FRESNO IRRIGATION DISTRICT
MULTIPLE RECHARGE BASIN PROJECT
DRAFT INITIAL STUDY/MITIGATED NEGATIVE DECLARATION

APRIL 2023

SCH NO.

PREPARED FOR:

Fresno Irrigation District
2907 South Maple Avenue
Fresno, CA 93725-2218

PREPARED BY:

Provost & Pritchard Consulting Group

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PROVOST& PRITCHARD
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TABLE OF CONTENTS

LIST OF APPENDICES

LIST OF FIGURES

LIST OF TABLES

ACRONYMS AND ABBREVIATIONS

AB ..... Assembly Bill
AF ..... Acre Feet
APE ..... Area of Potential Effect
APN ..... Assessor's Parcel Number
BAAQMD ..... Bay Area Air Quality Management District
BMP ..... Best Management Practices
CalEEMod ..... California Emissions Estimator Modeling (software)
CARB ..... California Air Resources Board
CCAA ..... California Clean Air Act
CCIC ..... Central California Information Center
CDFW ..... California Fish and Wildlife
CEQA ..... California Environmental Quality Act
CGS ..... California Geological Survey
CH_4 ..... Methane
CHRIS ..... California Historical Resources Information System
CNDDB ..... California Natural Diversity Database
CNPS ..... California Native Plant Society
CO ..... Carbone Monoxide
CO_2 ..... Carbon dioxide
County ..... Fresno County
CRHR ..... California Register of Historical Resources
dBA ..... A-weighted decibels
DFIRM ..... Digital Flood Insurance Rate Map
District ..... Fresno Irrigation District
DOC ..... Department of Conservation
DPM ..... Diesel Particulate Matter
DTSC ..... Department of Toxic Substances Control
ECOS ..... (USFWS) Environmental Conservation Online System
EIR ..... Environmental Impact Report
EPA ..... Environmental Protection Agency
ESA ..... Environmental Site Assessment

FEMA ..... Federal Emergency Management Agency
FID ..... Fresno Irrigation District
FMMP ..... Farmland Mapping and Monitoring Program
GHG ..... Greenhouse Gas
GIS ..... Geographic Information System
GSA ..... Groundwater Sustainability Agency
GSP ..... Groundwater Sustainability Plan
GWP ..... Global Warming Potential
HUC ..... Hydrologic Unit Code
IPaC ..... U.S. Fish and Wildlife Service's Information for Planning and Consultation system
IS ..... Initial Study
IS/MND ..... Initial Study/Mitigated Negative Declaration
km ..... kilometers
MBTA ..... Migratory Bird Act
MMRP ..... Mitigation Monitoring and Reporting Program
MND ..... Mitigated Negative Declaration
MOL ..... Mines Online (website)
MRZ ..... Mineral Resource Zones
NAAQS ..... National Ambient Air Quality Standards
NAHC ..... Native American Heritage Commission
ND ..... Negative Declaration
NEPA ..... National Environmental Policy Act
NFKGSA ..... North Fork Kings Groundwater Sustainability Agency
NO_2 ..... Nitrogen Dioxide
NOx ..... Nitrogen Oxides
NRCS ..... Natural Resources Conservation Service
NRHP ..... National Register of Historic Places
O_3 ..... Ozone
Pb ..... Lead
PM_{10} ..... particulate matter 10 microns in size
$PM_{2.5}$ ..... particulate matter 2.5 microns in size
ppb ..... parts per billion
ppm ..... parts per million

Project .....Multiple Recharge Basin Project
Reclamation ..... United States Bureau of Reclamation
ROG .....Reactive Organic Gases
RWQCB .....Regional Water Quality Control Board
SB ..... Senate Bill
SGMA..... Sustainable Groundwater Management Act
SJVAB .....San Joaquin Valley Air Basin
SO_2 .....Sulfur Dioxide
SR ..... State Route
SWPPP .....Storm Water Pollution Prevention Plan
SWRCB..... State Water Resources Control Board
TAC ..... Toxic Air Contaminants
TPY .....tons per year
USACE ..... United States Army Corps of Engineers
USC .....United States Code
USDA..... United States Department of Agriculture
USFWS .....United States Fish and Wildlife Service
USGS .....United States Geological Survey
µg/m3 .....micrograms per cubic meter
WDR ..... Waste Discharge Requirements

CHAPTER 1 INTRODUCTION

Provost & Pritchard Consulting Group (Provost & Pritchard) has prepared this Initial Study/Mitigated Negative Declaration (IS/MND) on behalf of Fresno Irrigation District (FID or District) to address the environmental effects of the Multiple Recharge Basin (Project). This document has been prepared in accordance with the California Environmental Quality Act (CEQA), Public Resources Code (PRC) Section 21000 et seq. The District is the CEQA lead agency for this Project.

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

1.1 REGULATORY INFORMATION

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

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

1.2 DOCUMENT FORMAT

This IS/MND contains six chapters. Chapter 1 Introduction, provides an overview of the Project and the CEQA process. Chapter 2 Project Description, provides a detailed description of proposed Project components and objectives. Chapter 3 Determination, the Lead Agency's determination based upon this initial evaluation. Chapter 4 Environmental Impact Analysis presents the CEQA checklist and environmental analysis for all impact areas, mandatory findings of significance, and feasible mitigation measures. If the Project does not have the potential to significantly impact a given issue area, the relevant section provides a brief discussion of the reasons why no impacts are expected. If the Project could have a potentially significant impact on a resource, the issue area discussion provides a description of potential impacts, and appropriate mitigation measures and/or permit requirements that would reduce those impacts to a less than significant level. Chapter 5 Mitigation, Monitoring, and Reporting Program (MMRP), provides the

proposed mitigation measures, implementation timelines, and the entity/agency responsible for ensuring implementation. Chapter 6 References details the documents and reports this document relies upon to provide its analysis.

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

CHAPTER 2 PROJECT DESCRIPTION

2.1 PROJECT BACKGROUND

2.1.1 Project Title

Multiple Recharge Basin Project

2.1.2 Lead Agency Name and Address

Fresno Irrigation District
2907 South Maple Avenue
Fresno, CA 93725-2218

2.1.3 Contact Person and Phone Number

Lead Agency Contact

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CEQA Consultant

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Briza Sholars, Senior Planner/Environmental Project Manager
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2.1.4 Project Location

The Proposed Project would be located within the Central San Joaquin Valley of California, in the western unincorporated jurisdiction of Fresno County. The centroid for all four basin sites is 36.7513960 N, 119.9567883 W. The Proposed Project consists of four separate recharge basin facilities totaling 151 acres at the following locations:

Table 2-1: Basin Location Information

Basin	Acres	Location	Assessor's Parcel Number	Township/Range/Section T/R/S
Carter-Bybee Basin	40 acres	NW corner of N Jameson and W Barstow	016-450-54, 76, and 75	T13S/R18E/10
Badhesha Basin	28 acres	Intersection of North and Hughes Avenue	328-091-18	T14S/R20E/S30
Hornor Basin	35 acres	Intersection of Ashlan Avenue and Madera Avenue	016-330-20S	T13s/R18E/10
Kenneson-Sanchez Basin	48 acres	Intersection of Clinton and Modoc Avenue	015-400-005 and -006	T13S/R17E/28

2.1.5 General Plan Designation and Zoning – Onsite and Surrounding Land Uses

All four basin sites as well as the immediate surrounding areas have a General Plan Designation of Agricultural and are all zoned AE – Exclusive Agriculture.

2.1.6 Surrounding Land Uses and Setting

The general vicinity of the Proposed Project sites consists of farmland and scattered residential and vacant land uses typical to rural areas in the Central Valley. Properties directly surrounding the proposed Project sites are currently in use for agriculture, including vines and tree crops. The District is located on the Valley floor east of the Coast Ranges and west of the Sierra Nevada Mountain Range. The proposed basins are located over a 5-mile area west of Highway 99. Topographically, the proposed Project areas are at an elevation of approximately 230-266 feet above mean sea level (Figure 2-2).

All four sites contain or are adjacent to existing District canal facilities that the proposed basins would tie into as a part of this Project.

2.1.7 Description of Project

District Background[1]

Fresno Irrigation District was formed in 1920 under the California Irrigation Districts Act, as the successor to the privately owned Fresno Canal and Land Company. The assets of the company consisted of over 800 miles of canals and distribution works which were constructed between 1850 and 1880 and the extensive water rights on Kings River. The District which now comprises some 245,000 acres, lies entirely within Fresno County and includes the rapidly growing Fresno-Clovis metropolitan area.

A significant improvement in the control and management of the waters of Kings River occurred with the completion of the Pine Flat Dam project by the United States Army Corps of Engineers in 1954. Although built primarily as a flood control project, the Dam provides significant water conservation benefits stemming from the storage and regulation of irrigation water by the 28 water right entities on Kings River including Fresno Irrigation District. The District contracted for 11.82% of the 1,000,000 AF (acre feet) capacity of the Pine Flat Reservoir. While the District is entitled to approximately 26% of the average runoff of Kings River, much of its entitlement occurs at times when it can be used for urban consumption or directly for irrigation of crops without the need for regulation at Pine Flat.

In a normal year, the District diverts approximately 500,000 AF of water and delivers most of it to agricultural users, although an ever-increasing share of the District's water supply is used for groundwater recharge in the urban area.

In addition to its entitlement from the Kings River, the District has a contract from the Friant Division of the Central Valley Project for 75,000 AF of Class II Irrigation water.

Historically, excess water applied by the farmers has percolated beyond the root zone and recharged the extensive aquifer underlying the Fresno Irrigation District. Between 85% and 90% of the groundwater supply can be attributed to water imported and distributed by the District.

[1] (Fresno Irrigation District 2022)

In recent years, the District has formed cooperative agreements with other agencies to handle special projects and to solve specific problems. Three examples are:

1. An agreement with the City of Fresno to recycle groundwater from the vicinity of the Regional Sewage Treatment Facility operated by the City.
2. A storm water agreement with the City of Clovis, the City of Fresno, Fresno County and the Fresno Metropolitan Flood Control District for the coordinated use of District's facilities to handle foothill and urban storm water runoff.
3. Cooperative agreements with the City of Clovis and the City of Fresno for a proportionate share of the District's water entitlement in exchange for lump sum payment of water service charges, rather than the District billing the tens of thousands of individual landowners within those urban areas.

As a public corporation, the District is governed by a board of five directors. Each director represents a separate geographical division of the District and is elected for a term of four years by the qualified voters within his division. Regular board meetings are held once each month.

The budget of the District is adopted by the Board in August for the following calendar year. The property is assessed by service provided on a per acre basis. The District usually delivers over two AF per acre of water in a normal year, but it may be lower or higher in extremely dry or wet years.

Day to day operations are the responsibility of the general manager acting through the following described five divisions:

1. Administration & Operations headed by the Assistant General Managers;
2. Engineering headed by the Chief Engineer;
3. Accounting headed by the Controller;
4. Water headed by the Watermaster;
5. Construction & Maintenance headed by the Superintendent of Const. & Maintenance

The District is a member of the North Kings Groundwater Sustainability Agency (NKGSA) that has adopted a Groundwater Sustainability Plan (GSP) to meet the requirements of the Sustainable Groundwater Management Act (SGMA). To help reach sustainability, the District has included several recharge basin projects within the NKGSA's GSP, including the projects described herein.

Project Description

Project Components:

General

FID is proposing to construct four recharge basins in Fresno County within the boundary of the District. The proposed Project will assist the District in expanding its groundwater recharge efforts. The basins will range in size from 28 to 48 acres (151 acres in total). The project Area of Potential Affect (APE) is identified as 151 acres.

The proposed benefits of all four basins includes recharge, new storage of floodwater, providing new habitat for waterfowl and to assist the District to maintain its commitments to the Kings River fisheries management program by providing place for fish management water to be diverted in dry years. These basins are all in a critical location for the District to perform recharge and will capture and use storm and flood water supplies available to the District.

The following components will be consistent at each basin site:

- Basin depth will be up to 20 feet below ground surface.

- Monitoring well(s),
- Metering stand and flow meter,
- Perimeter fencing- cattle fence and/or chain-link fence,
- Excavation will be balanced onsite, if possible,
- Recovery well(s) and discharge pipeline to deliver ~5 cfs to adjacent FID canal or pipeline.

Specific details that are unique to each recharge basin are outlined below.

Carter-Bybee Recharge Basin:

The Project includes construction of a new 40-acre recharge basin located at the NW corner of N Jameson and W Barstow, APN's 016-450-54, 75, and 76 in Fresno County. The proposed Carter-Bybee Basin project is upgradient of the community of Biola, a Severely Disadvantaged Community (SDAC). The property was previously planted in grape vines and has since been cleared of any vegetation. The District owns the conveyance canals adjacent to and pipeline (Carter No. 517) crossing the project site. There is an existing check structure in this canal that will be utilized. The project will provide significant recharge benefit estimated at 840 AF/yr. The proposed project includes the following construction components that would connect to Herndon Canal No. 39 which exists to the south.

- Basin inlet structure ~50 cfs,
- Reroute Carter No. 517 pipeline across the Project site,
- See Figure 2-4 for an aerial location map of Carter-Bybee Recharge Basin.

Badhesha Recharge Basin

The Project includes construction of a new 28-acres recharge basin located near the intersection of North Avenue and Hughes Avenue, APN 328-091-18 in Fresno County. The land was previously cleared and the APE will extend south of the Fresno Colony Canal No 24. A proposed turnout will be constructed in this canal. The project will provide significant recharge benefit estimated at 600 AF/yr.

- Basin inlet structure ~25 cfs,
- Diversion check structure ~50 cfs,
- See Figure 2-5 for an aerial location map of Badhesha Recharge Basin.

Hornor Recharge Basin

The Project includes construction of a new 35-acre recharge basin, located near the intersection of Ashlan Avenue and Madera Avenue, APN 016-330-20S, in Fresno County. The APE excludes the single-family dwelling on two acres to the west. The Project site has been cleared and the proposed basin will tie into the Little Sandridge Canal No 66 or Big Sandridge Canal No. 65 which are existing District facilities. The project will provide significant recharge benefit estimated at 720 AF/yr.

- Basin inlet structure ~35 cfs,
- Realignment of existing Little Sandridge Canal No 66 across the Project site,
- See Figure 2-6 for an aerial location map of Hornor Recharge Basin.

Kenneson-Sanchez Recharge Basin

The Project includes construction of a new 48-acre recharge basin located at the intersection of Clinton Avenue and Modoc Avenue, APNs 015-400-005 and -006, in Fresno County. The site was previously cleared of vines. The proposed basin would connect to existing District infrastructure, Big Sandridge Canal No 65. A rural elementary school is located directly west across Modoc Avenue. The single-family dwelling to the

east will remain and is not included in the Project APE. The project will provide significant recharge benefit estimated at 1,080 AF/yr.

- Basin inlet structure ~50 cfs,
- Diversion check structure ~100 cfs,
- Realignment of existing Big Sandridge Canal No 65 to sough along Clinton Ave,
- See Figure 2-7 for an aerial location map of Kenneson-Sanchez Recharge Basin.

Construction

Construction of each of the basin sites is anticipated to be completed over approximately six months. The Project parcels have been cleared of vegetation, fencing, structures, and other debris. The Project includes mobilization, site preparation, berm construction surrounding the basins; earthwork and structures placement; Project turnout(s), metering stands, diversion check structures, intrabasin and basin outfall structures, and well drilling. New berm construction would not exceed six feet, measured from the exterior toe to the top of new levee. The Project may include ponds/cells within the basins separated by berms. After construction completion, performance testing and demobilization would occur.

Equipment

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

- Excavators,
- Backhoes,
- Graders,
- Skid steers,
- Loaders,
- Hauling trucks,
- Scrapers,
- Sheeps foot compactors (Large and Small dependent on area conditions),
- D9 dozer,
- large tractor and large discing unit,
- Water trucks supplying water for dust control and conditioning soil for compaction, and
- Large watercannon and hoses.

Post-construction activities will include system testing, commissioning, and site clean-up. Construction will require temporary staging and storage of materials and equipment. Staging areas will be located onsite.

Operation and Maintenance

Each of the proposed basin sites include construction of a recovery well(s) and monitoring wells to assist the District with monitoring and managing the groundwater recharge basins and levels. The District's operation of the basins would be consistent with the District's other similar facilities in that groundwater conditions will be monitored to minimize negative impacts on the surrounding areas (such as nearby wells, crops, and septic systems).

2.1.8 Other Public Agencies Whose Approval May Be Required

Ministerial approvals and permits that may be required:

- State Water Resources Control Board – NPDES Construction General Permit

- San Joaquin Valley Air Pollution Control District – Rules and Regulations (Regulation VIII, Rule 9510, Rule 4641)
- Fresno County Environmental Health Division
- North Kings Groundwater Sustainability Agency

2.1.9 Consultation with California Native American Tribes

Public Resources Code (PRC) Section 21080.3.1, *et seq. (codification of Assembly Bill (AB) 52, 2013-14)*) requires that a lead agency, within 14 days of determining that it will undertake a project, must notify in writing any California Native American Tribe traditionally and culturally affiliated with the geographic area of the project if that Tribe has previously requested notification about projects in that geographic area. The notice must briefly describe the project and inquire whether the Tribe wishes to initiate request formal consultation. Tribes have 30 days from receipt of notification to request formal consultation. The lead agency then has 30 days to initiate the consultation, which then continues until the parties come to an agreement regarding necessary mitigation or agree that no mitigation is needed, or one or both parties determine that negotiation occurred in good faith, but no agreement will be made.

The District, as the lead agency, has received written correspondence from two tribes, Dumna Wo Wah Tribal Government and Santa Rosa Rancheria Tachi Yokut Tribe, pursuant to Public Resources Code Section 21080.3.1 requesting notification of proposed project.

The District sent a certified letter via United States Postal Service on August 11, 2022, to both tribes describing the Project and provided maps of the basin site locations. The District's contact information and notification that the Tribe had 30 days to request consultation pursuant to AB 52 were included. The 30-day timeline ran its course and no responses or requests for consultation were received by the District. All Tribal correspondence is included within Appendix C.

2.1.10 "CEQA–Plus" Assessment

The District may be applying for financial assistance to implement the Project through State or federal funding in the future.

In addition to meeting the requirements of CEQA, and because financial assistance could come from the Federal government (United States Environmental Protection Agency (USEPA), for instance), the Project could be subject to "federal cross-cutting authority" requirements of other federal laws and Executive Orders that apply in federal financial assistance programs. (This process is frequently referred to as "CEQA-Plus".) Therefore, the District may also complete certain studies and analyses to satisfy various federal environmental requirements.

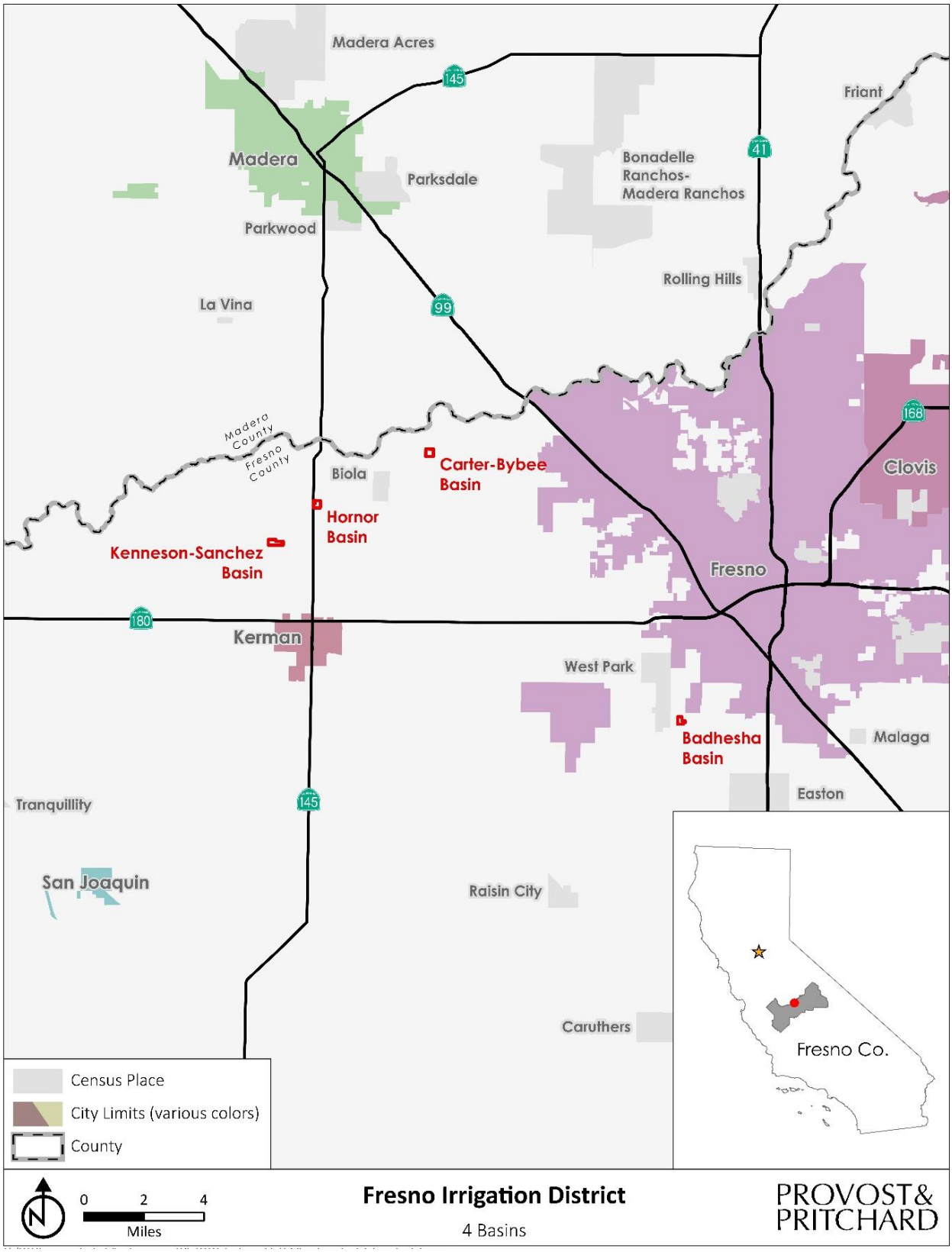

Figure 2-1: Regional Vicinity Map

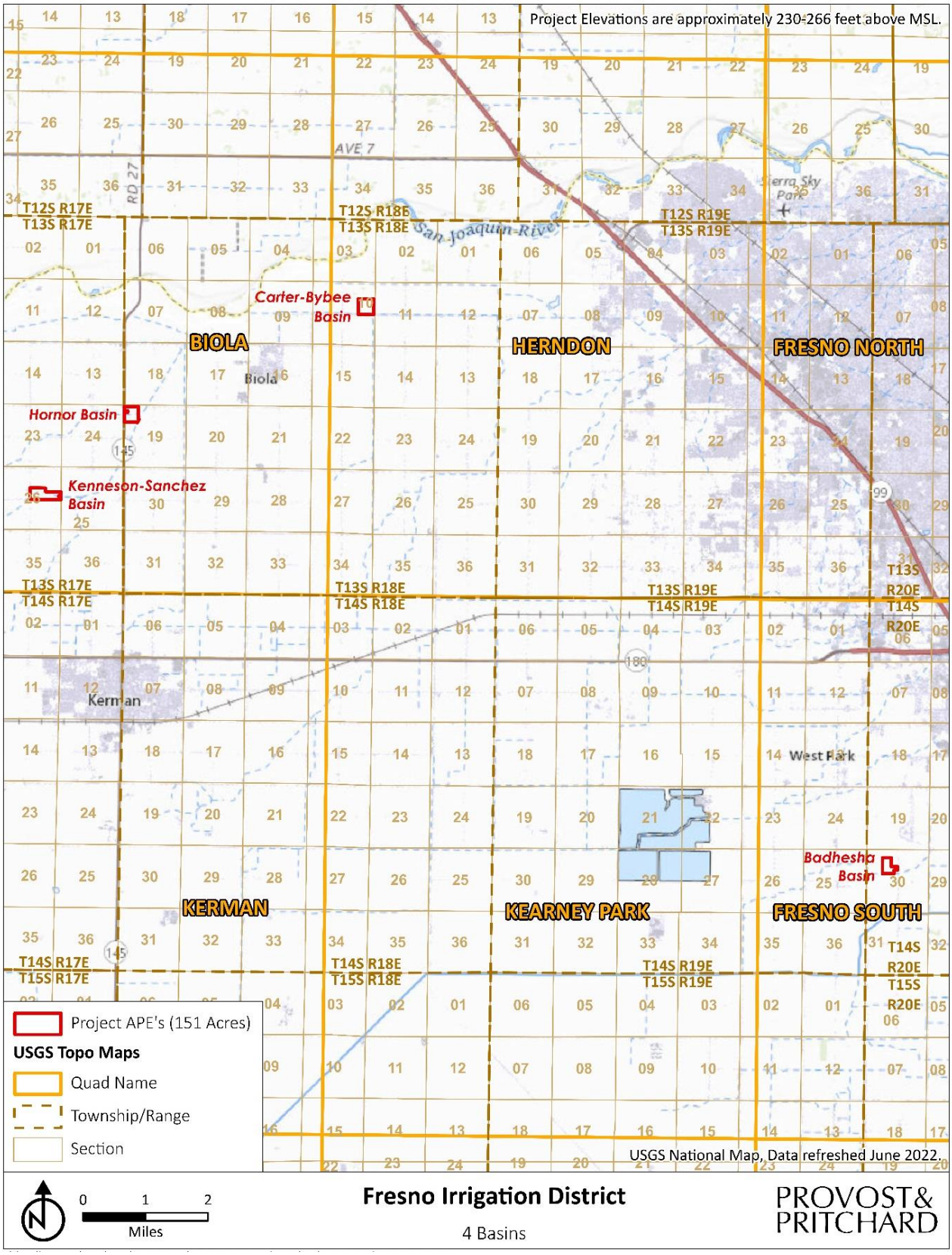

Figure 2-2: Topographical Quadrangle Map

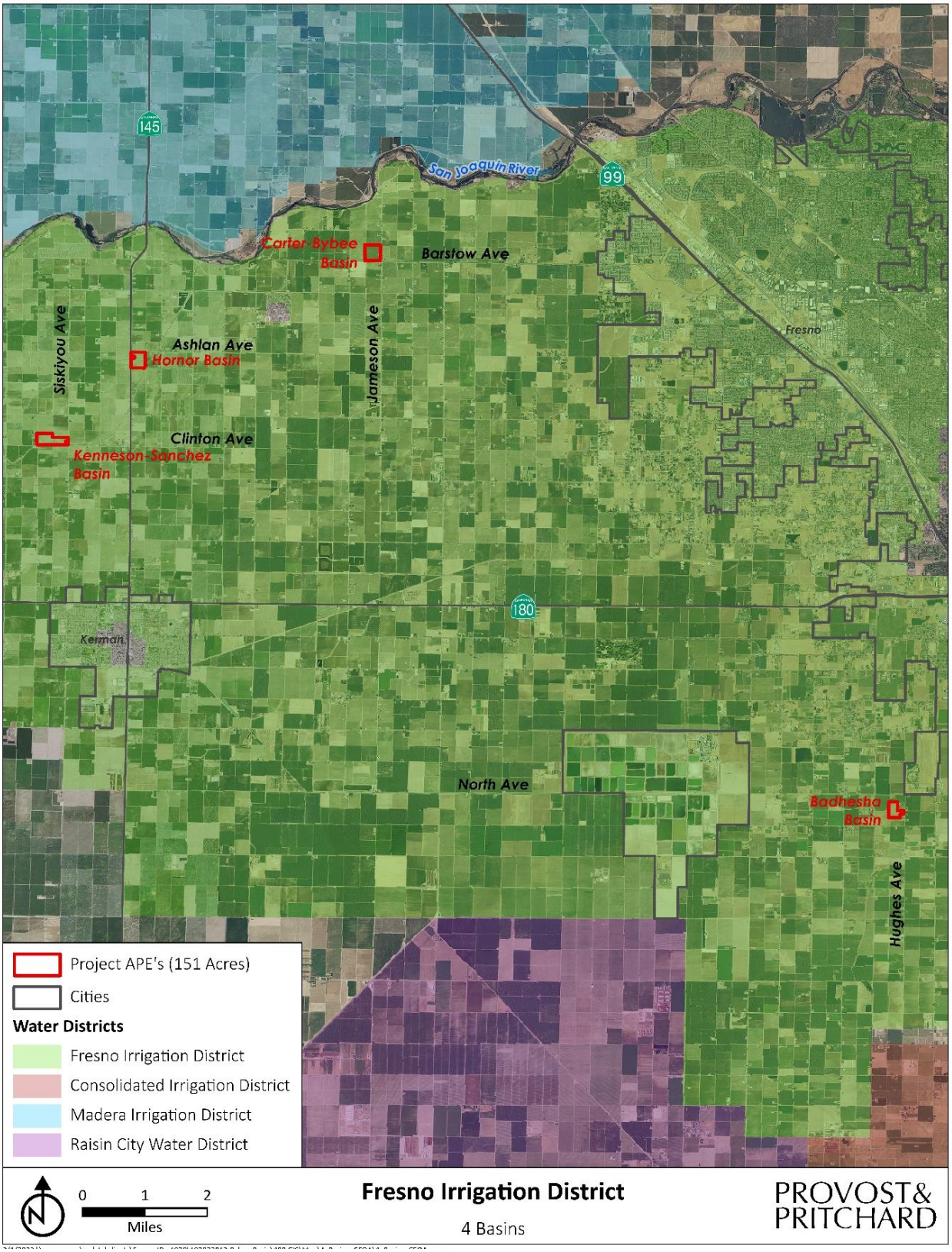

Figure 2-3: District Boundary Map

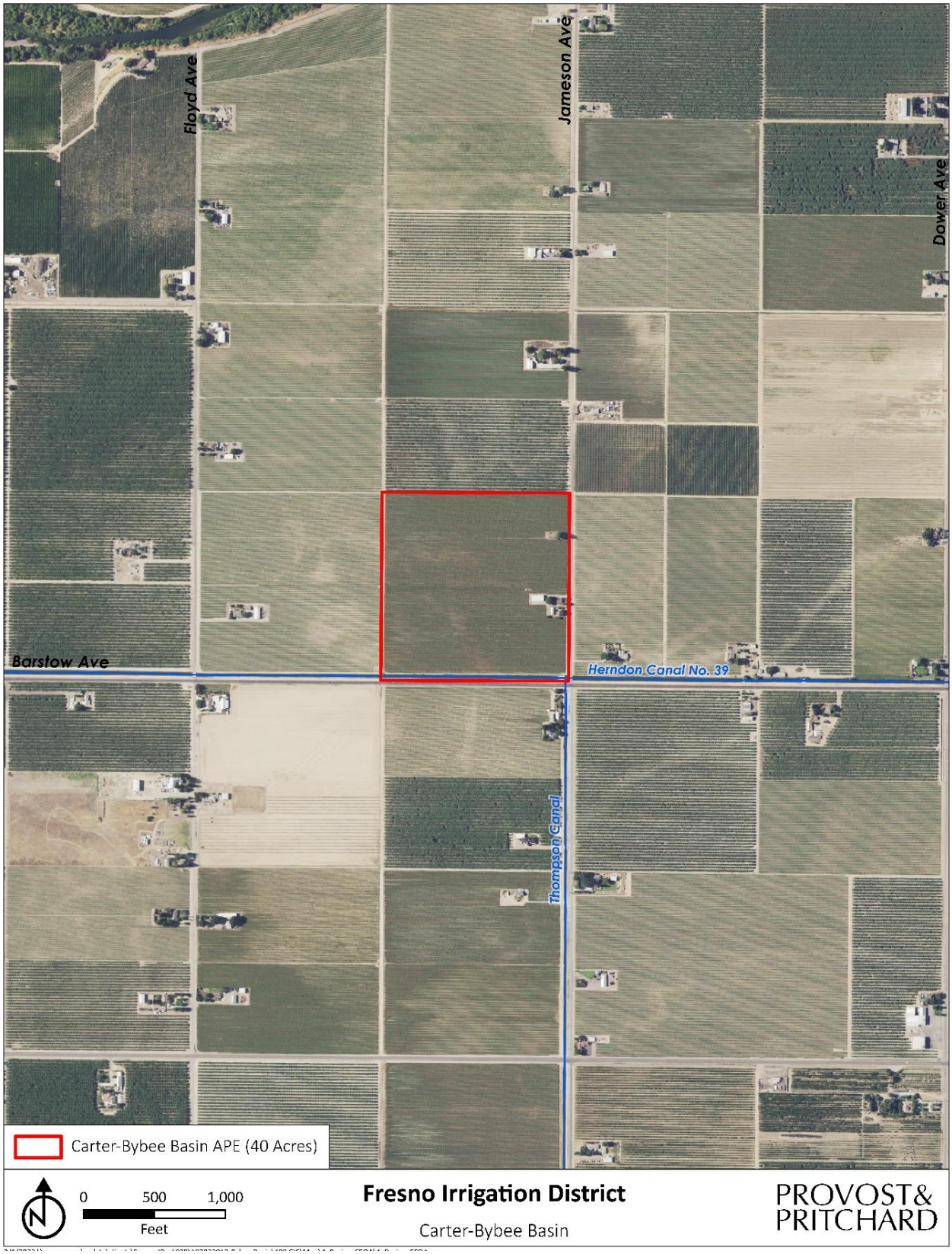

Figure 2-4: Carter-Bybee Basin Aerial Map

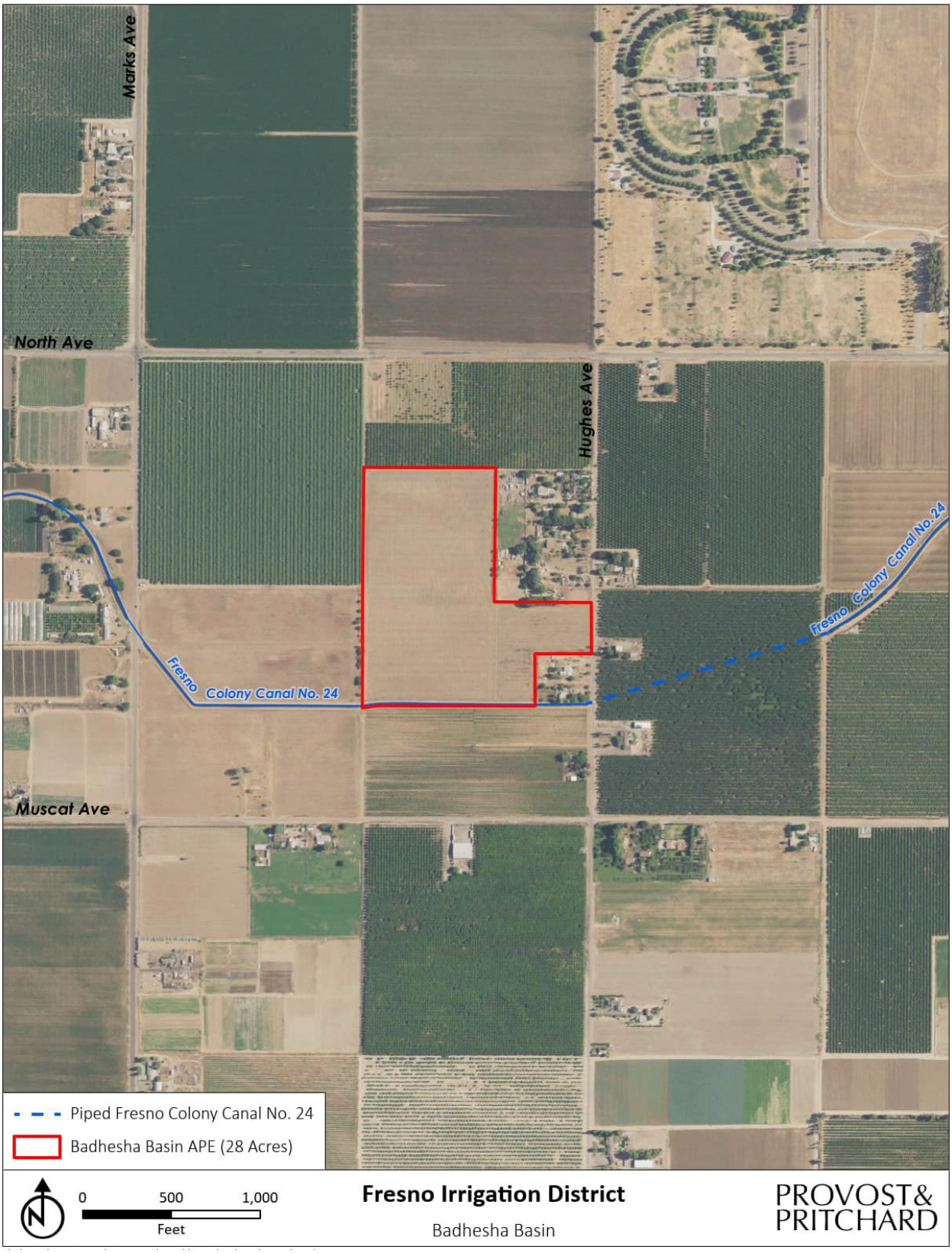

Figure 2-5: Badhesha Basin Aerial Map

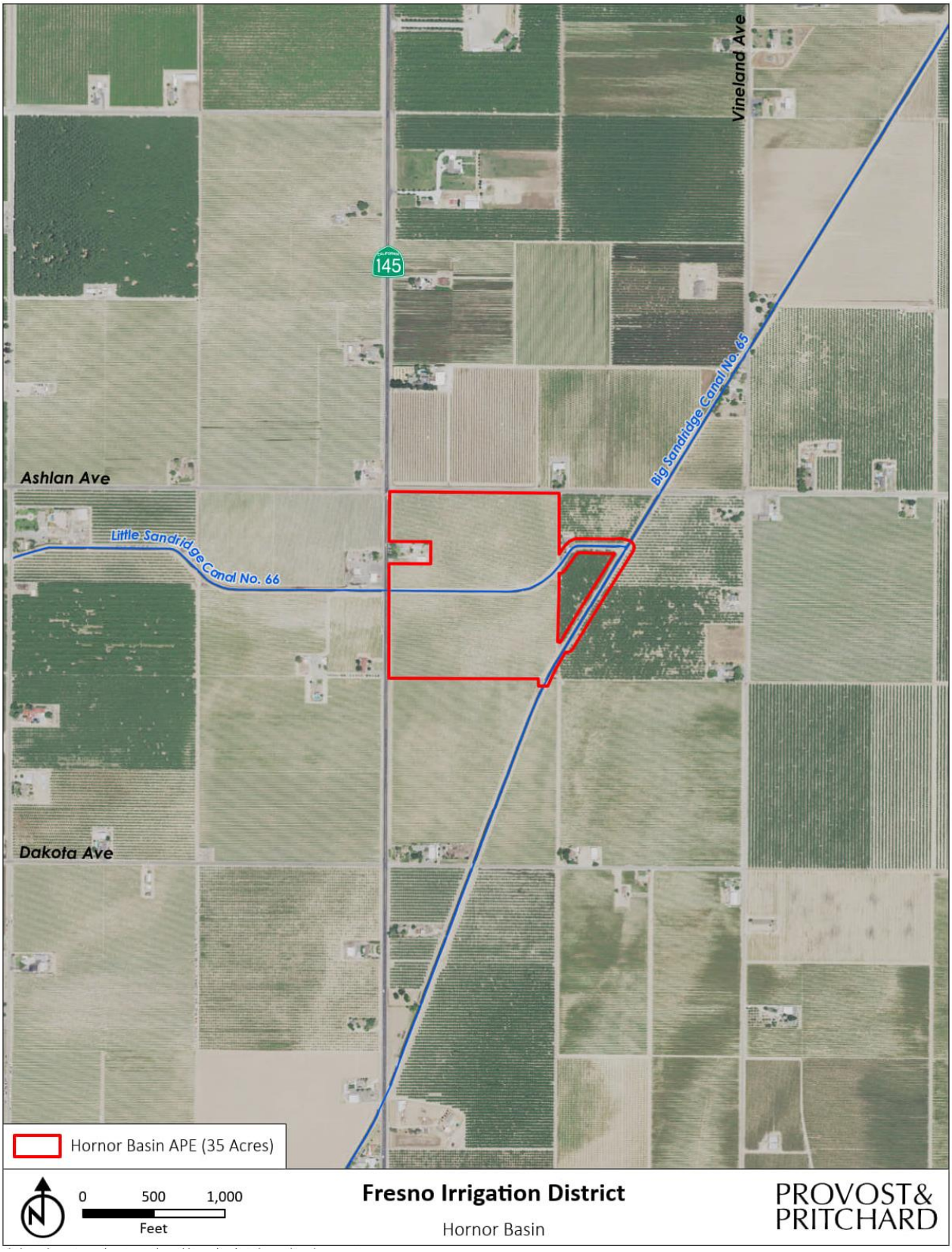

Figure 2-6: Hornor Basin Aerial Map

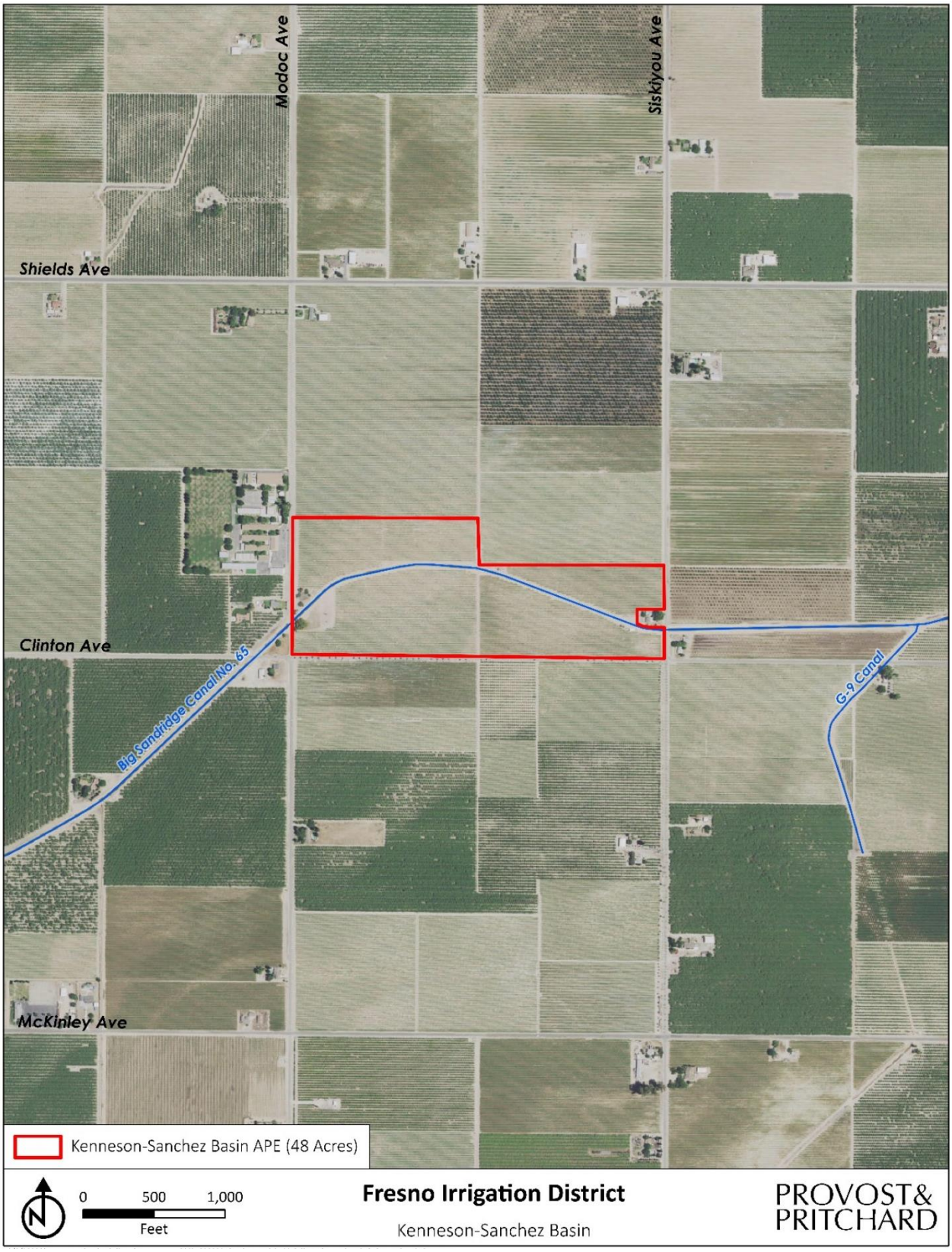

Figure 2-7: Kenneson-Sanchez Basin Aerial Map

CHAPTER 3 DETERMINATION

3.1 POTENTIAL ENVIRONMENTAL IMPACTS

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

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

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

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

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

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

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

3.2 DETERMINATION

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

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

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

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

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

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

Signature

3/29/2023

Date

Laurence Kimura/Chief Engineer

CHAPTER 4 ENVIRONMENTAL IMPACT ANALYSIS

4.1 AESTHETICS

Table 4-1: Aesthetics Impacts

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

4.1.1 Baseline Conditions

The proposed Project is located in the western unincorporated jurisdiction of Fresno County in the Central San Joaquin Valley. Lands in the Project's vicinity consist of relatively flat, irrigated farmland, agricultural infrastructure, and rural residences. Scenic features in the area may include the San Joaquin River and even the vast expanse of agricultural uses. In Fresno County, a portion of State Route 180 E (SR 180 E) has been officially designated by Caltrans as a "State Scenic Highway," however that section is over 32-miles southeast of the Carter-Bybee site. The nearest eligible designated State Scenic Highway is SR 168, which is over 14-miles southeast to the closest basin site. Rural roadways, the California Aqueduct, local water distribution canals, water retention basins and other infrastructure typical of rural agricultural areas in the San Joaquin Valley are also in the Project area.

4.1.2 Impact Analysis

a) Have substantial adverse effect on a scenic vista?

No Impact. As stated above, scenic features in the area may include the San Joaquin River and even the vast expanse of agricultural uses. The Project would not obstruct the viewshed of these features during construction or implementation. The four proposed recharge basins would be constructed at

approximately the same level as existing ground elevations in the areas, resulting in no potential views being obstructed. Additionally, the basins would be consistent with the overall character and theme of the surrounding areas and would not stand out in any remarkable manner. There would be no impact.

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

No Impact. There are no identified scenic resources, trees, rock outcroppings, or historic buildings within the Project site. There would be no components of the Project that would cause obstruction to the general public view of natural features, nor would the Project have an adverse effect on a scenic view. A 24-mile portion of State Route 180, located in Eastern Fresno County, is the only Officially Designated State Scenic Highway in Fresno County and is not located near the Project sites.[2] Although the proposed Project is located in Fresno County, Project activities would be taking place approximately 80-miles west of the segment and do not have the potential to cause any adverse effects. There would be no impact.

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

No Impact. The proposed Project sites contain agricultural lands and rural infrastructure. The sites and surrounding lands are zoned for agriculture and are located in rural Fresno County. The proposed basins would blend in and would not substantially degrade the visual character of the area. There would be no impact.

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

No Impact. The Project area is primarily agriculture and other rural uses. No artificial lighting is proposed to be on-site. Additional vehicular traffic to the sites after construction would likely be once-weekly daytime maintenance trips. Therefore, the Project would not create a new source of substantial light or glare which would adversely affect day or nighttime views in the area or be inconsistent with existing conditions. There would be no impact.

4.1.3 Federal Cross-Cutting Topic

Wild, Scenic, and Recreational Rivers Act

The National Wild and Scenic Rivers Act was established in 1968, to maintain the natural beauty, biology, and wildness of federally designated "wild," "scenic," or "recreational" rivers that may be threatened by construction of dams, diversions, and canals. The act seeks to preserve these designated rivers in their free-flowing condition, and to protect their immediate environments for the benefit and enjoyment of present and future generations. California has approximately 189,454-miles of river, of which approximately 1,999-miles are designated as wild & scenic—1% of the state's river miles.[3] The San Joaquin River is located less than one mile northwest of the Carter-Bybee Basin location and is not listed as a “wild” or “scenic” river. There are no "wild" or "scenic" rivers within or proximate to any of the basin sites.

[2] (California Department of Transportation 2018)
[3] (National Wild and Scenic Rivers System 2022)

4.2 AGRICULTURE AND FORESTRY RESOURCES

Table 4-2: Agriculture and Forest Impacts

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

4.2.1 Baseline Conditions

The Project sites currently contain approximately 151 acres of vacant farmland that would be converted under implementation of the Project to recharge basins. The sites are in rural areas and substantially surrounded by agricultural use and related infrastructure. According to the California Department of Conservation's Important Farmland Finder, all four sites of the Project are designated as Prime Farmland. (See Figure 4-1).[4] The Project would not violate any existing Williamson Act Contract. While the Project would result in the loss of approximately 151 acres of farmland, the Project would support agriculture through improved water supply reliability. The conversion of the four sites into recharge basins would replace one agriculture use with another due to the nature of this Project and what it would provide after construction has completed. Recharge basins temporarily store runoff, and volume is stored and allowed to infiltrate into the underlying soils over a period of time following a storm event, ultimately replenishing the underground aquifer.

The California Department of Conservation's 2012 Farmland Mapping and Monitoring Program (FMMP) is a non-regulatory program that produces "Important Farmland" maps and statistical data used for analyzing impacts on California's agricultural resources. The Important Farmland maps identify eight land use

[4] (California Department of Conservation 2016)

categories, five of which are agriculture related: prime farmland, farmland of Statewide importance, unique farmland, farmland of local importance, and grazing land – rated according to soil quality and irrigation status. The eight categories are summarized below[5]:

• PRIME FARMLAND (P): Farmland with the best combination of physical and chemical features able to sustain long term agricultural production. This land has the soil quality, growing season, and moisture supply needed to produce sustained high yields. Land must have been used for irrigated agricultural production at some time during the four years prior to the mapping date.

• FARMLAND OF STATEWIDE IMPORTANCE (S): Farmland similar to Prime Farmland but with minor shortcomings, such as greater slopes or less ability to store soil moisture. Land must have been used for irrigated agricultural production at some time during the four years prior to the mapping date.

• UNIQUE FARMLAND (U): Farmland of lesser quality soils used for the production of the State's leading agricultural crops. This land is usually irrigated but may include non- irrigated orchards or vineyards as found in some climatic zones in California. Land must have been cropped at some time during the four years prior to the mapping date.

• FARMLAND OF LOCAL IMPORTANCE (L): Land of importance to the local agricultural economy as determined by each county's board of supervisors and a local advisory committee.

• GRAZING LAND (G): Land on which the existing vegetation is suited to the grazing of livestock. The minimum mapping unit for Grazing Land is 40 acres.

• URBAN AND BUILT-UP LAND (D): Land occupied by structures with a building density of at least 1 unit to 1.5 acres, or approximately 6 structures to a 10-acre parcel. This land is used for residential, industrial, commercial, institutional, public administrative purposes, railroad and other transportation yards, cemeteries, airports, golf courses, sanitary landfills, sewage treatment, water control structures, and other developed purposes.

• OTHER LAND (X): Land not included in any other mapping category. Common examples include low density rural developments; brush, timber, wetland, and riparian areas not suitable for livestock grazing; confined livestock, poultry, or aquaculture facilities; strip mines, borrow pits; and water bodies smaller than 40 acres. Vacant and nonagricultural land surrounded on all sides by urban development and greater than 40 acres is mapped as Other Land.

• WATER (W): Perennial water bodies with an extent of at least 40 acres.

The State of California Department of Conservation 2012 FMMP for Fresno County designates the site and surrounding areas as Confined Animal Ag, Farmland of Local Importance, Urban and Built-Up Land, Farmland of State Importance and Prime Farmland, as shown in Figure 4-1 and summarized in Table 4-3 below:

Table 4-3: Farmland Designations

Basin Name	Farmland Designation
Carter-Bybee	Prime Farmland/Farmland of State Importance
Badhesha	Prime Farmland/Rural Residential
Hornor	Prime Farmland
Kenneson-Sanchez	Prime Farmland/Urban and Built-Up Land

[5] (California Department of Conservation 2016). Accessed October 25, 2022.

4.2.2 Impact Analysis

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

Less than Significant Impact. The Project sites are designated as Prime Farmland and Unique Farmland. See Figure 4-1. The Project would entail the construction of four recharge basins to replenish groundwater supplies from storm and flood water. These basins would ultimately benefit water resources that may be used for agricultural wells in the vicinity and thereby prevent other agricultural lands from being fallowed due to inadequate or costly recovery of declining groundwater water supply. Groundwater replenishment associated with the Proposed Project is consistent with the goals of the Sustainable Groundwater Management Act (SGMA). Therefore, the impact would be less than significant.

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

Less than Significant Impact. Table 4-4 below lists all the parcels that are currently under Williamson Act either directly onsite or on an adjacent parcel. The construction and implementation of the four basins would facilitate greater security of groundwater storage for District growers, promoting the agricultural zoning and Williamson Act intentions. The principal objectives of the Williamson Act program include: protection of agricultural resources, preservation of open space land, promotion of efficient urban growth patterns. The implementation of recharge basins would promote groundwater security protecting agricultural resources and promotes efficient urban growth as the land is converting from agricultural uses to passively built-up land. The impacts would be less than significant.

Table 4-4: Williamson Act Parcels

APN	Onsite Parcels	Adjacent Parcel
Bybee-Carter basin	NA	016-450-13, 016-460-01, 016-460-36, 016-450-17, 016-450-1
Badhesha basin	328-091-18	328-091-22, 328-092-04S, 328-091-08, 328-091-23
Hornor basin	016-330-20S	016-330-10, 016-330-11, 015-161-31, 015-161-30, 015-340-79
Kenneson-Sanchez basin	NA	015-400-07, 015-390-40S, 015-390-07, 015-390-01, 015-410-12

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

No Impact. There is no timber land in the vicinity or in proximity to any of the sites; therefore, there will be no impact.

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

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

d-e) No Impact. There is no forest or timberland located on or near the Project sites, nor are the sites zoned for forest land or timberland. The Project activities would not involve the conversion of any land that has been designated as timberland or forest as there is no such land in the immediate or surrounding areas. There would be no impact.

4.2.3 Federal Cross-Cutting Topic

Farmland Protection Act

The Farmland Protection and Policy Act (FPPA) was enacted in 1981 to minimize the loss of prime farmland and unique farmlands because of federal actions that converted these lands to nonagricultural uses. The act assures that federal programs are compatible with state and local governments, and private programs and policies to protect farmland.

As defined by the FPPA, prime farmland is farmland that has the best combination of physical and chemical characteristics for producing food, feed, forage, fiber, and oilseed crops, and also is available for these uses. A unique farmland is land other than prime farmland that is used for production of specific, high-value food and fiber crops; it has the special combination of soil quality, location, growing season, and moisture supply needed to economically produce sustained high quality or high yields of specific crops.

The Project is not located on lands classified by the DOC as Farmland of Statewide Importance, Unique Farmland, and Farmland of Local Importance. These classifications recognize a land' s suitability for agricultural production by considering the physical and chemical characteristics of the soil, such as soil temperature range, depth of the groundwater table, flooding potential, rock fragment content, and rooting depth. The classifications also consider location, growing season, and moisture available to sustain high-yield crops. Together, Important Farmland and Grazing Land are defined by the DOC as "Agricultural Land."

The Project is located on lands that are classified as "Prime Farmland," which consists of lands suited for Farmland with the best combination of physical and chemical features able to sustain long term agricultural production. This type of farmland land has the soil quality, growing season, and moisture supply needed to produce sustained high yields. Land must have been used for irrigated agricultural production at some time during the four years prior to the mapping date. Therefore, no farmland would be converted as a result of the Project. Therefore, the Project would not conflict with the Farmland Protection and Policy Act or adversely affect prime or unique farmland.

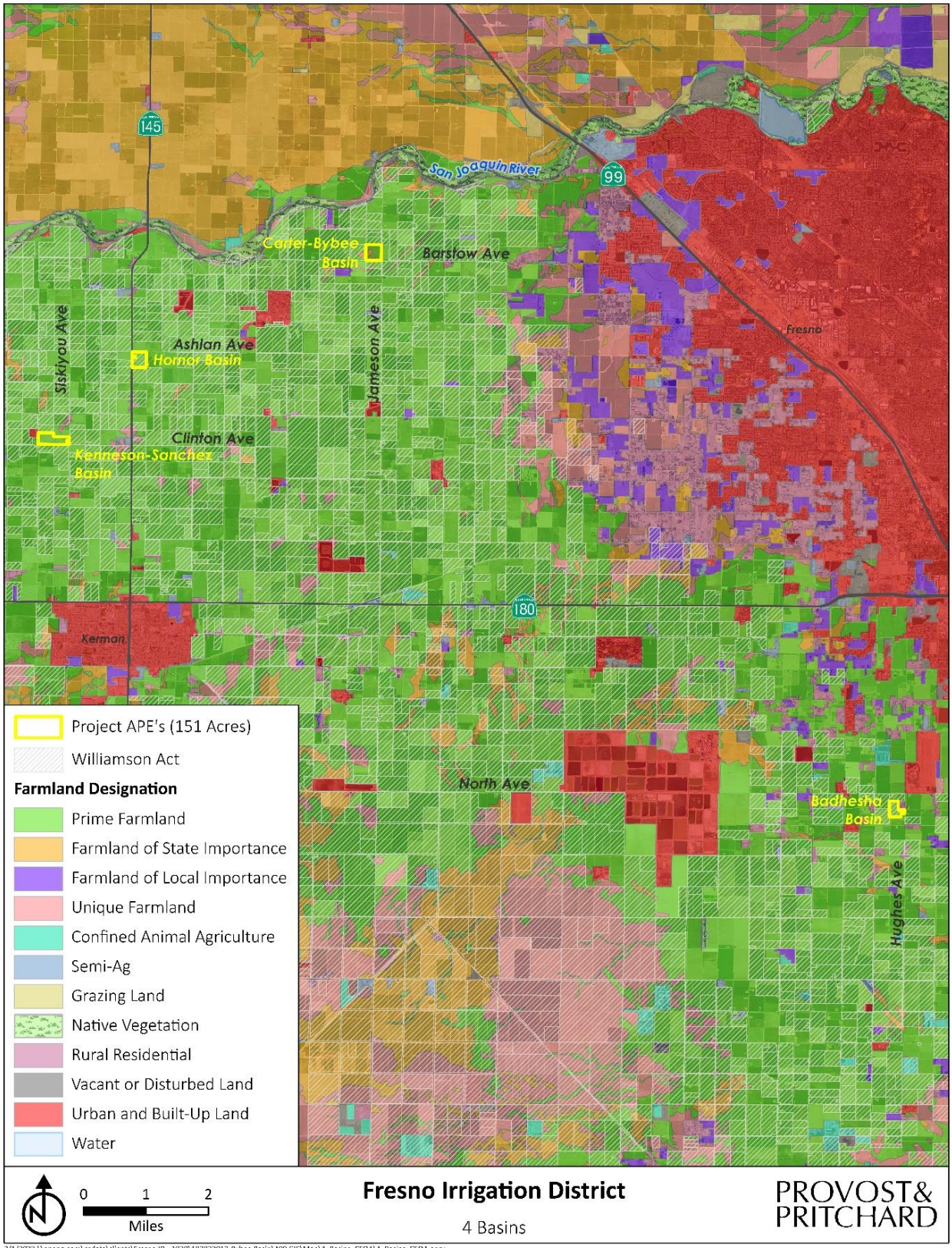

Figure 4-1: Farmland Designation Map

4.3 AIR QUALITY

Table 4-5: Air Quality Impacts

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

4.3.1 Baseline Conditions

The Project would be located in four separate locations of the County of Fresno, within the boundaries of the San Joaquin Valley Air Pollution Control District (SJVAPCD) and the San Joaquin Valley Air Basin (SJVAB). The SJVAB is positioned within the San Joaquin Valley of California. The San Joaquin Valley is bounded by the Sierra Nevada Mountain Range to the east and the Coastal Mountain Range to the west. Wind within the SJVAB typically channels south-southwest during the summer months, while wind flows to the north-northwest during the winter months. Wind velocity for the region is considered low for an area of such size.[6] Due to a lack of strong wind and the natural confinement of the mountain ranges surrounding the SJVAB, the region experiences some of the worst air quality in the world.

Regulatory Attainment Designations

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

The United States Environmental Protection Agency (USEPA) designates areas for ozone, CO, and NO_2 as "does not meet the primary standards," "cannot be classified," or "better than national standards." For SO_2, areas are designated as "does not meet the primary standards," "does not meet the secondary

[6] (San Joaquin Valley Air Pollution Control District 2022)

standards," "cannot be classified," or "better than national standards." However, the CARB terminology of attainment, nonattainment, and unclassified is more frequently used. The USEPA uses the same sub-categories for nonattainment status: serious, severe, and extreme. In 1991, USEPA assigned new nonattainment designations to areas that had previously been classified as Group I, II, or III for PM_{10} based on the likelihood that they would violate national PM_{10} standards. All other areas are designated "unclassified."

The state and national attainment status designations pertaining to the SJVAB are summarized in Appendix A. The SJVAB is currently designated as a nonattainment area with respect to the State PM_{10} standard, ozone, and $PM_{2.5}$ standards. The SJVAB is designated nonattainment for the National Ambient Air Quality Standard (NAAQS) 8-hour ozone and $PM_{2.5}$ standards. On September 25, 2008, the USEPA re-designated the San Joaquin Valley to attainment status for the PM_{10} NAAQS and approved the PM_{10} Maintenance Plan.

Table 4-6: Summary of Ambient Air Quality Standards and Attainment Designation

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

** For more information on standards visit: https://ww3.arb.ca.gov/research/aaqs/aaqs2.pdf*
*** No Federal 1-hour standard. Reclassified extreme nonattainment for the Federal 8-hour standard 11/17/22.*
****Secondary Standard*
Source: CARB 2015; SJVAPCD 2015

An Air Quality and Greenhouse Gas Emissions Evaluation Report (Appendix A) was prepared using CalEEMod Emissions Model, Version 2020.4.0 for the Project in November 2022. The sections below detail the methodology of the air quality and greenhouse gas emissions report and its conclusions.

Construction-Generated Emissions

The exact timeline for the construction of the proposed basins is unknown at this time. As a result, the construction of each of the four basins was assumed to occur concurrently, over the span of six months.

This assumption is represented within the air quality modeling that was completed for the proposed Project. Emissions associated with the Project were calculated using CalEEMod Emissions Model, Version 2020.4.0. The emissions modeling includes emissions generated by off-road equipment, haul trucks, and worker commute trips. Emissions were quantified based on the default parameters contained in the model. Localized air quality impacts associated with the Project would be minor and were qualitatively assessed. Modeling assumptions and output files are included in Appendix A.

Thresholds of Significance

To assist local jurisdictions in the evaluation of air quality impacts, the SJVAPCD has published the *Guide for Assessing and Mitigating Air Quality Impacts*. This guidance document includes recommended thresholds of significance to be used for the evaluation of short-term construction, long-term operational, odor, toxic air contaminant, and cumulative air quality impacts. Accordingly, the SJVAPCD-recommended thresholds of significance are used to determine whether implementation of the Project would result in a significant air quality impact. Projects that exceed these recommended thresholds would be considered to have a potentially significant impact to human health and welfare. The thresholds of significance are summarized below.

Short-Term Emissions of Particulate Matter (PM_{10}): Construction impacts associated with the Project would be considered significant if the feasible control measures for construction in compliance with Regulation VIII as listed in the SJVAPCD guidelines are not incorporated or implemented, or if project-generated emissions would exceed 15 tons per year (TPY).

Short-Term Emissions of Ozone Precursors (ROG and NOX): Construction impacts associated with the Project would be considered significant if the project generates emissions of Reactive Organic Gases (ROG) or NO_X that exceeds 10 TPY.

Long-Term Emissions of Particulate Matter (PM_{10}): Operational impacts associated with the Project would be considered significant if the project generates emissions of PM_{10} that exceed 15 TPY

Long-Term Emissions of Ozone Precursors (ROG and NO_X): Operational impacts associated with the Project would be considered significant if the project generates emissions of ROG or NOX that exceeds 10 TPY.

Conflict with or Obstruct Implementation of Applicable Air Quality Plan: Due to the region's nonattainment status for ozone, $PM_{2.5}$, and PM_{10}, if the project-generated emissions of either of the ozone precursor pollutants (i.e., ROG and NO_x) or PM_{10} would exceed the SJVAPCD's significance thresholds, then the project would be considered to conflict with the attainment plans. In addition, if the project would result in a change in land use and corresponding increases in vehicle miles traveled, the project may result in an increase in vehicle miles traveled that is unaccounted for in regional emissions inventories contained in regional air quality control plans.

Local Mobile-Source CO Concentrations: Local mobile source impacts associated with the Project would be considered significant if the project contributes to CO concentrations at receptor locations in excess of the California Ambient Air Quality Standard (i.e., 9.0 ppm for 8 hours or 20 ppm for 1 hour). Exposure to toxic air contaminants would be considered significant if the probability of contracting cancer for the Maximally Exposed Individual (i.e., maximum individual risk) would exceed 10 in 1 million or would result in a Hazard Index greater than 1.

Odor impacts associated with the Project would be considered significant if the project has the potential to frequently expose members of the public to objectionable odors.

Table 4-7: Unmitigated Short-Term Construction Related Emissions of Criteria Air Pollutants

Source	ROG	NO_X	CO	SO_X	PM_{10}	$PM_{2.5}$
Project Construction Emissions (2023)	0.3458	3.1668	2.8548	7.9800-003	1.6043	0.6015
Project Construction Emissions (2024)	0.0264	0.1651	0.2264	1.0600e-003	0.0761	0.0224
Maximum Annual Project Construction Emissions	0.3458	3.1668	2.8548	7.9800e-003	1.6043	0.6015
SJVAPCD Threshold	*10*	*10*	*100*	*15*	*15*	*27*
Threshold Exceeded?	No	No	No	No	No	No

Table 4-8: Unmitigated Long Term Operational Emissions of Criteria Pollutants

Source	ROG	NO_X	CO	SO_X	PM_{10}	$PM_{2.5}$
Project Operational Emissions (Max/Year)	0.5662	1.0000e-005	1.3900e-003	0	0	0
SJVAPCD Threshold	*10*	*10*	*100*	*15*	*15*	*27*
Threshold Exceeded?	No	No	No	No	No	No

Table 4-9: Maximum Daily Unmitigated Emissions of Criteria Pollutants (On-site)

Source	Daily Emissions (in Pounds)					
	ROG	NO_X	CO	SO_2	PM_{10}	$PM_{2.5}$
Construction – Summer	9.0256	89.8685	78.7063	0.1541	42.0415	18.4577
Construction – Winter	9.0256	89.8685	78.7063	0.1541	42.0415	18.4577
Operations – Winter	3.1033	1.4000e-004	0.0155	0	6.0000e-005	6.0000e-005
Operations - Summer	3.1033	1.4000e-004	0.0155	0	6.0000e-005	6.0000e-005
SJVAPCD Significance Thresholds	*100*	*100*	*100*	*100*	*100*	*100*
Exceed Thresholds?	*No*	*No*	*No*	*No*	*No*	*No*

4.3.2 Impact Analysis

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

No Impact. The Project would not conflict with or obstruct implementation of the applicable air quality plan. The Project would align with the standards and guidelines set by the SJVAPCD. Therefore, there would be no impacts.

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

Less than Significant Impact. The Project would not result in a cumulatively considerable net increase of any criteria pollutant for which the Project region is non-attainment under an applicable federal or state ambient air quality standard. As shown in Table 4-7, Table 4-8, and Table 4-9, the Project would not be in exceedance of an emission threshold for any pollutant identified by the SJVAPCD. However, cumulative impacts could result if the Project's incremental effect combined with impacts of other past, present, and reasonably foreseeable future projects exceeds the SJVAPCD's thresholds. Cumulative impacts from the Project when considered with other nearby, reasonably foreseeable projects have been deemed less than significant in nature because no other projects are known to be occurring in the vicinity of the Project that would cause potential cumulative impacts. Therefore, impacts would be less than significant.

c) Expose sensitive receptors to substantial pollutant concentrations?

Less than Significant Impact. The Project would not expose sensitive receptors to substantial pollutant concentrations. Sensitive Receptors are groups that would be more affected by air, noise, and light pollution, pesticides, and other toxic chemicals than others. This includes infants, children under 16, elderly over 65, athletes, and people with cardiovascular and respiratory diseases. High concentrations of these groups would include, daycares, residential areas, hospitals, elder care facilities, schools and parks. The Project would be constructed within 100 feet of homes in some areas and within 100 feet of Sun Empire Elementary School, exposing potential sensitive receptors to exhaust pollutants emitted by construction equipment. However, the HARP2 air dispersion model was run for the Kenneson-Sanchez Basin site, which is located adjacent to single family homes and Sun Empire Elementary school, to show the health risk for sensitive receptors. The analysis provides for the worst-case scenario of the Project due to its proximity to sensitive receptors. The model run, which can be viewed in Appendix A, indicates that the Project would result in a cancer risk of 6.72 in one million, which is less than the SJVAPCD's significance threshold of 20 in one million. Additionally, the model assumed that one years' worth of emissions would occur during the six-month period of construction used for each basin, within the CalEEMod emissions model run for the Project. As a result, impacts would be less than significant.

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

Less than Significant Impact. During construction activities, construction equipment exhaust and application of asphalt, structural coating and other construction applications would temporarily emit odors. Construction would be completed within several rural portions of western Fresno County and would have an effect on some rural residences and Sun Empire Elementary School, which would be located near the construction area of the Project. Construction of the Project would be temporary, and odors would not remain after Project completion. Therefore, impacts would be less than significant.

4.3.3 Federal Cross-Cutting Topic

Clean Air Act (CAA)

Under the federal CAA, federal actions conducted in air basins that are not in attainment with the federal ozone standard (such as the SJVAB) must demonstrate conformity with the State Implementation Plan (SIP). Conformity to a SIP is defined in the federal CAA as meaning conformity to a SIP's purpose of eliminating or reducing the severity and number of violations of the national standards and achieving an expeditious attainment of such standards. The SJVAPCD has published Regulation IX, Rule 9110 (referred as the General Conformity Rule) that indicates how most federal agencies can make such a determination.[7]

The SJVAPCD specifies that a project is conforming to the applicable attainment or maintenance plan if it:

- complies with all applicable SJVAPCD rules and regulations,
- complies with all applicable control measures from the applicable plans, and
- is consistent with the growth forecast in the applicable plans.

The SJVAPCD does not require a detailed quantification of construction emissions unless the project's indirect source emissions are expected to increase pollutant emissions of ROG or NOx in excess of 10 tons

[7] The SJVAPCD's Rule 9110 is consistent with USEPA 's General Conformity Rule, Determining Conformity of General Federal Actions to State or Federal Implementation Plans (40 CFR, Part 93), available online at http://www.valleyair.org/rules/currntrules/r9110.pdf.

per year. Because proposed project construction would not exceed this threshold, the proposed project would comply with the conformity criteria.

4.4 BIOLOGICAL RESOURCES

Table 4-10: Biological Resources Impacts

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

4.4.1 Baseline Conditions

The four basin sites are located in Fresno County within the San Joaquin Valley. The topography at all four basin locations is relatively flat. Elevations at Carter-Bybee Basin is approximately 266 feet above mean sea level (MSL), Badhesha Basin is approximately 263 feet above MSL, Hornor Basin is approximately 243 feet above MSL, and Kenneson-Sanchez Basin is approximately 230 feet above MSL.

Climate

Like most of the central valley, the Project area experiences a Mediterranean climate. Warm, dry summers are followed by cool, moist winters. Summer temperatures range between 80- and 100-degrees Fahrenheit (˚F), but often exceeds 100˚F in portions of Fresno County. Winter minimum temperatures are near 40˚F.

The historic average annual precipitation is approximately 10.43 inches, falling mainly from October to April (Weather U.S. 2022) with the wettest years averaging around 19.06 inches and the driest years averaging around 4.54 inches.

Hydrology

A watershed is the topographic region in which upland water collects and drains into a stream, river, or lake. Watersheds are made up of many smaller subwatersheds that drain into a particular stream, river, or lake. The details of each basin locations watershed and subwatershed information can be found below in Table 4-11.

Table 4-11: Hydrology Information

Basin	Watershed and Hydrologic Unit Code (HUC)	Subwatershed and HUC
Carter-Bybee Basin	James Bypass watershed; HUC 1803000907	Empire Ditch-James Bypass subwatershed; HUC 180300090704
Badhesha Basin	Dog Creek-Fish Slough watershed; HUC: 1803000905	Central Canal subwatershed; HUC: 18030090504
Hornor Basin	Cottonwood Creek-San Joaquin River; HUC: 1804000103, Tumey Gulch-Fresno Slough; HUC: 1803000909, and James Bypass; HUC: 1803000907	Bethany Cemetery-San Joaquin River; HUC: 180400010304, Sandridge Canal; HUC: 180300090907, and Empire Ditch-James Bypass; HUC: 180300090704
Kenneson-Sanchez Basin	Tumey Gulch-Fresno Slough; HUC: 1803000909 and James Bypass; HUC: 1803000907	Sandridge Canal - HUC: 180300090907 and Empire Ditch-James Bypass; HUC: 180300090704

Soils

Carter-Bybee Basin - Two soil mapping units representing two soil types were identified within the APE - Hanford sandy loam, silty substratum, and Tujunga loamy sand. Both of these soils are primarily used for agriculture.

Bahesha Basin - Four soil mapping units representing three soil types were identified within the APE – Borden loam, Hesperia sandy loam and Hesperia deep and fine sandy loam, deep, saline-sodic, and Pachappa loam moderately deep. These soils are all primarily used for agriculture.

Hornor Basin - Two soil mapping units representing one soil type was identified within the APE – Hanford coarse sandy loam and sandy loam, silty substratum. These soils are all primarily used for agriculture.

Kenneson-Sanchez Basin - Three soil mapping units representing two soil types were identified within the APE - Hanford - coarse sandy loam, sandy loam, silty substratum, Hesperia - sandy loam, deep. These soils are all primarily used for agriculture.

The soils are discussed further and displayed with their basic properties according to the Major Land Resource Area of California 19 map area in Appendix B. Additionally, geotechnical studies were conducted for all four basin sites, identifying soil characteristics as silty sands and clays.

Biotic Habitats within the Project Area

Carter-Bybee Basin

Ruderal/Agricultural

The Carter-Bybee Basin APE consists of a vacant ruderal field and is currently bare ground with sparse herbaceous and ornamental vegetation. Vegetation observed consisted of a palm tree (*Washingtonia* sp.), (*Ulmus parvifolia*), wild watermelon (*Citrullus lanatus*), flax leaved horseweed (*Erigeron bonariensis*),

grasses (*Setaria* spp.), common stork's-bill (*Erodium cicutarium*), mustard (*Brassica* sp.), Russian thistle (*Salsola tragus*), puncture vine (*Tribulus terrestris*), prickly lettuce (*Lactuca serriola*), hairy crabgrass (*Digitaria sanguinalis*), cheese weed mallow (*Malva parviflora*), plantain (*Plantago* sp.), mulberry tree (*Morus alba*), firethorns (*Pyracantha* sp.), oleander (*Nerium oleander*), Bay laurel (*Laurus nobilis*), Cootamundra wattle (*Acacia baileyana*) and an orange tree (*Citrus* × *sinensis*).

The survey of the Carter-Bybee Basin APE resulted in the identification of bird species including California Scrub Jay (*Aphelocoma californica*), Killdeer (*Charadrius vociferus*), House Finch (*Haemorhous mexicanus*), Yellow-rumped Warbler (*Setophaga coronata*), White-crowned Sparrow (*Zonotrichia leucophrys*), Northern Mockingbird (*Mimus polyglottos*), European Starling (*Sturnus vulgaris*), Black Phoebe (*Sayornis nigricans*), American Crow (*Corvus brachyrhynchos*), Red-tailed Hawk (*Buteo jamaicensis*), and Mourning Dove (*Zenaida macroura*). Signs of species observed within the APE included domestic dog (*Canis lupus familiaris*) tracks, gopher burrows (*Geomyidae* sp.), owl pellets (*Strigiformes*) under the palm tree and coyote calls (*Canis latrans*) were heard in the distance. The palm tree was surveyed from dusk until dark and during dawn on a separate day and no owls were observed.

The ruderal habitat within the APE was highly disturbed by agricultural activities but provides habitat for foraging birds, including raptors, during the day, as well as potentially bats, coyotes, and other nocturnal animals at night. The APE contains suitable habitat for tree and ground nesting avian species. Historical evidence including old and fresh pellets and whitewash indicate that the palm tree located in the front of the property is a continuous active roost for what looks like multiple owls based on the number of fresh owl pellets found below the palm tree. The previous landowner provided unverified information that the palm tree may contain Barn Owls year-round for roughly the past forty years (see Appendix B). Even though owl sightings were not observed during the surveys, construction activities could disturb potential owl roosting habitat and therefore mitigation is warranted.

Herndon Canal No. 39

Herndon Canal No. 39 contained minimal vegetation and was dry at the time of the survey. Vegetation within the Canal consisted of invasive grasses and a young willow tree (Salix sp.). The Canal habitat within the APE was moderately disturbed by agricultural and anthropogenic activities. This canal could be used as a wildlife movement corridor for species.

Badhesha Basin

Ruderal/Agricultural

The Badhesha Basin consists of a ruderal agricultural field and contains bare ground with sparse herbaceous vegetation. Vegetation consisted of brome grass (*Bromus* sp.), chinaberry (Melia azedarach), flax-leaved horseweed, Johnson grass (*Sorghum halepense*), sunflower (*Helianthus* sp.), tree-of-heaven (*Ailanthus altissima*), and wine grapes (*Vitis vinifera*). The APE was surrounded by active citrus (*Citrus* sp.) and almond (*Prunus dulcis*) orchards.

The survey of the APE resulted in the identification of numerus bird species including American Crow, American Pipit (*Anthus rubescens*), California Scrub Jay, Killdeer, Red-tailed Hawk, Vesper Sparrow (*Pooecetes gramineus*), White-crowned Sparrow, and Yellow-rumped Warbler. There were cattle (*Bos taurus*) and chickens (*Gallus gallus domesticus*) fenced within the property adjacent to the APE. Coyote and domestic dog tracks were also observed within the APE.

The ruderal habitat within the Badhesha Basin APE was highly disturbed by agricultural activities but could provide habitat for foraging birds, including raptors, during the day, as well as potentially bats, coyotes, and other nocturnal animals at night. The surrounding areas contain suitable habitat for tree and ground nesting avian species.

Fresno Colony Canal No. 24

Fresno Colony Canal No. 24 was dry at the time of the survey and contained plant species including Bermuda buttercup (*Oxalis pes-caprae*), false daisy (*Eclipta alba*), flax-leaved horseweed, green carpetweed (*Mollugo verticillata*), rough cocklebur (*Xanthium strumarium),* scarlet toothcup (*Ammannia coccinea*), and spotted spurge (*Euphorbia maculata*). The canal habitat within the APE was moderately disturbed by agricultural and anthropogenic activities. This canal could be used as a wildlife movement corridor for species.

Hornor Basin

Ruderal/Agricultural

The Horner Basin APE consists of a ruderal agricultural field and contains bare ground with sparse herbaceous vegetation. Vegetation consisted of flax leaved horseweed, flat spine bursage (Ambrosia acanthicarpa), Bermuda grass (*Cynodon dactylon*), puncture vine (*Tribulus terrestris*), Johnson grass, and common purslane (*Portulaca oleracea*).

The survey of the APE resulted in the identification of bird species including House Finch, and Common Raven (*Corvus corax*). Other species observed within the APE included domestic dogs (*Canis lupus familiaris*) and their tracks.

The ruderal habitat within the APE was highly disturbed by agricultural activities but could provide habitat for foraging birds, including raptors, during the day, as well as potentially bats, coyotes, and other nocturnal animals at night. The APE contained suitable habitat for tree and ground nesting avian species.

Little Sandridge Canal No. 66

Little Sandridge Canal No. 66 contained minimal vegetation and was dry at the time of the survey. Vegetation within the Canal consisted of invasive grasses and flax-leaved horseweed. The canal habitat within the APE was moderately disturbed by agricultural and anthropogenic activities. This canal could be used as a wildlife movement corridor for species.

Big Sandridge Canal No. 65

Big Sandridge Canal No. 65 was dry at the time of the survey. Domestic dog tracks and human shoe prints were also observed within the bottom of the canal. The canal habitat within the APE was moderately disturbed by agricultural and anthropogenic activities. This canal could be used as a wildlife movement corridor for species.

Kenneson-Sanchez Basin

Ruderal/Agricultural

The Kenneson-Sanchez Basin consists of a ruderal agricultural field and contains bare ground with sparse herbaceous vegetation. Vegetation consisted of barnyardgrass (*Echinochloa crus-galli*), cheeseweed mallow (*Malva parviflora*), common purslane, green carpetweed, hairy crabgrass, horseweed, Johnson grass, pale smartweed (*Persicaria lapathifolia*), prickly pear (*Opuntia* sp.), procumbent pigweed (*Amaranthus blitoides*), redstem stork's-bill (*Erodium cicutarium*), rough cocklebur, sacred datura (*Datura wrightii*), telegraphweed (*Heterotheca grandiflora*), and western marsh cudweed (*Gnaphalium palustre*). A large western sycamore (*Platanus racemosa*) was identified next to the residential home on the adjacent parcel just east of the Project APE. Multiple camphor trees (*Cinnamomum camphora*) were identified on the west side of the Project site.

The survey of the APE resulted in the identification of numerus bird species including American Crow, American Kestrel (*Falco sparverius*), Black Phoebe, California Scrub Jay, House Finch, Killdeer, and Red-tailed Hawk. Tracks of domestic dogs and coyotes were also observed.

The ruderal habitat within the APE was highly disturbed by agricultural activities but could provide habitat for foraging birds, including raptors, during the day, as well as potentially bats, coyotes, and other nocturnal animals at night. The APE contains suitable habitat for tree and ground nesting avian species.

Big Sandridge Canal No. 65

Big Sandridge Canal No. 65 was dry at the time of the survey. Domestic dog tracks and human shoe prints were also observed within the bottom of the canal. The canal habitat within the APE was moderately disturbed by agricultural and anthropogenic activities. This canal could be used as a wildlife movement corridor for species.

Representative photographs of all sites at the time of the survey are available in Appendix B.

Wildlife and Plant Species

A reconnaissance-level field survey of the Project areas (Figure 2-4, Figure 2-5, Figure 2-6, and Figure 2-7) was conducted on October 25, 2022, by Provost & Pritchard biologists. The survey consisted of walking and driving through all four APEs while identifying and noting land uses, biological habitats and communities, plant and animal species encountered and assessing suitable habitats of various wildlife species. The biologists conducted an analysis of potential Project-related impacts to biological resources based on the resources known to exist or with potential to exist within the APEs. Sources of information used in preparation of this analysis are included in Appendix B.

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

Special Status Plants and Animals

A thorough search of the CNDDB for published accounts of special status plant and animal species for this APE was conducted for all four basin sites. These species and their potential to occur within the APE, are listed and described in detail in Appendix B. Raw data obtained from CNDDB and IPaC, that was used in preparation of this document are also available in Appendix B. Figure 2-2 shows the Project's 7.5-minute quadrangle, according to United States Geological Survey (USGS) Topographic Maps.

Figure 4-2: CNDDB 9-Quad Search Criteria

Basin	Primary Quadrangle	Eight Surrounding Quadrangles
Carter-Bybee Basin	*Herndon*	*Madera, Gregg, Lanes Bridge, Fresno North, Fresno South, Kearney Park, Kerman, and Biola*
Badhesha Basin	*Fresno South*	*Herndon, Fresno North, Clovis, Malaga, Conejo, Caruthers, Raisin, and Kearney Park*
Hornor Basin	*Biola*	*Bonita Ranch, Madera, Gregg, Herndon, Kearney Park, Kerman, Jameson, and Gravelly Ford*
Kenneson-Sanchez Basin	*Biola*	*Bonita Ranch, Madera, Gregg, Herndon, Kearney Park, Kerman, Jameson, and Gravelly Ford*

Figure 4-3: Carter-Bybee Basin Site, looking north

Figure 4-4: Badhesha Basin site, overview looking east

Figure 4-5: Hornor Basin site, overview looking south

Figure 4-7: Kenneson-Sanchez Basin site, overview looking southwest

4.4.2 Applicable Regulations

Applicable regulations are discussed in further detail in the Biological Resource Evaluation found in Appendix B.

4.4.3 Impact Analysis

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

Less than Significant Impact with Mitigation Incorporated. A list of special status animal and plant species with the potential to occur onsite and/or in the vicinity can be found in Appendix B. The Biological Evaluation Report discusses these special status animal and plant species and their occurrences in detail in or near each of the basin sites. Species identified as candidate, sensitive, or special status species in local or regional plans, policies, or regulations by CDFW or USFWS that have the potential to be impacted by Project include: California Horned Lark, pallid bat, Swainson's Hawk, western mastiff bat, northwestern pond turtle, and western spadefoot. Mitigation measures outlined below in Section 4.4.5 would ensure impacts to these species are reduced to less than significant.

b) Would the project have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations, or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service?

No Impact. There are no CNDDB-designated "natural communities of special concern" recorded within the APE (Appendix B). No natural communities of special concern were observed during the biological survey. There are several natural communities of species concern in the region: Valley Sacaton Grassland, Northern Hardpan Vernal Pool, Northern Claypan Vernal Pool, and Great Valley Mixed Riparian Forest. None of these communities would be impacted as they are outside of the reach of the Project. There would be no impact. (See Appendix B)

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

Less than Significant Impact. Typical wetlands, vernal pools, and other sensitive natural communities were not observed onsite at the time of the biological survey. The Carter-Bybee basin would connect to Herndon Canal No. 39 and is not jurisdictional. The Badhesha basin would connect to Fresno Colony Canal No. 24 and is not jurisdictional. The Hornor Basin would connect to Little Sandridge Canal No. 66 and is not jurisdictional. The Kenneson-Sanchez Basin would connect to Big Sandridge Canal No. 65 and is not jurisdictional. No permits are required for the proposed Project. (See Appendix B)

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

The Project is not located within the coastal zone. The Project would not impact or be located within or near the Coastal Barrier Resources System or its adjacent wetlands, marshes, estuaries, inlets, and near-shore waters. Mitigation is not warranted. (See Appendix B)

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

Less than Significant Impact with Mitigation Incorporated. The APEs and surrounding areas consist of agricultural fields with canals that could function as wildlife movement corridors. Anthropogenic activities within the APEs would deter wildlife from using these corridors during the day, though these deterrents are absent at night. The mitigation measures **BIO-2a** through **BIO-2c**, outlined below in Section 4.4.5, would reduce impacts to nocturnal wildlife movement to less than significant. (See Appendix B)

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

Less than Significant Impact with Mitigation Incorporated. The Bybee APE contains a palm tree that is known to be used by nesting raptors and potentially considered a significant biological resource. The palm tree located in the front of the property is a continuous active roost for what looks like multiple owls based on the number of fresh owl pellets found below the palm tree. Construction activities could disturb this tree and the potential owl species using them for roosting and nesting (see Appendix B). Best management practices would be used (such as orange exclusion fencing) to provide a protective buffer for the palm tree and its roots.

Implementation of the mitigation measure **BIO 6-a** through **BIO-6c** as outlined below in Section 4.4.5, would reduce potential impacts to special status species to a less than significant and would ensure compliance with State and federal laws. (See Appendix B)

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?

Less than Significant Impact. The Project appears to be consistent with the goals and policies of the Fresno County General Plan. There are no known habitat conservation plans (HCPs) or a Natural Community Conservation Plan (NCCP) in the Project vicinity. Mitigation measures are not warranted. (See Appendix B)

4.4.4 Federal Cross-Cutting Topic

Federal Endangered Species Act

Regulations in the federal Endangered Species Act of 1973 and subsequent amendments govern the conservation of endangered and threatened species and the ecosystems on which they depend. USFWS and the National Marine Fisheries Service (NMFS) oversee the act. USFWS has jurisdiction over plants, wildlife, and resident fish, and NMFS has jurisdiction over anadromous fish, marine fish, and mammals. Section 7 requires federal agencies to consult with USFWS and NMFS if they determine that a proposed project may affect a listed species or destroy or adversely modify designated critical habitat. Under Section 7, the federal lead agency must obtain incidental take authorization or a letter of concurrence, stating that the project is not likely to adversely affect federally listed species.

Appendix B presents a Biological Evaluation Report intended to provide the basis for compliance with Section 7 of the ESA. Appendix B summarizes the Project effect determinations for Federally Listed Species found on the USFWS IPaC list generated on December 16, 2022, in accordance with Section 7 of the Endangered Species Act.

Section 9 prohibits take of any fish or wildlife species listed as endangered, including the destruction of habitat that prevents the species' recovery. "Take" is defined as any action or attempt to hunt, harm, harass, pursue, shoot, wound, capture, kill, trap, or collect a species. Section 9 prohibitions also apply to threatened species unless a special rule governing take was defined at the time the species became listed.

The take prohibition in Section 9 applies only to fish and wildlife species. However, Section 9 also prohibits the unlawful removal and possession, or malicious damage or destruction, of any endangered plant from federal land. Section 9 prohibits acts to remove, cut, dig up, damage, or destroy an endangered plant species in non-federal areas in knowing violation of any State law or in the course of criminal trespass. Candidate species and species that are proposed for or under petition for listing receive no protection under Section 9.

See discussion under checklist item a above.

Fish and Wildlife Conservation Act

The Fish and Wildlife Conservation Act (Act), approved September 29, 1980, declares that fish and wildlife are of ecological, educational, esthetic, cultural, recreational, economic, and scientific value to the Nation. The Act acknowledges that historically, fish and wildlife conservation programs have focused on more recreationally and commercially important species within any particular ecosystem, without provisions for the conservation and management of nongame fish and wildlife. The purposes of this Act are to encourage all federal departments and agencies to utilize their statutory and administrative authority, to the maximum extent practicable and consistent with each agency's statutory responsibilities and to conserve and to promote conservation of non-game fish and wildlife and their habitats. The Act authorizes financial and technical assistance to the States for the development, revision, and implementation of conservation plans and programs for nongame fish and wildlife. The Act defines "nongame fish and wildlife" as wild vertebrate animals in an unconfined state, that are not ordinarily taken for sport, fur or food, not listed as endangered or threatened species, and not marine mammals within the meaning of the Marine Mammal Protection Act. The original Act authorized $5 million for each of Fiscal Years 1982 through 1985, for grants for development and implementation of comprehensive State nongame fish and wildlife plans and for administration of the Act.

See discussions under checklist items a, b, and d above.

Migratory Bird Treaty Act

The Migratory Bird Treaty Act (MBTA) (Title 16, Section 703 and following sections of the United States Code [16 USC 703 et seq.]), first enacted in 1918, provides protection of international migratory birds and authorizes the Secretary of the Interior to regulate the taking of migratory birds. The MBTA states that it is unlawful, except as permitted by regulations, to pursue, take, or kill any migratory bird, or any part, nest, or egg of any such bird. The current list of species protected by the MBTA is found under Title 50, Section 10.13 of the CFR (50 CFR 10.13). The list includes nearly all birds native to the United States.

In December 2017, the U.S. Department of the Interior's Office of the Solicitor issued a revised legal interpretation (Opinion M-37050) of the MBTA's prohibition on the take of migratory bird species. Opinion M-37050 concludes that "consistent with the text, history, and purpose of the MBTA, the statute's prohibitions on pursuing, hunting, taking, capturing, killing, or attempting to do the same apply only to affirmative actions that have as their purpose the taking or killing of migratory birds, their nests, or their eggs" (DOI 2017). According to Opinion M-37050, take of a migratory bird, its nest, or eggs that is incidental to another lawful activity does not violate the MBTA, and the MBTA's criminal provisions do not apply to

those activities. Opinion M-37050 may affect how the MBTA is interpreted but does not legally change the regulation itself.

The U.S. Court of Appeals for the Ninth Circuit, the controlling federal appellate court for California, also has held that habitat modification that harms migratory birds "does not 'take' them within the meaning of the MBTA (Seattle Audubon Soc. v. Evans, 952 F.2d 297, 303, 1981).

See discussion under checklist item a.

Bald and Golden Eagle Protection Act

The Bald and Golden Eagle Protection Act affords additional legal protection to bald eagles and golden eagles. This law prohibits the take, sale, purchase, barter, offer of sale, purchase, or barter, transport, export, or import, at any time or in any manner of any bald or golden eagle, alive or dead, or any part, nest, or egg thereof (16 U.S. Code [USC] 668---668d). The Bald and Golden Eagle Protection Act also defines take to include "pursue, shoot, shoot at, poison, wound, kill, capture, trap, collect, molest, or disturb," and includes criminal and civil penalties for violating the statute. USFWS further defines the term "disturb" as agitating or bothering an eagle to a degree that causes or is likely to cause injury, or either a decrease in productivity or nest abandonment by substantially interfering with normal breeding, feeding, or sheltering behavior.

See discussion under checklist item a.

Magnuson-Stevens Fishery Conservation and Management Act

The Magnuson-Stevens Fishery Conservation and Management Act, as amended (16 USC 180 I), requires that Essential Fish Habitat (EFH) be identified and described in federal fishery management plans. Federal agencies must consult with NMFS on any activity that they fund, permit, or carry out that may adversely affect EFH. The EFH regulations require that federal agencies obligated to consult on EFH also provide NMFS with a written assessment of the effects of any action on EFH (50 CFR 600.920). NMFS is required to provide EFH conservation and enhancement recommendations to federal agencies. The statute also requires federal agencies receiving NMFS EFH conservation recommendations to provide a detailed written response to NMFS within 30 days of receipt, detailing how they intend to avoid, mitigate, or offset the impact of activity on EFH (Section 305[b][4][B]).

EFH is defined as those waters and substrates necessary to fish for spawning, breeding, feeding, or growth to maturity. For the purposes of interpreting the definition of EFH, "waters" includes aquatic areas and their associated physical, chemical, and biological properties that are used by fish, and may include areas historically used by fish where appropriate; "substrate" includes sediment, hard bottom, structures underlying the waters, and associated biological communities; "necessary" means habitat required to support a sustainable fishery and a healthy ecosystem; and "spawning, breeding, feeding, or growth to maturity" covers all habitat types used by a species throughout its life cycle. No EFH is on the project site.

Clean Water Act

Section 404

Section 404 of the CWA requires project proponents to obtain a permit from the United States Army Corps of Engineers before performing any activity involving a discharge of dredged or fill material into waters of the U.S. Waters of the U.S. include:

- Navigable waters of the U.S.;
- Interstate waters;

- All other waters where the use or degradation or destruction of the waters could affect interstate or foreign commerce;
- Tributaries to any of these waters; and
- Wetlands that meet any of these criteria, or that are adjacent to any of these waters or their tributaries.

Many surface waters and wetlands in California meet the criteria for waters of the U.S.

Section 402

CWA Section 402 regulates construction-related stormwater discharges to surface waters through the National Pollutant Discharge Elimination System program, which is administered by USEPA. In California, the State Water Resources Control Board is authorized by USEPA to oversee the program through the Regional Water Quality Control Boards (RWQCBs)-in this case, the Central Valley (Region 5) RWQCB.

Section 401

Under CWA Section 401(a)(1), the applicant for a federal license or permit to conduct an activity that may result in a discharge into waters of the U.S. must provide the federal licensing or permitting agency with a certification that any such discharge will not violate state water quality standards. The RWQCBs administer the Section 401 program to prescribe measures for projects that are necessary to avoid, minimize, and mitigate adverse effects on water quality and ecosystems.

No State or federally protected wetlands or waters are on the proposed project site.

4.4.5 Mitigation

General Mitigation Measures

Prior to the start of construction, all personnel associated with construction of the Project will be trained to be able to identify these candidate, sensitive, or special status species in order to prevent impacts to sensitive resources; therefore, the following general mitigation measures will be implemented:

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

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

- Vehicles will observe a 15-mph speed limit while on unpaved access routes.
- Workers will inspect areas beneath parked vehicles prior to mobilization. If special status species are detected beneath vehicles, the individual will either be allowed to leave of its own volition or will be captured by the qualified biologist (must possess appropriate collecting/handling permits) and relocated out of harm's way to the nearest suitable habitat beyond the influence of the Project work area. "Take" of a listed (rare, threatened, or endangered) species is prohibited.
- The presence of any special status species and/or any wildlife mortalities will be reported to the Project's designated biologist and the appropriate regulatory agencies.

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

The APEs and surrounding areas consist of agricultural fields with canals that could function as wildlife movement corridors. Anthropogenic activities within the APEs would deter wildlife from using these corridors during the day, though these deterrents are absent at night. The following mitigation measures would reduce impacts to nocturnal wildlife movement to a less than significant level.

Mitigation. The following measures will be implemented during or prior to the start of construction:

BIO-2a **(Operational Hours):** Construction activities will be limited to daylight hours to reduce potential impacts to wildlife movement corridors.

BIO-2b **(Wildlife Access):** At no point will access be blocked outside of construction hours or during overnight hours or weekends. If construction must block both sides of a wildlife access route, an alternative route through the construction area will be identified by a qualified biologist and maintained throughout the construction schedule timeframe.

BIO-2c **(Cover Excavations)**: Pipeline/culvert/siphon excavations and vertical pipes will be covered each night to prevent wildlife from falling in and becoming trapped or injured during migratory or dispersal movements.

Project-Related Mortality and/or Disturbance of Nesting Raptors, Migratory Birds, and Special Status Birds

The APEs contain suitable nesting and/or foraging habitat for a variety of ground and tree nesting avian species. It is anticipated that during nesting bird season, numerous species of birds could use the APE for nesting. Swainson's Hawks and California Horned Lark were deemed the only special status species possible to occur within the APE. Trees near the Project site have the potential to host a multitude of nesting birds, and species such as Killdeer which were observed during the biological survey, are known to build nests on bare ground or compacted dirt roads. Construction activities could disturb birds nesting within or adjacent to work areas, resulting in nest abandonment. Construction activities that adversely affect the nesting success of raptors and migratory birds or result in the mortality of individual birds constitute a violation of State and federal laws and are considered a significant impact under CEQA and NEPA. Birds nesting within the APE during construction have the potential to be injured or killed by Project-related activities. In addition to the direct "take" of nesting birds, nesting birds within the APE or adjacent areas could be disturbed by Project-related activities resulting in nest abandonment. Projects that adversely affect the nesting success of raptors and migratory birds or result in the mortality of individual birds is considered a

violation of State and federal laws and are considered a potentially significant impact under CEQA and NEPA.

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

Mitigation. The following measures would be implemented prior to the start of construction:

BIO-3a (*Avoidance*): The Project's construction activities will occur, if feasible, between September 16 and January 31 (outside of nesting bird season) in an effort to avoid impacts to nesting birds. If all Project activities occur outside of nesting bird season, no further mitigation is required.

BIO-3b (*Pre-construction Surveys*): If activities must occur within nesting bird season (February 1 to September 15), a qualified biologist will conduct pre-construction surveys for Swainson's Hawk nests onsite and within a 0.5-mile radius. These surveys will be conducted in accordance with the *Recommended Timing and Methodology for Swainson's Hawk Nesting Surveys in California's Central Valley* (Swainson's Hawk Technical Advisory Committee 2000) or current guidance. The Swainson's Hawk survey will not be completed between April 21 to June 10 due to the difficulty of identifying nests during this time of year. The pre-construction survey would also provide a presence/absence survey for all other nesting birds within the APE and an additional 50 feet, no more than seven (7) days prior to the start of construction. All raptor nests would be considered "active" upon the nest-building stage.

BIO-3c (*Establish Buffers*): On discovery of any active nests or breeding colonies near work areas, the biologist will determine appropriate construction setback distances based on applicable CDFW and/or USFWS guidelines and/or the biology of the species in question. Active Swainson's Hawk nests will receive a 0.5-mile buffer and active California Horned Lark nests will receive a 150-foot buffer. Reduced buffer distances may be appropriate for Swainson's Hawk and California Horned Lark depending on site conditions and ongoing disturbance levels and may be discussed with CDFW. Construction buffers will be identified with flagging, fencing, or other easily visible means, and will be maintained until the biologist has determined that the nestlings have fledged.

BIO-3d (*ITP*): In the event an active Swainson's Hawk nest, California Horned Lark nest, or other nest is detected during surveys and cannot be avoided, consultation with CDFW will be warranted to discuss how to implement the Project and avoid take. If take cannot be avoided, take authorization through the acquisition of an ITP pursuant to Fish and Game Code section 2081, subdivision (b) is necessary to comply with California Endangered Species Act (CESA).

Project-Related Mortality and/or Disturbance to Northwestern Pond Turtle

Western pond turtles were once a single species known as *Actinemys marmorata* but was split into two distinct species by Spinks et al. in 2014. The two distinct species are now known as Northwestern pond turtles (*Actinemys marmorata*) and Southwestern pond turtles (*Actinemys pallida*). The Northwestern Pond turtle (NPT) range extends from Washington State south and inland through California's San Joaquin Valley. The Southwestern Pond turtle (SPT) range extends from the south of the San Francisco Bay along the central

California coast to Baja California (Spinks PQ 2014). The top four threats for NPT are predation by nonnative species, pathogens, land alterations, and drought. The top three threats for SPT were drought, predation by nonnative species, floods, and land alteration (Manzo S 2021). The APE lies within the San Joaquin Valley where only NPT inhabit. NPT habitat features for nesting, overwintering, dispersal, and basking and can occur in the APE. These features include aquatic and terrestrial habitats such as ponded areas, irrigation canals, riparian, and upland habitat. NPT are known to nest in the spring or early summer within 100 meters of a water body, although nest sites as far away as 500 meters have also been reported. Noise, vegetation removal, movement of workers, construction, and ground disturbance as a result of Project activities have the potential to significantly impact NPT populations. Without appropriate avoidance and minimization measures for NPT, potentially significant impacts associated with Project activities could include nest reduction, inadvertent entrapment, reduced reproductive success, reduction in health or vigor of eggs and/or young, and direct mortality.

Mitigation. The following measures will be implemented prior to the start of construction:

BIO-4a (*Pre-construction Survey*): If Project activities are directly related to the canals a qualified biologist will conduct a pre-construction survey for NPT within and adjacent to the Canals. Pre-construction surveys will be conducted in accordance with the *United States Geological Survey Western Pond Turtle (Emys marmorata) Visual Survey Protocol for the Southcoast Ecoregion* (United States Geological Survey 2006). If no NPT are observed during the pre-construction survey, then construction activities may begin. If construction is delayed or halted for more than 90 days, another pre-construction survey for NPT will be conducted. If a listed species is observed within the Project area, the biologist will stop work and allow the species to leave the site of its own volition or a qualified biologist with the correct handling permit will remove the species from the APE.

Project-Related Mortality and/or Disturbance to Western Spadefoot

Habitats within the APE and surrounding area were determined to be suitable for western spadefoot, a California Species of Special Concern. Construction activities occurring within occupied habitat could result in injury, mortality, displacement, disturbance, or inhibit the movement of this species. Implementation of mitigation measure BIO-1a listed above, requires each employee, worker, or visitor onsite to attend a mandatory training session, including printed educational materials regarding the conservation status of special status amphibians with potential to occur onsite, laws protecting these species, penalties for violation of those laws, and a list of required protective measures that must be employed to avoid "take" or other significant impacts. Additionally, mitigation measure BIO-1b requires implementation of BMPs on the work site which would avoid and minimize potential impacts to special status species.

Mitigation. The following measures will be implemented prior to the start of construction:

BIO-5a (*Pre-construction Survey*): If Project activities are directly related to the canals a qualified biologist will conduct a pre-construction survey for spadefoots within and adjacent to the canals. If no spadefoots are observed during the pre-construction survey, then construction activities may begin. If construction is delayed or halted for more than 90 days, another pre-construction survey for spadefoots will be conducted. If a listed species is observed within the Project area, the biologist will stop work and allow the species to leave the site of its own volition or a qualified biologist with the correct handling permit will remove the species from the APE.

4.4.6 Additional Mitigation for Carter-Bybee Basin

Project-Related Disturbance to Trees

The APE contains one palm tree that is known to be used by nesting raptors and are considered a significant biological resource. Historical evidence including old and fresh pellets and whitewash indicate that the palm tree located in the front of the property is a continuous active roost for owls. (See Appendix B). Construction activities could inadvertently disturb this tree and the special status species using them for roosting and nesting.
Implementation of the following measures will reduce potential impacts to special status species to a less than significant level under CEQA and NEPA and will ensure compliance with State and federal laws protecting these species.

Mitigation. The following measures would be implemented prior to the start of construction:

BIO-6a (*Tree Avoidance*): The palm tree within the APE is considered a significant biological resource and will be left in perpetuity. If this is not feasible, consultation with the appropriate regulatory agency (CDFW and/or USFWS) will be required for guidance on how to proceed.

BIO-6b (*Establish Buffers*): The palm tree will have a buffer established around it prior to any construction activities. Buffers will be placed outside of the tree canopy/drip line to protect the tree root system. Ideally, a 150-foot buffer shall be established to avoid disturbance to the potential owls that may use the palm tree for roosting and/or nesting. Construction buffers will be identified with flagging, fencing, or other easily visible means, and will be maintained until construction activities are completed.

BIO-6c (*Monitor*): In order to prevent inadvertent disturbance to sensitive resource and protect roosting owls within Carter-Bybee Basin site, a qualified biologist will perform biological monitoring during all construction activities that occur within 150 feet of the existing palm tree. The biologist will perform the monitoring duties before, during, and after construction pursuant to the most current guidelines and protocols. If owls are observed within the Project area and show signs of stress, disturbance, and/or harassment, the biologist will stop work activities in the area for the day to allow the species to resume its normal activities. The biological monitor will continue this practice until the construction activities are complete. The biologist will provide an account of observed behavior using wildlife monitoring methods and provide a daily summary log and photos of observed behavior. A final memo including the daily logs will be submitted to FID for their administrative record.

BIO-6d (*ITP*): In the event the palm tree cannot be avoided and/or injury or mortality occurs, consultation with CDFW will be required. If take cannot be avoided, take authorization through the acquisition of an ITP pursuant to Fish and Game Code section 2081, subdivision (b) is necessary to comply with CESA. The ITP permit will be obtained prior to any construction.

4.5 CULTURAL RESOURCES

Table 4-12: Cultural Resources Impacts

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

4.5.1 Baseline Conditions

Fresno County was formed in 1856 from portions of Merced, Mariposa, and Tulare counties. The first focus of Euro-American settlement in the county occurred at Millerton, close to Fort Miller, which was the initial county seat. A flood in 1867 inundated Millerton, causing many settlers to move to Centerville. The Fresno area at the time was primarily used for sheep herding due to insufficient water for dryland farming. The Central Pacific Railroad reached the Fresno area in 1872, connecting it with important market towns elsewhere in the state, dramatically impacting agriculture production (Pacific Legacy 2006). "Fresno Station" soon became "Fresno," named after the ash trees that are common along the San Joaquin River. Fresno was made the county seat in 1874 and was incorporated in 1885. By 1890, the population had grown to more than 10,000. (See Appendix C)

In 1871, Moses J. Church constructed the first irrigation system and formed the Fresno Canal and Irrigation Company (FCIC), predecessor to the Fresno Irrigation District (FID). The initial intention was to lengthen the Centerville Ditch to the natural channel of Fancher Creek. Subsequently the creek itself was extended to service properties to the south and west. This was completed in 1874 with the creek, sometimes referred to as the Fancher Creek Canal or the Fresno Canal, ultimately extending for about 9.1-mi (Brady and Roper 2011). According to Grunsky (1898), the Fancher Creek/Fresno Canal was uncontrolled by structures at the turn of the century. (See Appendix C)

Fresno Irrigation District (FID) was formed in 1920, as the successor to the Fresno Canal and Land Company. This included the rights to 800 miles of canals and distribution works, purchased for $1.75 million, including Fancher Creek/Fresno Canal. The FID now services 245,000-acres in the Fresno – Clovis area. (See Appendix C)

Phase I Pedestrian Survey

An intensive Class III Inventory/Phase I survey of the Project APE of 151 acres was conducted on September 22nd and 23rd, 2022 by ASM Affiliates staff. The APE was examined with the field crew walking parallel transects space at approximately 15-m intervals, in order to identify surface artifacts, archaeological indicators (e.g., shellfish or animal bone), and/or archaeological deposits (e.g., organically enriched midden soil); tabulation and recording of surface diagnostic artifacts; site sketch mapping; preliminary evaluation of site integrity; and site recording, following the California Office of Historic Preservation Instructions for

Recording Historic Resources, using DPR 523 forms. Special attention was paid to rodent burrow back dirt piles, in the hope of identifying sub-surface soil conditions that might be indicative of archaeological features or remains. (See Appendix C)

The following figures illustrate the current conditions of the basin locations.

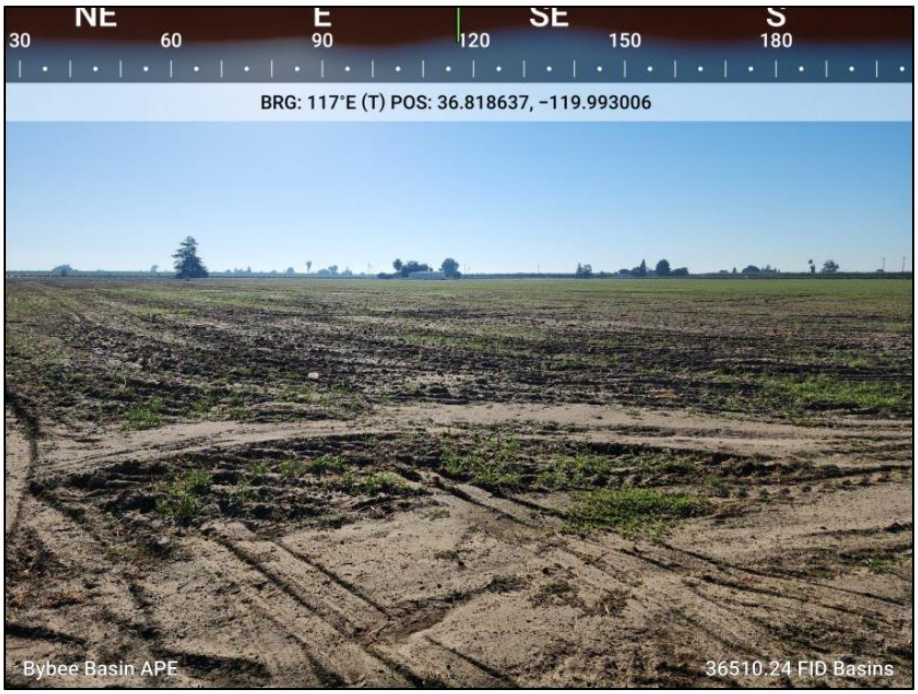

Figure 4-8: Overview of Carter-Bybee Basin APE

Figure 4-9: Overview of Badhesha Basin APE

Figure 4-10: Overview of Hornor Basin APE

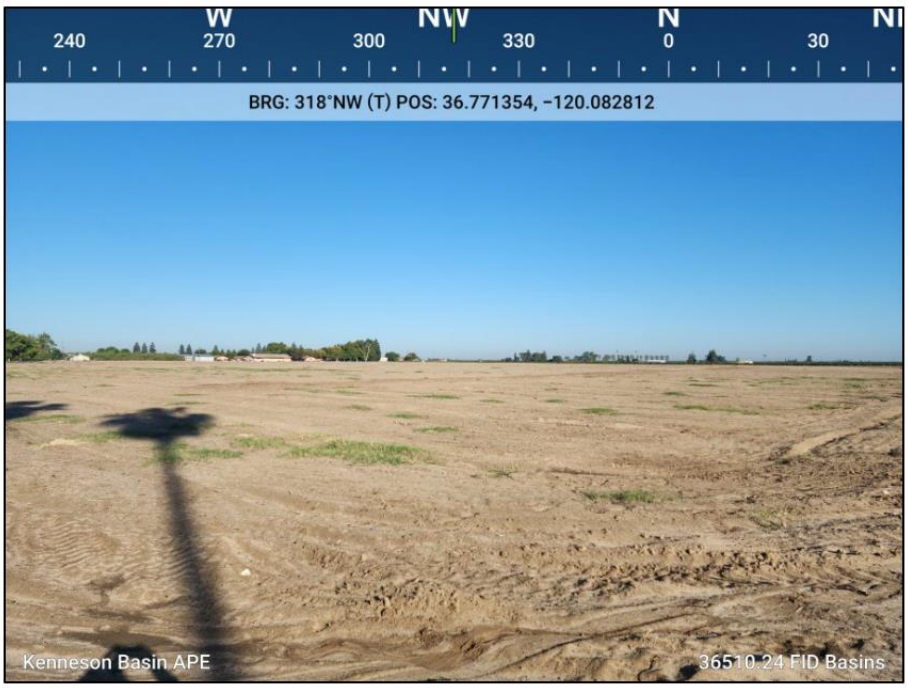

Figure 4-11: Overview of Kenneson-Sanchez Basin APE

Records Search

An archival records search was conducted, prior to the field survey, at the California State University, Bakersfield, Southern San Joaquin Valley Information Center (SSJVIC), by SSJVIC staff members on August 23, 2022 to determine: (i) if prehistoric or historical cultural resources had previously been recorded within the APE; (ii) if the APE had been systematically surveyed by archaeologists prior to the initiation of this field

study; and/or (iii) whether the region of the Project was known to contain archaeological sites and to thereby be archaeologically sensitive.

According to the records search results, no previous archaeological surveys had been completed within the APEs, but three cultural resources were known within them (Table 4-13). These are two historical canals and one historical single-family residence. Two additional resources were known within a 0.5-mi radius of the APE: a historical canal and another single-family residence. Only one previous archaeological survey had been completed within 0.5-mi of the APE: Report FR-02414, "Cultural Resources Inventory of Caltrans District 6 Rural Conventional Highways, Fresno, Western Kern, Kings, Madera & Tulare Counties," Far Western Anthropological Research Group, 2010. (Appendix C)

Table 4-13: Previously Recorded Cultural Resources within Project Area

Primary No.	Description	Location
P-10-005573	Historical Herndon Canal	Carter-Bybee Basin
P-10-006626	Historical Single-Family Residence	Carter-Bybee Basin
P-10-005793	Historical Big Sandridge Canal	Hornor & Kenneson-Sanchez Basins

Table 4-14: Newly Recorded Cultural Resources within Project Area

Description	Location
Fresno Colony Canal	Badhesha Basin
Little Sandridge Canal	Kenneson-Sanchez Basin

Native American Outreach

In addition to the records search conducted at SSJVIC, ASM contacted the Native American Heritage Commission (NAHC) in Sacramento, in October 2022. ASM provided NAHC with a brief description of the project and a map showing the locations of the basins and requested that the NAHC perform a search of the Sacred Lands File to determine if any Native American resources have been recorded in the immediate study area. The results were negative. NAHC provided a current list of local Native American contacts that might be able to provide insight and additional information regarding the Proposed Project APE. The 12 tribes identified by NAHC were contacted by ASM in writing via US mail with a letter dated September 26, 2022, informing them about the Project. Additionally, ASM staff sent follow up emails to each of the tribal contacts on November 15, 2022. No additional correspondence was received. (See Appendix C)

4.5.2 Impact Analysis

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

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

a) and b) Less than Significant Impact with Mitigation Incorporated. As stated above, according to the records search conducted as SSJVIC, no previous archaeological surveys have been completed within the APEs, but three cultural resources were known within them (see Table 4-13 above). These resources are two historical canals and one historical single-family residence; the latter has been removed for safety purposes. Two additional resources were known within a 0.5-mi radius of the APE: a historical canal and another single-family residence. Only one previous archaeological survey has been completed within 0.5-mi of the APE.

Based on the records search and other sources, the APE appeared to have low cultural resources sensitivity. (See Appendix C) It is unlikely that the Project has the potential to result in significant impacts or adverse effects to cultural or historical resources, such as archaeological remains, artifacts or historic properties. However, in the unlikely event that cultural resources are encountered during Project construction, implementation of mitigation measure CUL-1 outlined below, would reduce impacts to less than significant.

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

Less than Significant Impact with Mitigation Incorporated. No formal cemeteries or other places of human internment are known to exist on the Project site; however, in accordance with Health and Safety Code Section 7050.5 and Public Resource Code Section 5097.98, if human remains are uncovered, Mitigation Measure CUL-2 would be implemented.

4.5.3 Federal Cross-Cutting Topic

National Historic Preservation Act

Section 106 of the National Historic Preservation Act (NHPA) of 1966, as amended (Title 54 USC 300101 et seq.; 33 CFR Part 325 Appendix C; 36 CFR Part 800) is applicable to federal undertakings, including projects financed or permitted by federal agencies, regardless of whether the activities occur on land that is managed by federal agencies, other governmental agencies, or private landowners. Its purpose is to determine whether adverse effects will occur to significant cultural resources, defined as "historical properties" that are listed in or determined eligible for listing in the National Register of Historic Places (NRHP). The criteria for NRHP eligibility are defined at 36 CFR § 60.4 and include:

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

(a) are associated with events that have made a significant contribution to the broad patterns of our history; or,
(b) are associated with the lives of persons significant in our past; or,
(c) embody the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction; or,
(d) have yielded or may be likely to yield, information important in prehistory or history.

There are, however, restrictions to the kinds of historical properties that can be NRHP listed. These have been identified by the Advisory Council on Historic Preservation (ACHP), as follows:

Ordinarily cemeteries, birthplaces, or graves of historical figures, properties owned by religious institutions or used for religious purposes, structures that have been moved from their original locations, reconstructed historic buildings, properties primarily commemorative in nature, and properties that have achieved significance within the past 50 years shall not be considered eligible for the NRHP. However, such properties will qualify if they are integral parts of districts that do meet the criteria or if they fall within the following categories:

a) A religious property deriving primary significance from architectural or artistic distinction or historical importance; or,

b) A building or structure removed from its original location, but which is significant primarily for architectural value, or which is the surviving structure most importantly associated with a historic person or event; or,
c) A birthplace or grave of a historical figure of outstanding importance if there is no appropriate site or building directly associated with his productive life; or,
d) A cemetery which derives its primary significance from graves of persons of transcendent importance, from age, from distinctive design features, or from association with historic events; or,
e) A reconstructed building when accurately executed in a suitable environment and presented in a dignified manner as part of a restoration masterplan, and when no other building or structure with the same association has survived; or,
f) A property primarily commemorative in intent if design, age, tradition, or symbolic value has invested it with its own exceptional significance; or,
g) A property achieving significance within the past 50 years if it is of exceptional importance.

Based on the findings of the Class III inventory/Phase I survey of the Project APE, a determination of No Effect/No Significant Impact is recommended for the Multiple Basins Project.

4.5.4 Mitigation

CUL-1 (Archaeological Remains) In the event that archaeological remains are encountered at any time during development or ground-disturbing activities within the entire project area, all work in the vicinity of the find shall halt until a qualified archaeologist can assess the discovery. The District shall implement all recommendations of the archaeologist necessary to avoid or reduce to a less than significant level potential impacts to cultural resource. Appropriate actions could include a Data Recovery Plan or preservation in place.

CUL-2 (Human Remains) In the event human remains are uncovered, or in any other case when human remains are discovered during construction, the Fresno County Coroner is to be notified to arrange their proper treatment and disposition. If the remains are identified—on the basis of archaeological context, age, cultural associations, or biological traits—as those of a Native American, California Health and Safety Code 7050.5 and Public Resource Code 5097.98 require that the coroner notify the NAHC within 24 hours of discovery. The NAHC will then identify the Most Likely Descendent who will determine the manner in which the remains are treated.

4.6 ENERGY

Table 4-15: Energy Impacts

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

4.6.1 Baseline Conditions

Pacific Gas and Electric (PG&E) supplies electricity and natural gas to the Project areas. PG&E obtains its power through hydroelectric, thermal (natural gas), wind, and solar generation of purchases. PG&E continually produces new electric generation and natural gas sources and implements continuous improvements to gas lines throughout its service areas to ensure the provision of services to residents. New construction would be subject to Titles 20 and 24 of the California Code of Regulations which each serve to reduce demand for electrical energy by implementing energy-efficient standards for residential, as well as non-residential buildings. As the Project does not involve buildings of any kind, these regulations are not applicable.

Construction equipment and construction worker vehicles operated during Project excavation and construction would use fossil fuels. This increased fuel consumption would be temporary and would cease at the end of the construction activity, and it would not have a residual requirement for additional energy input. The marginal increases in fossil fuel use resulting from Project construction are not expected to have appreciable impacts on energy resources. There is currently power in close vicinity to the four basin sites.

4.6.2 Impact Analysis

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

Less than Significant Impact. As discussed in Section 4.3, the Project would not exceed any air emission thresholds during construction or operation. All improvements will utilize existing PG&E and no new services would be needed. The recovery well and propellor flow meter would require power from PGE, but nothing in addition to the existing lines. The Project would comply with construction best management practices and may be required to complete a Storm Water Pollution Prevention Plan (SWPPP) as part of construction. Once completed, the Project would be mostly passive in nature and would not use an excessive amount of energy. Therefore, the Project would not result in potentially significant environmental impacts due to wasteful, inefficient, or unnecessary consumption of energy resources during construction or operation. The impacts would be less than significant.

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

No Impact. The Project would be passive in nature once it is completed, and the construction phase would be temporary, lasting six months per basin site and would not exceed any thresholds set by the SJVAPCD. All improvements will utilize existing PG&E lines and no new services would be needed. There would be no impacts to state or local plans.

4.7 GEOLOGY AND SOILS

Table 4-16: Geology and Soils Impacts

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

4.7.1 Baseline Conditions

The Project sites are not located on any active fault line or system. The nearest active fault is located approximately 44 miles northeast of the Project area, according to the California Department of Conservation's Fault Activity Map of California.[8] In addition, the Project areas are comprised of the Hanford silty loam and the Tujunga loamy sand and is not known to be located within an area that has experienced liquefaction. However, like much of the San Joaquin Valley, the area has experienced land subsidence due to overdraft of the water table due to increased reliance on groundwater pumping. The Project would result in the construction of four recharge basins, totaling 151 acres. Implementation of the Project would aid to restore the water table levels and would aid agricultural operations in the area by providing improved water

[8] (California Department of Conservation 2015)

supply reliability. Any potential disruption of soil at the proposed Project sites would be evaluated under a Storm Water Pollution Prevention Plan (SWPPP) to limit any effects the proposed Project would have in the form of erosion and storm drainage flow change.

Geology and Soils

The Project is located in Fresno County, in the southern section of California's Great Valley Geomorphic Province, or Central Valley. The Sacramento Valley makes up the northern third and the San Joaquin Valley makes up the southern two-thirds of the geomorphic province. Both valleys are watered by large rivers flowing west from the Sierra Nevada Range, with smaller tributaries flowing east from the Coast Ranges. Most of the surface of the Great Valley is covered by Quaternary (present day to 1.6 million years ago) alluvium. The sedimentary formations are steeply upturned along the western margin due to the uplifted Sierra Nevada Range.[9] From the time the Valley first began to form, sediments derived from erosion of igneous and metamorphic rocks and consolidated marine sediments in the surrounding mountains have been transported into the Valley by streams.

The soils present and their characteristics at each of the basin locations can be found in Appendix B.

Faults and Seismicity

The Proposed Project site is not located within the Alquist-Priolo Earthquake Fault Zone and no known faults cut through the local soil at any of the sites. The nearest mapped principal fault is the San Andreas Fault, located over 58 miles southwest of the basin sites. The San Andreas Fault is the dominant active tectonic feature of the Coast Ranges and represents the boundary of the North American and Pacific plates. A smaller fault zone, the O'Neill fault system is located over 44 miles west of the basin sites.

Liquefaction

The potential for liquefaction, which is the loss of soil strength due to seismic forces, is dependent on soil types and density, the groundwater table, and the duration and intensity of ground shaking. Although no specific liquefaction hazard areas have been identified in the county, this potential is recognized throughout the San Joaquin Valley where unconsolidated sediments and a high-water table coincide. It is reasonable to assume that due to the depth to groundwater within the western portion of Fresno County, liquefaction hazards would be negligible.

Soil Subsidence

Subsidence occurs when a large land area settles due to over-saturation or extensive withdrawal of ground water, oil, or natural gas. These areas are typically composed of open-textured soil that become saturated. These areas are high in silt or clay content. The Proposed Project site is dominated by loam and sandy loam soils, with a low to moderate risk of subsidence.

Dam and Levee Failure

The Proposed Project area is partially within the inundation zone for Friant with the dam location approximately 20 miles NE of the Carter Bybee site.

Paleontological Resources

Paleontological resources are fossilized remains of flora and fauna and associated deposits. CEQA requires that a determination be made as to whether a project would directly or indirectly destroy a unique paleontological resource or site or unique geological feature (CEQA Appendix G(v)(c)). If an impact is

[9] Harden, D.R. 1998, California Geology, Prentice Hall, 479 pages

significant, CEQA requires feasible measures to minimize the impact (CCR Title 14(3) Section 15126.4(a)(1)). PRC Section 5097.5 (see above) also applies to paleontological resources.

4.7.2 Impact Analysis

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

i. Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault? Refer to Division of Mines and Geology Special Publication 42.

ii. Strong seismic ground shaking?

a-i and a-ii) Less than Significant Impact. Ground shaking intensity is largely a function of distance from the earthquake epicenter and underlying geology. The most common impact associated with strong ground shaking is damage to structures and no habitable structures are associated with the Project. The Project would not directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving the 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. No known faults with evidence of historic activity cut through the valley soils in the Project site's area. Due to the geology of the Project area and its distance from active faults, the potential for loss of life, property damage, ground settlement, or liquefaction to occur in the Project area is considered minimal.

According to the Alquist-Priolo Earthquake Fault Zoning Map the nearest known fault of any kind is the Nunez Fault located approximately 45-miles southwest of the Project sites. The nearest major active fault, the San Andreas Fault – creeping section, is located approximately 58 miles southwest of the basin sites. The Project does not include habitable residential, agricultural, commercial, or industrial structures. Operation of the Project would require infrequent, as-needed, routine maintenance trips to the sites. Any impacts would be less than significant.

iii. Seismic-related ground failure, including liquefaction?

Less than Significant Impact. Liquefaction occurs when loose, water-saturated sediments lose strength and fail during strong ground shaking. In general, liquefiable areas are generally confined to the Valley floors covered by Quaternary-age alluvial deposits, Holocene soil deposits, current river channels, and active wash deposits and their historic floodplains, marshes, and dry lakes. Specific liquefaction hazard areas in the county have not been identified. The Proposed Project is not in a wetland area and is located in the middle portion of the County where liquefaction risk is considered low. Additionally, the Project would be in compliance with the relevant land use plans, because of this comprehensive body of construction requirements enforced by the County, and the goals and policies set forth in the Fresno County General Plan that would avoid or reduce the effects of these hazards, this impact would be less than significant.

iv. Landslides?

No Impact. As the Proposed Project is located on the Valley floor, no major geologic landforms exist on or near the site that could result in a landslide event. There would be no impact.

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

Less than Significant Impact. Earthmoving activities associated with the Project would include excavation, trenching, and infrastructure construction. These activities could expose soils to erosion processes and the extent of erosion would vary depending on slope steepness/stability, vegetation/cover, concentration of runoff, and weather conditions. Dischargers whose projects disturb one (1) or more acres of soil or whose projects disturb less than one acre but are part of a larger common plan of development that in total disturbs one or more acres, are required to obtain coverage under the General Permit for Discharges of Storm Water Associated with Construction Activity Construction General Permit Order 2009-0009-DWQ. Construction activity subject to this permit includes clearing, grading, and disturbances to the ground such as stockpiling, or excavation, but does not include regular maintenance activities performed to restore the original line, grade, or capacity of the facility. The Construction General Permit requires the development of a SWPPP by a certified Qualified SWPPP Developer (QSD). Since the Proposed Project sites have relatively flat terrain with a low potential for soil erosion and would comply with the SWRCB requirements, the impacts would be less than significant.

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

Less than Significant Impact. The Project sites and the immediate surrounding areas do not have any substantial grade changes in the topography to the point where the proposed basins would expose people or structures to potential substantial adverse effects on, or offsite, such as landslides, lateral spreading, subsidence, liquefaction or collapse. Any impacts would be less than significant.

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

Less than Significant Impact. The soil at the Project sites include a majority of coarse and fine sandy loam. These soils are considered well drained and prime soils for agricultural use with moderate to high permeability. The Project would not contain any facilities that could be affected by expansive soils. The Project's would be consistent with the California Building Code; therefore, impacts would be less than significant.

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

No Impact. Disposal of wastewater is not necessary for the Project, therefore there would be no impact.

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

No Impact. There are no known paleontological resources or unique geological features that have been identified at the Project site, at any of the basin locations. There would be no impacts.

4.8 GREENHOUSE GAS EMISSIONS

Table 4-17: Greenhouse Gas Emissions Impacts

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

4.8.1 Baseline Conditions

Commonly identified Green House Gas (GHG) emissions and sources include the following:

Carbon dioxide (CO_2) is an odorless, colorless natural greenhouse gas. CO_2 is emitted from natural and anthropogenic sources. Natural sources include the following: decomposition of dead organic matter; respiration of bacteria, plants, animals, and fungus; evaporation from oceans; and volcanic out gassing. Anthropogenic sources include the burning of coal, oil, natural gas, and wood.

Methane (CH_4) is a flammable greenhouse gas. A natural source of methane is the anaerobic decay of organic matter. Geological deposits, known as natural gas fields, also contain methane, which is extracted for fuel. Other sources are from landfills, fermentation of manure, and ruminants such as cattle.

Nitrous oxide (N_2O), also known as laughing gas, is a colorless greenhouse gas. Nitrous oxide is produced by microbial processes in soil and water, including those reactions that occur in fertilizer containing nitrogen. In addition to agricultural sources, some industrial processes (fossil fuel-fired power plants, nylon production, nitric acid production, and vehicle emissions) also contribute to its atmospheric load.

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

Ozone (O_3) is known as a photochemical pollutant and is a greenhouse gas; however, unlike other greenhouse gases, ozone in the troposphere is relatively short-lived and, therefore, is not global in nature. O_3 is not emitted directly into the atmosphere but is formed by a complex series of chemical reactions between volatile organic compounds, nitrogen oxides, and sunlight.

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

Chlorofluorocarbons (CFCs) are nontoxic, nonflammable, insoluble, and chemically unreactive in the troposphere (the level of air at the earth's surface). CFCs were first synthesized in 1928 for use as

refrigerants, aerosol propellants, and cleaning solvents. CFCs destroy stratospheric ozone; therefore, their production was stopped as required by the Montreal Protocol in 1987.

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

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

Sulfur hexafluoride (SF_6) is an inorganic, odorless, colorless, nontoxic, nonflammable gas. It has the highest global warming potential of any gas evaluated. Sulfur hexafluoride is used for insulation in electric power transmission and distribution equipment, in the magnesium industry, in semiconductor manufacturing, and as a tracer gas for leak detection.

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

Emissions of GHGs contributing to global climate change are largely attributable to human activities associated with the industrial/manufacturing, utility, transportation, residential, and agricultural sectors. About three-quarters of human emissions of CO_2 to the global atmosphere during the past 20 years are due to fossil fuel burning. Atmospheric concentrations of CO_2, CH_4, and N_2O have increased by at least 40 percent, 150 percent, and 20 percent respectively since the year 1750. GHG emissions are typically expressed in carbon dioxide-equivalents (CO_2e), based on the GHG's Global Warming Potential (GWP). The GWP is dependent on the lifetime, or persistence, of the gas molecule in the atmosphere. For example, one ton of CH_4 has the same contribution to the greenhouse effect as approximately 25 tons of CO_2. Therefore, CH_4 is a much more potent GHG than CO_2. In accordance with SJVAPCD's *CEQA Greenhouse Gas Guidance for Valley Land-use Agencies in Addressing GHG Emission Impacts for New Projects*[10], proposed projects complying with Best Performance Standards (BPS) would be determined to have a less-than-significant impact. Projects not complying with BPS would be considered less than significant if operational GHG emissions would be reduced or mitigated by a minimum of 29 percent, in comparison to business-as-usual (year 2004) conditions. In addition, project-generated emissions complying with an approved plan or mitigation program would also be determined to have a less-than-significant impact.

Construction-Generated Emissions

The exact timeline for the construction of the proposed basins is unknown at this time. As a result, the construction of each of the four basins was assumed to occur concurrently, over the span of six months. This assumption is represented within the air quality modeling that was completed for the proposed Project. Emissions associated with the Project were calculated using CalEEMod Air Quality Model, Version 2020.4.0. The emissions modeling includes emissions generated by off-road equipment, haul trucks, and worker commute trips. Emissions were quantified based on an anticipated construction schedule of

[10] (San Joaquin Valley Air Pollution Control District 2022) Accessed November 2022.

approximately six months. All remaining assumptions were based on the default parameters contained in the model. Localized air quality impacts associated with the Project would be minor and were qualitatively assessed. Modeling assumptions and output files are included in Appendix A.

Impact Assessment

Short-Term Construction-Generated Emissions

Short-term construction emissions associated with the Project were calculated using CalEEMod, Version 2020.4.0. Emissions' modeling was assumed to occur over an approximate six-month period for each basin and construction may begin at different times at each site. Remaining assumptions were based on the default parameters contained in the model. Modeling assumptions and output files are included in Appendix A. Estimated construction-generated emissions are summarized in Table 4-18. GHGs impact the environment over time as they increase and contribute to climate change.

Table 4-18: Short Term Construction Generated GHG Emissions

	Emissions (MT CO2e)
Maximum Annual Construction CO2e Emissions (tpy)	731.2936
AB 32 Consistency Threshold for Land-Use Development Projects* (tpy)	1,1OO
AB 32 Consistency Threshold for Stationary Source Projects* (tpy)	10,000
Threshold Exceeded?	No

* As published in the Bay Area Air Quality Management District's CEQA Air Quality Guidelines. Available online at http://www.baaqmd.gov/~/media/files/planning-and-research/ceqa/ceqa_guidelines_may2017-pdf.pdf?la=en Accessed 11/16/22.

Long-Term Operational Emissions

Long-term construction emissions associated with the Project were calculated using CalEEMod, Version 2020.4.0. Long-term emissions of the Project are considered and take into account expected emission levels the Project would emit after construction is completed. Modeling assumptions and output files are included in Appendix A. Estimated long-term operational emissions are summarized in Table 4-19.

Table 4-19: Long Term Operational GHG Emissions

	Emissions (MT CO2e)
Maximum Annual Construction CO2e Emissions (tpy)	.00289
AB 32 Consistency Threshold for Land-Use Development Projects (tpy)*	*1,1OO*
AB 32 Consistency Threshold for Stationary Source Projects (tpy)*	*10,000*
Threshold Exceeded?	No

* As published in the Bay Area Air Quality Management District's CEQA Air Quality Guidelines. Available online at http://www.baaqmd.gov/~/media/files/planning-and-research/ceqa/ceqa_guidelines_may2017-pdf.pdf?la=en Accessed 11/16/22.

4.8.2 Impact Analysis

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

Less than Significant Impact. The Project would not generate GHG emissions, either directly or indirectly, that may have a significant impact on the environment. As shown in Table 4-18 and Table 4-19, the Project is not expected to result in the generation of GHG emissions that would exceed the AB 32 consistency threshold of 1,100 MT CO_2e annually during both construction and operational activities. Long term operational activities may be incrementally higher due to the use of pumps and valves associated with the canal that would deliver water to the basins, however, this incremental increase would have a negligible effect on GHGs generated by operations of the four basins. Therefore, impacts would be less than significant.

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

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

4.9 HAZARDS AND HAZARDOUS MATERIALS

Table 4-20: Hazards and Hazardous Materials Impacts

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

4.9.1 Baseline Conditions

According to the State Water Resource Control Board's GeoTracker database and the Department of Toxic Substance's EnviroStor database, the nearest active hazardous waste cleanup site is located approximately 5 miles from the proposed Project site.[11] [12] The proposed Project would not result in the emissions of hazardous materials during operation and any foreseeable potential hazardous material spillage as a result of construction activities would be remediated in accordance with industry Best Management Practices and State and County regulations.

[11] (California State Waterboards 2022)
[12] (California Department of Toxic Substances Control 2022)

Hazardous Materials

The Hazardous Waste and Substances Sites (Cortese) List is a planning document used by the State, local agencies, and developers to comply with CEQA requirements in providing information about the location of hazardous materials release sites. Government Code Section 65962.5 requires the California Environmental Protection Agency to develop at least annually an updated Cortese List. The Department of Toxic Substances Control (DTSC) is responsible for a portion of the information contained in the Cortese List. Other State and local government agencies are required to provide additional hazardous material release information for the Cortese List. DTSC's EnviroStor database provides DTSC's component of Cortese List data (DTSC, 2010). In addition to the EnviroStor database, the State Water Resources Control Board (SWRCB) Geotracker database provides information on regulated hazardous waste facilities in California, including underground storage tank (UST) cases and non-UST cleanup programs, including Spills-Leaks-Investigations-Cleanups sites, Department of Defense sites, and Land Disposal program. A search of the DTSC EnviroStor database and the SWRCB Geotracker performed in November 2022, determined that there are no known active hazardous waste generators or hazardous material spill sites within the Project site or immediate surrounding vicinity. Historically, there have been multiple previous hazardous spill sites within the City of Parlier, but the cases have since been cleaned up and closed.

Airports

The Project sites are located more than 12 miles west of the Fresno Yosemite International Airport. The Project site is not located inside an Airport Land Use Compatibility Plan (ALUCP) for either of the mentioned airports.

Emergency Response Plan

The Fresno County Office of Emergency Services is located within the Department of Public Health and coordinates planning, preparedness, response, and recovery efforts for disasters occurring within the unincorporated area of the County.

Sensitive Receptors

Sensitive Receptors are groups that would be more affected by air, noise, and light pollution, pesticides, and other toxic chemicals than others. This includes infants, children under 16, elderly over 65, athletes, and people with cardiovascular and respiratory diseases. High concentrations of these groups would include daycares, residential areas, hospitals, elder care facilities, schools, and parks. The Project sites are located within an agricultural and rural setting, there would not be sensitive receptor areas near the basin sites and proposed pipeline connections.

4.9.2 Impact Analysis

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

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

a) and b) Less than Significant Impact. There are no designated hazardous materials transportation routes in the vicinity of the Project sites. Additionally, there would be no transport, use, or disposal of hazardous materials associated with the construction, with the exception of diesel fuel for construction equipment. Any potential accidental hazardous materials spills during Project construction are the responsibility of

the contractor to remediate in accordance with industry best management practices and State and County regulations. Any impacts would therefore be less than significant.

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

Less than Significant Impact. The Project would not emit hazardous emissions or involve the transport or handling of any hazardous materials, with the exception of diesel for construction equipment. The Central High West Campus is located over one mile southeast of the basin sites. Any impact would be considered less than significant.

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

No Impact. The Project does not involve land that is actively listed as a hazardous materials site pursuant to Government Code Section 65962.5 and is not included on a list compiled by the Department of Toxic Substances Control. Both the State Water Board's Geotracker and Department of Toxic Substances Control EnviroStor websites were checked for contaminated groundwater or sites in the area. There would be no impact.

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

Less than Significant Impact. The Fresno Yosemite International Airport is located more than 12 miles east of the Project sites. The construction of the basins and pipelines would not be a safety hazard for people working in the area. There would be no impact.

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

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

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

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

4.10 HYDROLOGY AND WATER QUALITY

Table 4-21: Hydrology and Water Quality Impacts

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

4.10.1 **Baseline Conditions**

The Project would result in the construction of approximately 151-acres of recharge basins in rural Fresno County, less than one mile southeast of the nearest flood zone (See Figure 4-12). The Carter-Bybee Basin would be connected to the Herndon Canal No. 39; the Badhesha Basin would extend south of the Fresno Colony No. 24 Canal turnout would be installed; the Hornor basin would tie into the Little Sandridge Canal No. 66 or the Big Sandridge Canal No. 65; and the Kenneson-Sanchez Basin would connect to existing infrastructure Big Sandridge Canal No. 65. The proposed Project would be located within the North Kings Groundwater Sustainability Agency (GSA) in the San Joaquin Valley Basin and Kings subbasin.[13] The North

[13] (California Department of Water Resources 2022)

Kings GSA submitted the North Kings Groundwater Sustainability Plan (GSP) in 2020.[14] The implementation of the Project, creating four new recharge basins, would support the adopted GSP for the area and directly support groundwater recharge for the basin. Due to the size of the Project, a SWPPP would be completed in order to address any potential impacts to storm drainage on-site.

Federal Emergency Management Agency (FEMA) Flood Insurance Rate Map Panel No. 06019C1525H, 06019C1530H and 06019C2105H (effective 9/26/2008) indicate that the Project areas are located of the 100 Year Flood Zone with minimal flooding risk.

4.10.2 Impact Analysis

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

Less than Significant Impact. The State Water Resources Control Board requires a Stormwater Pollution Prevention Plan (SWPPP) be prepared for projects that disturb one (1) or more acres of soil. A SWPPP involves site planning and scheduling, limiting disturbed soil areas, and determining best management practices to minimize the risk of pollution and sediments being discharged from construction sites. Implementation of the SWPPP will minimize the potential for the Proposed Project to substantially alter the existing drainage pattern in a manner that will result in substantial erosion or siltation onsite or offsite. Additionally, there will be no discharge to any surface source. However, there will be percolation discharge to groundwater via the proposed recharge/regulation basins. Use of chemicals or surfactants will not be generated through the maintenance or operation of the Proposed Project and as such, there will be no discharge directly associated with Project implementation that could impact water quality standards. The Proposed Project will not violate any water quality standards and will not impact waste discharge requirements. The impact will be less than significant.

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

Less than Significant Impact. The Project entails the construction of four recharge basins in Fresno County to improve groundwater supplies by capturing storm and flood flows. The recharge volume is stored and allowed to infiltrate into the underlying soils over a period of time following a storm or flood event. The North Kings GSA holds jurisdiction over the Project area and is responsible for developing a GSP to minimize significant impacts to lowering groundwater levels and promote aquifer replenishment, as the Project is intended. No additional groundwater would be required compared to baseline conditions; therefore, the impacts would be less than significant.

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

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

Less than Significant Impact. The Project would improve groundwater storage and prevent exceedances of stormwater drainage systems by providing depressional spaces for surface water to be captured and stored for recharge purposes. The project would not alter the course of the flow of a stream or river in which substantial erosion or siltation could occur. In addition, the Project would not result in an increase

[14] (North Kings Groundwater Sustainability Agency 2019)

in the amount of surface runoff because the scope of this Project does not include the conversion of any permeable surface into impermeable surfaces. Therefore, impacts would be less than significant.

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

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

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

No Impact. The Project would improve groundwater storage and prevent exceedances of storm water drainage systems or additional polluted runoff by providing a depressional space for surface water at four locations. There would be no impacts.

iv. impede or redirect flood flows?

No Impact. The Project would not impede or redirect flood flows. The Project is designed to capture and temporarily store storm and flood flows and allow the water to infiltrate into the ground over a period of time following an even, thereby facilitating recharge of the underlying aquifer. There would be no impact.

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

Less than Significant Impact. The Project is not located in a flood hazard, tsunami, or seiche zone. The Project is in the central San Joaquin Valley, especially isolated from opportunities for tsunami or seiche. There is a very low probability of dam failure inundation however, the closest dam inundation area is Crane Valley, located 0.7 miles northwest of the Carter-Bybee Basin site and Fancher Creek, located 1.5 miles northeast of the Badhesha Basin site. There would be no employees required to be on site on a regular basis at any of the basin locations and no housing would result from Project construction or implementation. The impacts would be less than significant.

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

No Impact. The Project would not conflict with implementation of a water quality control plan. It is intended to improve implementation of the groundwater sustainability plan as outlined by the North Kings Groundwater Sustainability Agency. The Project would help alleviate water supply issues during the irrigation season and capture any available storm or flood runoff available to recharge the groundwater. Furthermore, construction activities would require implementation of a SWPPP and compliance with all Cal/OSHA regulations in order to reduce the potential for incidental release of pollutants or hazardous substances into surface water or groundwater. There would be no impacts.

4.10.3 Federal Cross-Cutting Topic

Flood Plain Management- Executive Order Numbers 11988, 12148, and 13690

The Federal Emergency Management Agency (FEMA) designates flood hazard and frequency for cities and counties on its Flood Insurance Rate Maps. The proposed project areas are not within a designated 100-year floodplain, on a floodplain map, or otherwise designated by FEMA.

Rivers and Harbors Act

The Rivers and Harbors Act of 1899 prohibits construction of any bridge, dam, dike, or causeway over or in navigable waterways of the U.S., without Congressional approval. Under Section 10 of the Act, the building of any wharfs, piers, jetties, and other structures is prohibited without Congressional approval, and excavation or fill within navigable waters requires the approval of the Chief of Engineers. The United States Army Corps of Engineers (USACE) is authorized to issue permits for the discharge of refuse matter into or affecting navigable waters under Section 13 of the act.

The proposed project would not be constructed in a location that would affect a navigable waterway, requiring permit or approval by USACE.

Safe Drinking Water Act, Sole Source Aquifer Protection

The Safe Drinking Water Act (SOWA) required USEPA to establish criteria through which an aquifer may be declared a critical aquifer protection area. Since 1977, it has been used by communities to help prevent contamination of groundwater from federally funded projects. These aquifers are defined as "sole source aquifers." EPA's Sole Source Aquifer (SSA) Program was established under Section 1424(e) of the SOWA. These are, essentially, aquifers that are the only drinking water supply for the population of a region.

SSA designation protects an area's groundwater resources by requiring USEPA to review all proposed projects within the designated area that will receive federal financial assistance. The SSA Program states that if USEPA determines an area to have an aquifer which is the sole or principal drinking water source for the area, that if contaminated would create a significant hazard to public health, a notice of that determination needs to be published in the Federal Register. After publication of any such notice, no commitment for federal financial aid may be applied for any project that the Administrator determines may contaminate the aquifer through a recharge zone, so as to create a significant hazard to public health.[15]

Pursuant to Section 1424(e), the USEPA has designated six (6) aquifers in Region IX which are the sole or principal source of drinking water for all municipal and private water systems in that watershed, and that if contaminated, would create a significant hazard to public health.

The Project is located in Fresno County Sole Source Aquifer, ID No. SSA55a on Region IX.

[15] (EPA 2019)

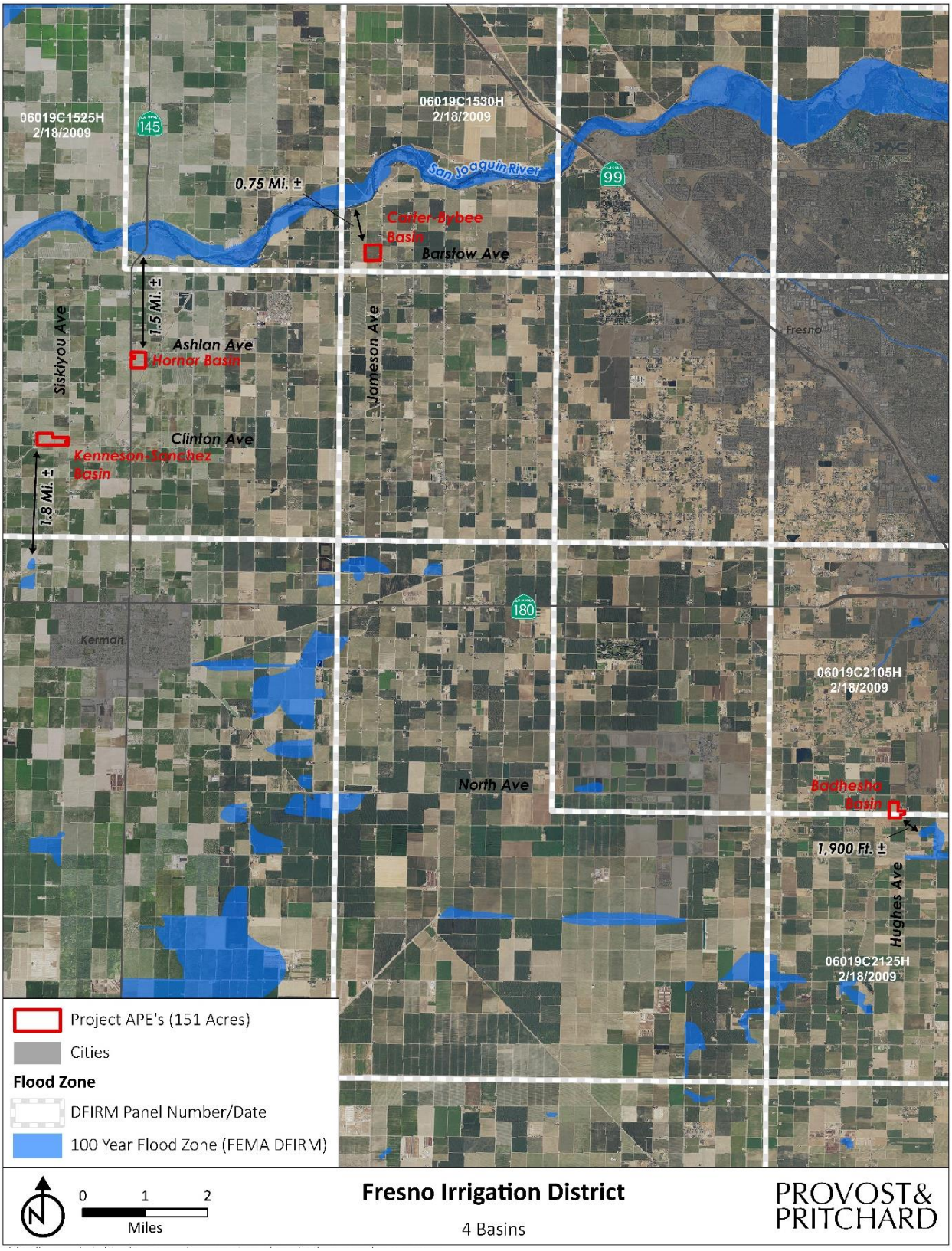

Figure 4-12: FEMA Flood Map

4.11 LAND USE AND PLANNING

Table 4-22: Land Use and Planning Impacts

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

4.11.1 Baseline Conditions

The proposed sites for the Project are located within rural Fresno County, an area dominated by agriculture and rural residences. The sites contain approximately 151 acres total of farmland the loss of one rural residence on the Bybee site. The owners of the residence have sold the site to the Project proponent and thus would not be impacted by the proposed Project unwillingly. Land within this part of the County, including the proposed Project sites, are zoned Exclusive Agriculture by Fresno County.[16] According to the Fresno County General Plan Background Report, the sites are planned for Agriculture/Open Space Use.[17] The Project would convert the four sites into recharge basins that would support agriculture through improved water supply reliability. In addition, Government Code Section 53091 (e) excludes the application of a city or county's zoning ordinances from applying to water projects that construct facilities for the production, generation, storage, treatment, or transmission of water. As a result, the proposed Project would not conflict with the County's General Plan and zoning designations for the site.

4.11.2 Impact Analysis

a) Would the project physically divide an established community?

No Impact. The Project is located in an agricultural area in rural Fresno County. The community of Biola is located centrally within three of the four proposed basin sites – Carter Bybee Basin, Hornor Basin and Kenneson-Sanchez Basin. West Park is located northeast of the Badhesha Basin. Surrounding land uses are agricultural uses and is designated and zoned as such. The Proposed Project would not physically divide any established communities. There would be no impact.

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

No Impact. The Project sites are zoned Exclusive Agricultural. The Project involves the construction and operation of four recharge basins, approximately 151 acres in total, which is consistent with the land uses

[16] (Fresno County 2022)
[17] (Fresno County 2000)

within the vicinity. The Project would not conflict with any land use plan, policy or regulation adopted. There would be no impact.

4.11.3 Federal Cross-Cutting Topic

Coastal Zone Management Act

The Coastal Zone Management Act was enacted in 1972. This act, administered by the National Oceanic and Atmospheric Administration, provides management of the nation' s coastal resources. The California coastal zone generally extends 1,000 yards inland from the mean high tide line. The Project site is more than 100 miles from the coastline. Therefore, the proposed Project would not conflict with the Coastal Zone Management Act.

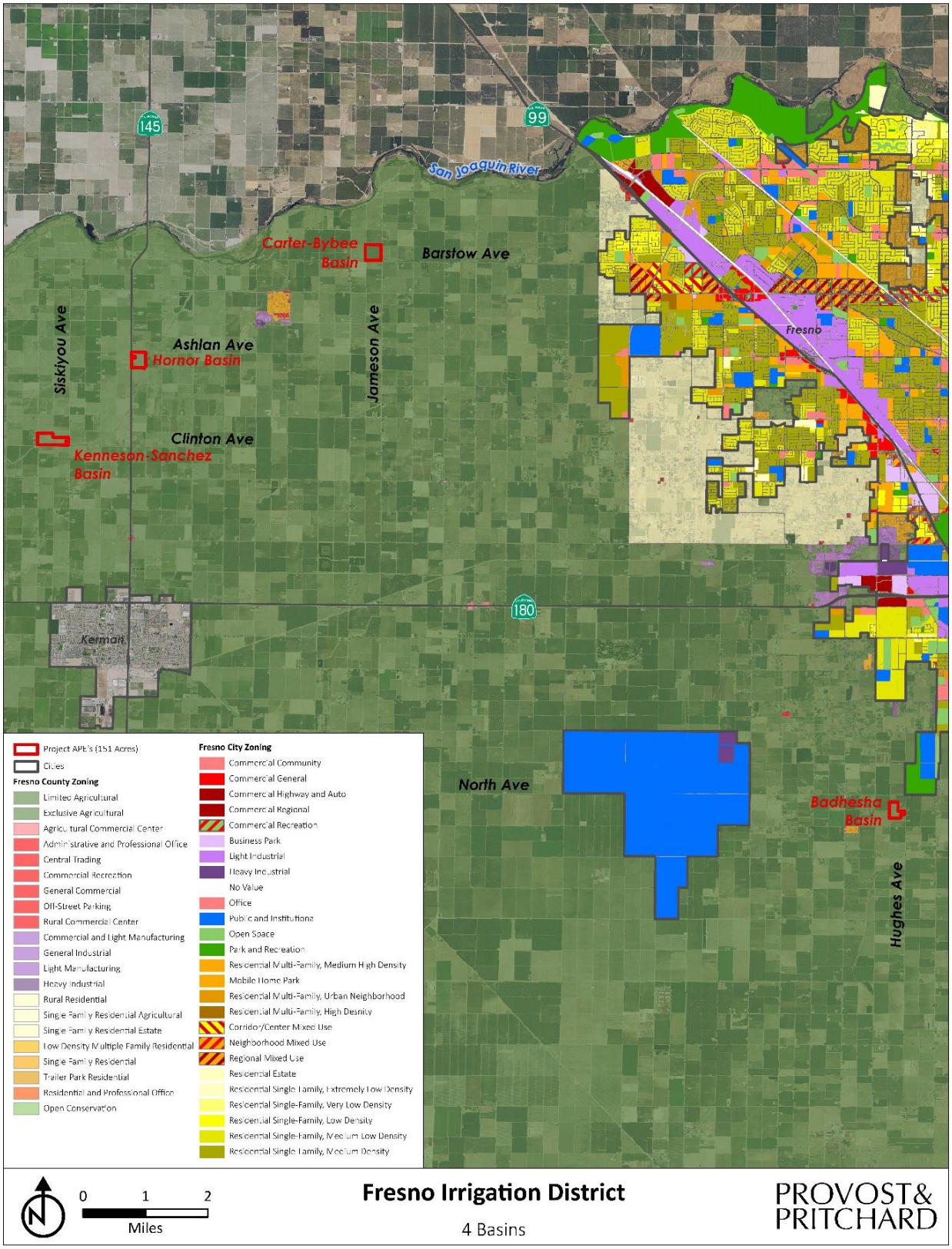

Figure 4-13: Zoning Map

4.12 MINERAL RESOURCES

Table 4-23: Mineral Resources Impacts

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

4.12.1 Baseline Conditions

According to the California Department of Conservation's Mineral Land Classification map, the Project sites are not located in an area identified for aggregate material production.[18] The Fresno County General Plan Background Report identifies sand and gravel resources approximately a mile and a half north of the Carter-Bybee, Hornor and Kenneson-Sanchez basin sites, along the Madera and Fresno County border. In addition, the Report shows that there is an Oil Field located approximately 15 miles to the southwest, near San Joaquin from the Carter-Bybee, Hornor and Kenneson-Sanchez basin sites. The Project sites are not zoned for mineral extraction or preservation, and the proposed Project is would not result in the loss of any identified mineral resources on-site or within the vicinity.

4.12.2 Impact Analysis

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

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

a) and b) No Impact. The California Geological Survey Division of Mines and Geology has not classified any of the Project sites as a Mineral Resource Zone under the Surface Mining and Reclamation Act (SMARA). California's Division of Oil, Gas and Geothermal Resources has no records of closed or active oil or gas wells on the Proposed Project site. No known mineral resources are within the Project area. Therefore, construction of the Project would not result in the loss of availability of a known mineral resource since no known mineral resources occur in this area. There would be no impacts.

[18] (California Department of Conservation 2015)

4.13 NOISE

Table 4-24: Noise Impacts

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

4.13.1 Baseline Conditions

The Project sites are located in Fresno County, dominated primarily by agricultural production. SR 99 is the nearest highway, which is less than one mile east of the Carter-Bybee, Hornor and Kenneson-Sanchez sites and SR 41 is over 2-miles to the west. The Fresno Yosemite International Airport is located approximately 12-miles east and the Fresno Chandler Executive Airport is located approximately 7-miles east.

Fresno County Noise Control Ordinance[19]: Chapter 8.40 of the Fresno County Municipal Code contains the Noise Control Ordinance, which places limits on noise levels and hours of construction. Section 8.40.060 states that noise sources associated with construction activities are exempt from the provisions of the Noise Control Ordinance, as long as construction does not take place before 6:00 a.m. or after 9:00 p.m. on any day except Saturday or Sunday, or before 7:00 a.m. or after 5:00 p.m. on Saturday or Sunday.

4.13.2 Impact Analysis

a) Would the project result in generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?

Less than Significant Impact. The construction phase of the Project would involve temporary noise sources, predominately from off-road equipment, such as excavators, backhoe/loader, drilling rigs, concrete truck, and concrete pumper for approximately six months at each basin site. The Project is located adjacent to agricultural lands, accustomed to noises associated with farm equipment. The Project would comply with the Fresno County Noise Control Ordinance. Operational maintenance activities

[19] (Fresno County California Code of Ordinances 1978).

would be on an as-needed basis with routine monitoring performed by existing staff and would not generate significant new noise. Any impacts would be mild and temporary and therefore, less than significant.

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

Less than Significant Impact. The construction phase of the Project would primarily consist of excavation and grading as part of development of the new basins. The Project sites are located in an area dominated by agricultural production. Agricultural production commonly includes the use of off-road equipment and ground-disturbing activities regularly. During construction, Project-related construction activities would not vary substantially from the baseline conditions routinely experience on neighboring properties. Impacts would be less than significant.

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

No Impact. The Project is not located within an airport land use plan of an airport. The Fresno Yosemite International Airport is located approximately 12-miles east and the Fresno Chandler Executive Airport is approximately more than 7-miles east of the Project. The Project does not involve the development of habitable structures or require the presence of permanent staff onsite. There would be no impact.

4.14 POPULATION AND HOUSING

Table 4-25: Population and Housing Impacts

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

4.14.1 Baseline Conditions

Fresno County's estimated population according to 2021 Census data was 1,013,581 with a percent population change from 2020 to 2021 of 0.5 percent. As of 2016-2020, there was an average of 310,097 households with an average of 3.14 persons per household. [20]

As stated above in Section 4.11, the proposed Project would result in the loss of one rural residence existing on the Bybee site. The owners of the residence have sold the site to the Project proponent and thus would not be impacted by the proposed Project unwillingly. The site is planned and zoned for Agriculture by Fresno County, and the loss of one residence would not be substantial.

4.14.2 Impact Analysis

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

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

a) and b) Less than Significant Impact. The goal of the Project is not to induce population growth. The Project would construct four new recharge basins in an effort to capture and use stormwater and flood flows. The Project would not encourage population growth directly or indirectly. No residential structures would be built and one house will be removed, however the project would not displace any number of people. The impacts would be less than significant.

[20] (United States Census Bureau - Fresno County 2021)

4.14.3 Federal Cross-Cutting Topic

Environmental Justice Executive Order 12898

Executive Order (EO) 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations, was issued in 1994. The EO directs federal agencies to identify and address the disproportionately high and adverse human health or environmental effects of their actions on minority and low-income populations, to the greatest extent practicable and permitted by law.

USEPA has developed a mapping and screening tool called EJSCREEN that uses nationally consistent data to identify minority or low-income communities. According to EJSCREEN, the proposed project site is not in an environmental justice community (US EPA 2015). In addition, the purpose of the project would be to supply clean, reliable water to residents of the District. Because the proposed project would directly benefit the local community only, no disproportional health of environmental effect would be imposed on minority or low-income populations. The proposed project would not conflict with the purpose and objectives of EO 12898.

4.15 PUBLIC SERVICES

Table 4-26: Public Services

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

4.15.1 Baseline Conditions

Fire Protection: The Project area is be served by the Fresno County Fire Protect District Station 89. The Fresno County Fire Protection Districts' combined staffing is approximately 220 full-time and 445 volunteer personnel. North Central Fire Protection District Station 45 – 9 miles northeast of the Project

Police Protection: According to the County of Fresno's General Plan, the Fresno County Sherriff's Department serves the Proposed Project area. The Fresno County Sheriff Station is located approximately 10 miles southeast of the Project sites. The unincorporated portions of the County are served by 329 sworn officers for a ratio of 1.09 officers per 1,000 residents. The number of patrol officers is anticipated to increase with 28 additional officers to accommodate projected population growth[21].

Schools: Public school services are provided throughout the County by 35 school districts. Of the 35 school districts, 16 are unified districts and 19 districts consist of 16 elementary school districts and three high school districts; many of which have one or two schools[22]. The closest high school is Central High School – West Campus, located over one mile southeast of the Carter-Bybee, Hornor and Kenneson-Sanchez basin sites. The Sun Empire Elementary School is located less than one mile northwest of the Kenneson-Sanchez basin site.

Parks: Fresno County has several regional parks, as well as State and national parks, national forest, wilderness areas and ecological reserves. The development and maintenance of regional parks and landscaped areas is held responsible by the Fresno County Parks Division. The nearest park is the Jensen-

[21] (Fresno County 2000), Pages 4.6-2 – 4.6-4 Accessed November 2022.
[22] Ibid, Pages 4.6-20. Accessed November 2022.

West Regional Sports Complex, located approximately 2.5 miles north of the Carter-Bybee, Hornor and Kenneson-Sanchez basin sites.

Landfills: The nearest landfill to the Proposed Project site is the American Avenue Landfill, located approximately 18-miles west of the Proposed Project area.

4.15.2 Impact Analysis

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

i. Fire Protection:

No Impact. The North Central Fire Protection District Station 45 – 9 miles northeast of the Project would continue to provide fire protection services to the lands surrounding the Proposed Project area during construction. No residential or office construction is identified with this Project. There would be no impact.

ii. Police Protection:

No Impact. Fresno County would continue provide sheriff protection services to the Proposed Project site upon development. Emergency response is adequate to the Proposed Project site. The Fresno County Sheriff's Department is located approximately 5 miles to the north and the nearest Fresno Police Station is located approximately 10 miles southeast of the Project. No residential or office construction is proposed for this Project and no additional police protection would be needed because of the Project. There would be no impact.

iii. Schools:

No Impact. Central High School – West Campus is located over one mile southeast of the Carter-Bybee basin site. The Sun Empire Elementary School is located less than one mile northwest of the Kenneson-Sanchez basin site. Implementation would not include construction of any residential structures that would impact any schools. The Proposed Project would not result in an increase of population that would require additional school facilities; therefore, there would be no impact.

iv. Parks:

No Impact. There are no recreational lands or public facilities within the Proposed Project area. As the Proposed Project would not induce population growth, the project would not create a need for additional park or recreational services. There would be no impact.

v. Other public facilities:

No Impact. No additional public facilities would be impacted by this Project. There would be no additional public wastewater facility or substantial electrical needs generated by this Project. There would be no impact.

4.16 RECREATION

Table 4-27: Recreation Impacts

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

4.16.1 Baseline Conditions

Fresno County has several regional parks, as well as State and national parks, national forest, wilderness areas and ecological reserves. The development and maintenance of regional parks and landscaped areas is held responsible by the Fresno County Parks Division. The unincorporated areas of Fresno County, including the Proposed Project sites, have approximately 1,165 acres of parkland to serve approximately 174,200 persons. The Parks and Recreation Element of the Fresno County General Plan does not establish a standard for the number of park acres or facilities per person for these uses. The nearest park is Kearney Park, located over 2-miles southeast of the Carter-Bybee, Hornor and Kenneson-Sanchez basin sites.

The four proposed basin sites are located in Fresno County on land that has historically been utilized for agricultural production. Implementation of the Project at each location would have no impact on recreational opportunities within the County, nor would it result in the degradation of any existing recreational facilities or require the construction of new recreational facilities.

4.16.2 Impact Analysis

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

No Impact. The Project includes the construction and operation of four recharge basins in Fresno County. These recharge basins would not increase the use or demand of any existing neighborhood, regional parks, or other recreational facilities of any kind. No population growth is anticipated or associated with the Project. There would be no impact.

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

No Impact. The Project does not include recreational facilities as part of the Project components, nor does it propose the expansion of any existing recreational facilities. There would be no impact.

4.17 TRANSPORTATION

Table 4-28: Transportation Impacts

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

4.17.1 Baseline Conditions

Fresno County's circulation system consists of a roadway network that is primarily rural in character, with exception of the urbanized area surrounding the cities of Fresno and Clovis and various smaller communities in the southern and western parts of the county. The most important inter-regional roadways within the county are the state highways particularly SR 99, SR 41, and Interstate 5.

The Project sites are located in southern Fresno County at the following locations: Carter-Bybee Basin on the southeast corner of NW corner of N Jameson and W Barstow Avenues, Badhesha Basin near the intersection of North Avenue and Hughes Avenue, Hornor Basin near the intersection of Ashlan Avenue and Madera Avenue, and Kenneson-Sanchez Basin at the intersection of Clinton and Modoc Avenues. The Project vicinity is dominated by agricultural uses, sparse rural residential and farmland uses. There are no public improvements proposed as part of the Project. Traffic generation after project implementation would be minimal and dedicated only to basin maintenance on an as-needed basis at each site.

4.17.2 Impact Analysis

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

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

a) and b) Less than Significant Impact. The Project includes the construction of an approximately 151-acres of groundwater recharge basins for the District. Construction traffic associated with the Project would be minimal and temporary, lasting approximately six months per basin. Operational traffic consists of as-needed maintenance trips at each site. No road improvements are proposed as a part of the Project. There would not be a significant adverse effect to existing roadways in the area.

Construction associated with the Project would be restricted to the Project sites and it would not intersect any roadways, or pedestrian or bicycle paths. These construction-related impacts would be temporary and there would be no impacts to the surrounding transportation network. Road closures and detours are not anticipated as part of construction.

There is no population growth associated with the Project, nor would implementation of the Project result in an increase of staff or drivers utilizing roadways in the area. Therefore, implementation of the Project would not increase the demand for any changes to congestion management programs or interfere with existing level of service standards during the operational phase. Construction-related roadway interferences would be less than significant.

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

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

d) Would the project result in inadequate emergency access?

Less than Significant Impact. As mentioned above in Impact Assessments a, b, and c above, the Project does not propose new roadway design features or permanent alterations to roadways at any of the basin sites. All potential disturbances to roadways during construction would be temporary. Road closures and detours are not anticipated as part of the construction phase of the Project. The operational phase of the Project would have no effect on roadways or emergency access. Therefore, overall potential Project-related impacts to emergency access on local roadways would be considered less than significant.

4.18 TRIBAL CULTURAL RESOURCES

Table 4-29: Tribal Cultural Resources Impacts

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

4.18.1 Baseline Conditions

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

Although population estimates vary and population size was greatly affected by the introduction of Euro-American diseases and social disruption, the Yokuts were one of the largest, most successful groups in Native California. It is estimated that the Yokuts region contained 27 percent of the aboriginal population in the state at the time of contact; other estimates are even higher. Many Yokut descendants continue to live in Fresno County, either on tribal reservations, or in local towns and communities. (Appendix C)

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

Public Resources Code Section 21080.3.1, et seq. (codification of AB 52, 2013-14) requires that a lead agency, within 14 days of determining that it would undertake a project, must notify in writing any California Native American Tribe traditionally and culturally affiliated with the geographic area of the project if that Tribe has previously requested notification about projects in that geographic area. The notice must briefly describe the project and inquire whether the Tribe wishes to initiate request formal consultation. Tribes have 30 days from receipt of notification to request formal consultation. The lead agency then has 30 days to initiate the consultation, which then continues until the parties come to an agreement regarding necessary mitigation or agree that no mitigation is needed, or one or both parties determine that negotiation occurred in good faith, but no agreement would be made. (Appendix C)

Records Search

An archival records search was conducted at the California State University, Bakersfield, Southern San Joaquin Valley Information Center (SSJVIC), by SSJVIC staff members on August 23, 2022, to determine: (i) if prehistoric or historical cultural resources had previously been recorded within the APE; (ii) if the APE had been systematically surveyed by archaeologists prior to the initiation of this field study; and/or (iii) whether the region of the Project was known to contain archaeological sites and to thereby be archaeologically sensitive. (Appendix C)

According to the records search results, no previous archaeological surveys had been completed within the APEs, but three cultural resources were known within them (Table 4-13).

Native American Outreach

In October 2022, ASM contacted the Native American Heritage Commission (NAHC) in Sacramento. ASM provided NAHC a brief description of the project and a map showing its location and requested that the NAHC perform a search of the Sacred Lands File to determine if any Native American resources have been recorded in the immediate study area. The results were negative. Provost & Pritchard also requested NAHC provide a current list of local Native American contacts for the Proposed Project APE. The 12 tribes identified by NAHC were contacted in writing via US mail with a letter dated September 26, 2022, informing them about the Project. Follow up emails were sent November 15, 2022. (Appendix C)

The results of the SLF search were negative for the presence of tribal cultural resources.

Phase 1 Pedestrian Survey

An intensive Class III Inventory/Phase I survey of the Project APE was conducted on September 22nd and 23rd, 2022 by ASM Affiliates staff. The APE was examined with the field crew walking parallel transects space at approximately 15-m intervals, in order to identify surface artifacts, archaeological indicators (e.g., shellfish or animal bone), and/or archaeological deposits (e.g., organically enriched midden soil); tabulation and recording of surface diagnostic artifacts; site sketch mapping; preliminary evaluation of site integrity; and site recording, following the California Office of Historic Preservation Instructions for Recording Historic Resources, using DPR 523 forms. Special attention was paid to rodent burrow back dirt piles, in the hope

of identifying sub-surface soil conditions that might be indicative of archaeological features or remains. (Appendix C)

4.18.2 Impact Assessment

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

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

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

Less than Significant Impact with Mitigation Incorporated. A search of the NAHC Sacred Lands File was completed for the APE. No tribal cultural resources were identified. Additionally, a records search was conducted at the Southern San Joaquin Valley Archaeological Information Center, California State University, Bakersfield. This search also determined that tribal cultural resources were not present on-site.

The District, as a public lead agency, has received formal requests for notification from the Dumna Wo Wah Tribe and the Santa Rosa Rancheria Tachi Yokut Tribe, Public Resources Code Section 21080.3.1 (AB 52). No responses from either tribe have been received. In addition, no comments or concerns were raised about the areas by the contacted tribes during general tribal consultation.

There is little chance the Project would cause a substantial adverse change to the significance of a tribal cultural resource as defined. Mitigation Measures **CUL-1 and CUL-2,** described in Section 4.5.4 are recommended in the event cultural materials or human remains are unearthed during excavation or construction. Implementation of mitigation measures outlined above would reduce impacts to tribal cultural resources to less than significant impacts.

4.18.3 Mitigation

See **CUL-1** and **CUL-2** outlined above in Section 4.5.4

4.19 UTILITIES AND SERVICE SYSTEMS

Table 4-30: Utilities and Service Systems Impacts

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

4.19.1 Baseline Conditions

Water Supply

The Proposed Project is located within the Kings Sub-basin of the San Joaquin Valley Groundwater Basin, as defined by the California Department of Water Resources Groundwater Bulletin 118. Declines in groundwater basin storage and groundwater overdraft are recurring problems in Fresno County. Measures for ensuring the continued availability of groundwater for municipal needs have been identified and planned in several areas of the county. The measures include groundwater conservation and recharge, and supplementing or replacing groundwater sources for irrigation with surface water.

Wastewater Collection and Treatment

The City of Fresno, Fresno Wastewater Treatment and Collection System Facility is the closest wastewater facility. However, no wastewater would be generated during Project construction or operation.

Landfills

The closest landfill to the Proposed Project site is owned and operated by American Avenue Landfill over 17-miles west of the Project area; however, no significant solid waste would be generated during Project construction or operation.

4.19.2 Impact Analysis

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

No Impact. The Project would not require construction of new or relocation or expansion of existing facilities for water, wastewater treatment, storm water drainage, electric power, natural gas, or telecommunications. There would be no impact.

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

No Impact. The Project consists of construction of four groundwater recharge basins, approximately 151 acres total. The recharged water would be used in the District efforts to achieve groundwater sustainability. Project operation is passive and would not reduce the area's available water supply under any scenario. There would be no impact.

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

No Impact. The Project would not require or result in the construction of new storm water drainage facilities or expansion of existing facilities. There would be no impact.

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

Less than Significant Impact. The Project would generate some solid waste during construction; however, it would be temporary and properly disposed of during construction and upon completion. Any impacts with regard to solid waste would be less than significant.

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

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

4.20 WILDFIRE

Table 4-31: Wildfire Impacts

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

4.20.1 Baseline Conditions

The Project sites are located approximately 20-miles northeast of the nearest State Responsibility Area and approximately 20 miles southwest of the nearest Very High Fire Hazard Severity Area according to CalFIRE.[23] [24] The Project sites are not located in an area that is known for wildfires and would not face any potentially impacts due to wildfire.

4.20.2 Impact Analysis

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

b) If located in or near state responsibility areas or lands classified as very high fire hazard severity zones, would the project due to slope, prevailing winds, and other factors, exacerbate wildfire risks and thereby expose project occupants to pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire?

c) If located in or near state responsibility areas or lands classified as very high fire hazard severity zones, would the project require the installation or maintenance of associated infrastructure (such as roads,

[23] (CalFIRE 2022)
[24] (CalFIRE 2022)

fuel breaks, emergency water sources, power lines or other utilities) that may exacerbate fire risk or that may result in temporary or ongoing impacts to the environment?

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

a-d) No Impact. The Project sites are not located in or near a State Responsibility Areas nor located on lands classified as very high fire hazard severity zones. The nearest SRA Fire Hazard Zone is located 20 miles northeast of the Project sites. Construction or implementation of the basins would not impede any existing or future emergency response plans. The Project sites and the surrounding lands consist of agricultural and related infrastructure on relatively flat and open land. Additionally, the Project does not include the construction of any residential components or structures of any kind, nor would it require any employees to be stationed permanently at the site on a daily basis. There would be no impacts.

4.21 CEQA MANDATORY FINDINGS OF SIGNIFICANCE

Table 4-32: CEQA Mandatory Findings of Significance

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

4.21.1 Statement of Findings

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

Less than Significant Impact with Mitigation Incorporated. The potential for impacts to biological resources, cultural resources, and tribal cultural resources from the construction and operation of the Project would be less than significant with the incorporation of the mitigation measures discussed above and outlined in Chapter 5 Mitigation, Monitoring, and Reporting Program. Accordingly, the Project would not involve any potential for significant impacts through the degradation of the quality of the environment, the reduction in the habitat or population of fish or wildlife, including endangered plants or animals, the elimination of a plant or animal community or eliminate important examples of the major periods of California history or prehistory. The analysis conducted in this IS/MND results in a determination that the Project, with incorporation of mitigation measures discussed above and outlined in Chapter 5 Mitigation, Monitoring, and Reporting Program, would have a less than significant effect on the environment.

b) Does the project have impacts that are individually limited, but cumulatively considerable? ("Cumulatively considerable" means that the incremental effects of a project are considerable when

viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects)?

Less than Significant Impact. CEQA Guidelines Section 15064(i) States that a Lead Agency shall consider whether the cumulative impact of a project is significant and whether the effects of the project are cumulatively considerable. The assessment of the significance of the cumulative effects of a project must, therefore, be conducted in connection with the effects of past projects, other current projects, and probable future projects. The Project would include the construction of four groundwater recharge basins and connecting these basins to existing District canals.

No additional roads would be constructed as a result of the Project, nor would any additional public services be required. The Project is not expected to result in direct or indirect population growth. Therefore, implementation of the Project would not result in significant cumulative impacts and all potential impacts would be reduced to less than significant through the implementation of mitigation measures and basic regulatory requirements incorporated into future Project design.

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

Less than Significant Impact. The Project would include the construction of four groundwater recharge basins in Fresno County. The Project in and of itself would not create a significant hazard to the public or the environment. Construction-related air quality/dust exposure impacts could occur temporarily as a result of project construction. However, implementation of basic regulatory requirements identified in this IS/MND would ensure that impacts are less than significant. Therefore, the Project would not have any direct or indirect adverse impacts on humans. The impacts would be less than significant.

CHAPTER 5 MITIGATION, MONITORING, AND REPORTING PROGRAM

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

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

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

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

Mitigation, Monitoring, and Reporting Program						
Item	Mitigation Measure	When Monitoring is to Occur	Frequency of Monitoring	Agency Responsible for Monitoring	Method to Verify Compliance	Verification of Compliance
Biological Resources						
General Mitigation Measures						
BIO-1A	**(WEAP Training):** Prior to initiating construction activities (including staging and mobilization), all personnel associated with Project construction will attend mandatory Worker Environmental Awareness Program (WEAP) training, conducted by a qualified biologist, to aid workers in identifying special status resources that may occur in the APE. The specifics of this program will include identification of the sensitive species and suitable habitats, a description of the regulatory status and general ecological characteristics of sensitive resources, and review of the limits of construction and mitigation measures required to reduce impacts to biological resources within the work area. This training will discuss special status species, describe the laws and regulations in place to provide protection of these species, identify the penalties for violation of applicable environmental laws and regulations, and a list of required protective measures to avoid "take." A fact sheet conveying this information, along with photographs or illustrations of sensitive species with potential to occur onsite, will also be prepared for distribution to all contractors, their employees, and all other personnel involved with construction of the Project. All employees will sign a form documenting that they have attended WEAP training and understand the information presented to them.	Prior to initiating construction activities	Once	FID		
BIO-1B	**(BMPs):** The Project proponent will ensure that all workers employ the following best management practices (BMPs) in order to avoid and minimize potential impacts to special status species: • Vehicles will observe a 15-mph speed limit while on unpaved access routes.	Daily during ground disturbing activities.	During construction	FID		

Mitigation, Monitoring, and Reporting Program						
Item	Mitigation Measure	When Monitoring is to Occur	Frequency of Monitoring	Agency Responsible for Monitoring	Method to Verify Compliance	Verification of Compliance
	• Workers will inspect areas beneath parked vehicles prior to mobilization. If special status species are detected beneath vehicles, the individual will either be allowed to leave of its own volition or will be captured by the qualified biologist (must possess appropriate collecting/handling permits) and relocated out of harm's way to the nearest suitable habitat beyond the influence of the Project work area. "Take" of a listed (rare, threatened, or endangered) species is prohibited. The presence of any special status species and/or any wildlife mortalities will be reported to the Project's designated biologist and the appropriate regulatory agencies.					
Project-Related Impacts to Wildlife Movement Corridors and Native Wildlife Nursery Sites.						
BIO-2A	**(*Operational Hours*):** Construction activities will be limited to daylight hours to reduce potential impacts to wildlife movement corridors.	During construction activities	During construction activities	FID		
BIO-2B	**(Wildlife Access):** At no point will access be blocked outside of construction hours or during overnight hours or weekends. If construction must block both sides of a wildlife access route, an alternative route through the construction area will be identified by a qualified biologist and maintained throughout the construction schedule timeframe.	During construction activities	During construction activities	FID		
BIO-2C	**(*Cover Excavations*)**: Pipeline/culvert/siphon excavations and vertical pipes will be covered each night to prevent wildlife from falling in and becoming trapped or injured during migratory or dispersal movements.	Prior to the start of ground disturbing and construction activities	During construction and ground disturbing activities	FID		
Project-Related Mortality and/or Disturbance of Nesting Raptors, Migratory Birds, and Special Status Birds						
BIO-3A	**(*Avoidance*):** The Project's construction activities will occur, if feasible, between September 16 and January 31 (outside of nesting bird season) in an effort to avoid impacts to nesting birds. If all Project activities occur	Prior to initiating construction activities	Prior to initiating construction activities	FID		

Mitigation, Monitoring, and Reporting Program						
Item	Mitigation Measure	When Monitoring is to Occur	Frequency of Monitoring	Agency Responsible for Monitoring	Method to Verify Compliance	Verification of Compliance
	outside of nesting bird season, no further mitigation is required.					
BIO-3B	**(*Pre-construction Surveys*):** If activities must occur within nesting bird season (February 1 to September 15), a qualified biologist will conduct pre-construction surveys for Swainson's Hawk nests onsite and within a 0.5-mile radius. These surveys will be conducted in accordance with the *Recommended Timing and Methodology for Swainson's Hawk Nesting Surveys in California's Central Valley* (Swainson's Hawk Technical Advisory Committee 2000) or current guidance. The Swainson's Hawk survey will not be completed between April 21 to June 10 due to the difficulty of identifying nests during this time of year. The pre-construction survey would also provide a presence/absence survey for California Horned Lark and all other nesting birds within the APEs and an additional 50 feet, no more than seven (7) days prior to the start of construction. All raptor nests would be considered "active" upon the nest-building stage.	If activities must occur within nesting bird season (February 1 to September 15), prior to the start of ground disturbing and construction activities	Prior to initiating construction activities	FID		
BIO-3C	**(*Establish Buffers*):** On discovery of any active nests or breeding colonies near work areas, the biologist will determine appropriate construction setback distances based on applicable CDFW and/or USFWS guidelines and/or the biology of the species in question. Active Swainson's Hawk nests will receive a 0.5-mile buffer and active California Horned Lark nests will receive a 150-foot buffer. Reduced buffer distances may be appropriate for Swainson's Hawk and California Horned Lark depending on site conditions and ongoing disturbance levels and may be discussed with CDFW. Construction buffers will be identified with flagging, fencing, or other easily visible means, and will be maintained until the biologist has determined that the nestlings have fledged.	Prior to initiating construction activities	Prior to initiating construction activities	FID		
BIO-3D	**(*ITP*):** In the event an active Swainson's Hawk nest, California Horned Lark nest, or other nest is detected	Swainson's Hawk nest, California	During any construction and	FID		

Mitigation, Monitoring, and Reporting Program						
Item	Mitigation Measure	When Monitoring is to Occur	Frequency of Monitoring	Agency Responsible for Monitoring	Method to Verify Compliance	Verification of Compliance
	during surveys and cannot be avoided, consultation with CDFW will be warranted to discuss how to implement the Project and avoid take. If take cannot be avoided, take authorization through the acquisition of an ITP pursuant to Fish and Game Code section 2081, subdivision (b) is necessary to comply with CESA.	Horned Lark nest, or other nest are detected during surveys and cannot be avoided	ground disturbing activities			
Project-Related Mortality and/or Disturbance to Northwestern Pond Turtle						
BIO-4A	**(*Pre-construction Survey*):** If Project activities are directly related to the canals a qualified biologist will conduct a pre-construction survey for NPT within and adjacent to the Canals. Pre-construction surveys will be conducted in accordance with the *United States Geological Survey Western Pond Turtle (Emys marmorata) Visual Survey Protocol for the Southcoast Ecoregion* (United States Geological Survey 2006). If no NPT are observed during the pre-construction survey, then construction activities may begin. If construction is delayed or halted for more than 90 days, another pre-construction survey for NPT will be conducted. If a listed species is observed within the Project area, the biologist will stop work and allow the species to leave the site of its own volition or a qualified biologist with the correct handling permit will remove the species from the APE.	Prior to any construction activities	Prior to any construction activities	FID		
Project-Related Mortality and/or Disturbance to Western Spadefoot						
BIO-5A	**(*Pre-construction Survey*):** If Project activities are directly related to the canals a qualified biologist will conduct a pre-construction survey for spadefoots within and adjacent to the canals. If no spadefoots are observed during the pre-construction survey, then construction activities may begin. If construction is delayed or halted for more than 90 days, another pre-construction survey for spadefoots will be conducted. If a listed species is observed within the Project area, the biologist will stop work and allow the species to leave the site of its own volition or a qualified biologist	Prior to any construction activities	Prior to any construction activities	FID		

Mitigation, Monitoring, and Reporting Program						
Item	Mitigation Measure	When Monitoring is to Occur	Frequency of Monitoring	Agency Responsible for Monitoring	Method to Verify Compliance	Verification of Compliance
	with the correct handling permit will remove the species from the APE.					
Additional Mitigation for Carter-Bybee Basin						
Project-Related Disturbance to Tree						
BIO-6A	**(*Tree Avoidance*):** The palm tree within the APE is considered a significant biological resource and will be left in perpetuity. If this is not feasible, consultation with the appropriate regulatory agency (CDFW and/or USFWS) will be required for guidance on how to proceed.	Prior to construction around the palm tree	Prior to construction around the palm tree	FID		
BIO-6B	**(*Establish Buffers*):** The palm tree will have a buffer established around it prior to any construction activities. Buffers will be placed outside of the tree canopy/drip line to protect the tree root system. Ideally, a 150-foot buffer shall be established to avoid disturbance to the potential owls that may use the palm tree for roosting and/or nesting. Construction buffers will be identified with flagging, fencing, or other easily visible means, and will be maintained until construction activities are completed.	Prior to any construction activities	Prior to any construction activities	FID		
BIO-6C	**(*Monitor*):** In order to prevent inadvertent disturbance to sensitive resource and protect the known roosting owls within Carter-Bybee Basin site, a qualified biologist will perform biological monitoring during all construction activities that occur within 150 feet of the existing palm tree. The biologist will perform the monitoring duties before, during, and after construction pursuant to the most current guidelines and protocols. If owls are observed within the Project area and show signs of stress, disturbance, and/or harassment, the biologist will stop work activities in the area for the day to allow the species to resume its normal activities. The biological monitor will continue this practice until the construction activities are complete. The biologist will provide an account of observed behavior using wildlife monitoring methods and provide a daily summary log and photos of	During all construction activities that occur within 150 feet of the existing palm tree	Daily, during all construction activities that occur within 150 feet of the existing palm tree	FID		

Mitigation, Monitoring, and Reporting Program						
Item	Mitigation Measure	When Monitoring is to Occur	Frequency of Monitoring	Agency Responsible for Monitoring	Method to Verify Compliance	Verification of Compliance
	observed behavior. A final memo including the daily logs will be submitted to FID for their administrative record.					
BIO-6D	**(*ITP*):** In the event the palm tree cannot be avoided and/or injury or mortality occurs, consultation with CDFW will be required. If take cannot be avoided, take authorization through the acquisition of an ITP pursuant to Fish and Game Code section 2081, subdivision (b) is necessary to comply with CESA. The ITP permit will be obtained prior to any construction.	During construction	In the event the palm tree cannot be avoided and/or injury or mortality occurs	FID		
Cultural Resources						
CUL-1	(**Archaeological Remains**) In the event that archaeological remains are encountered at any time during development or ground-moving activities within the entire project area, all work in the vicinity of the find shall halt until a qualified archaeologist can assess the discovery. The District shall implement all recommendations of the archaeologist necessary to avoid or reduce to a less than significant level potential impacts to cultural resource. Appropriate actions could include a Data Recovery Plan or preservation in place.	During construction	Daily during construction activities	FID		
CUL-2	(**Human Remains**) In the event human remains are uncovered, or in any other case when human remains are discovered during construction, the Fresno County Coroner is to be notified to arrange their proper treatment and disposition. If the remains are identified—on the basis of archaeological context, age, cultural associations, or biological traits—as those of a Native American, California Health and Safety Code 7050.5 and Public Resource Code 5097.98 require that the coroner notify the NAHC within 24 hours of discovery. The NAHC will then identify the Most Likely Descendent who will determine the manner in which the remains are treated.	During construction	Daily during construction activities	FID		
Tribal Cultural Resources						
TCR-1	See **CUL-1** and **CUL-2** above					

CHAPTER 6 REFERENCES

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Appendix A: CalEEMod Output Files

4-Basins Project - Fresno County, Annual

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

4-Basins Project

Fresno County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Other Non-Asphalt Surfaces	152.00	Acre	152.00	6,621,120.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	45
Climate Zone	3			**Operational Year**	2024
Utility Company	Pacific Gas and Electric Company				
CO2 Intensity (lb/MWhr)	203.98	**CH4 Intensity (lb/MWhr)**	0.033	**N2O Intensity (lb/MWhr)**	0.004

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use -

Construction Phase - Demolition removed, and phases timelines changed

Grading - Acres of Grading

Construction Off-road Equipment Mitigation -

Table Name	Column Name	Default Value	New Value
tblConstructionPhase	NumDays	3,100.00	20.00
tblConstructionPhase	NumDays	310.00	130.00
tblConstructionPhase	NumDays	120.00	30.00
tblConstructionPhase	PhaseEndDate	8/14/2037	1/5/2024
tblConstructionPhase	PhaseEndDate	9/26/2025	12/8/2023

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

tblConstructionPhase	PhaseEndDate	7/19/2024	6/9/2023
tblConstructionPhase	PhaseStartDate	9/27/2025	12/9/2023
tblConstructionPhase	PhaseStartDate	7/20/2024	6/10/2023
tblConstructionPhase	PhaseStartDate	2/3/2024	5/1/2023
tblGrading	AcresOfGrading	390.00	930.00
tblGrading	AcresOfGrading	45.00	180.00

2.0 Emissions Summary

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

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2023	0.3458	3.1668	2.8548	7.9800e-003	1.4843	0.1200	1.6043	0.4909	0.1106	0.6015	0.0000	719.5513	719.5513	0.1402	0.0277	731.2936
2024	0.0264	0.1651	0.2264	1.0600e-003	0.0736	2.5600e-003	0.0761	0.0200	2.4100e-003	0.0224	0.0000	99.3467	99.3467	2.8300e-003	8.8900e-003	102.0671
Maximum	**0.3458**	**3.1668**	**2.8548**	**7.9800e-003**	**1.4843**	**0.1200**	**1.6043**	**0.4909**	**0.1106**	**0.6015**	**0.0000**	**719.5513**	**719.5513**	**0.1402**	**0.0277**	**731.2936**

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	0.3458	3.1668	2.8548	7.9800e-003	0.7212	0.1200	0.8411	0.2300	0.1106	0.3406	0.0000	719.5508	719.5508	0.1402	0.0277	731.2931
2024	0.0264	0.1651	0.2264	1.0600e-003	0.0736	2.5600e-003	0.0761	0.0200	2.4100e-003	0.0224	0.0000	99.3467	99.3467	2.8300e-003	8.8900e-003	102.0671
Maximum	**0.3458**	**3.1668**	**2.8548**	**7.9800e-003**	**0.7212**	**0.1200**	**0.8411**	**0.2300**	**0.1106**	**0.3406**	**0.0000**	**719.5508**	**719.5508**	**0.1402**	**0.0277**	**731.2931**

4-Basins Project - Fresno 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	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**48.99**	**0.00**	**45.41**	**51.06**	**0.00**	**41.82**	**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	**5-1-2023**	**7-31-2023**	1.1373	1.1373
2	**8-1-2023**	**10-31-2023**	1.2468	1.2468
3	**11-1-2023**	**1-31-2024**	1.3189	1.3189
		Highest	1.3189	1.3189

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	0.5662	1.0000e-005	1.3900e-003	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.7200e-003	2.7200e-003	1.0000e-005	0.0000	2.8900e-003
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	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	**0.5662**	**1.0000e-005**	**1.3900e-003**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**2.7200e-003**	**2.7200e-003**	**1.0000e-005**	**0.0000**	**2.8900e-003**

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	0.5662	1.0000e-005	1.3900e-003	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.7200e-003	2.7200e-003	1.0000e-005	0.0000	2.8900e-003
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	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	**0.5662**	**1.0000e-005**	**1.3900e-003**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**2.7200e-003**	**2.7200e-003**	**1.0000e-005**	**0.0000**	**2.8900e-003**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Site Preparation	Site Preparation	5/1/2023	6/9/2023	5	30	
2	Grading	Grading	6/10/2023	12/8/2023	5	130	
3	Building Construction	Building Construction	12/9/2023	1/5/2024	5	20	

4-Basins Project - Fresno County, Annual

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

Acres of Grading (Site Preparation Phase): 180

Acres of Grading (Grading Phase): 930

Acres of Paving: 152

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
Building Construction	Cranes	1	7.00	231	0.29
Grading	Excavators	2	8.00	158	0.38
Building Construction	Forklifts	3	8.00	89	0.20
Building Construction	Generator Sets	1	8.00	84	0.74
Grading	Graders	1	8.00	187	0.41
Grading	Rubber Tired Dozers	1	8.00	247	0.40
Site Preparation	Rubber Tired Dozers	3	8.00	247	0.40
Grading	Scrapers	2	8.00	367	0.48
Building Construction	Tractors/Loaders/Backhoes	3	7.00	97	0.37
Grading	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Site Preparation	Tractors/Loaders/Backhoes	4	8.00	97	0.37
Building Construction	Welders	1	8.00	46	0.45

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Site Preparation	7	18.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Grading	8	20.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	9	2,781.00	1,085.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

4-Basins Project - Fresno County, Annual

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

Water Exposed Area

3.2 Site Preparation - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.3664	0.0000	0.3664	0.1593	0.0000	0.1593	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0399	0.4129	0.2737	5.7000e-004		0.0190	0.0190		0.0175	0.0175	0.0000	50.1760	50.1760	0.0162	0.0000	50.5817
Total	**0.0399**	**0.4129**	**0.2737**	**5.7000e-004**	**0.3664**	**0.0190**	**0.3854**	**0.1593**	**0.0175**	**0.1767**	**0.0000**	**50.1760**	**50.1760**	**0.0162**	**0.0000**	**50.5817**

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

3.2 Site Preparation - 2023

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	8.4000e-004	5.4000e-004	6.3700e-003	2.0000e-005	2.1600e-003	1.0000e-005	2.1700e-003	5.7000e-004	1.0000e-005	5.8000e-004	0.0000	1.6975	1.6975	5.0000e-005	5.0000e-005	1.7135
Total	**8.4000e-004**	**5.4000e-004**	**6.3700e-003**	**2.0000e-005**	**2.1600e-003**	**1.0000e-005**	**2.1700e-003**	**5.7000e-004**	**1.0000e-005**	**5.8000e-004**	**0.0000**	**1.6975**	**1.6975**	**5.0000e-005**	**5.0000e-005**	**1.7135**

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					0.1429	0.0000	0.1429	0.0621	0.0000	0.0621	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0399	0.4129	0.2737	5.7000e-004		0.0190	0.0190		0.0175	0.0175	0.0000	50.1760	50.1760	0.0162	0.0000	50.5817
Total	**0.0399**	**0.4129**	**0.2737**	**5.7000e-004**	**0.1429**	**0.0190**	**0.1619**	**0.0621**	**0.0175**	**0.0796**	**0.0000**	**50.1760**	**50.1760**	**0.0162**	**0.0000**	**50.5817**

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

3.2 Site Preparation - 2023

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	8.4000e-004	5.4000e-004	6.3700e-003	2.0000e-005	2.1600e-003	1.0000e-005	2.1700e-003	5.7000e-004	1.0000e-005	5.8000e-004	0.0000	1.6975	1.6975	5.0000e-005	5.0000e-005	1.7135
Total	**8.4000e-004**	**5.4000e-004**	**6.3700e-003**	**2.0000e-005**	**2.1600e-003**	**1.0000e-005**	**2.1700e-003**	**5.7000e-004**	**1.0000e-005**	**5.8000e-004**	**0.0000**	**1.6975**	**1.6975**	**5.0000e-005**	**5.0000e-005**	**1.7135**

3.3 Grading - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.8846	0.0000	0.8846	0.2684	0.0000	0.2684	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.2159	2.2435	1.8233	4.0400e-003		0.0926	0.0926		0.0852	0.0852	0.0000	354.4789	354.4789	0.1147	0.0000	357.3450
Total	**0.2159**	**2.2435**	**1.8233**	**4.0400e-003**	**0.8846**	**0.0926**	**0.9772**	**0.2684**	**0.0852**	**0.3536**	**0.0000**	**354.4789**	**354.4789**	**0.1147**	**0.0000**	**357.3450**

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

3.3 Grading - 2023

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	4.0200e-003	2.6100e-003	0.0307	9.0000e-005	0.0104	5.0000e-005	0.0104	2.7600e-003	5.0000e-005	2.8100e-003	0.0000	8.1733	8.1733	2.5000e-004	2.4000e-004	8.2502
Total	**4.0200e-003**	**2.6100e-003**	**0.0307**	**9.0000e-005**	**0.0104**	**5.0000e-005**	**0.0104**	**2.7600e-003**	**5.0000e-005**	**2.8100e-003**	**0.0000**	**8.1733**	**8.1733**	**2.5000e-004**	**2.4000e-004**	**8.2502**

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					0.3450	0.0000	0.3450	0.1047	0.0000	0.1047	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.2159	2.2435	1.8233	4.0400e-003		0.0926	0.0926		0.0852	0.0852	0.0000	354.4784	354.4784	0.1147	0.0000	357.3446
Total	**0.2159**	**2.2435**	**1.8233**	**4.0400e-003**	**0.3450**	**0.0926**	**0.4376**	**0.1047**	**0.0852**	**0.1899**	**0.0000**	**354.4784**	**354.4784**	**0.1147**	**0.0000**	**357.3446**

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

3.3 Grading - 2023

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	4.0200e-003	2.6100e-003	0.0307	9.0000e-005	0.0104	5.0000e-005	0.0104	2.7600e-003	5.0000e-005	2.8100e-003	0.0000	8.1733	8.1733	2.5000e-004	2.4000e-004	8.2502
Total	**4.0200e-003**	**2.6100e-003**	**0.0307**	**9.0000e-005**	**0.0104**	**5.0000e-005**	**0.0104**	**2.7600e-003**	**5.0000e-005**	**2.8100e-003**	**0.0000**	**8.1733**	**8.1733**	**2.5000e-004**	**2.4000e-004**	**8.2502**

3.4 Building Construction - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0118	0.1079	0.1218	2.0000e-004		5.2500e-003	5.2500e-003		4.9400e-003	4.9400e-003	0.0000	17.3854	17.3854	4.1400e-003	0.0000	17.4888
Total	**0.0118**	**0.1079**	**0.1218**	**2.0000e-004**		**5.2500e-003**	**5.2500e-003**		**4.9400e-003**	**4.9400e-003**	**0.0000**	**17.3854**	**17.3854**	**4.1400e-003**	**0.0000**	**17.4888**

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

3.4 Building Construction - 2023

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	8.7500e-003	0.3576	0.1072	1.6300e-003	0.0540	2.2900e-003	0.0562	0.0156	2.1900e-003	0.0178	0.0000	156.5053	156.5053	8.5000e-004	0.0236	163.5465
Worker	0.0646	0.0418	0.4918	1.4300e-003	0.1668	8.1000e-004	0.1676	0.0443	7.4000e-004	0.0451	0.0000	131.1350	131.1350	3.9900e-003	3.8000e-003	132.3680
Total	**0.0733**	**0.3994**	**0.5990**	**3.0600e-003**	**0.2207**	**3.1000e-003**	**0.2238**	**0.0599**	**2.9300e-003**	**0.0628**	**0.0000**	**287.6402**	**287.6402**	**4.8400e-003**	**0.0274**	**295.9144**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0118	0.1079	0.1218	2.0000e-004		5.2500e-003	5.2500e-003		4.9400e-003	4.9400e-003	0.0000	17.3853	17.3853	4.1400e-003	0.0000	17.4887
Total	**0.0118**	**0.1079**	**0.1218**	**2.0000e-004**		**5.2500e-003**	**5.2500e-003**		**4.9400e-003**	**4.9400e-003**	**0.0000**	**17.3853**	**17.3853**	**4.1400e-003**	**0.0000**	**17.4887**

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

3.4 Building Construction - 2023

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	8.7500e-003	0.3576	0.1072	1.6300e-003	0.0540	2.2900e-003	0.0562	0.0156	2.1900e-003	0.0178	0.0000	156.5053	156.5053	8.5000e-004	0.0236	163.5465
Worker	0.0646	0.0418	0.4918	1.4300e-003	0.1668	8.1000e-004	0.1676	0.0443	7.4000e-004	0.0451	0.0000	131.1350	131.1350	3.9900e-003	3.8000e-003	132.3680
Total	**0.0733**	**0.3994**	**0.5990**	**3.0600e-003**	**0.2207**	**3.1000e-003**	**0.2238**	**0.0599**	**2.9300e-003**	**0.0628**	**0.0000**	**287.6402**	**287.6402**	**4.8400e-003**	**0.0274**	**295.9144**

3.4 Building Construction - 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					
Off-Road	3.6800e-003	0.0336	0.0404	7.0000e-005		1.5300e-003	1.5300e-003		1.4400e-003	1.4400e-003	0.0000	5.7962	5.7962	1.3700e-003	0.0000	5.8305
Total	**3.6800e-003**	**0.0336**	**0.0404**	**7.0000e-005**		**1.5300e-003**	**1.5300e-003**		**1.4400e-003**	**1.4400e-003**	**0.0000**	**5.7962**	**5.7962**	**1.3700e-003**	**0.0000**	**5.8305**

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

3.4 Building Construction - 2024

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	2.8300e-003	0.1192	0.0349	5.3000e-004	0.0180	7.7000e-004	0.0188	5.2000e-003	7.4000e-004	5.9300e-003	0.0000	51.2780	51.2780	2.7000e-004	7.7200e-003	53.5850
Worker	0.0199	0.0123	0.1512	4.6000e-004	0.0556	2.5000e-004	0.0558	0.0148	2.3000e-004	0.0150	0.0000	42.2725	42.2725	1.2000e-003	1.1700e-003	42.6517
Total	**0.0227**	**0.1315**	**0.1860**	**9.9000e-004**	**0.0736**	**1.0200e-003**	**0.0746**	**0.0200**	**9.7000e-004**	**0.0209**	**0.0000**	**93.5505**	**93.5505**	**1.4700e-003**	**8.8900e-003**	**96.2366**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	3.6800e-003	0.0336	0.0404	7.0000e-005		1.5300e-003	1.5300e-003		1.4400e-003	1.4400e-003	0.0000	5.7962	5.7962	1.3700e-003	0.0000	5.8305
Total	**3.6800e-003**	**0.0336**	**0.0404**	**7.0000e-005**		**1.5300e-003**	**1.5300e-003**		**1.4400e-003**	**1.4400e-003**	**0.0000**	**5.7962**	**5.7962**	**1.3700e-003**	**0.0000**	**5.8305**

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

3.4 Building Construction - 2024

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	2.8300e-003	0.1192	0.0349	5.3000e-004	0.0180	7.7000e-004	0.0188	5.2000e-003	7.4000e-004	5.9300e-003	0.0000	51.2780	51.2780	2.7000e-004	7.7200e-003	53.5850
Worker	0.0199	0.0123	0.1512	4.6000e-004	0.0556	2.5000e-004	0.0558	0.0148	2.3000e-004	0.0150	0.0000	42.2725	42.2725	1.2000e-003	1.1700e-003	42.6517
Total	**0.0227**	**0.1315**	**0.1860**	**9.9000e-004**	**0.0736**	**1.0200e-003**	**0.0746**	**0.0200**	**9.7000e-004**	**0.0209**	**0.0000**	**93.5505**	**93.5505**	**1.4700e-003**	**8.8900e-003**	**96.2366**

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

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

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

4.2 Trip Summary Information

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

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Other Non-Asphalt Surfaces	9.50	7.30	7.30	0.00	0.00	0.00	0	0	0

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Other Non-Asphalt Surfaces	0.515888	0.053153	0.175761	0.156529	0.025865	0.006829	0.014141	0.022504	0.000707	0.000289	0.023863	0.001496	0.002975

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

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

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

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

5.2 Energy by Land Use - NaturalGas

Unmitigated

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

Mitigated

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

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

5.3 Energy by Land Use - Electricity

Unmitigated

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

Mitigated

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

6.0 Area Detail

6.1 Mitigation Measures Area

4-Basins Project - Fresno 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	0.5662	1.0000e-005	1.3900e-003	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.7200e-003	2.7200e-003	1.0000e-005	0.0000	2.8900e-003
Unmitigated	0.5662	1.0000e-005	1.3900e-003	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.7200e-003	2.7200e-003	1.0000e-005	0.0000	2.8900e-003

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	0.1381					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.4280					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	1.3000e-004	1.0000e-005	1.3900e-003	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.7200e-003	2.7200e-003	1.0000e-005	0.0000	2.8900e-003
Total	**0.5662**	**1.0000e-005**	**1.3900e-003**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**2.7200e-003**	**2.7200e-003**	**1.0000e-005**	**0.0000**	**2.8900e-003**

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	0.1381					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.4280					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	1.3000e-004	1.0000e-005	1.3900e-003	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.7200e-003	2.7200e-003	1.0000e-005	0.0000	2.8900e-003
Total	**0.5662**	**1.0000e-005**	**1.3900e-003**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**2.7200e-003**	**2.7200e-003**	**1.0000e-005**	**0.0000**	**2.8900e-003**

7.0 Water Detail

7.1 Mitigation Measures Water

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

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

7.2 Water by Land Use

Unmitigated

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

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

7.2 Water by Land Use

Mitigated

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

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

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

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

8.2 Waste by Land Use

Unmitigated

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

Mitigated

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

9.0 Operational Offroad

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

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

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

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

Boilers

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

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

Appendix B: Biological Evaluation Report

Biological Evaluation

FRESNO IRRIGATION DISTRICT

MULTIPLE RECHARGE BASIN PROJECT

DECEMBER 2022

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Table of Contents

List of Figures

List of Tables

List of Appendices

I. Introduction

The following technical report, prepared by Provost & Pritchard Consulting Group, and in compliance with the California Environmental Quality Act (CEQA) and National Environmental Policy Act (NEPA), includes a description of the biological resources present or with potential to occur within the proposed Fresno Irrigation District (FID or District) Multiple Recharge Basin Project (Project), and evaluates potential Project-related impacts to those resources.

Project Description

The FID Project consists of the construction of multiple recharge basins. There would be four (4) basins: Carter-Bybee Basin, Badhesha Basin, Horner Basin, and Kenneson-Sanchez Basin at four individual sites and each basin site would have a monitoring well, recovery well, perimeter fencing and new berm construction that would not exceed six feet, measured from the exterior toe to the top of new levee. Each of the proposed basins would connect to existing District infrastructure on or adjacent to the site. The Project's Area of Potential Effect (APE) includes the four basins which total approximately 152 acres and an additional 50-foot buffer area around the basins (see **Figure 3**). The four basin sites are located in Fresno County within the San Joaquin Valley (see **Figure 1** and **Figure 2**). The basin sites and surrounding lands were historically in agricultural with a few residential properties in the area.

Carter-Bybee Basin

The Carter-Bybee Basin APE is approximately 40 acres including the additional 50-foot buffer (**Figure 3**). It is located approximately five miles west of the City of Fresno and one mile south of the San Joaquin River, southeast of the intersection of West Barstow Avenue and North Jameson Avenue. The site was previously used to cultivate grapes but has been cleared of vegetation. The basin would connect to Herndon Canal No. 39.

Badhesha Basin

The Badhesha Basin APE is approximately 29 acres including the additional 50-foot buffer (**Figure 4**). It is located approximately three miles southwest of the City of Fresno, south of the intersection of West North Avenue and South Hughes Avenue. The site was previously used to cultivate grapes and has been cleared of vegetation. The basin would connect to Fresno Colony Canal No. 24.

Horner Basin

The Horner Basin APE is approximately 435 acres including the additional 50-foot buffer (**Figure 5**Figure 4). It is located approximately two miles southwest of the census-designated place of Biola, south of the intersection of West Ashlan Avenue and North Madera Avenue. The site is currently fallowed, and the APE excludes the single family dwelling on two acres to the west. This basin would connect to Little Sandridge Canal No. 66.

Kenneson-Sanchez Basin

The Kenneson-Sanchez Basin APE is approximately 48 acres including the additional 50-foot buffer (**Figure 6**Figure 4). It is located approximately three miles southwest of the census-designated place of Biola, north of the intersection of West Clinton Avenue and North Modoc Avenue. The site is adjacent to Sun Empire Elementary School. The site is currently fallowed, and a single-family residence would remain to the east of the Project. The basin would connect to Big Sandridge Canal No. 65.

Report Objectives

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

This report addresses issues related to the following:

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

Therefore, the objectives of this report are:

1. Summarize all site-specific information related to existing biological resources.
2. Make reasonable inferences about the biological resources that could occur onsite based on habitat suitability and the proximity of the site to a species' known range.
3. Summarize all State and federal natural resource protection laws that may be relevant to the APE.
4. Identify and discuss Project impacts and effects to biological resources likely to occur onsite within the context of CEQA/NEPA and/or State or federal laws.
5. Identify and publish a set of avoidance and mitigation measures that would reduce impacts to a less-than-significant level (as identified by CEQA) or avoid and minimize effects (as identified by NEPA) and are generally consistent with recommendations of the resource agencies for affected biological resources.

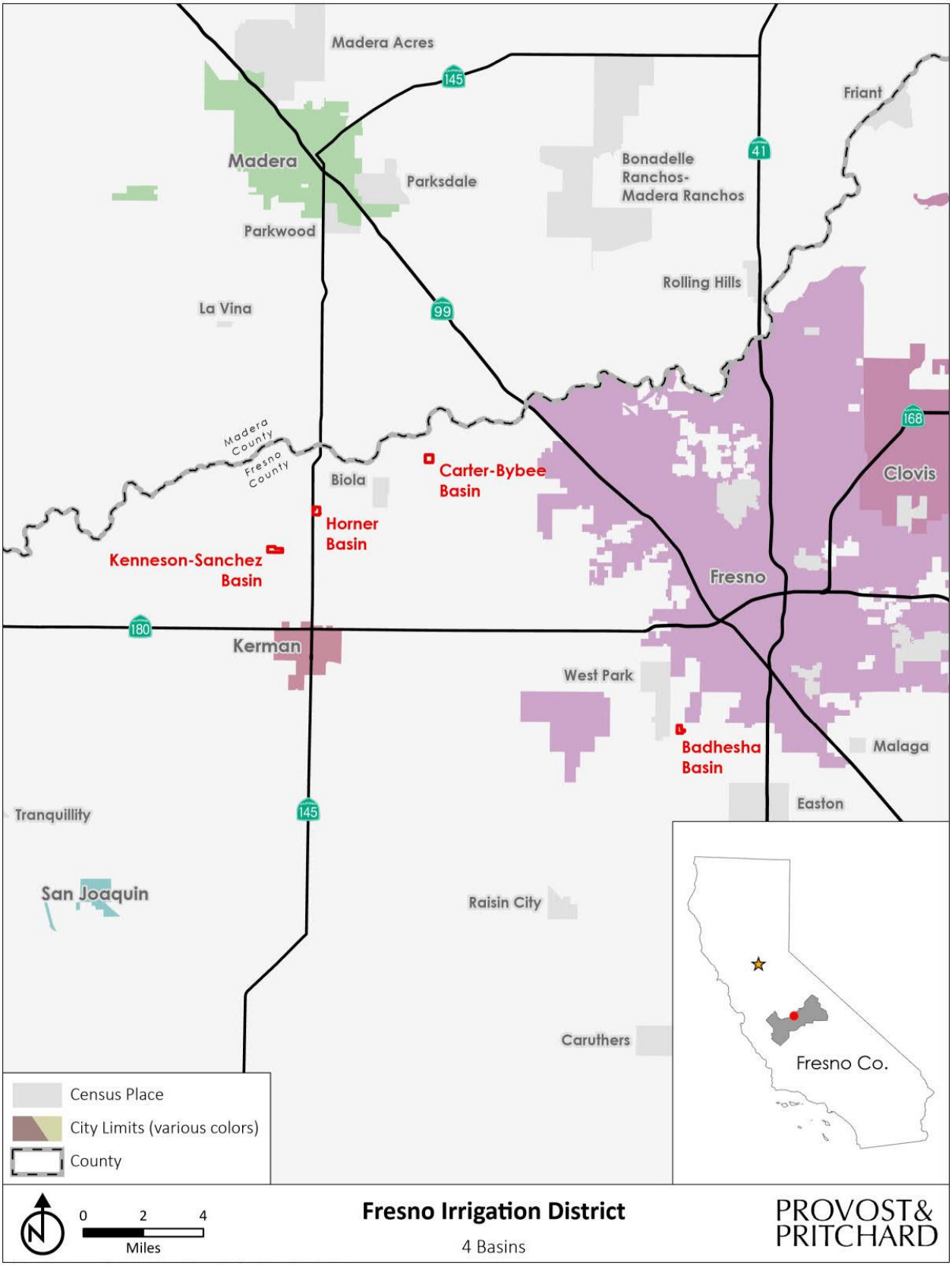

Figure 1. Regional Location

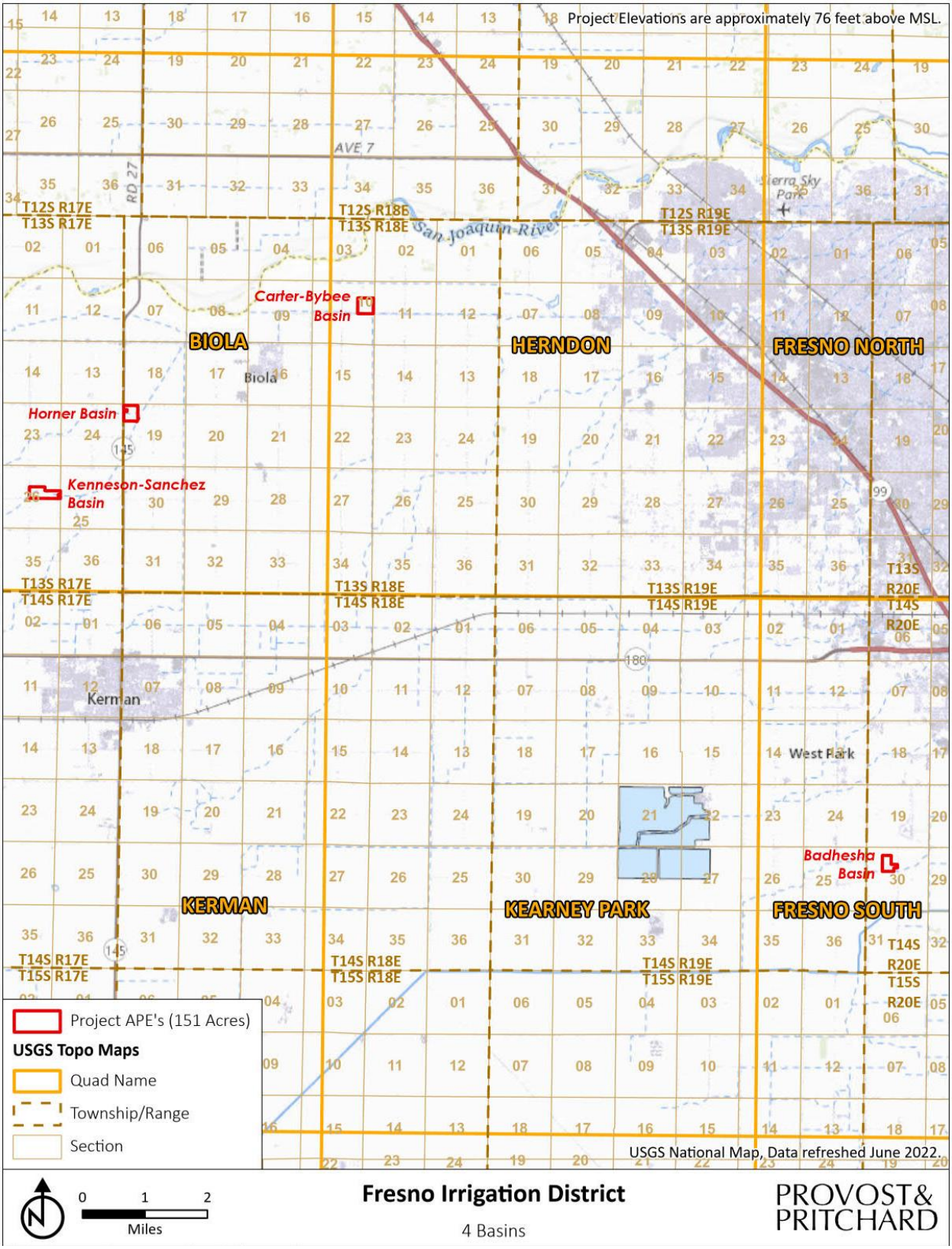

Figure 2. Topographic Quadrangle Map

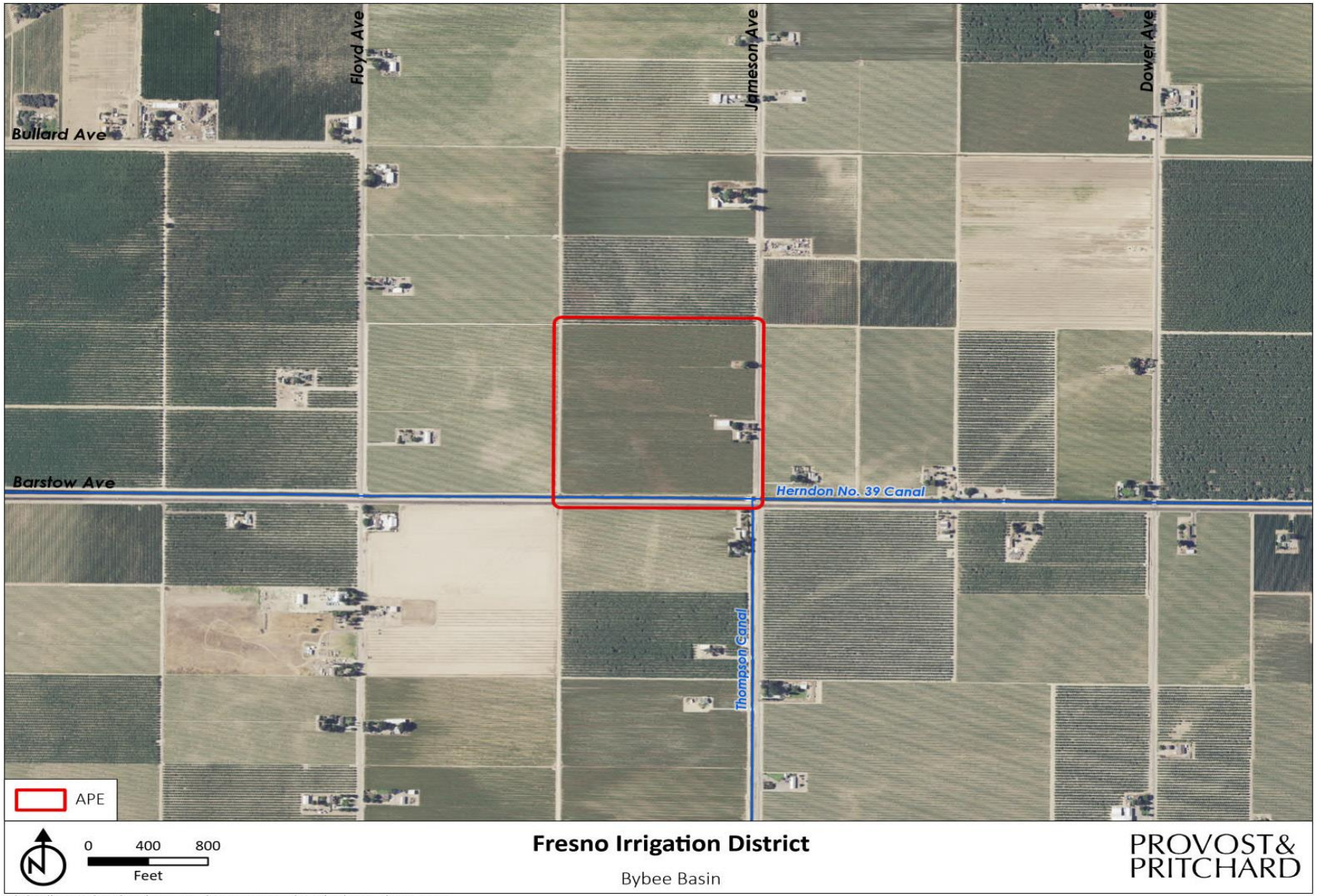

Figure 3. Carter-Bybee Basin Area of Potential Effect

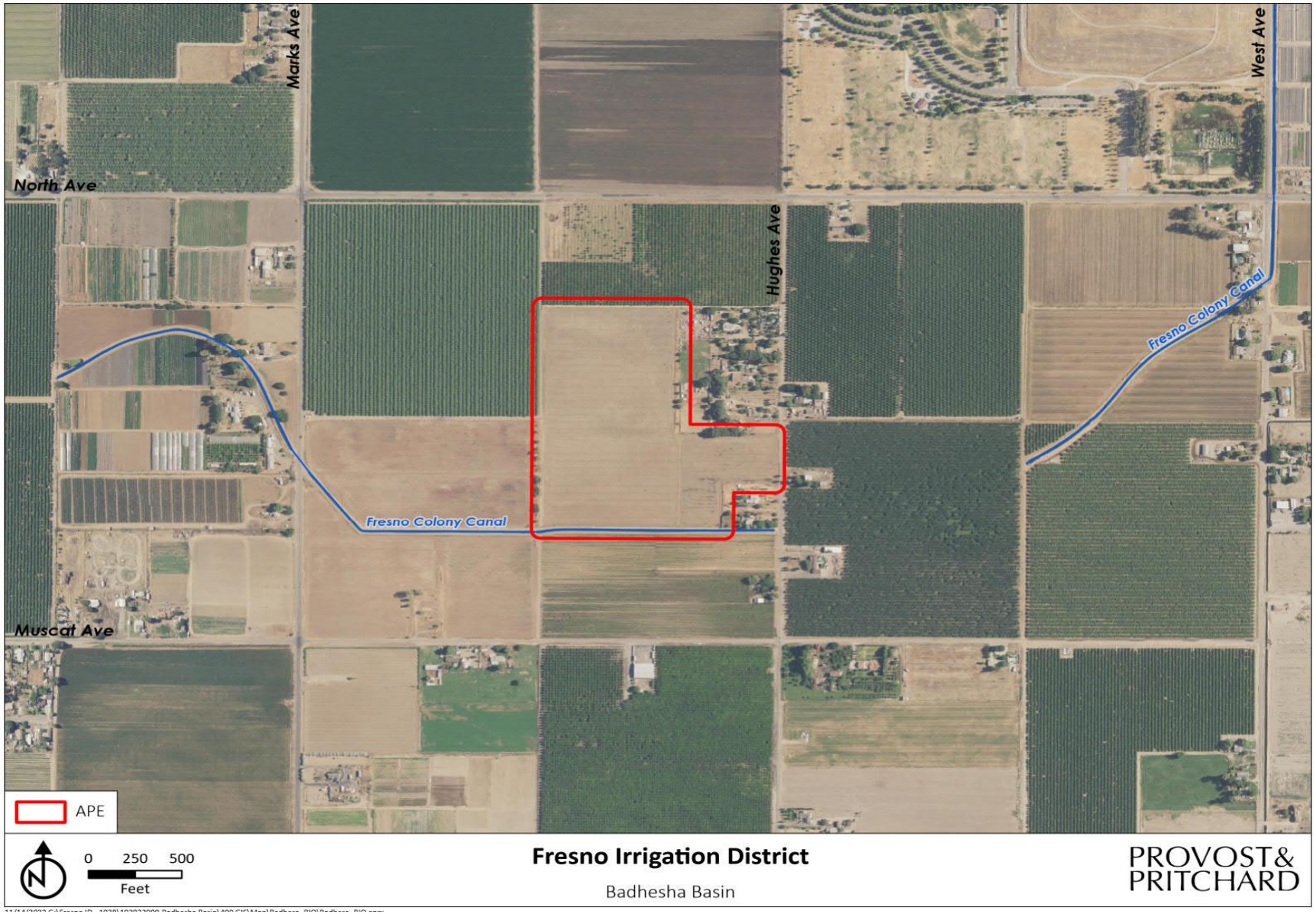

Figure 4. Badhesha Basin Area of Potential Effect

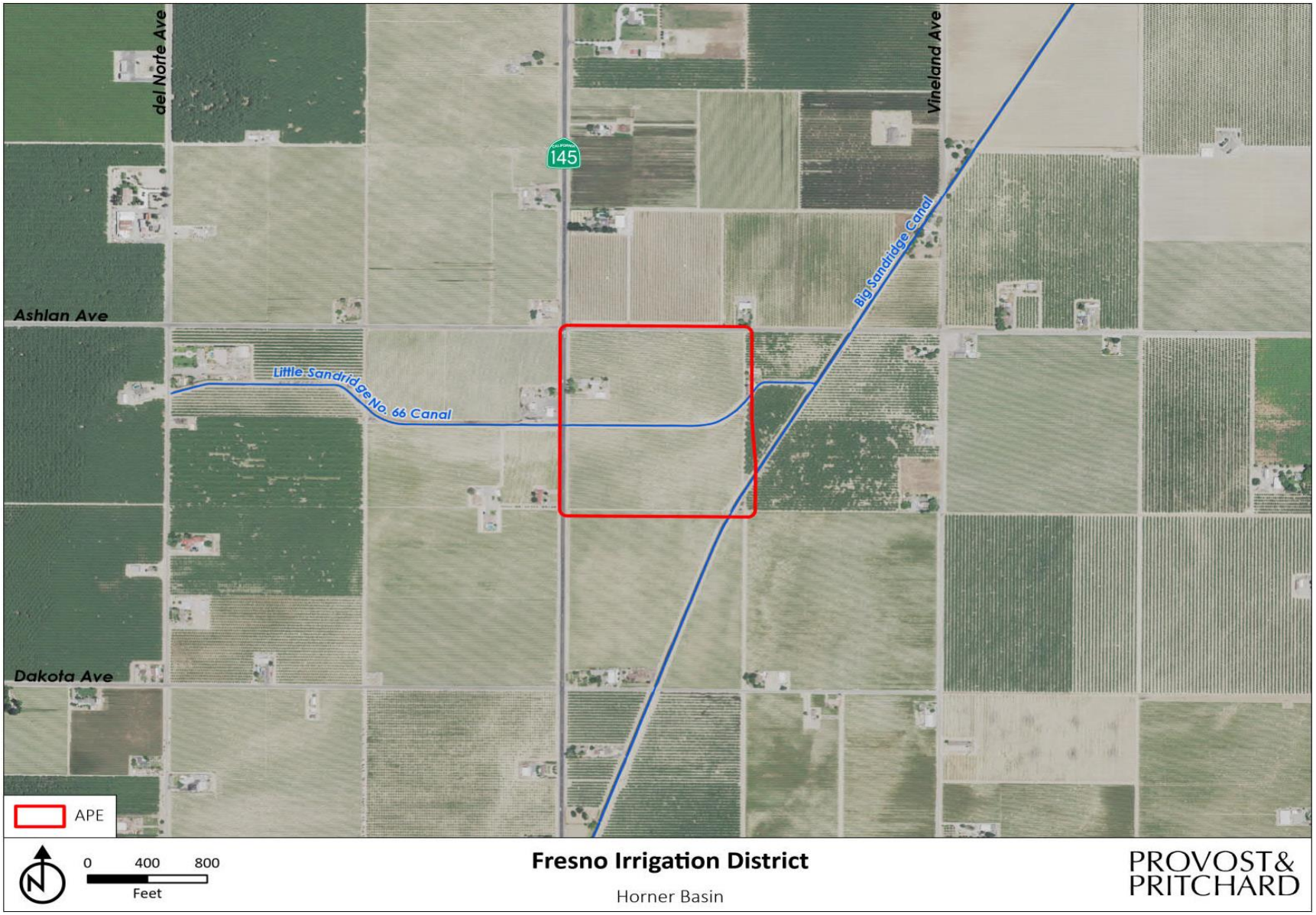

Figure 5. Horner Basin Area of Potential Effect

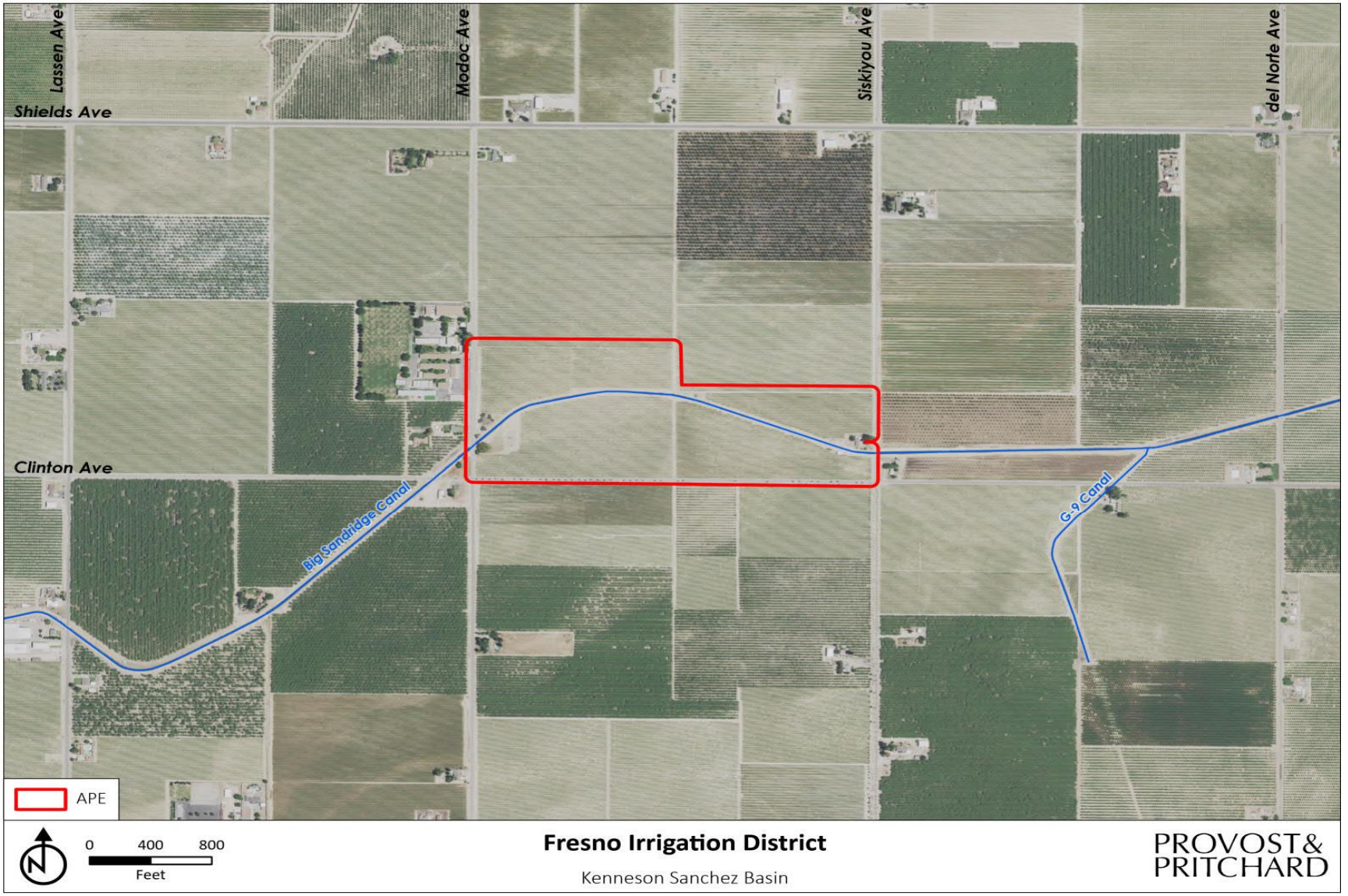

Figure 6. Kenneson-Sanchez Basin Area of Potential Effect

Study Methodology

A reconnaissance-level field survey of the all four Project sites (**Figure 3**, **Figure 4**, **Figure 5**, and **Figure 6**) was conducted on October 25, 2022, by Provost & Pritchard biologists, Shaylea Stark and Roman Endicott. For the purposes of this biological report, the Area of Potential Effect (APE) is identified as approximately 152 acres. The surveys consisted of walking and driving through all four APEs while identifying and noting land uses, biological habitats and communities, plant and animal species encountered and assessing suitable habitats of various wildlife species.

The biologists conducted an analysis of potential Project-related impacts to biological resources based on the resources known to exist or with potential to exist within the APE. Sources of information used in preparation of this analysis included: the California Department of Fish and Wildlife (CDFW) California Natural Diversity Database (CNDDB); the California Native Plant Society (CNPS) Online Inventory of Rare and Endangered Vascular Plants of California; CalFlora's online database of California native plants; the Jepson Herbarium online database (Jepson eFlora); United States Fish and Wildlife Service (USFWS) Environmental Conservation Online System (ECOS); Information for Planning and Consultation (IPaC) system; USFW National Wetlands Inventory (NWI); iNaturalist; the NatureServe Explorer online database; the United States Department of Agriculture (USDA) Natural Resources Conservation Service (NRCS) Plants Database; CDFW California Wildlife Habitat Relationships (CWHR) database; the California Herps online database; and various manuals, reports, and references related to plants and animals of the San Joaquin Valley region.

The field investigation did not include focused surveys for special status species. The field survey conducted included the appropriate level of detail to assess the significance of potential impacts to sensitive biological resources resulting from the Project. Furthermore, the field survey was sufficient to generally describe those features of the Project that could be subject to the jurisdiction of federal and/or State agencies, such as the United States Army Corps of Engineers (USACE) *1987 Corps of Engineers Wetland Delineation Manual*, the *Arid West Regional Supplement*, CDFW, Regional Water Quality Control Board (RWQCB), the State Water Resources Control Board (SWRCB*) State Wetland Definition and Procedures for Discharges of Dredged or Fill Material to Waters of the State*, and used to support CEQA and NEPA documents.

II. Existing Conditions

Regional Setting

Carter-Bybee Basin

Topography

The Carter-Bybee Basin APE is located in Fresno County within the San Joaquin Valley, approximately five miles west of the City of Fresno and one mile south of the San Joaquin River (see **Figure 1** and **Figure 2**). The topography is relatively flat and approximately 76 feet above mean sea level.

Climate

Like most of California, the Project area experience a Mediterranean climate. Warm, dry summers are followed by cool, moist winters. Summer temperatures range between 80- and 90-degrees Fahrenheit (˚F), but often exceeds 90˚F in the upper reaches of the county. Winter minimum temperatures are near 40˚F. The average annual precipitation is approximately 15 inches, falling mainly from October to April (USA.com 2022).

Hydrology

A watershed is the topographic region in which upland water collects and drains into a stream, river, or lake. Watersheds are made up of many smaller subwatersheds that drain into a particular stream, river, or lake. The Carter-Bybee Basin APE lies within the James Bypass watershed - Hydrologic Unit Code (HUC) 1803000907 and a single subwatershed: Empire Ditch-James Bypass subwatershed - HUC 180300090704; and is comprised of stormwater or snowmelt collected in upland areas which flows down into Slide Creek, Long Creek, Iron Creek, Chetwood Creek, and Cora Creek which are tributaries to the the San Joaquin River. The San Joaquin River then receives inputs from Cargyle Creek, Granite Creek, and Reconnaissance Creek. The San Joaquin River flows through Mammoth Pool Reservoir, Kerckhoff, Lake, and Millerton Lake. The San Joaquin River then continues and flows into Herndon Canal No. 39, which runs along the south border of Carter-Bybee Basin and continues into other unnamed canals that do not connect to any waters of the United States or State (United States Environmental Protection Agency (USEPA) 2022).

Soils

Two soil mapping units representing two soil types were identified within the Carter-Bybee Basin APE are listed in **Table 1**. The soils are displayed with their core properties in the table below, according to the Major Land Resource Area of California (MLRA) 19 map area. Both soils are primarily used for agriculture.

Table 1. Carter-Bybee Basin- List of Soils Located Onsite and Their Basic Properties

Soil	Soil Map Unit	Percent of APE	Hydric Unit	Hydric Minor Units	Drainage	Permeability	Runoff
Hanford	Sandy loam, silty substratum	81.5%	No	No	Well drained	Moderately rapid	Very low runoff
Tujunga	Loamy sand, 0 to 3 percent slopes	18.5%	No	Yes	Somewhat excessively drained	High	Very low runoff

None of the major soil mapping units and only one of the minor soil mapping units were identified as hydric. The minor soils which are hydric make up 0.2% of the soil in the APE (NRCS (2022)). Hydric soils are defined as soils that are saturated, flooded, or ponded long enough during the growing season to develop anaerobic conditions such that under sufficiently wet conditions, hydrophytic vegetation can be supported.

The complete NRCS Web Soil Survey report for the Carter-Bybee basin is available in **Appendix M** at the end of this document.

Badhesha Basin

Topography

The Badhesha Basin APE is located in Fresno County within the San Joaquin Valley, approximately three miles southwest of the City of Fresno, California (see **Figure 1** and **Figure 2**). The topography is relatively flat with an elevation ranging from 260 to 270 feet above mean sea level.

Climate

This Badhesha Basin Project area also experiences a Mediterranean climate with the same temperatures and rainfall as Carter-Bybee Basin discussed above.

Hydrology

The Badhesha Basin APE is located within the Dog Creek-Fish Slough watershed - HUC 1803000905 and a single subwatershed: Central Canal subwatershed - HUC 18030090504. This watershed is comprised of stormwater or snowmelt collected in upland areas which flows down into the Middle Fork Kings River and the South Fork Kings River which combine to become the Kings River. The Kings River then flows into the Pine Flat Reservoir and exits as the Kings River. The Kings River eventually flows into Fresno Canal. The Fresno Canal becomes Mill Ditch which flows into Fancher Creek Canal. Fancher Creek Canal flows into Fresno Colony Canal No. 24, which flows through the south end of the APE. This waterway appears to eventually flow into Central Canal, then into various unnamed canals that do not connect to any waters of the United States or State (United States Environmental Protection Agency (USEPA) 2022).

Soils

Four soil mapping units representing three soil types were identified within the Badhesha Basin APE and are listed in **Table 2**. The soils are displayed with their core properties in the table below, according to the Major Land Resource Area of California (MLRA) 19 map area. These soils are primarily used for agriculture.

Table 2. Badhesha Basin List of Soils Located Onsite and Their Basic Properties

Soil	Soil Map Unit	Percent of APE	Hydric Unit	Hydric Minor Units	Drainage	Permeability	Runoff
Borden	Loam	9.0%	No	No	Well drained	Moderately slow	Low runoff
Hesperia	Sandy loam, deep	5.8%	No	Yes	Well drained	Moderately rapid	Negligible runoff
	Fine sandy loam, deep, saline-sodic	80.7%	No	No	Well drained	Moderately rapid	Negligible runoff
Pachappa	Loam, moderately deep	4.5%	No	No	Well drained	Moderate	Low runoff

None of the major soil mapping units and one of the minor soil mapping units was identified as hydric. The minor soils which are hydric make up 0.2% of the soil in the APE (NRCS (2022)). Hydric soils are defined as soils that are saturated, flooded, or ponded long enough during the growing season to develop anaerobic conditions such that under sufficiently wet conditions, hydrophytic vegetation can be supported.

The complete NRCS Web Soil Survey report for the Badhesha basin is available in **Appendix N** at the end of this document.

Horner Basin

Topography

The Horner Basin APE is located in Fresno County within the San Joaquin Valley, approximately two miles southwest of the census-designated place of Biola, California (see **Figure 1** and **Figure 2**). The topography is relatively flat with an elevation of approximately 240 feet above mean sea level.

Climate

The Horner Basin Project area also experiences similar climate discussed above with Carter-Bybee and Badhesha basins.

Hydrology

The Horner Basin APE lies within three watersheds: Cottonwood Creek-San Joaquin River - HUC 1804000103; Tumey Gulch-Fresno Slough - HUC 1803000909; and James Bypass - HUC 1803000907. The APE lies within three subwatersheds: Bethany Cemetery-San Joaquin River - HUC 180400010304; Sandridge Canal - HUC 180300090907; and Empire Ditch-James Bypass - HUC 180300090704. These watersheds are comprised of stormwater or snowmelt collected in upland areas which flows down into Slide Creek, Long Creek, Iron Creek, Chetwood Creek, and Cora Creek which flows into the San Joaquin River. The San Joaquin River then receives inputs from Cargyle Creek, Granite Creek, and Reconnaissance Creek. The San Joaquin River flows through Mammoth Pool Reservoir, Kerckhoff, Lake, and Millerton Lake. The San Joaquin River then continues and flows through Herndon Canal No. 39, into Little Sandridge Canal No. 66 which goes through the APE and terminates in an agricultural field. This canal does not connect to any waters of the United States or State (United States Environmental Protection Agency (USEPA) 2022).

Soils

Two soil mapping units representing one soil type was identified within the APE are listed in **Table 3**. The soils are displayed with their core properties in the table below, according to the Major Land Resource Area of California (MLRA) 19 map area. All three soils are primarily used for agriculture.

Table 3. Horner Basin- List of Soils Located Onsite and Their Basic Properties

Soil	Soil Map Unit	Percent of APE	Hydric Unit	Hydric Minor Units	Drainage	Permeability	Runoff
Hanford	Coarse sandy loam	83.5%	No	No	Well drained	Moderately rapid	Very low runoff
	Sandy loam, silty substratum	16.5%	No	No	Well drained	Moderately rapid	Very low runoff

None of the major or minor soil mapping units were identified as hydric by the NRCS (2022). Hydric soils are defined as soils that are saturated, flooded, or ponded long enough during the growing season to develop anaerobic conditions such that under sufficiently wet conditions, hydrophytic vegetation can be supported.

The complete NRCS Web Soil Survey report for the Horner basin is available in **Appendix O** at the end of this document.

Kenneson-Sanchez Basin

Topography

The Kenneson-Sanchez Basin APE is located in Fresno County within the San Joaquin Valley, approximately four miles southwest of the census-designated place of Biola, California (see **Figure 1** and **Figure 2**). The topography is relatively flat with an elevation of approximately 230 feet above mean sea level.

Climate

The Project area experiences the same Mediterranean climate as the other three basins discussed above.

Hydrology

The Kenneson-Sanchez Basin APE lies within two watersheds: Tumey Gulch-Fresno Slough - HUC 1803000909 and James Bypass - HUC 1803000907; and two subwatersheds: Sandridge Canal - HUC 180300090907 and Empire Ditch-James Bypass - HUC 180300090704. These watersheds are comprised of stormwater or snowmelt collected in upland areas which flows down into Slide Creek, Long Creek, Iron Creek, Chetwood Creek, and Cora Creek which flows into the San Joaquin River. Simialy to Carter-Bybee Basin, the San Joaquin River moves through lakes and Herndon Canal No. 39, into Big Sandridge Canal No. 65 which goes through the APE and terminates in an agricultural field. This canal does not connect to any waters of the United States or State (United States Environmental Protection Agency (USEPA) 2022).

Soils

Three soil mapping units representing two soil types were identified within the Kenneson-Sanchez Basin APE and are listed in

Table 4. The soils are displayed with their core properties in the table below, according to the Major Land Resource Area of California (MLRA) 19 map area. All three soils are primarily used for agriculture.

Table 4. Kenneson-Sanchez Basin List of Soils Located Onsite and Their Basic Properties

Soil	Soil Map Unit	Percent of APE	Hydric Unit	Hydric Minor Units	Drainage	Permeability	Runoff
Hanford	Coarse sandy loam	59.2%	No	No	Well drained	Moderately rapid	Very low runoff
	Sandy loam, silty substratum	18.1%	No	No	Well drained	Moderately rapid	Very low runoff
Hesperia	Sandy loam, deep	22.7%	No	Yes	Well drained	Moderately rapid	Negligible runoff

None of the major soil mapping units and one of the minor soil mapping units were identified as hydric. The minor soils which are hydric make up 0.7% of the soil in the APE (NRCS (2022)). Hydric soils are defined as soils that are saturated, flooded, or ponded long enough during the growing season to develop anaerobic conditions such that under sufficiently wet conditions, hydrophytic vegetation can be supported.

The complete NRCS Web Soil Survey report for the Kenneson-Sanchez Basin is available in **Appendix P** at the end of this document.

Biotic Habitats

Carter-Bybee Basin

Ruderal/Agricultural

The Carter-Bybee Basin APE consists of a ruderal agricultural field with a residential home and is currently bare ground with sparse herbaceous and ornamental vegetation. Vegetation observed consisted of a palm tree (*Washingtonia* sp.), grapefruit trees (*Citrus ×paradisi*), Chinese elm tree (*Ulmus parvifolia*), wild watermelon (*Citrullus lanatus*), flax leaved horseweed (*Erigeron bonariensis*), grasses (*Setaria* spp.), common stork's-bill (*Erodium cicutarium*), mustard (*Brassica* sp.), Russian thistle (*Salsola tragus*), puncture vine (*Tribulus terrestris*), prickly lettuce (*Lactuca serriola*), hairy crabgrass (*Digitaria sanguinalis*), cheese weed mallow (*Malva parviflora*), Deodar cedar tree (*Cedrus deodara*), western sycamore tree (*Platanus racemose*), plantain (*Plantago* sp.), mulberry tree (*Morus alba*), firethorns (*Pyracantha* sp.), oleander (*Nerium oleander*), Bay laurel (*Laurus nobilis*), Cootamundra wattle (*Acacia baileyana*) and an orange tree (*Citrus × sinensis*).

The survey of the Carter-Bybee Basin APE resulted in the identification of bird species including California Scrub Jay (*Aphelocoma californica*), Killdeer (*Charadrius vociferus*), House Finch (*Haemorhous mexicanus*), Yellow-rumped Warbler (*Setophaga coronata*), White-crowned Sparrow (*Zonotrichia leucophrys*), Northern Mockingbird (*Mimus polyglottos*), European Starling (*Sturnus vulgaris*), Black Phoebe (*Sayornis nigricans*), American Crow (*Corvus brachyrhynchos*), Red-tailed Hawk (*Buteo jamaicensis*), and Mourning Dove (*Zenaida macroura*). Signs of species observed within the APE included domestic dog (*Canis lupus familiaris*) tracks, gopher burrows (*Geomyidae* sp.), owl pellets (*Strigiformes*) under the palm tree by the house, and coyote calls (*Canis latrans*) were heard in the distance. The palm tree was surveyed from dusk until dark and no owls were observed.

The ruderal habitat within the APE was highly disturbed by agricultural activities but provides habitat for foraging birds, including raptors, during the day, as well as potentially bats, coyotes, and other nocturnal animals at night. The APE contains suitable habitat for tree and ground nesting avian species. Through discussions with the previous landowner, it was determined trees within the APE are known to be used by nesting raptors and are considered a significant biological resource. The palm tree in front of the house is known to contain Barn Owls year-round for the past forty years (see **Appendix A**). Construction activities could disturb these trees and the special status species using them and mitigation is warranted.

Canal No. 39

Herndon Canal No. 39 contained minimal vegetation and was dry at the time of the survey. Vegetation within the Canal consisted of invasive grasses and a young willow tree (*Salix* sp.). The Canal habitat within the APE was moderately disturbed by agricultural and anthropogenic activities. This canal could be used as a wildlife movement corridor for species.

Representative photographs of the site at the time of the survey are available in **Appendix A** at the end of this document.

Badhesha Basin

Ruderal/Agricultural

The Badhesha Basin consists of a ruderal agricultural field and contains bare ground with sparse herbaceous vegetation. Vegetation consisted of brome grass (*Bromus* sp.), chinaberry (*Melia azedarach*), flax-leaved horseweed, Johnson grass (*Sorghum halepense*), sunflower (*Helianthus* sp.), tree-of-heaven (*Ailanthus altissima*), and wine grapes (*Vitis vinifera*). The APE was surrounded by active citrus (*Citrus* sp.) and pecan (*Carya illinoinensis*) orchards.

The survey of the APE resulted in the identification of numerus bird species including American Crow, American Pipit (*Anthus rubescens*), California Scrub Jay, Killdeer, Red-tailed Hawk, Vesper Sparrow (*Pooecetes gramineus*), White-crowned Sparrow, and Yellow-rumped Warbler. There were cattle (*Bos taurus*) and chickens (*Gallus gallus domesticus*) fenced within the property adjacent to the APE. Coyote and domestic dog tracks were also observed within the APE.

The ruderal habitat within the Badhesha Basin APE was highly disturbed by agricultural activities but provides habitat for foraging birds, including raptors, during the day, as well as potentially bats, coyotes, and other nocturnal animals at night. The APE contains suitable habitat for tree and ground nesting avian species.

Canal No. 24

Fresno Colony Canal No. 24 was dry at the time of the survey and contained plant species including Bermuda buttercup (*Oxalis pes-caprae*), false daisy (*Eclipta alba*), flax-leaved horseweed, green carpetweed (*Mollugo verticillata*), rough cocklebur (*Xanthium strumarium*), scarlet toothcup (*Ammannia coccinea*), and spotted spurge (*Euphorbia maculata*). The canal habitat within the APE was moderately disturbed by agricultural and anthropogenic activities. This canal could be used as a wildlife movement corridor for species.

Representative photographs of the site at the time of the survey are available in **Appendix B**at the end of this document.

Horner Basin

Ruderal/Agricultural

The Horner Basin APE consists of a ruderal agricultural field and contains bare ground with sparse herbaceous vegetation. Vegetation consisted of wine grapes, flax leaved horseweed, flat spine bursage (*Ambrosia acanthicarpa*), Bermuda grass (*Cynodon dactylon*), puncture vine (*Tribulus terrestris*), Johnson grass, and common purslane (*Portulaca oleracea*).

The survey of the APE resulted in the identification of bird species including House Finch, and Common Raven (*Corvus corax*). Other species observed within the APE included domestic dogs (*Canis lupus familiaris*) and their tracks.

The ruderal habitat within the APE was highly disturbed by agricultural activities but provides habitat for foraging birds, including raptors, during the day, as well as potentially bats, coyotes, and other nocturnal animals at night. The APE contained suitable habitat for tree and ground nesting avian species.

Canal No. 66

Little Sandridge Canal No. 66 contained minimal vegetation and was dry at the time of the survey. Vegetation within the Canal consisted of invasive grasses and flax-leaved horseweed. The canal habitat within the APE was moderately disturbed by agricultural and anthropogenic activities. This canal could be used as a wildlife movement corridor for species.

Representative photographs of the site at the time of the survey are available in **Appendix C** at the end of this document.

Kenneson-Sanchez Basin

Ruderal/Agricultural

The Kenneson-Sanchez Basin consists of a ruderal agricultural field and contains bare ground with sparse herbaceous vegetation. Vegetation consisted of barnyardgrass (*Echinochloa crus-galli*), cheeseweed mallow (*Malva parviflora*), common purslane, green carpetweed, hairy crabgrass, horseweed, Johnson grass, pale smartweed (*Persicaria lapathifolia*), prickly pear (*Opuntia* sp.), procumbent pigweed (*Amaranthus blitoides*), redstem stork's-bill (*Erodium cicutarium*), rough cocklebur, sacred datura (*Datura wrightii*), telegraphweed (*Heterotheca grandiflora*), and western marsh cudweed (*Gnaphalium palustre*). A large western sycamore (*Platanus racemosa*) was identified next to the residential home on the east side of the APE. Multiple camphor trees (*Cinnamomum camphora*) were identified on the west side of the APE.

The survey of the APE resulted in the identification of numerus bird species including American Crow, American Kestrel (*Falco sparverius*), Black Phoebe, California Scrub Jay, House Finch, Killdeer, and Red-tailed Hawk. Tracks of domestic dogs and coyote were also observed.

The ruderal habitat within the APE was highly disturbed by agricultural activities but provides habitat for foraging birds, including raptors, during the day, as well as potentially bats, coyotes, and other nocturnal animals at night. The APE contains suitable habitat for tree and ground nesting avian species.

Canal No. 65

Big Sandridge Canal No. 65 was dry at the time of the survey. Domestic dog tracks and human shoe prints were also observed within the bottom of the canal. The canal habitat within the APE was moderately disturbed by agricultural and anthropogenic activities. This canal could be used as a wildlife movement corridor for species.

Representative photographs of the site at the time of the survey are available in **Appendix D** at the end of this document.

Natural Communities of Special Concern

Natural communities of special concern are those that are of limited distribution, distinguished by significant biological diversity, or home to special status species. CDFW is responsible for the classification and mapping of all-natural communities in California. Just as the special status plant and animal species, these natural communities of special concern can be found within the CNDDB.

According to CNDDB, there are several natural communities of species concern in the region: Valley Sacaton Grassland, Northern Hardpan Vernal Pool, Northern Claypan Vernal Pool, and Great Valley Mixed Riparian Forest. There is one occurrence of Valley Sacaton Grassland in the region. The nearest basin to this occurrence is Horner Basin, which is approximately 10 miles to the southeast. There are seven occurrences of Northern Hardpan Vernal Pool in the region. The closest occurrence of this natural community to any of the Project areas is approximately seven miles northeast of Bybee Basin. There are also two occurrences of Northern Claypan Vernal Pool in the region. The closest occurrence of this natural community to any of the Project areas is approximately six miles southwest of Kenneson-Sanchez. There is one occurrence of Great Valley Mixed Riparian Forest in the region. The nearest basin to this occurrence is Bybee Basin, which is approximately 15 miles to the southwest (California Natural Diversity Database (CNDDB) 2022). No natural communities of special concern were observed during the biological survey.

Designated Critical Habitat of the APE

The USFWS often designates areas of "Critical Habitat" when it lists species as threatened or endangered. Critical Habitat is a specific geographic area that contains features essential for the conservation of a threatened or endangered species and that may require special management and protection. According to CNDDB and IPaC, designated critical habitat is absent from the APEs and vicinities (California Natural Diversity Database (CNDDB) 2022) & (United States Fish and Wildlife Service. 2022).

Wildlife Movement Corridors

Wildlife movement corridors are routes that animals regularly and predictably follow during seasonal migration, dispersal from native ranges, daily travel within home ranges, and inter-population movements. Movement corridors in California are typically associated with valleys, ridgelines, and rivers and creeks supporting riparian vegetation.

Project Canals

Herndon Canal No. 39, Fresno Colony Canal No. 24, Little Sandridge Canal No. 66, and Big Sandridge Canal No. 65 could potentially be used as wildlife movement corridors through the region. Species could use the canals during seasonal migration, dispersal, daily travel or interpopulation movements, especially during dawn, dusk and evening hours when surrounding activities are low. There does appear to be a moderate level of disturbance around the canals, as there are active orchards nearby and evidence of humans and domestic dogs walking along the banks of the canals. Project disturbances to the canals would be temporary and minimal and would not discourage wildlife usage permanently. Mitigation measures can be found in the **Potentially Significant Project-Related Impacts and Mitigation** section.

Special Status Plants and Animals

California contains several "rare" plant and animal species. In this context, rare is defined as a species known to have low populations or limited distributions. State and federal regulations have provided the CDFW and the USFWS with a mechanism for conserving and protecting the diversity of plant and animal species native to California. Numerous native plants and animals have been formally designated as "threatened" or "endangered" under State and federal endangered species legislation. Other formal designations include "candidate" for listing or "species of special concern" by CDFW. The CNPS has its list of native plants considered rare, threatened, or endangered. Collectively these plants and animals are referred to as "special status species." This survey was conducted outside of the blooming season for most plants. Further investigation of special status plants is recommended to occur within the plants' blooming seasons.

Carter-Bybee Basin

A thorough search of the CNDDB for published accounts of special status plant and animal species for this APE was conducted for the *Herndon* 7.5-minute quadrangle that contains the APE in its entirely, and for the eight surrounding quadrangles: *Madera, Gregg, Lanes Bridge, Fresno North, Fresno South, Kearney Park, Kerman, and Biola*. These species and their potential to occur within the APE, are listed in **Table 5** and **Table 6** on the following pages. Raw data obtained from CNDDB and IPaC is available in **Appendix E** and **Appendix I** at the end of this document. **Figure 2** shows the Project's 7.5-minute quadrangle, according to United States Geological Survey (USGS) Topographic Maps.

Badhesha Basin

A thorough search of the CNDDB for published accounts of special status plant and animal species for this APE was conducted for the *Fresno South* 7.5-minute quadrangle that contains the APE in its entirety, and for

the eight surrounding quadrangles *Herndon, Fresno North, Clovis, Malaga, Conejo, Caruthers, Raisin, and Kearney Park.* These species and their potential to occur within the APE, are listed in **Table 5** and **Table 6** on the following pages. Raw data obtained from CNDDB and IPaC is available in **Appendix F**and **Appendix J** at the end of this document. **Figure 2** shows the Project's 7.5-minute quadrangle, according to United States Geological Survey (USGS) Topographic Maps.

Horner Basin

A thorough search of the CNDDB for published accounts of special status plant and animal species for this APE was conducted for the *Biola* 7.5-minute quadrangle that contains the APE in its entirety, and for the eight surrounding quadrangles *Bonita Ranch, Madera, Gregg, Herndon, Kearney Park, Kerman, Jamesan, and Gravelly Ford.* These species and their potential to occur within the APE, are listed in **Table 5** and **Table 6** on the following pages. Raw data obtained from CNDDB and IPaC is available in **Appendix G** and **Appendix K** at the end of this document. **Figure 2** shows the Project's 7.5-minute quadrangle, according to United States Geological Survey (USGS) Topographic Maps.

Kenneson-Sanchez Basin

A thorough search of the CNDDB for published accounts of special status plant and animal species for this APE was conducted for the *Biola* 7.5-minute quadrangle that contains the APE in its entirety, and for the eight surrounding quadrangles *Bonita Ranch, Madera, Gregg, Herndon, Kearney Park, Kerman, Jamesan, and Gravelly Ford.* These species and their potential to occur within the APE, are listed in **Table 5** and **Table 6** on the following pages. Raw data obtained from CNDDB and IPaC is available in **Appendix H** and **Appendix L** at the end of this document. **Figure 2** shows the Project's 7.5-minute quadrangle, according to United States Geological Survey (USGS) Topographic Maps.

All relevant sources of information, as discussed in the Study Methodology section of this report, as well as field observations, were used to determine if any special status species are known to be within the APE.

Table 5. List of Special Status Animals with Potential to Occur Onsite and/or in the Vicinity

Species	Status	Habitat	Occurrence within Project Site			
			Carter-Bybee	Badhesha	Horner	Kenneson-Sanchez
American badger (*Taxidea taxus*)	CSC	Grasslands, savannas, and mountain meadows near timberline are preferred. Most abundant in drier open spaces of shrub and grassland. Burrows in soil.	**Unlikely.** The APE and surrounding areas are frequently cultivated agricultural lands that are unsuitable for this species. No dens or signs of this species were observed during the biological survey. There is also high disturbance in the surrounding areas due to agricultural operations. The most recent recorded observation of this species was approximately 13 miles northeast of the APE in 2017.	**Unlikely.** The APE and surrounding areas are frequently cultivated agricultural lands that are unsuitable for this species. There is also high disturbance in the surrounding areas due to agricultural operations. No dens or signs of this species were observed during the biological survey. The most recent recorded observation of this species was approximately 10.5 miles north of the APE in 1988.	**Unlikely.** The APE and surrounding areas are frequently cultivated agricultural lands that are unsuitable for this species. There is also high disturbance in the surrounding areas due to agricultural operations. No dens or signs of this species were observed during the biological survey. The most recent recorded observation of this species was approximately 11 miles northwest of the APE in 2016.	**Unlikely.** The APE and surrounding areas are frequently cultivated agricultural lands that are unsuitable for this species. There is also high disturbance in the surrounding areas due to agricultural operations. No dens or signs of this species were observed during the biological survey. The most recent recorded observation of this species was approximately 10.5 miles northwest of the APE in 2016.
Blunt-nosed leopard lizard (*Gambelia sila*)	FE, CE, CFP	Inhabits semi-arid grasslands, alkali flats, low foothills, canyon floors, large washes, and arroyos, usually on sandy, gravelly, or loamy substrate, sometimes on hardpan. Often found where there are abundant rodent burrows in dense vegetation or tall grass. Cannot survive on lands under cultivation. Known to bask on kangaroo rat mounds and often seeks shelter at the base of	**Absent.** The APE and surrounding areas are frequently cultivated agricultural lands that are unsuitable for this species. No small mammal burrows suitable for this species were observed. The only recorded observation of this species was approximately 8 miles northwest of the APE in 1916.	**Absent.** The APE and surrounding areas are frequently cultivated agricultural lands that are unsuitable for this species. No small mammal burrows suitable for this species were observed. There are no recorded observations of this species on CNDDB within the regional vicinity of the Project.	**Absent.** The APE and surrounding areas are frequently cultivated agricultural lands that are unsuitable for this species. No small mammal burrows suitable for this species were observed. The most recent recorded observation of this species was approximately 10 miles northwest of the APE in 1990.	**Absent.** The APE and surrounding areas are frequently cultivated agricultural lands that are unsuitable for this species. No small mammal burrows suitable for this species were observed. The most recent recorded observation of this species was approximately 9.5 miles northwest of the APE in 1990.

Species	Status	Habitat	Occurrence within Project Site			
			Carter-Bybee	Badhesha	Horner	Kenneson-Sanchez
		shrubs, in small mammal burrows, or in rock piles. Adults may excavate shallow burrows but rely on deeper pre-existing rodent burrows for hibernation and reproduction.				
Burrowing Owl (*Athene cunicularia*)	CSC	Resides in open, dry annual or perennial grasslands, deserts, and scrublands with low growing vegetation. Nests underground in existing burrows created by mammals, most often ground squirrels.	**Unlikely.** The APE and surrounding areas are frequently cultivated agricultural lands that are unsuitable for this species. No ground squirrel burrows, dens, whitewash, or other signs of Burrowing Owls were observed during the biological survey. The most recent recorded observation of this species was approximately 11.5 miles south of the APE in 2016.	**Unlikely.** The APE and surrounding areas are frequently cultivated agricultural lands that are unsuitable for this species. No suitable burrows, dens, whitewash, or other signs of Burrowing Owls were observed during the biological survey. The most recent recorded observation of this species was approximately 10.5 miles southwest of the APE in 2016. The nearest recorded observation of this species was approximately 4 miles west of the APE in 2018.	**Unlikely.** The APE and surrounding areas are frequently cultivated agricultural lands that are unsuitable for this species. No ground squirrel burrows, dens, whitewash, or other signs of Burrowing Owls were observed during the biological survey. The most recent recorded observation of this species was approximately 9.5 miles south of the APE in 2016. The nearest recorded observation of this species was approximately 5.5 miles southwest of the APE in 1984.	**Absent.** The APE and surrounding areas are frequently cultivated agricultural lands that are unsuitable for this species. No ground squirrel burrows, dens, whitewash, or other signs of Burrowing Owls were observed during the biological survey. The most recent recorded observation of this species was approximately 9 miles south of the APE in 2016. The nearest recorded observation of this species was approximately 3.5 miles southwest of the APE in 1984.
California glossy snake (*Arizona elegans occidentalis*)	CSC	Inhabits arid scrub, rocky washes, grasslands, and chaparral. Prefers open areas with loose soil for easy burrowing.	**Unlikely.** The APE and surrounding areas are frequently cultivated agricultural lands that are	**Absent.** The APE and surrounding areas are frequently cultivated agricultural lands that are unsuitable for this	**Absent.** The APE and surrounding areas are frequently cultivated agricultural lands that are unsuitable for this	**Absent.** The APE and surrounding areas are frequently cultivated agricultural lands that are unsuitable for this

Species	Status	Habitat	Occurrence within Project Site			
			Carter-Bybee	Badhesha	Horner	Kenneson-Sanchez
			unsuitable for this species. The APE is more than 40 miles away from the current known range of this species. The only recorded observation of this species was approximately 7 miles east of the APE in 1893.	species. The APE is more than 40 miles away from the current known range of this species. The nearest recorded observation of this species was approximately 2 miles northeast of the APE in 1893. The most recent recorded observation of this species was approximately 12 miles south of the APE in 1939.	species. The APE is more than 40 miles away from the current known range of this species. There are no recorded observations of this species on CNDDB within the regional vicinity of the Project.	species. The APE is more than 40 miles away from the current known range of this species. There are no recorded observations of this species on CNDDB within the regional vicinity of the Project.
California Horned Lark (*Eremophila alpestris actia*)	CWL	Frequents open habitats, including short-grass prairie, mountain meadows, open coastal plains, fallow grain fields, and alkali flats. Found primarily in coastal regions, including Sonoma and San Diego Counties.	**Possible.** This species could potentially forage and nest in the ruderal agricultural fields within the APE. The only recorded observation of this species was approximately 11 miles northeast of the APE in 1992.	**Possible.** This species could potentially forage and nest in the ruderal agricultural fields within the APE. There are no recorded observations of this species on CNDDB within the regional vicinity of the Project.	**Possible.** This species could potentially forage and nest in the ruderal agricultural fields within the APE. There are no recorded observations of this species on CNDDB within the regional vicinity of the Project.	**Possible.** This species could potentially forage and nest in the ruderal agricultural fields within the APE. There are no recorded observations of this species on CNDDB within the regional vicinity of the Project.
California tiger salamander (*Ambystoma californiense*)	FT, CT, CWL	Requires vernal pools or seasonal ponds for breeding and small mammal burrows for aestivation. Generally found in grassland and oak savannah plant communities in central California from sea level to 1500 feet in elevation.	**Absent.** Vernal pools and upland habitat are absent within the APE and surrounding areas. The surrounding land consists of grape vines which are unsuitable for this species. The nearest recorded observation of this species was	**Absent.** Vernal pools and upland habitat are absent within the APE and surrounding areas. The surrounding land consists of agricultural orchards which are unsuitable for this species. The most recent recorded observation of this	**Absent.** Vernal pools and upland habitat are absent within the APE and surrounding areas. The surrounding land consists of agricultural orchards which are unsuitable for this species. The nearest recorded observation of this species was	**Absent.** Vernal pools and upland habitat are absent within the APE and surrounding areas. The surrounding land consists of agricultural orchards which are unsuitable for this species. The nearest recorded observation of this species was

Species	Status	Habitat	Occurrence within Project Site			
			Carter-Bybee	Badhesha	Horner	Kenneson-Sanchez
			approximately 7 miles east of the APE in 2017.	species was approximately 7.5 miles north of the APE in 2017. The nearest recorded observation of this species was approximately 2 miles north of the APE in Fresno but is considered extirpated.	approximately 9 miles northeast of the APE in 2018.	approximately 11 miles northeast of the APE in 2018.
Coast horned lizard (*Phrynosoma blainvillii*)	CSC	Found in grasslands, coniferous forests, woodlands, and chaparral, primarily in open areas with patches of loose, sandy soil and low-lying vegetation in valleys, foothills, and semi-arid mountains. Frequently found near ant hills and along dirt roads in lowlands along sandy washes with scattered shrubs.	**Unlikely.** The APE and surrounding areas are frequently cultivated agricultural lands that are unsuitable for this species. Harvester ant nests were not observed within the APE. The only recorded observation of this species was approximately 7 miles east of the APE in 1893.	**Unlikely.** The APE and surrounding areas are frequently cultivated agricultural lands that are unsuitable for this species. Harvester ant nests were not observed within the APE. The only recorded observation of this species was approximately 2 miles north of the APE in Fresno in 1893.	**Unlikely.** The APE and surrounding areas are frequently cultivated agricultural lands that are unsuitable for this species. Harvester ant nests were not observed within the APE. The only recorded observation of this species was approximately 13 miles northwest of the APE in 2011.	**Unlikely.** The APE and surrounding areas are frequently cultivated agricultural lands that are unsuitable for this species. Harvester ant nests were not observed within the APE. The only recorded observation of this species was approximately 12.5 miles northwest of the APE in 2011.
Crotch bumble bee (*Bombus crotchii*)	CCE	Occurs throughout coastal California, as well as east to the Sierra-Cascade crest, and south into Mexico. Food plant genera include *Antirrhinum, Phacelia, Clarkia, Dendromecon, Eschscholzia*, and *Eriogonum.*	**Absent.** Foraging and nesting habitat is absent within the APE and surrounding lands. The APE had minimal vegetation which primarily consisted of invasive annuals and did not include foraging plants for this species. The most recent recorded	**Absent.** Foraging and nesting habitat is absent within the APE and surrounding lands. The APE had minimal vegetation which primarily consisted of invasive annuals and does not include foraging plants for this species. The nearest recorded observation	**Absent.** Foraging and nesting habitat is absent within the APE and surrounding lands. The APE had minimal vegetation which primarily consisted of invasive annuals and does not include foraging plants for this species. There are no recorded observations	**Absent.** Foraging and nesting habitat is absent within the APE and surrounding lands. The APE had minimal vegetation which primarily consisted of invasive annuals and does not include foraging plants for this species. There are no recorded observations

Species	Status	Habitat	Occurrence within Project Site Carter-Bybee	Badhesha	Horner	Kenneson-Sanchez
			observation of this species was approximately 13 miles northeast of the APE in 1960. The nearest recorded observation of this species was approximately 11 miles east of the APE in 2019.	of this species was approximately 2 miles north of the APE in Fresno in 1899.	of this species on CNDDB within the regional vicinity of the Project.	of this species on CNDDB within the regional vicinity of the Project.
Delta smelt (*Hypomesus transpacificus*)	FT, CE	This pelagic and euryhaline species is Endemic to the Sacramento-San Joaquin River Delta, upstream through Contra Costa, Sacramento, San Joaquin, and Solano Counties.	**Absent.** The APE is outside the known range for this species. Suitable aquatic habitat is absent within the APE as the Canal that flows through the APE does not flow perennially and does not connect to the Delta. There are no recorded observations of this species on CNDDB within the regional vicinity of the Project.	**Absent.** The APE is outside the known range for this species. Suitable aquatic habitat is absent within the APE as the Canal that flows through the APE does not flow perennially and does not connect to the Delta. There are no recorded observations of this species on CNDDB within the regional vicinity of the Project.	**Absent.** The APE is outside the known range for this species. Suitable aquatic habitat is absent within the APE as the Canal that flows through the APE does not flow perennially and does not connect to the Delta. There are no recorded observations of this species on CNDDB within the regional vicinity of the Project.	**Absent.** The APE is outside the known range for this species. Suitable aquatic habitat is absent within the APE as the Canal that flows through the APE does not flow perennially and does not connect to the Delta. There are no recorded observations of this species on CNDDB within the regional vicinity of the Project.
Double-crested Cormorant (*Phalacrocorax auratus*)	CWL	Colonial nester on coastal cliffs, offshore islands, and along lake margins in the interior of the state. Nests along coast on sequestered islets, usually on ground with sloping surface, or in tall trees along lake margins.	**Unlikely.** Aquatic habitat is absent within the APE and surrounding areas. This species could potentially fly though but would not reside within the APE. There are no recorded observations of this species on CNDDB	**Unlikely.** Aquatic habitat is absent within the APE and surrounding areas. This species could potentially fly though the APE but would not reside within the APE. The only recorded observation of this species was approximately 9 miles	**Unlikely.** Aquatic habitat is absent within the APE and surrounding areas. This species could potentially fly though but would not reside within the APE. There are no recorded observations of this species on CNDDB	**Unlikely.** Aquatic habitat is absent within the APE and surrounding areas. This species could potentially fly though but would not reside within the APE. There are no recorded observations of this species on CNDDB

Species	Status	Habitat	Occurrence within Project Site			
			Carter-Bybee	Badhesha	Horner	Kenneson-Sanchez
			within the regional vicinity of the Project	northeast of the APE in 2012.	within the regional vicinity of the Project	within the regional vicinity of the Project.
Fresno kangaroo rat (*Dipodomys nitratoides exilis*)	FE, CE	An inhabitant of alkali sinks open grassland environments in western Fresno County. Prefers bare, alkaline, clay-based soils subject to seasonal inundation with more friable soil mounds around shrubs and grasses.	**Unlikely.** The highly disturbed habitat of the APE and surrounding lands are unsuitable for this species. Domestic dog tracks were observed within the APE which would deter this species. No tail drags were found at any burrows within the APE. The nearest recorded observation of this species was approximately 7.5 miles southwest of the APE in 1934.	**Unlikely.** The highly disturbed habitat of the APE and surrounding lands are unsuitable for this species. Domestic dog tracks were observed within the APE which would deter this species. No tail drags were found at any burrows within the APE. The nearest recorded observation of this species was approximately 6 miles southwest of the APE in 1974.	**Unlikely.** The highly disturbed habitat of the APE and surrounding lands are unsuitable for this species. Domestic dogs and their tracks were observed within the APE which would deter this species. No tail drags were found at any burrows within the APE. The nearest recorded observation of this species was approximately 4 miles south of the APE in 1934. The most recent recorded observation of this species was approximately 7 miles southwest of the APE in 2003.	**Unlikely.** The highly disturbed habitat of the APE and surrounding lands are unsuitable for this species. Domestic dog tracks were observed within the APE which would deter this species. No tail drags were found at any burrows within the APE. The nearest recorded observation of this species was approximately 2.5 miles south of the APE in 1934. The most recent recorded observation of this species was approximately 5.5 miles southwest of the APE in 2003.
Giant gartersnake (*Thamnophis gigas*)	FT, CT	Occurs in marshes, sloughs, drainage canals, irrigation ditches, rice fields, and adjacent uplands. Prefers locations with emergent vegetation for cover and open areas for basking. This species uses small mammal burrows adjacent to aquatic habitats for hibernation in the winter	**Unlikely.** The APE is outside of the current and historical range for this species. The APE had minimal fossorial mammal burrows and lacked suitable aquatic habitat and vegetation. Surrounding lands are agricultural fields and orchards that are unsuitable for this	**Unlikely.** The APE is outside of the current and historical range for this species. The APE lacked fossorial mammal burrows and suitable aquatic habitat and vegetation. Surrounding lands are agricultural fields and orchards that are unsuitable for this	**Unlikely.** The APE is outside of the current and historical range for this species. The APE had minimal fossorial mammal burrows and lacked suitable aquatic habitat and vegetation. Surrounding lands are agricultural fields and orchards that are unsuitable for this	**Unlikely.** The APE is outside of the current and historical range for this species. The APE had minimal fossorial mammal burrows and lacked suitable aquatic habitat and vegetation. Surrounding lands are agricultural fields and orchards that are unsuitable for this

Species	Status	Habitat	Occurrence within Project Site			
			Carter-Bybee	Badhesha	Horner	Kenneson-Sanchez
		and to escape from excessive heat in the summer.	species. There are no recorded observations of this species on CNDDB within the regional vicinity of the Project.	species. The nearest recorded observation of this species was approximately 16 miles southwest of the APE in 1976.	species. There are no recorded observations of this species on CNDDB within the regional vicinity of the Project.	species. There are no recorded observations of this species on CNDDB within the regional vicinity of the Project.
Hardhead (*Mylopharodon conocephalus*)	CSC	Occurs in low- to mid-elevation streams in the Sacramento-San Joaquin drainage. Clear, deep pools with sand-gravel-boulder bottoms and slow-moving water is required. This species is often sympatric with Sacramento pikeminnow and Sacramento sucker. Hardhead are typically absent from streams occupied by centrarchids and from heavily altered habitats.	**Absent.** The APE is not suitable for this species due to the lack of aquatic habitat. The APE is outside of the current range for this species. The only recorded observation of this species was approximately 12 miles east of the APE within the San Joaquin River in 1981.	**Absent.** The APE is not suitable for this species due to the lack of aquatic habitat. The APE is outside of the current range for this species. There are no recorded observations of this species on CNDDB within the regional vicinity of the Project.	**Absent.** The APE is not suitable for this species due to the lack of aquatic habitat. The APE is outside of the current range for this species. There are no recorded observations of this species on CNDDB within the regional vicinity of the Project.	**Absent.** The APE is not suitable for this species due to the lack of aquatic habitat. The APE is outside of the current range for this species. There are no recorded observations of this species on CNDDB within the regional vicinity of the Project.
Least Bell's Vireo (*Vireo bellii pusillus*)	FE, CE	This migratory species breeds in southern California. Breeding habitat consists of dense, low, shrubby, riparian vegetation in the vicinity of water or dry river bottoms. By the early 1980s, this species was extirpated from most of its historic range in California, including the Central Valley. This species now occurs exclusively along the coast of southern	**Absent.** The APE lacks suitable riparian vegetation and this species has been extirpated from the region. There are no recorded observations of this species on CNDDB within the regional vicinity of the Project.	**Absent.** The APE lacks suitable riparian vegetation and this species has been extirpated from the region. The nearest recorded observation of this species was approximately 9.5 miles northeast of the APE in 1912.	**Absent.** The APE lacks suitable riparian vegetation and this species has been extirpated from the region. There are no recorded observations of this species on CNDDB within the regional vicinity of the Project.	**Absent.** The APE lacks suitable riparian vegetation and this species has been extirpated from the region. There are no recorded observations of this species on CNDDB within the regional vicinity of the Project.

Species	Status	Habitat	Occurrence within Project Site			
			Carter-Bybee	Badhesha	Horner	Kenneson-Sanchez
		California (USFWS, 1998).				
Monarch Butterfly (*Danaus plexippus*)	FC	Roosts located in wind-protected tree groves (eucalyptus, Monterey pine, cypress), with nectar and water sources nearby. Larval host plants consist of milkweeds (*Asclepias* sp.). Winter roost sites extend along the coast from northern Mendocino to Baja California, Mexico.	**Unlikely.** Foraging and roosting habitat is absent from within the APE and surrounding areas. The APE contained minimal vegetation with no nectar, milkweeds or groves of trees observed during the biological survey. The nearest recorded observation of this species was approximately 7.5 miles east of the APE in 2016.	**Unlikely.** Foraging and roosting habitat is absent from within the APE and surrounding areas. The APE contained minimal vegetation with no nectar, milkweeds or groves of trees observed during the biological survey. The nearest recorded observation of this species was approximately 6.5 miles northeast of the APE in 2016.	**Unlikely.** Foraging and roosting habitat is absent from within the APE and surrounding areas. The APE contained minimal vegetation with no nectar, milkweeds or groves of trees observed during the biological survey. The nearest recorded observation of this species was approximately 9.5 miles east of the APE in 2016.	**Unlikely.** Foraging and roosting habitat is absent from within the APE and surrounding areas. The APE contained minimal vegetation with no nectar, milkweeds or groves of trees observed during the biological survey. The nearest recorded observation of this species was approximately 10 miles east of the APE in 2016.
Northern California legless lizard (*Anniella pulchra*)	CSC	Found primarily underground, burrowing in loose, sandy soil. Forages in loose soil and leaf litter during the day. Occasionally observed on the surface at dusk and night.	**Unlikely.** Loose soils can be found within the APE, but leaf litter is absent. The APE does not have any predicted habitat for this species. The only recorded observation of this species was approximately 7 miles east of the APE in the 1880s.	**Unlikely.** Loose soils can be found within the APE, but leaf litter is absent. The APE does not have any predicted habitat for this species. The only recorded observation of this species was approximately 2 miles north of the APE in the 1880s.	**Unlikely.** Loose soils can be found within the APE, but leaf litter is absent. The APE does not have any predicted habitat for this species. There are no recorded observations of this species on CNDDB within the regional vicinity of the Project.	**Unlikely.** Loose soils can be found within the APE, but leaf litter is absent. The APE does not have any predicted habitat for this species. There are no recorded observations of this species on CNDDB within the regional vicinity of the Project.
Pallid bat (*Antrozous pallidus*)	CSC	Found in grasslands, chaparral, and woodlands, where it feeds on ground- and vegetation-dwelling arthropods, and	**Unlikely.** This species could potentially forage in the APE or surrounding land but would not be expected to roost within the	**Unlikely.** This species could potentially forage in the APE or surrounding land but would not be expected to roost within the	**Unlikely.** This species could potentially forage in the APE or surrounding land but would not be expected to roost within the	**Unlikely.** This species could potentially forage in the APE or surrounding land but would not be expected to roost within the

Species	Status	Habitat	Occurrence within Project Site			
			Carter-Bybee	Badhesha	Horner	Kenneson-Sanchez
		occasionally takes insects in flight. Prefers to roost in rock crevices, but may also use tree cavities, caves, bridges, and other man-made structures.	APE. The only recorded observation of this species was approximately 13 miles southeast of the APE in 1909.	APE. The only recorded observation of this species was approximately 5.5 miles northeast of the APE in 1909.	APE. There are no recorded observations of this species on CNDDB within the regional vicinity of the Project.	APE. There are no recorded observations of this species on CNDDB within the regional vicinity of the Project.
San Joaquin coachwhip (*Masticophis flagellum ruddocki*)	CSC	Found in open dry habitats with little or no tree cover in valley grassland and saltbush scrub communities in the San Joaquin Valley. Relies on mammal burrows for refuge and oviposition sites.	**Unlikely.** The APE does not contain suitable habitat for this species. The APE lacked suitable vegetation and mammal burrows. There are no recorded observations of this species on CNDDB within the regional vicinity of the Project.	**Unlikely.** The APE does not contain suitable habitat for this species. The APE lacked suitable vegetation and mammal burrows. There are no recorded observations of this species on CNDDB within the regional vicinity of the Project.	**Unlikely.** The APE does not contain suitable habitat for this species. The APE lacked suitable vegetation and mammal burrows. The only recorded observation of this species was approximately 8.5 miles southwest of the APE in 2004.	**Unlikely.** The APE does not contain suitable habitat for this species. The APE lacked suitable vegetation and mammal burrows. The only recorded observation of this species was approximately 6.5 miles southwest of the APE in 2004.
San Joaquin kit fox (*Vulpes macrotis mutica*)	FE, CT	Underground dens with multiple entrances in alkali sink, valley grassland, and woodland in valleys and adjacent foothills.	**Unlikely.** There were no suitable dens, tracks, or scat observed during the biological survey. It is unlikely this species would reside within the APE due to human disturbance and domestic dogs that were observed in the APE during the biological survey. The only recorded observation of this species was approximately 5 miles east of the APE in 1993.	**Unlikely.** There were no suitable dens, tracks, or scat observed during the biological survey. It is unlikely this species would reside within the APE due to human disturbance. The nearest recorded observation of this species was approximately 9.5 miles north of the APE in 1993.	**Unlikely.** There were no suitable dens, tracks, or scat observed during the biological survey. It is unlikely this species would reside within the APE due to human and domestic dog disturbances. The most recent recorded observation of this species was approximately 9 miles east of the APE in 1993. The nearest recorded observation of this species was approximately 7.5	**Unlikely.** There were no suitable dens, tracks, or scat observed during the biological survey. It is unlikely this species would reside within the APE due to human disturbance. The most recent recorded observation of this species was approximately 10.5 miles east of the APE in 1993. The nearest recorded observation of this species was approximately 5.5

Species	Status	Habitat	Occurrence within Project Site			
			Carter-Bybee	Badhesha	Horner	Kenneson-Sanchez
					miles southwest of the APE in 1975.	miles southwest of the APE in 1975.
Swainson's Hawk (*Buteo swainsoni*)	CT	Nests in large trees in open areas adjacent to grasslands, grain or alfalfa fields, or livestock pastures suitable for supporting rodent populations.	**Possible.** Although there were no trees within the APE, there are trees large enough to support nesting raptors in the surrounding areas. The nearest recorded observation of this species was approximately 5.5 miles northwest of the APE in 2016. The most recent recorded observation of this species was approximately 11 miles east of the APE in 2022.	**Possible.** There are a few trees in the vicinity of the APE that could potentially support a nest. The nearest recorded observation of this species was approximately 3.5 miles west of the APE in 2020.	**Possible.** Although there were no trees within the APE, there are trees large enough to support nesting raptors in the surrounding areas. The most recent recorded observation of this species was approximately 6 miles southwest of the APE in 2018.	**Possible.** There are a few trees in the vicinity of the APE that could potentially support a nest. The most recent recorded observation of this species was approximately 4 miles southwest of the APE in 2018.
Tricolored Blackbird (*Agelaius tricolor*)	CT, CSC	Nests colonially near fresh water in dense cattails or tules, or in thickets of riparian shrubs. Forages in grassland and cropland. Large colonies are often found on dairy farm forage fields.	**Unlikely.** No riparian vegetation was observed during the biological survey. This species could potentially fly through or forage in the APE or surrounding areas, but it is unlikely to nest withing the APE. The most recent recorded observation of this species was approximately 13 miles east of the APE in 1975.	**Unlikely.** No riparian vegetation was observed during the biological survey. This species could potentially fly through or forage in the APE or surrounding areas, but it is unlikely to nest withing the APE. The most recent recorded observation of this species was approximately 10 miles northeast of the APE in 1975.	**Unlikely.** No riparian vegetation was observed during the biological survey. This species could potentially fly through or forage in the APE or surrounding areas, but it is unlikely to nest withing the APE. The nearest recorded observation of this species was approximately 9.5 miles southwest of the APE in 2015.	**Unlikely.** No riparian vegetation was observed during the biological survey. This species could potentially fly through or forage in the APE or surrounding areas, but it is unlikely to nest withing the APE. The nearest recorded observation of this species was approximately 8 miles southwest of the APE in 2015.

Species	Status	Habitat	Occurrence within Project Site			
			Carter-Bybee	Badhesha	Horner	Kenneson-Sanchez
Valley elderberry longhorn beetle (*Desmocerus californicus dimorphus*)	FT	Lives in mature elderberry shrubs of the Central Valley and foothills. Adults are active from March to June.	**Absent.** No elderberry shrubs were found within the APE or surrounding areas. The nearest recorded observation of this species was approximately 5 miles east of the APE in 1989. The most recent recorded observation of this species was approximately 11.5 miles east of the APE in 2006.	**Absent.** No elderberry shrubs were found within the APE or surrounding areas. The only recorded observation of this species was approximately 11.5 miles north of the APE in 1989.	**Absent.** No elderberry shrubs were found within the APE or surrounding areas. The only recorded observation of this species was approximately 9 miles northeast of the APE in 1989.	**Absent.** No elderberry shrubs were found within the APE or surrounding areas. The only recorded observation of this species was approximately 11 miles northeast of the APE in 1989.
Vernal pool fairy shrimp (*Branchinecta lynchi*)	FT	Occupies vernal pools, clear to tea-colored water, in grass or mud-bottomed swales, and basalt depression pools.	**Absent.** Vernal pool habitat is absent from the APE and surrounding lands. The nearest recorded observation of this species was approximately 10.5 miles northeast of the APE in 2006.	**Absent.** Vernal pool habitat is absent from the APE and surrounding lands. The nearest recorded observation of this species was approximately 13.5 miles northeast of the APE in 1993. The most recent recorded observation of this species was approximately 15 miles northeast of the APE in 2006.	**Absent.** Vernal pool habitat is absent from the APE and surrounding lands. The most recent recorded observation of this species was approximately 9.5 miles northeast of the APE in 2017.	**Absent.** Vernal pool habitat is absent from the APE and surrounding lands. The most recent recorded observation of this species was approximately 11.5 miles northeast of the APE in 2017.
Western mastiff bat (*Eumops perotis californicus*)	CSC	Found in open, arid to semi-arid habitats, including dry desert washes, flood plains, chaparral, oak woodland, open ponderosa pine forest, grassland, and	**Unlikely.** This species could potentially forage in the APE or surrounding land but would not be expected to roost within the APE. The most recent	**Unlikely.** This species could potentially forage in the APE or surrounding land but would not be expected to roost within the APE. The nearest	**Unlikely.** This species could potentially forage in the APE or surrounding land but would not be expected to roost within the APE. There are no	**Unlikely.** This species could potentially forage in the APE or surrounding land but would not be expected to roost within the APE. There are no

Species	Status	Habitat	Occurrence within Project Site			
			Carter-Bybee	Badhesha	Horner	Kenneson-Sanchez
		agricultural areas, where it feeds on insects in flight. Roosts most commonly in crevices in cliff faces but may also use high buildings and tunnels.	recorded observation of this species was approximately 8 miles southeast of the APE in 1991.	recorded observation of this species was approximately 4.5 miles northeast of the APE in 1991.	recorded observations of this species on CNDDB within the regional vicinity of the Project.	recorded observations of this species on CNDDB within the regional vicinity of the Project.
Northwestern pond turtle (*Emys marmorata*)	CSC	An aquatic turtle of ponds, marshes, slow-moving rivers, streams, and irrigation ditches with riparian vegetation. Requires adequate basking sites and sandy banks or grassy open fields to deposit eggs.	**Possible.** Suitable aquatic habitat is present within the APE. This species is often found in agricultural ditches and canals. The nearest recorded observation of this species was approximately 5 miles south of the APE in 2015.	**Possible.** Suitable aquatic habitat is present within the APE. This species is often found in agricultural ditches and canals. The nearest recorded observation of this species was approximately 4.5 miles north of the APE in 2014. The most recent recorded observation of this species was approximately 15 miles northeast of the APE in 2016.	**Possible.** Suitable aquatic habitat is present within the APE. This species is often found in agricultural ditches and canals. The nearest recorded observation of this species was approximately 5.5 miles southeast of the APE in 2015.	**Possible.** Suitable aquatic habitat is present within the APE. This species is often found in agricultural ditches and canals. The nearest recorded observation of this species was approximately 6 miles southeast of the APE in 2015.
Western spadefoot (*Spea hammondii*)	CSC	Prefers open areas with sandy or gravelly soils, in a variety of habitats including mixed woodlands, grasslands, coastal sage scrub, chaparral, sandy washes, lowlands, river floodplains, alluvial fans, playas, alkali flats, foothills, and mountains. Vernal pools or temporary wetlands, lasting a minimum of	**Possible.** Suitable aquatic habitat is present within the canal that runs through APE. This species only requires water for three weeks to breed. The nearest recorded observation of this species was approximately 10.5 miles northeast of the APE in 2019.	**Possible.** Suitable aquatic habitat is present within the canal that runs through APE. This species only requires water for three weeks to breed. The most recent recorded observation of this species was approximately 12 miles north of the APE in 2019.	**Possible.** Suitable aquatic habitat is present within the canal that runs through APE. This species only requires water for three weeks to breed. The nearest recorded observation of this species was approximately 5 miles southwest of the APE in 1948.	**Possible.** Suitable aquatic habitat is present within the canal that runs through APE. This species only requires water for three weeks to breed. The nearest recorded observation of this species was approximately 3 miles southwest of the APE in 1948.

Species	Status	Habitat	Occurrence within Project Site Carter-Bybee	Badhesha	Horner	Kenneson-Sanchez
		three weeks, which do not contain bullfrogs, fish, or crayfish are necessary for breeding.				
Western Yellow-billed Cuckoo (*Coccyzus americanus occidentalis*)	FT, CE	Suitable nesting habitat in California includes dense riparian willow-cottonwood and mesquite habitats along a perennial river. Once a common breeding species in riparian habitats of lowland California, this species currently breeds consistently in only two locations in the State: along the Sacramento and South Fork Kern Rivers.	**Absent.** Suitable nesting and foraging habitats are absent within the APE and surrounding lands. All recorded observations in the vicinity are listed as extirpated. This species currently breeds consistently in only two locations in the State: along the Sacramento and South Fork Kern Rivers.	**Absent.** Suitable nesting and foraging habitats are absent within the APE and surrounding lands. All recorded observations in the vicinity are listed as extirpated. This species currently breeds consistently in only two locations in the State: along the Sacramento and South Fork Kern Rivers.	**Absent.** Suitable nesting and foraging habitats are absent within the APE and surrounding lands. All recorded observations in the vicinity are listed as extirpated. This species currently breeds consistently in only two locations in the State: along the Sacramento and South Fork Kern Rivers.	**Absent.** Suitable nesting and foraging habitats are absent within the APE and surrounding lands. All recorded observations in the vicinity are listed as extirpated. This species currently breeds consistently in only two locations in the State: along the Sacramento and South Fork Kern Rivers.

Table 6. List of Special Status Plants with Potential to Occur Onsite and/or in the Vicinity

Species	Status	Habitat	Occurrence within Project Site Carter-Bybee	Bashesha	Horner	Kenneson-Sanchez
Alkali-sink goldfields (*Lasthenia chrysantha*)	CNPS 1B	Found in vernal pool and wet saline flat habitats. Occurrences documented in the San Joaquin and Sacramento Valleys at elevations below 656 feet. Blooms February - April.	**Absent.** Vernal pool habitat and required soils are absent from the APE and the surrounding areas. The most recent recorded observation of this species was approximately 9.5 miles southwest of the APE in 1953.	**Absent.** Vernal pool habitat and required soils are absent from the APE and the surrounding areas. The only recorded observation of this species was approximately 15 miles southeast of the APE in 1943 but is listed as possibly extirpated.	**Absent.** Vernal pool habitat and required soils are absent from the APE and the surrounding areas. The nearest recorded observation of this species was approximately 3.5 miles south of the APE in 1936 but is listed as possibly extirpated. The most recent recorded	**Absent.** Vernal pool habitat and required soils are absent from the APE and the surrounding areas. The nearest recorded observation of this species was approximately 2.5 miles south of the APE in 1936 but is listed as possibly extirpated. The most recent recorded

Species	Status	Habitat	Occurrence within Project Site			
			Carter-Bybee	Bashesha	Horner	Kenneson-Sanchez
					observation of this species was approximately 7 miles southwest of the APE in 2004.	observation of this species was approximately 5.5 miles southwest of the APE in 2004.
Brittlescale (*Atriplex depressa*)	CNPS 1B	Found in the San Joaquin Valley and Sacramento Valley in alkaline or clay soils, typically in meadows or annual grassland in at elevations below 1050 feet. Sometimes associated with vernal pools. Blooms June–October.	**Absent.** Vernal pool habitat is absent from within the APE and surrounding areas. There are no recorded observations of this species on CNDDB within the regional vicinity of the Project.	**Absent.** Vernal pool habitat is absent from within the APE and surrounding areas. There are no recorded observations of this species on CNDDB within the regional vicinity of the Project.	**Absent.** Vernal pool habitat is absent from within the APE and surrounding areas. The nearest recorded observation of this species was approximately 7.5 miles southwest of the APE in 1993.	**Absent.** Vernal pool habitat is absent from within the APE and surrounding areas. The nearest recorded observation of this species was approximately 6 miles southwest of the APE in 1993.
California alkali grass (*Puccinellia simplex*)	CNPS 1B	Found in the San Joaquin Valley and other parts of California in saline flats and mineral springs within valley grassland and wetland-riparian communities at elevations below 3000 feet. Blooms March–May.	**Absent.** Required grassland habitat are absent within the APE and surrounding lands. There are no recorded observations of this species on CNDDB within the regional vicinity of the Project.	**Absent.** Required grassland habitat are absent within the APE and surrounding lands. There are no recorded observations of this species on CNDDB within the regional vicinity of the Project.	**Absent.** Required grassland habitat are absent within the APE and surrounding lands. The nearest recorded observation of this species was approximately 3.5 miles south of the APE in 1936 but is listed as possibly extirpated. The most recent recorded observation of this species was approximately 8 miles southwest of the APE in 2003.	**Absent.** Required grassland habitat are absent within the APE and surrounding lands. The nearest recorded observation of this species was approximately 2.5 miles south of the APE in 1936. The most recent recorded observation of this species was approximately 6.5 miles southwest of the APE in 2003.
California jewelflower (*Caulanthus californicus*)	FE, CE, CNPS 1B	Found in the San Joaquin Valley and Western Transverse Ranges in sandy soils. Occurs on flats and slopes, generally in non-	**Unlikely.** Required sandy soils are present within the APE and surrounding lands but the APE is a cultivated	**Unlikely.** Required sandy soils are present within the APE and surrounding lands but the APE is a cultivated	**Unlikely.** Required sandy soils are present within the APE and surrounding lands but the APE is a cultivated	**Unlikely.** Required sandy soils are present within the APE and surrounding lands but the APE is a cultivated

Species	Status	Habitat	Occurrence within Project Site			
			Carter-Bybee	Bashesha	Horner	Kenneson-Sanchez
		alkaline grassland at elevations between 230 feet and 6100 feet. Blooms February–April.	agricultural field. Agricultural disturbance makes the APE unsuitable for this species. The only recorded observation of this species was approximately 7 miles east of the APE in 1986.	agricultural field. Agricultural disturbance makes the APE unsuitable for this species. The only recorded observation of this species was approximately 2 miles north of the APE in 1986.	agricultural field. Agricultural disturbance makes the APE unsuitable for this species. There are no recorded observations of this species on CNDDB within the regional vicinity of the Project	agricultural field. Agricultural disturbance makes the APE unsuitable for this species. There are no recorded observations of this species on CNDDB within the regional vicinity of the Project.
California satintail (*Imperata brevifolia*)	CNPS 2B	Although this facultative species is equally likely to occur in wetlands and non-wetlands, it is often found in wet springs, meadows, streambanks, and floodplains at elevations below 1600 feet. Blooms September – May.	**Absent.** Wet meadows are absent from the APE and surrounding areas. The Canal in the APE is regularly maintained and contained minimal invasive vegetation at the time of the biological survey. The only recorded observation of this species was approximately 7 miles east of the APE in 1893.	**Absent.** Wet meadows are absent from the APE and surrounding areas. The Canal in the APE is regularly maintained and contained minimal invasive vegetation at the time of the biological survey. The only recorded observation of this species was approximately 2 miles north of the APE in 1893.	**Absent.** Wet meadows are absent from the APE and surrounding areas. The Canal in the APE is regularly maintained and contained minimal invasive vegetation at the time of the biological survey. There are no recorded observations of this species on CNDDB within the regional vicinity of the Project.	**Absent.** Wet meadows are absent from the APE and surrounding areas. The Canal in the APE is regularly maintained and contained minimal invasive vegetation at the time of the biological survey. There are no recorded observations of this species on CNDDB within the regional vicinity of the Project.
Earlimart orache (*Atriplex cordulata* var. *erecticaulis*)	CNPS 1B	Found in the San Joaquin Valley in saline or alkaline soils, typically within valley and foothill grassland at elevations below 375 feet. Blooms August–September.	**Unlikely.** Required saline soils are absent within the APE and surrounding lands. The APE is a cultivated agricultural field which makes the APE unsuitable for this species. There are no recorded observations of this species on CNDDB within the	**Unlikely.** Required saline soils are present within the APE and surrounding lands but the APE is a cultivated agricultural field. Agricultural disturbance makes the APE unsuitable for this species. There are no recorded observations of this	**Unlikely.** Required saline soils are absent within the APE and surrounding lands. The APE is a cultivated agricultural field which makes the APE unsuitable for this species. The only recorded observation of this species was approximately 10.5	**Unlikely.** Required saline soils are present within the APE and surrounding lands but the APE is a cultivated agricultural field. Agricultural disturbance makes the APE unsuitable for this species. The only recorded observation of this species was

Species	Status	Habitat	Occurrence within Project Site			
			Carter-Bybee	Bashesha	Horner	Kenneson-Sanchez
			regional vicinity of the Project.	species on CNDDB within the regional vicinity of the Project.	miles southwest of the APE in 1990.	approximately 9 miles southwest of the APE in 1990.
Greene's tuctoria (*Tuctoria greenei*)	FE, CR, CNPS 1B	Found in the San Joaquin Valley and other parts of California in vernal pools within valley grassland, wetland, and riparian communities at elevations below 3500 feet. Blooms May – September.	**Absent.** Vernal pool habitat is absent within the APE and the surrounding areas. There are no recorded observations of this species on CNDDB within the regional vicinity of the Project.	**Absent.** Vernal pool habitat is absent within the APE and the surrounding areas. The only recorded observation of this species was approximately 15.5 miles northeast of the APE in 1987.	**Absent.** Vernal pool habitat is absent within the APE and the surrounding areas. There are no recorded observations of this species on CNDDB within the regional vicinity of the Project.	**Absent.** Vernal pool habitat is absent within the APE and the surrounding areas. There are no recorded observations of this species on CNDDB within the regional vicinity of the Project.
Hairy Orcutt grass (*Orcuttia pilosa*)	FE, CE, CNPS 1B	Found in vernal pools in valley grassland, wetland, and riparian communities at elevations below 650 feet. Blooms May – September.	**Absent.** Vernal pool habitat is absent within the APE and the surrounding areas. The nearest recorded observation of this species was approximately 7 miles northeast of the APE in 2010.	**Absent.** Vernal pool habitat is absent within the APE and the surrounding areas. The only recorded observation of this species was approximately 13 miles north of the APE in 1986.	**Absent.** Vernal pool habitat is absent within the APE and the surrounding areas. The nearest recorded observation of this species was approximately 11 miles northeast of the APE in 2010.	**Absent.** Vernal pool habitat is absent within the APE and the surrounding areas. The nearest recorded observation of this species was approximately 13 miles northeast of the APE in 2010.
Heartscale (*Atriplex cordulata* var. *cordulata*)	CNPS 1B	Found in the San Joaquin Valley and Sacramento Valley in saline or alkaline soils within shadscale scrub, valley grassland, and wetland-riparian communities at elevations below 230 feet. Blooms June–July.	**Unlikely.** Required saline soils are absent within the APE and surrounding lands. The APE is a cultivated agricultural field which makes the APE unsuitable for this species. The only recorded observation of this species was approximately 12 miles south of the APE in 2009 but is listed as extirpated.	**Unlikely.** Required saline soils are present within the APE and surrounding lands but the APE is a cultivated agricultural field. Agricultural disturbance makes the APE unsuitable for this species. There are no recorded observations of this species on CNDDB within the regional vicinity of the Project.	**Unlikely.** Required saline soils are present within the APE and surrounding lands but the APE is a cultivated agricultural field. Agricultural disturbance makes the APE unsuitable for this species. The most recent recorded observation of this species was approximately 7.5	**Unlikely.** Required saline soils are absent within the APE and surrounding lands. The APE is a cultivated agricultural field which makes the APE unsuitable for this species. The only recorded observation of this species was approximately 6 miles southwest of the APE in 1993.

Species	Status	Habitat	Occurrence within Project Site			
			Carter-Bybee	Bashesha	Horner	Kenneson-Sanchez
					miles southwest of the APE in 1993.	
Hoover's calycadenia (*Calycadenia hooveri*)	CNPS 1B	Found in valley and foothill grassland and cismontane woodland communities on exposed, rocky, barren soil at elevations between 300 feet and 1300 feet. Blooms June – September.	**Absent.** Required habitat and soils are absent from the APE and surrounding areas. The only recorded observation of this species was approximately 16 miles northeast of the APE in 2007.	**Absent.** Required habitat and soils are absent from the APE and surrounding areas. There are no recorded observations of this species on CNDDB within the regional vicinity of the Project.	**Absent.** Required habitat and soils are absent from the APE and surrounding areas. There are no recorded observations of this species on CNDDB within the regional vicinity of the Project.	**Absent.** Required habitat and soils are absent from the APE and surrounding areas. There are no recorded observations of this species on CNDDB within the regional vicinity of the Project.
Hoover's eriastrum (*Eriastrum hooveri*)	CNPS 4	Chenopod scrub, valley and foothill grassland, pinyon, and juniper woodland. On sparsely vegetated alkaline alluvial fans; also, in the Temblor Range on sandy soils. 50-915 m.	**Absent.** Required habitat and alkaline soils are absent from the APE and surrounding areas. The only recorded observation of this species was approximately 11.5 miles south of the APE in 1979.	**Absent.** Required habitat and alkaline soils are absent from the APE and surrounding areas. The only recorded observation of this species was approximately 6 miles southwest of the APE in 1986.	**Absent.** Required habitat and alkaline soils are absent from the APE and surrounding areas. The most recent recorded observation of this species was approximately 9.5 miles southwest of the APE in 1986.	**Absent.** Required habitat and alkaline soils are absent from the APE and surrounding areas. The most recent recorded observation of this species was approximately 7.5 miles southwest of the APE in 1986.
Lesser saltscale (*Atriplex minuscula*)	CNPS 1B	Found in the San Joaquin Valley in sandy, alkaline soils in alkali scrub, valley and foothill grassland, and alkali sink communities at elevations below 750 feet. Blooms April–October.	**Absent.** Required habitat and alkaline soils are absent from the APE and surrounding areas. The only recorded observation of this species was approximately 8.5 miles south of the APE in 1948.	**Absent.** Required habitat and alkaline soils are absent from the APE and surrounding areas. The only recorded observation of this species was approximately 6 miles southwest of the APE in 1937.	**Absent.** Required habitat and alkaline soils are absent from the APE and surrounding areas. The nearest recorded observation of this species was approximately 7 miles southwest of the APE in 1941. The most recent recorded observation of this species was approximately 10 miles	**Absent.** Required habitat and alkaline soils are absent from the APE and surrounding areas. The nearest recorded observation of this species was approximately 5 miles south of the APE in 1941. The most recent recorded observation of this species was approximately 9.5

Species	Status	Habitat	Occurrence within Project Site			
			Carter-Bybee	Bashesha	Horner	Kenneson-Sanchez
					northwest of the APE in 2000.	miles northwest of the APE in 2000.
Lost Hills crownscale (*Atriplex coronata* var. *vallicola*)	CNPS 1B	Found in the San Joaquin Valley in dried ponds and alkaline soils in alkali scrub, valley and foothill grassland, and vernal pools at elevations below 2900 feet. Blooms April–September.	**Absent.** Required habitat and alkaline soils are absent from the APE and surrounding areas. There are no recorded observations of this species on CNDDB within the regional vicinity of the Project.	**Absent.** Required habitat and alkaline soils are absent from the APE and surrounding areas. There are no recorded observations of this species on CNDDB within the regional vicinity of the Project.	**Absent.** Required habitat and alkaline soils are absent from the APE and surrounding areas. The most recent recorded observation of this species was approximately 7 miles southwest of the APE in 1986.	**Absent.** Required habitat and alkaline soils are absent from the APE and surrounding areas. The nearest recorded observation of this species was approximately 5.5 miles southwest of the APE in 1986.
Madera leptosiphon (*Leptosiphon serrulatus*)	CNPS 1B	Found in openings in foothill woodland, often yellow-pine forest, and chaparral at elevations between 1000 feet and 4300 feet. Blooms April – May.	**Absent.** The APE is outside of the elevational requirements of this species. Required habitats are absent within the APE and surrounding lands. The nearest recorded observation of this species was approximately 7 miles east of the APE in 1922.	**Absent.** The APE is outside of the elevational requirements of this species. Required habitats are absent within the APE and surrounding lands. The only recorded observation of this species was approximately 2 miles north of the APE in 1922.	**Absent.** The APE is outside of the elevational requirements of this species. Required habitats are absent within the APE and surrounding lands. The only recorded observation of this species was approximately 7.5 miles southwest of the APE in 1986.	**Absent.** The APE is outside of the elevational requirements of this species. Required habitats are absent within the APE and surrounding lands. The only recorded observation of this species was approximately 5.5 miles southwest of the APE in 1986.
Munz's tidy-tips (*Layia munzii*)	CNPS 1B	Found in the San Joaquin Valley in alkaline clay soils; often along hillsides in alkali scrub and sometimes valley and foothill grassland. Occurs at elevations between 145 feet and 2625 feet Blooms March–April.	**Absent.** Required habitat and alkaline soils are absent within the APE and surrounding lands. The only recorded observation of this species was approximately 9 miles north of the APE in 1937.	**Absent.** Required habitat and alkaline soils are absent within the APE and surrounding lands. There are no recorded observations of this species on CNDDB within the regional vicinity of the Project.	**Absent.** Required habitat and alkaline soils are absent within the APE and surrounding lands. The only recorded observation of this species was approximately 11 miles south of the APE in 1937.	**Absent.** Required habitat and alkaline soils are absent within the APE and surrounding lands. The only recorded observation of this species was approximately 12.5 miles south of the APE in 1937.

Species	Status	Habitat	Occurrence within Project Site			
			Carter-Bybee	Bashesha	Horner	Kenneson-Sanchez
Palmate-bracted bird's beak (*Chloropyron palmatum*)	FE, CE, CNPS 1B	Found in the San Joaquin Valley and Sacramento Valley in alkaline soils (usually Pescadero silty clay) in chenopod scrub, valley and foothill grassland at elevations below 500 feet. Blooms June–August.	**Absent.** Required habitat and alkaline soils are absent within the APE and surrounding lands. The only recorded observation of this species was approximately 12 miles south of the APE in 1983.	**Absent.** Required habitat and alkaline soils are absent within the APE and surrounding lands. There are no recorded observations of this species on CNDDB within the regional vicinity of the Project.	**Absent.** Required habitat and alkaline soils are absent within the APE and surrounding lands. The only recorded observation of this species was approximately 9.5 miles south of the APE in 1983.	**Absent.** Required habitat and alkaline soils are absent within the APE and surrounding lands. The only recorded observation of this species was approximately 8.5 miles south of the APE in 1983.
Pincushion navarettia (*Navarretia myersii* spp. *myersii*)	CNPS 1B	Found in vernal pools in clay soils at elevations between 65-295 feet. Often associated with non-native grasslands. Blooms in May.	**Absent.** Required vernal pools are absent within the APE and surrounding lands. The only recorded observation of this species was approximately 14 miles northeast of the APE in 2016.	**Absent.** Required vernal pools are absent within the APE and surrounding lands. There are no recorded observations of this species on CNDDB within the regional vicinity of the Project.	**Absent.** Required vernal pools are absent within the APE and surrounding lands. There are no recorded observations of this species on CNDDB within the regional vicinity of the Project.	**Absent.** Required vernal pools are absent within the APE and surrounding lands. There are no recorded observations of this species on CNDDB within the regional vicinity of the Project.
Recurved larkspur (*Delphinium recurvatum*)	CNPS 1B	Occurs in poorly drained, fine, alkaline soils in grassland and alkali scrub communities at elevations between 100 feet and 2600 feet. Blooms March–June.	**Absent.** Required habitat and alkaline soils are absent within the APE and surrounding lands. The only recorded observation of this species was approximately 12 miles south of the APE in 1956.	**Absent.** Required habitat and alkaline soils are absent within the APE and surrounding lands. There are no recorded observations of this species on CNDDB within the regional vicinity of the Project.	**Absent.** Required habitat and alkaline soils are absent within the APE and surrounding lands. The nearest recorded observation of this species was approximately 8 miles southwest of the APE in 2004.	**Absent.** Required habitat and alkaline soils are absent within the APE and surrounding lands. The nearest recorded observation of this species was approximately 6 miles southwest of the APE in 2004.
San Joaquin Valley Orcutt grass (*Orcuttia inaequalis*)	FT, CE, CNPS 1B	Found in the eastern San Joaquin Valley and the Sierra Nevada foothills in vernal pools within valley grassland, freshwater wetland, and wetland-	**Absent.** Required vernal pools are absent within the APE and surrounding lands. The nearest recorded observation of this	**Absent.** Required vernal pools are absent within the APE and surrounding lands. The only recorded observation of this	**Absent.** Required vernal pools are absent within the APE and surrounding lands. There are no recorded observations of this	**Absent.** Required vernal pools are absent within the APE and surrounding lands. There are no recorded observations of this

Species	Status	Habitat	Occurrence within Project Site			
			Carter-Bybee	Bashesha	Horner	Kenneson-Sanchez
		riparian communities at elevations below 2600 feet. Blooms April – September.	species was approximately 10.5 miles east of the APE in 1987.	species was approximately 11.5 miles north of the APE in 1987 but is listed as extirpated.	species on CNDDB within the regional vicinity of the Project.	species on CNDDB within the regional vicinity of the Project.
Sanford's arrowhead (*Sagittaria sanfordii*)	CNPS 1B	Found in the San Joaquin Valley and other parts of California in freshwater-marsh, primarily ponds and ditches, at elevations below 1000 feet. Blooms May–October.	**Unlikely.** This species was not observed during the biological survey. The Canal contained minimal vegetation and is maintained regularly making it unlikely for this species to occur within the APE. The nearest recorded observation of this species was approximately 4.5 miles east of the APE in 2020.	**Unlikely.** This species was not observed during the biological survey. The Canal contained minimal vegetation and is maintained regularly making it unlikely for this species to occur within the APE. The most recent recorded observation of this species was approximately 9 miles northwest of the APE in 2020.	**Unlikely.** This species was not observed during the biological survey. The Canal contained minimal vegetation and is maintained regularly making it unlikely for this species to occur within the APE. The most recent recorded observation of this species was approximately 8 miles east of the APE in 2020.	**Unlikely.** This species was not observed during the biological survey. The Canal contained minimal vegetation and is maintained regularly making it unlikely for this species to occur within the APE. The most recent recorded observation of this species was approximately 9.5 miles east of the APE in 2020.
Spiny-sepaled button-celery (*Eryngium spinosepalum*)	CNPS 1B	Found in the Sierra Nevada Foothills and the San Joaquin Valley. Occurs in vernal pools, swales, and roadside ditches. Often associated with clay soils in vernal pools within grassland communities. Occurs at elevations between 50 feet and 4160 feet. Blooms April–July.	**Absent.** Vernal pools are absent from the APE and surrounding areas. The most recent recorded observation of this species was approximately 14 miles northeast of the APE in 2010.	**Absent.** Vernal pools are absent from the APE and surrounding areas. There are no recorded observations of this species on CNDDB within the regional vicinity of the Project.	**Absent.** Vernal pools are absent from the APE and surrounding areas. The only recorded observation of this species was approximately 11.5 miles northwest of the APE in 2000.	**Absent.** Vernal pools are absent from the APE and surrounding areas. The only recorded observation of this species was approximately 11 miles northwest of the APE in 2000.
Subtle orache (*Atriplex subtilis*)	CNPS 1B	Found in the San Joaquin Valley in saline depressions in alkaline soils within valley and foothill grassland communities at	**Absent.** Required habitat and alkaline soils are absent within the APE and surrounding lands. There are no recorded	**Absent.** Required habitat and alkaline soils are absent within the APE and surrounding lands. There are no recorded	**Absent.** Required habitat and alkaline soils are absent within the APE and surrounding lands. The nearest recorded	**Absent.** Required habitat and alkaline soils are absent within the APE and surrounding lands. The nearest recorded

Species	Status	Habitat	Occurrence within Project Site			
			Carter-Bybee	Bashesha	Horner	Kenneson-Sanchez
		elevations below 330 feet. Blooms June–October.	observations of this species on CNDDB within the regional vicinity of the Project.	observations of this species on CNDDB within the regional vicinity of the Project.	observation of this species was approximately 8 miles southwest of the APE in 1996.	observation of this species was approximately 6 miles southwest of the APE in 1996.
Succulent owl's-clover (*Castilleja campestris* var. *succulenta*)	FT, CE, CNPS 1B	Found in vernal pools, often in acidic soils at elevations below 2500 feet. Blooms April – July.	**Absent.** Vernal pool habitat and acidic soils are absent from the APE and surrounding areas. The nearest recorded observation of this species was approximately 12 miles east of the APE in 1981.	**Absent.** Vernal pool habitat and acidic soils are absent from the APE and surrounding areas. The only recorded observation of this species was approximately 12.5 miles northeast of the APE in 1981.	**Absent.** Vernal pool habitat and acidic soils are absent from the APE and surrounding areas. The only recorded observation of this species was approximately 13 miles northeast of the APE in 1982.	**Absent.** Vernal pool habitat and acidic soils are absent from the APE and surrounding areas. The only recorded observation of this species was approximately 15 miles northeast of the APE in 1982.
Vernal pool smallscale (*Atriplex persistens*)	CNPS 1B	Occurs in the San Joaquin Valley and Sacramento Valley in alkaline vernal pools at elevations below 375 feet. Blooms June–September.	**Absent.** Required vernal pool habitat and alkaline soils are absent within the APE and surrounding lands. There are no recorded observations of this species on CNDDB within the regional vicinity of the Project.	**Absent.** Required vernal pool habitat and alkaline soils are absent within the APE and surrounding lands. There are no recorded observations of this species on CNDDB within the regional vicinity of the Project.	**Absent.** Required vernal pool habitat and alkaline soils are absent within the APE and surrounding lands. The most recent recorded observation of this species was approximately 10.5 miles northwest of the APE in 2009.	**Absent.** Required vernal pool habitat and alkaline soils are absent within the APE and surrounding lands. The most recent recorded observation of this species was approximately 11 miles northwest of the APE in 2009.

EXPLANATION OF OCCURRENCE DESIGNATIONS AND STATUS CODES

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

STATUS CODES

FE	Federally Endangered	CE	California Endangered
FT	Federally Threatened	CT	California Threatened
FC	Federal Candidate	CR	California Rare
		CFP	California Fully Protected
		CSC	California Species of Concern
		CWL	California Watch List
		CCE	California Endangered (Candidate)

CNPS LISTING

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

III. Impacts and Mitigation

Significance Criteria

CEQA

General plans, area plans, and specific projects are subject to the provisions of CEQA. The purpose of CEQA is to assess the impacts of proposed projects on the environment prior to project implementation. Impacts to biological resources are just one type of environmental impact assessed under CEQA and vary from project to project in terms of scope and magnitude. Projects requiring removal of vegetation may result in the mortality or displacement of animals associated with this vegetation. Animals adapted to humans, roads, buildings, and pets may replace those species formerly occurring on a site. Plants and animals that are State and/or federally listed as threatened or endangered may be destroyed or displaced. Sensitive habitats such as wetlands and riparian woodlands may be altered or destroyed. Such impacts may be considered either "significant" or "less than significant" under CEQA. According to CEQA, Statute and Guidelines (AEP 2012), "significant effect on the environment" means a substantial, or potentially substantial, adverse change in any of the physical conditions within the area affected by the project including land, air, water, minerals, flora, fauna, ambient noise, and objects of historic or aesthetic interest. Specific project impacts to biological resources may be considered "significant" if they would:

- Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the CDFW or USFWS;
- Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by the CDFW or USFWS;
- Have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means;
- Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors or impede the use of native wildlife nursery sites.
- Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance; or
- Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or State habitat conservation plan.

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

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

NEPA

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

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

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

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

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

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

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

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

Relevant Goals, Policies, and Laws

Fresno County Ordinance

All three sites are located within Fresno County. The Fresno County General Plan Policy Document (Fresno County Planning Commission 2000) contains the following goals and policies related to the Project:

Water Resources

Goal OS-A: To protect and enhance the water quality and quantity in Fresno County's streams, creeks, and groundwater basins.

Policy OS-A.6: The County shall support efforts to create additional water storage that benefits Fresno County, and is economically, environmentally, and technically feasible.

Policy OS-A.10: The County shall develop and maintain an inventory of sites within the county that are suitable for groundwater recharge. The sites shall be incorporated into the County GIS and included in the water resource database. **Policy OS-A.13:** The County shall encourage, where economically, environmentally, and technically feasible, efforts aimed at directly or indirectly recharging the county's groundwater.

Policy OS-A.14: The County shall support and/or engage in water banking (i.e., recharge and subsequent extraction for direct and/or indirect use on lands away from the recharge area) based on the following criteria:

a. The amount of extracted water will never exceed the amount recharged;
b. The water banking program will result in no net loss of water resources within Fresno County;
c. The water banking program will not have a negative impact on other water users within Fresno County;
d. The water banking program will not create, increase, or spread groundwater contamination;
e. The water banking program includes sponsorship, monitoring, and reporting by a local public agency;
f. The groundwater banking program will not cause or increase land subsidence;
g. The water banking program will not have a negative impact on agriculture within Fresno County;
h. The water banking program will provide a net benefit to Fresno County.

Wetland and Riparian Areas

Goal OS-D: To conserve the function and values of wetland communities and related riparian areas throughout Fresno County while allowing compatible uses where appropriate. Protection of these resource functions will positively affect aesthetics, water quality, floodplain management, ecological function, and recreation/tourism.

Policy OS-D.1: The County shall support the "no-net-loss" wetlands policies of the US Army Corps of Engineers, the US Fish and Wildlife Service, and the California Department of Fish and Game. Coordination with these agencies at all levels of project review shall continue to ensure that appropriate mitigation measures and the concerns of these agencies are adequately addressed.

Fish and Wildlife Habitat

Goal OS-E: To help protect, restore, and enhance habitats in Fresno County that support fish and wildlife species so that populations are maintained at viable levels.

Policy OS-E.2: The County shall require adequate buffer zones between construction activities and significant wildlife resources, including both onsite habitats that are purposely avoided and significant habitats that are adjacent to the project site, in order to avoid the degradation and disruption of critical life cycle activities such as breeding and feeding. The width of the buffer zone should vary depending on the location, species, etc. A final determination shall be made based on informal consultation with the US Fish and Wildlife Service and/or the California Department of Fish and Game.

Policy OS-E.5: The County shall support preservation of habitats of rare, threatened, endangered, and/or other special-status species including fisheries. The County shall consider developing a formal Habitat Conservation Plan in consultation with Federal and State agencies, as well as other resource conservation organizations. Such a plan should provide a mechanism for the acquisition and management of lands that support special-status species.

Policy OS-E.11: The County shall protect significant aquatic habitats against excessive water withdrawals that could endanger special-status fish and wildlife or would interrupt normal migratory patterns.

Policy OS-E.18: The County should preserve areas identified as habitats for rare or endangered plant and animal species primarily through the use of open space easements and appropriate zoning that restrict development in these sensitive areas.

Vegetation

Goal OS-F: To preserve and protect the valuable vegetation resources of Fresno County.

Policy OS-F.4: The County shall ensure that landmark trees are preserved and protected whenever possible.

Policy OS-F.8: The County should encourage landowners to maintain natural vegetation or plant suitable vegetation along fence lines, drainage, and irrigation ditches and on unused or marginal land for the benefit of wildlife.

Threatened and Endangered Species

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

Designated Critical Habitat

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

Migratory Birds

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

Birds of Prey

Birds of prey are protected in California under provisions of Fish and Game Code (Section 3503.5), which states that it is unlawful to take, possess, or destroy any birds in the order Falconiformes (hawks and eagles) or Strigiformes (owls), as well as their nests and eggs. The bald eagle and golden eagle are afforded additional protection under the federal Bald and Golden Eagle Protection Act (16 USC 668), which makes it unlawful to kill birds or their eggs.

Nesting Birds

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

Wetlands and other "Jurisdictional Waters"

Natural drainage channels and adjacent wetlands may be considered "Waters of the United States" or "jurisdictional waters" subject to the jurisdiction of the USACE. The extent of jurisdiction has been defined in the Code of Federal Regulations but has also been subject to interpretation of the federal courts. Jurisdictional waters generally include:

- All waters which are currently used, or were used in the past, or may be susceptible to use in interstate or foreign commerce, including all waters which are subject to the ebb and flow of the tide;
- All interstate waters including interstate wetlands;
- All other waters such as intrastate lakes, rivers, streams (including intermittent streams), mudflats, sandflats, wetlands, sloughs, prairie potholes, wet meadows, playa lakes, or natural ponds, the use, degradation, or destruction of which could affect interstate or foreign commerce;
- All impoundments of waters otherwise defined as Waters of the United States under the definition;
- Tributaries of waters identified in paragraphs (a)(1)-(4) (i.e., the bulleted items above).

As determined by the United States Supreme Court in its 2001 Solid Waste Agency of Northern Cook County v. United States Army Corps of Engineers (SWANCC) decision, channels and wetlands isolated from other jurisdictional waters cannot be considered jurisdictional on the basis of their use, hypothetical or observed, by migratory birds. Similarly, in its 2006 consolidated Carabell/Rapanos decision, the Supreme Court ruled that a significant nexus between a wetland and other navigable waters must exist for the wetland itself to be considered a navigable and therefore jurisdictional water. Furthermore, the Supreme Court clarified that the United States Environmental Protection Agency (USEPA) and the USACE will not assert jurisdiction over ditches excavated wholly in and draining only uplands and that do not carry a relatively permanent flow of water.

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

Under the Porter-Cologne Water Quality Control Act of 1969, the SWRCB has regulatory authority to protect the water quality of all surface water and groundwater in the State of California ("Waters of the State"). Nine

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

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

Potentially Significant Project-Related Impacts and Mitigation

Species identified as candidate, sensitive, or special status species in local or regional plans, policies, or regulations by CDFW or USFWS that have the potential to be impacted by Project include: California Horned Lark, Swainson's Hawk, northwestern pond turtle, and western spadefoot.

All Basins Mitigation

General Mitigation Measures

Prior to the start of construction, all personnel associated with construction of the Project will be trained to be able to identify these candidate, sensitive, or special status species in order to prevent impacts to sensitive resources; therefore, the following general mitigation measures will be implemented:

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

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

- Vehicles will observe a 15-mph speed limit while on unpaved access routes.
- Workers will inspect areas beneath parked vehicles prior to mobilization. If special status species are detected beneath vehicles, the individual will either be allowed to leave of its own volition or will be captured by the qualified biologist (must possess appropriate collecting/handling permits) and relocated out of harm's way to the nearest suitable habitat beyond the influence of the Project work area. "Take" of a listed (rare, threatened, or endangered) species is prohibited.
- The presence of any special status species and/or any wildlife mortalities will be reported to the Project's designated biologist and the appropriate regulatory agencies.

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

The APEs and surrounding areas consist of agricultural fields with canals that are likely to function as wildlife movement corridors. Anthropogenic activities within the APEs would deter wildlife from using these corridors during the day, though these deterrents are absent at night. The following mitigation measures would reduce impacts to nocturnal wildlife movement to a less than significant level.

Mitigation. The following measures will be implemented during or prior to the start of construction:

Mitigation Measure BIO-2a (*Operational Hours*): Construction activities will be limited to daylight hours to reduce potential impacts to wildlife movement corridors.

Mitigation Measure BIO-2b (Wildlife Access): At no point will access be blocked outside of construction hours or during overnight hours or weekends. If construction must block both sides of a wildlife access route, an alternative route through the construction area will be identified by a qualified biologist and maintained throughout the construction schedule timeframe.

Mitigation Measure BIO-2c (*Cover Excavations*): Pipeline/culvert/siphon excavations and vertical pipes will be covered each night to prevent wildlife from falling in and becoming trapped or injured during migratory or dispersal movements.

Project-Related Mortality and/or Disturbance of Nesting Raptors, Migratory Birds, and Special Status Birds

The APEs contain suitable nesting and/or foraging habitat for a variety of ground and tree nesting avian species. It is anticipated that during nesting bird season, numerous species of birds could use the APEs for nesting. Swainson's Hawks and California Horned Lark were deemed the only special status species possible to occur within the APEs. Trees near the APEs have the potential to host a multitude of nesting birds, and species such as Killdeer which were observed during the biological survey, are known to build nests on bare ground or compacted dirt roads. Construction activities could disturb birds nesting within or adjacent to work areas, resulting in nest abandonment. Construction activities that adversely affect the nesting success of raptors and migratory birds or result in the mortality of individual birds constitute a violation of State and federal laws and are considered a significant impact under CEQA and NEPA. Birds nesting within the APEs during construction have the potential to be injured or killed by Project-related activities. In addition to the direct "take" of nesting birds, nesting birds within the APEs or adjacent areas could be disturbed by Project-related activities resulting in nest abandonment. Projects that adversely affect the nesting success of raptors and

migratory birds or result in the mortality of individual birds is considered a violation of State and federal laws and are considered a potentially significant impact under CEQA and NEPA.

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

Mitigation. The following measures would be implemented prior to the start of construction:

> **Mitigation Measure BIO-3a (*Avoidance*):** The Project's construction activities will occur, if feasible, between September 16 and January 31 (outside of nesting bird season) in an effort to avoid impacts to nesting birds. If all Project activities occur outside of nesting bird season, no further mitigation is required.
>
> **Mitigation Measure BIO-3b (*Pre-construction Surveys*):** If activities must occur within nesting bird season (February 1 to September 15), a qualified biologist will conduct pre-construction surveys for Swainson's Hawk nests onsite and within a 0.5-mile radius. These surveys will be conducted in accordance with the *Recommended Timing and Methodology for Swainson's Hawk Nesting Surveys in California's Central Valley* (Swainson's Hawk Technical Advisory Committee 2000) or current guidance. The Swainson's Hawk survey will not be completed between April 21 to June 10 due to the difficulty of identifying nests during this time of year. The pre-construction survey would also provide a presence/absence survey for California Horned Lark and all other nesting birds within the APEs and an additional 50 feet, no more than seven (7) days prior to the start of construction. All raptor nests would be considered "active" upon the nest-building stage.
>
> **Mitigation Measure BIO-3c (*Establish Buffers*):** On discovery of any active nests or breeding colonies near work areas, the biologist will determine appropriate construction setback distances based on applicable CDFW and/or USFWS guidelines and/or the biology of the species in question. Active Swainson's Hawk nests will receive a 0.5-mile buffer and active California Horned Lark nests will receive a 150-foot buffer. Reduced buffer distances may be appropriate for Swainson's Hawk and California Horned Lark depending on site conditions and ongoing disturbance levels and may be discussed with CDFW. Construction buffers will be identified with flagging, fencing, or other easily visible means, and will be maintained until the biologist has determined that the nestlings have fledged.
>
> **Mitigation Measure BIO-3d (*ITP*):** In the event an active Swainson's Hawk nest, California Horned Lark nest, or other nest is detected during surveys and cannot be avoided, consultation with CDFW will be warranted to discuss how to implement the Project and avoid take. If take cannot be avoided, take authorization through the acquisition of an ITP pursuant to Fish and Game Code section 2081, subdivision (b) is necessary to comply with CESA.

Project-Related Mortality and/or Disturbance to Northwestern Pond Turtle

Western pond turtles were once a single species known as *Actinemys marmorata* but was split into two distinct species by Spinks et al. in 2014. The two distinct species are now known as northwestern pond turtle (*Actinemys marmorata*) and southwestern pond turtle (*Actinemys pallida*). The northwestern pond turtle (NPT) range extends from Washington State south and inland through California's San Joaquin Valley. The southwestern Pond turtle (SPT) range extends from the south of the San Francisco Bay along the central California coast to Baja California (Spinks PQ 2014). The top four threats for NPT are predation by nonnative species, pathogens, land alterations, and drought. The top three threats for SPT were drought, predation by nonnative species, floods, and land alteration (Manzo S 2021). The APEs lie within the San Joaquin Valley where only NPT inhabit. NPT habitat features for nesting, overwintering, dispersal, and basking and can occur in the APEs. These features

include aquatic and terrestrial habitats such as ponded areas, irrigation canals, riparian, and upland habitat. NPT are known to nest in the spring or early summer within 100 meters of a water body, although nest sites as far away as 500 meters have also been reported. Noise, vegetation removal, movement of workers, construction, and ground disturbance as a result of Project activities have the potential to significantly impact NPT populations. Without appropriate avoidance and minimization measures for NPT, potentially significant impacts associated with Project activities could include nest reduction, inadvertent entrapment, reduced reproductive success, reduction in health or vigor of eggs and/or young, and direct mortality.

Mitigation. The following measures will be implemented prior to the start of construction:

> **Mitigation Measure BIO-5a (*Pre-construction Survey*):** If Project activities are directly related to the canals a qualified biologist will conduct a pre-construction survey for NPT within and adjacent to the Canals. Pre-construction surveys will be conducted in accordance with the *United States Geological Survey Western Pond Turtle (Emys marmorata) Visual Survey Protocol for the Southcoast Ecoregion* (United States Geological Survey 2006). If no NPT are observed during the pre-construction survey, then construction activities may begin. If construction is delayed or halted for more than 90 days, another pre-construction survey for NPT will be conducted. If a listed species is observed within the Project area, the biologist will stop work and allow the species to leave the site of its own volition or a qualified biologist with the correct handling permit will remove the species from the APE.

Project-Related Mortality and/or Disturbance to Western Spadefoot

Habitat within the APEs and surrounding areas were determined to be suitable for western spadefoot, a California Species of Special Concern. Construction activities occurring within occupied habitat could result in injury, mortality, displacement, disturbance, or inhibit the movement of this species. Implementation of mitigation measure **BIO-1a** listed above, requires each employee, worker, or visitor onsite to attend a mandatory training session, including printed educational materials regarding the conservation status of special status amphibians with potential to occur onsite, laws protecting these species, penalties for violation of those laws, and a list of required protective measures that must be employed to avoid "take" or other significant impacts. Additionally, mitigation measure **BIO-1b** requires implementation of BMPs on the work site which would avoid and minimize potential impacts to special status species.

Mitigation. The following measures will be implemented prior to the start of construction:

> **Mitigation Measure BIO-6a (*Pre-construction Survey*):** If Project activities are directly related to the canals a qualified biologist will conduct a pre-construction survey for spadefoots within and adjacent to the canals. If no spadefoots are observed during the pre-construction survey, then construction activities may begin. If construction is delayed or halted for more than 90 days, another pre-construction survey for spadefoots will be conducted. If a listed species is observed within the Project area, the biologist will stop work and allow the species to leave the site of its own volition or a qualified biologist with the correct handling permit will remove the species from the APE.

Additional Mitigation for Carter-Bybee Basin

Project-Related Disturbance to Trees

The APE contains trees that are known to be used by nesting raptors and are considered a significant biological resource. The palm tree in front of the house is known to contain Barn Owls year-round for the past forty years (see **Appendix A**). Construction activities could disturb these trees and the special status species using them for roosting and nesting.

Implementation of the following measures will reduce potential impacts to the trees and special status species to a less than significant level under CEQA and NEPA and will ensure compliance with State and federal laws protecting these species.

Mitigation. The following measures would be implemented prior to the start of construction:

Mitigation Measure BIO-8b (*Tree Avoidance*): The palm tree within the APE is considered a significant biological resource and will be left in perpetuity. If this is not feasible, consultation with the appropriate regulatory agency (CDFW and/or USFWS) will be required for guidance on how to proceed.

Mitigation Measure BIO-8c (*Establish Buffers*): The palm tree will have a buffer established around it prior to any construction activities. Buffers will be placed outside of the trees canopy/drip line or a minimum 150-foot buffer to avoid disturbance to the root systems. Construction buffers will be identified with flagging, fencing, or other easily visible means, and will be maintained until construction activities are completed.

Mitigation Measure BIO-8a (*Monitor*): In order to prevent inadvertent disturbance to sensitive resource and protect the known roosting owls within Carter-Bybee Basin site, a qualified biologist will perform biological monitoring during all grading, clearing, grubbing, demolition, and construction activities that occur within 150 feet of the existing palm tree. The biologist will perform the monitoring duties before, during, and after construction pursuant to the most current guidelines and protocols. If owls are observed within the Project area and show signs of stress, disturbance, and/or harassment, the biologist will stop work activities in the area for the day to allow the species to resume its normal activities. The biological monitor will continue this practice until the construction activities are complete. The biologist will provide an account of observed behavior using wildlife monitoring methods and provide a daily summary log and photos of observed behavior. A final memo including the daily logs will be submitted to FID for their administrative record.

Mitigation Measure BIO-8d (*ITP*): In the event the palm tree cannot be avoided and/or injury or mortality occurs, consultation with CDFW will be required. If take cannot be avoided, take authorization through the acquisition of an ITP pursuant to Fish and Game Code section 2081, subdivision (b) is necessary to comply with CESA. The ITP permit will be obtained prior to any construction.

Section 7 Determinations

In addition to the effects analysis performed in **Table 5** and **Table 6** of this document, **Table 7**, **Table 8**, **Table 9**, and **Table 10**, summarize Project effect determinations for Federally Listed Species found on the USFWS IPaC list generated on December 16, 2022 (**Appendix I, Appendix J, Appendix K,** and **Appendix L**), in accordance with Section 7 of the Endangered Species Act.

Carter-Bybee Basin

Table 7. Carter-Bybee Basin Section 7 Determinations

Species	Determination	Rationale for Determination
Blunt-nosed leopard lizard (*Gambelia sila*)	**No effect**	**Habitat absent.** The APE and surrounding areas are frequently cultivated agricultural lands that are unsuitable for this species. The APE and surrounding areas are frequently cultivated agricultural lands that are unsuitable for this species. No small mammal burrows suitable for this species were observed.
California tiger salamander (*Ambystoma californiense*)	**No effect**	**Habitat absent.** Vernal pools and upland habitat are absent within the APE and surrounding areas. The surrounding land consists of grape vines which are unsuitable for this species.
Delta smelt (Hypomesus transpacificus)	**No effect**	**Habitat absent.** The APE is outside the known range for this species. Suitable aquatic habitat is absent within the APE as the Canals that flow through the APEs do not flow perennially and do not connect to the Delta.
Fresno kangaroo rat (*Dipodomys nitratoides exilis*)	**No effect**	**Disturbed habitat**. Domestic dog tracks were observed within the APE which would deter this species. No tail drags were found at any burrows within the APE.
Hairy Orcutt grass (*Orcuttia pilosa*)	**No effect**	**Habitat absent**. Vernal pool habitat and required soils are absent from the APE and the surrounding areas.
Monarch butterfly (*Danaus plexippus*)	**No effect**	**Habitat absent**. Foraging and roosting habitat is absent from within the APE and surrounding areas. The APE contained minimal vegetation with no nectar, milkweeds or groves of trees observed during the biological survey.
San Joaquin kit fox (*Vulpes macrotis mutica*)	**No effect**	**Disturbed habitat.** There were no suitable dens, tracks, or scat observed during the biological survey. Human disturbance and domestic dogs within the APE would prevent this species from residing in the area.
Vernal pool fairy shrimp (*Branchinecta lynchi*)	**No effect**	**Habitat absent**. Vernal pool habitat is absent from the APE and surrounding lands.

Badhesha Basin

Table 8. Badhesha Basin Section 7 Determinations

Species	Determination	Rationale for Determination
Blunt-nosed leopard lizard (*Gambelia sila*)	**No effect**	**Habitat absent.** The APE and surrounding areas are frequently cultivated agricultural lands that are unsuitable for this species. No small mammal burrows suitable for this species were observed.
California tiger salamander (*Ambystoma californiense*)	**No effect**	**Habitat absent.** Vernal pools and upland habitat are absent within the APE and surrounding areas The surrounding land consists of agricultural orchards which are unsuitable for this species.
Delta smelt (Hypomesus transpacificus)	**No effect**	**Habitat absent.** The APE is outside the known range for this species. Suitable aquatic habitat is absent within the APE as the Canals that flow through the APEs do not flow perennially and do not connect to the Delta.
Fresno kangaroo rat (*Dipodomys nitratoides exilis*)	**No effect**	**Disturbed habitat**. The highly disturbed habitat of the APE and surrounding lands are unsuitable for this species. Domestic dog tracks were observed within the APE which would deter this species. No tail drags were found at any burrows within the APE.
Monarch butterfly (*Danaus plexippus*)	**No effect**	**Habitat absent**. Foraging and roosting habitat is absent from within the APE and surrounding areas. The APE contained minimal vegetation with no nectar, milkweeds or groves of trees observed during the biological survey.
San Joaquin kit fox (*Vulpes macrotis mutica*)	**No effect**	**Disturbed habitat.** There were no suitable dens, tracks, or scat observed during the biological survey. It is unlikely this species would reside within the APE due to human disturbance.
Vernal pool fairy shrimp (*Branchinecta lynchi*)	**No effect**	**Habitat absent**. Vernal pool habitat is absent from the APE and surrounding lands.

Horner Basin

Table 9. Horner Basin Section 7 Determinations

Species	Determination	Rationale for Determination
Blunt-nosed leopard lizard (*Gambelia sila*)	**No effect**	**Habitat absent.** The APE and surrounding areas are frequently cultivated agricultural lands that are unsuitable for this species. No small mammal burrows suitable for this species were observed.
California tiger salamander (*Ambystoma californiense*)	**No effect**	**Habitat absent.** Vernal pools and upland habitat are absent within the APE and surrounding areas. The surrounding land consists of agricultural orchards which are unsuitable for this species.
Delta smelt (Hypomesus transpacificus)	**No effect**	**Habitat absent.** The APE is outside the known range for this species. Suitable aquatic habitat is absent within the APE as the Canals that flow

Species	Determination	Rationale for Determination
		through the APEs do not flow perennially and do not connect to the Delta.
Fresno kangaroo rat (*Dipodomys nitratoides exilis*)	**No effect**	**Disturbed habitat.** The highly disturbed habitat of the APE and surrounding lands are unsuitable for this species. Domestic dogs and their tracks were observed within the APE which would deter this species. No tail drags were found at any burrows within the APE.
Monarch butterfly (*Danaus plexippus*)	**No effect**	**Habitat absent.** Foraging and roosting habitat is absent from within the APE and surrounding areas. The APE contained minimal vegetation with no nectar, milkweeds or groves of trees observed during the biological survey.
Valley elderberry longhorn beetle (*Desmocerus californicus dimorphus*)	**No effect**	**Habitat absent.** No elderberry shrubs were found within the APE or surrounding areas.
San Joaquin kit fox (*Vulpes macrotis mutica*)	**No effect**	**Disturbed habitat.** There were no suitable dens, tracks, or scat observed during the biological survey. It is unlikely this species would reside within the APE due to human and domestic dog disturbances.
Vernal pool fairy shrimp (*Branchinecta lynchi*)	**No effect**	**Habitat absent**. Vernal pool habitat is absent from the APE and surrounding lands.

Kenneson-Sanchez Basin

Table 10. Kenneson-Sanchez Basin Section 7 Determinations

Species	Determination	Rationale for Determination
Blunt-nosed leopard lizard (*Gambelia sila*)	**No effect**	**Habitat absent.** The APE and surrounding areas are frequently cultivated agricultural lands that are unsuitable for this species. No small mammal burrows suitable for this species were observed.
California tiger salamander (*Ambystoma californiense*)	**No effect**	**Habitat absent.** Vernal pools and upland habitat are absent within the APE and surrounding areas. The surrounding land consists of agricultural orchards which are unsuitable for this species.
Delta smelt (Hypomesus transpacificus)	**No effect**	**Habitat absent.** The APE is outside the known range for this species. Suitable aquatic habitat is absent within the APE as the Canals that flow through the APEs do not flow perennially and do not connect to the Delta.
Fresno kangaroo rat (*Dipodomys nitratoides exilis*)	**No effect**	**Disturbed habitat.** The highly disturbed habitat of the APE and surrounding lands are unsuitable for this species. Domestic dog tracks were observed within the APE which would deter this species. No tail drags were found at any burrows within the APE.
Monarch butterfly (*Danaus plexippus*)	**No effect**	**Habitat absent**. Foraging and roosting habitat is absent from within the APE and surrounding areas.

Species	Determination	Rationale for Determination
		The APE contained minimal vegetation with no nectar, milkweeds or groves of trees observed during the biological survey.
San Joaquin kit fox (*Vulpes macrotis mutica*)	**No effect**	**Disturbed habitat.** There were no suitable dens, tracks, or scat observed during the biological survey. It is unlikely this species would reside within the APE due to human disturbance.
Vernal pool fairy shrimp (*Branchinecta lynchi*)	**No effect**	**Habitat absent**. Vernal pool habitat is absent from the APE and surrounding lands.

Less Than Significant Project-Related Impacts

All Basins

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

Of the 27 regionally occurring special status animal species, 23 are considered absent from or unlikely to occur within the APE due to past or ongoing disturbance and/or the absence of suitable habitat. These species include: American badger, Burrowing Owl, blunt-nosed leopard lizard, California glossy snake, California tiger salamander, Crotch bumble bee, coast horned lizard, Double-crested Cormorant, Delta smelt, Fresno kangaroo rat, giant gartersnake, hardhead, Least Bell's Vireo, monarch butterfly, northern California legless lizard, pallid bat, San Joaquin coachwhip, San Joaquin kit fox, Tricolored Blackbird, valley elderberry longhorn beetle, vernal pool fairy shrimp, western mastiff bat, Western Yellow-billed Cuckoo.

Since it is unlikely that these species would occur onsite, implementation of the Project would have no impact on these 23 special status species through construction mortality, disturbance, or loss of habitat. Mitigation measures are not warranted.

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

Of the 24 regionally occurring special status plant species, all 24 are considered absent from or unlikely to occur within the APE due to past or ongoing disturbance and/or the absence of suitable habitat. These species include: alkali-sink goldfields, brittlescale, California alkali grass, California jewelflower, California satintail, Earlimart orache, Greene's tuctoria, hairy Orcutt grass, heartscale, Hoover's calycadenia, Hoover's eriastrum, lesser saltscale, Lost Hills crownscale, Madera leptosiphon, Munz's tidy-tips, palmate-bracted bird's beak, pincushion navarettia, recurved larkspur, San Joaquin Valley Orcutt grass, spiny-sepaled button-celery, subtle orache, succulent owl's-clover, Sanford's arrowhead, and vernal pool smallscale.

Since it is unlikely that these species would occur onsite, implementation of the Project would have no impact on these 24 special status species through construction mortality, disturbance, or loss of habitat. Mitigation measures are not warranted.

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

At the time of the survey, special status fishes are not considered present or likely to occur within the APE (The National Oceanic and Atmospheric Administration Habitat Conservation 2022). The Canals that flow

through the APEs do not have connections to waterbodies that contain special status fish species. Mitigation measures are not warranted.

Project-Related Impacts to *Essential Fish Habitat*

At the time of Essential Fish Habitat (EFH) and Habitat Areas of Particular Concern (HAPC) are absent from the Project area and surrounding lands, and consultation with the National Marine Fisheries (NMFS) Service would not be required. Query results of the NMFS EHF Mapper can be found in **Appendix Q**, **Appendix R**, **Appendix S**, and **Appendix T** at the end of this document (The National Oceanic and Atmospheric Administration Habitat Conservation 2022). Mitigation is not warranted.

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

There are no CNDDB-designated "natural communities of special concern" recorded within the APE (California Natural Diversity Database (CNDDB) 2022). No natural communities of special concern were observed during the biological survey. There are several natural communities of species concern in the region: Valley Sacaton Grassland, Northern Hardpan Vernal Pool, Northern Claypan Vernal Pool, and Great Valley Mixed Riparian Forest. None of these communities would be impacted as they are outside of the reach of the Project. Mitigation is not warranted.

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

Typical wetlands, vernal pools, and other sensitive natural communities were not observed onsite at the time of the biological survey. The Carter-Bybee basin would connect to Herndon Canal No. 39, which would not be considered jurisdictional, and no permits would be required. The Badhesha basin would connect to Fresno Colony Canal No. 24, which would not be considered jurisdictional, and no permits would be required. The Horner Basin would connect to Little Sandridge Canal No. 66, which would not be considered jurisdictional, and no permits would be required. The Kenneson-Sanchez Basin would connect to Big Sandridge Canal No. 65, which would not be considered jurisdictional, and no permits would be required. There are no downstream connections to known jurisdictional waters.

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

Project-Related Impacts to Critical Habitat

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

Local Policies or Habitat Conservation Plans

The Project appears to be consistent with the goals and policies of the Fresno County General Plan (Fresno County Planning Commission 2000). There are no known habitat conservation plans (HCPs) or a Natural Community Conservation Plan (NCCP) in the Project vicinity. Mitigation measures are not warranted.

Coastal Zone and Coastal Barriers Resources Act

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

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Appendix A: Photos of the Carter-Bybee Project Area

FRESNO IRRIGATION DISTRICT

MULTIPLE RECHARGE BASINS PROJECT

Photograph 1

Overview of the APE looking north.

Photograph 2

Overview of the APE looking northeast.

Photograph 3

Eastern boundary of the APE looking south.

Photograph 4

Southern boundary of the APE looking east.

Photograph 5

Western boundary of the APE looking south.

Photograph 6

Northern boundary of the APE looking east.

Photograph 7

Overview of Herndon Canal No. 39 that runs along the southern boundary of the APE. The Project will tie-in to this Canal.

Photograph 8

Another overview of Herndon Canal No. 39.

Photograph 9

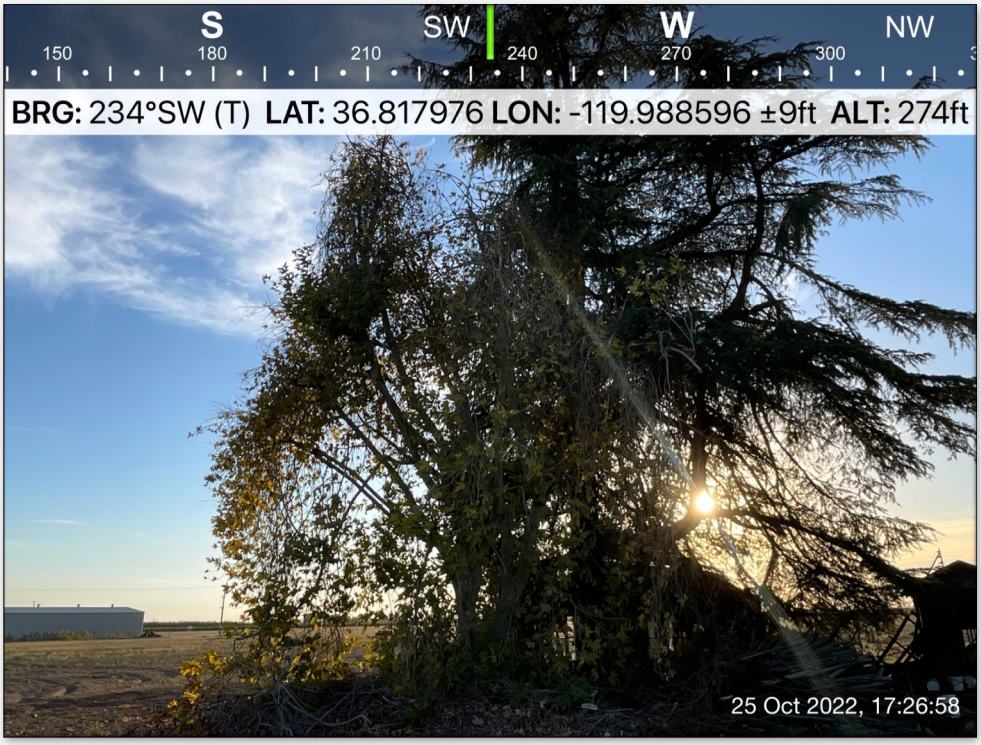
A small mammal burrow within the APE. No kangaroo tracks or tail drag marks were found around the burrow.

Photograph 10

Evidence of gophers within the APE.

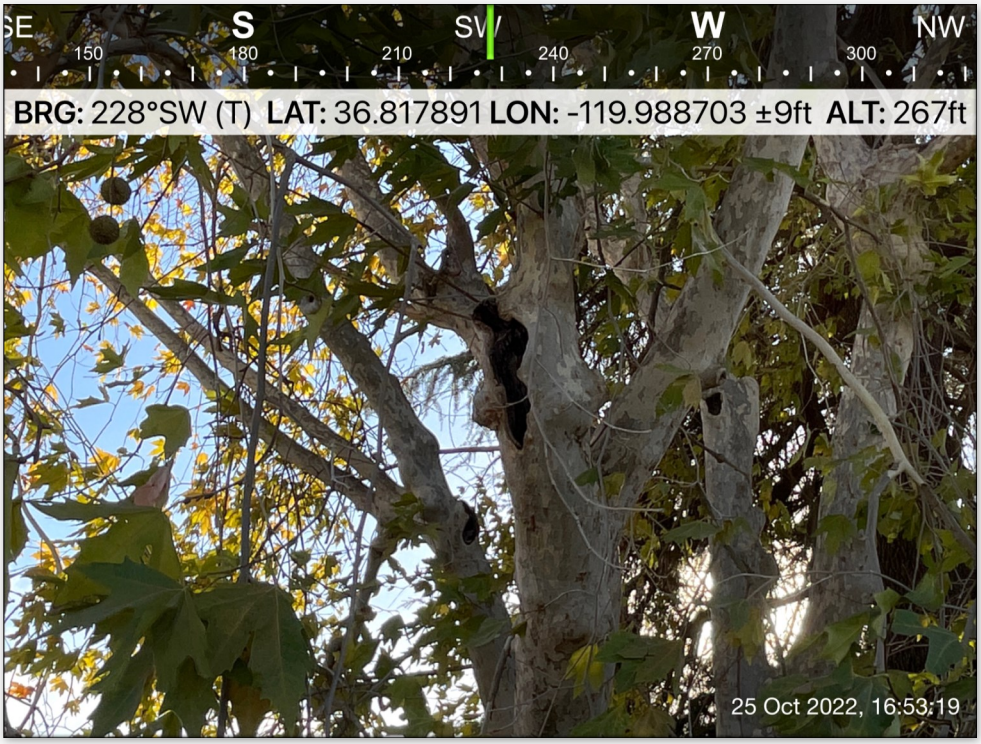
Photograph 11

A large deodar cedar on the eastern boundary of the APE. This tree is known to contain raptor nests yearly.



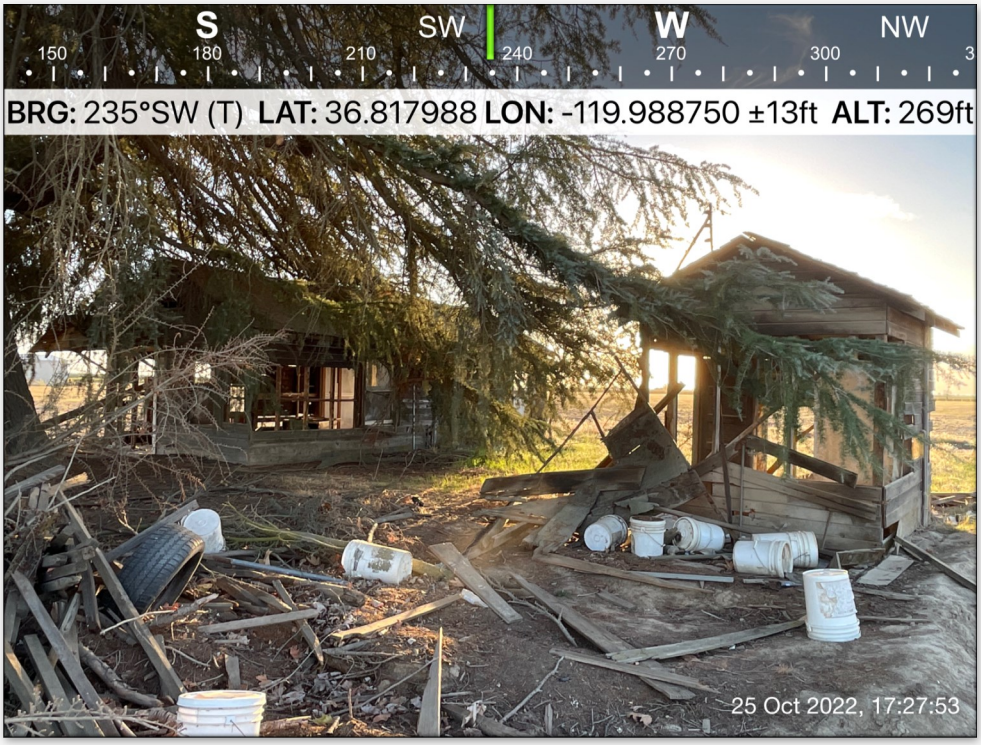
Photograph 12

A large western sycamore tree is located next to the large deodar cedar on the eastern boundary of the APE.



Photograph 13

The large sycamore tree contains cavities and an emergence bat survey was conducted to determine no bats are using the tree.



Photograph 14

The old homestead located next to the western sycamore and deodar cedar trees. These buildings will be removed prior to construction of the basin.

Photograph 15

A garage located within the APE that will be removed prior to construction of the basin.

Photograph 16

The house located within the APE that will be removed prior to construction of the basin. The palm tree out front of the house has evidence of owls.

Photograph 17

An example of an owl pellet located under the palm tree outside of the house.

Photograph 18

Another example of owl pellets located under the palm tree outside of the house.

Photograph 19

Surrounding land outside of the APE looking north consisted of agricultural orchards.

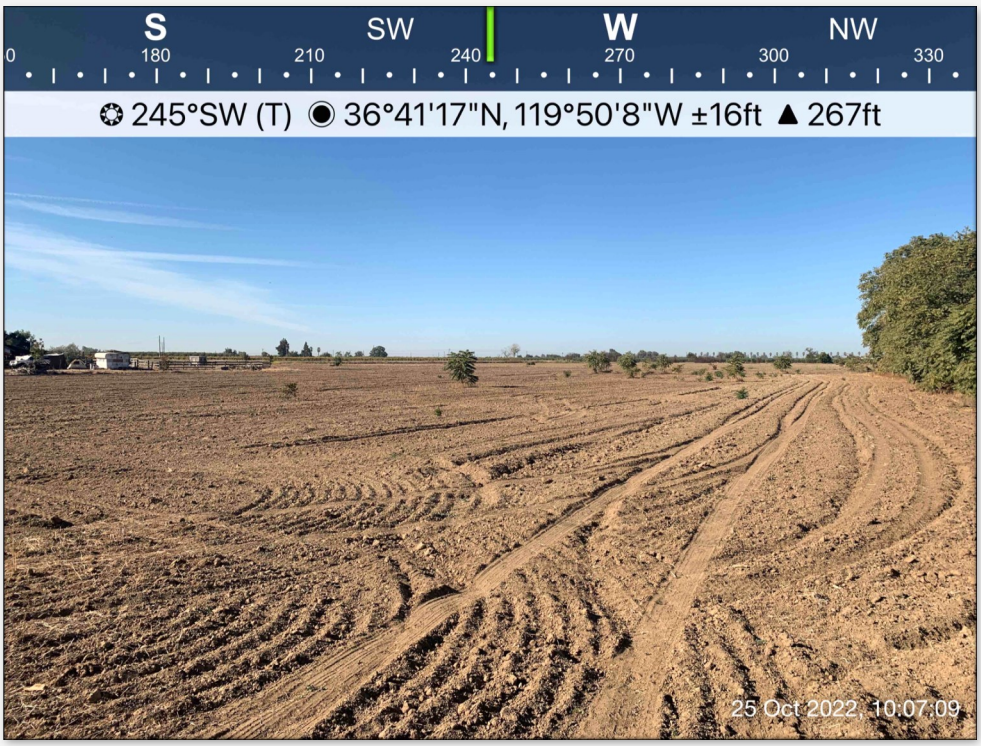
Photograph 20

Surrounding land outside of the APE looking west consisted of agricultural grapes.

Appendix B: Photos of the Badhesha Project Area

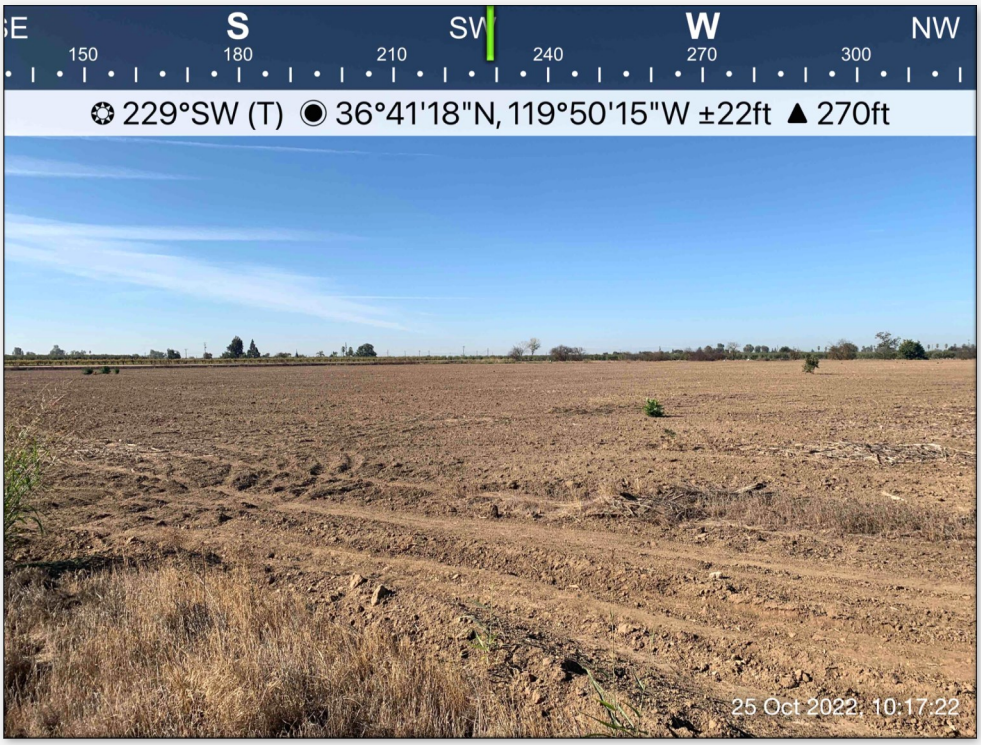
FRESNO IRRIGATION DISTRICT

MULTIPLE RECHARGE BASINS PROJECT



Photograph 1

Overview of the APE looking west.

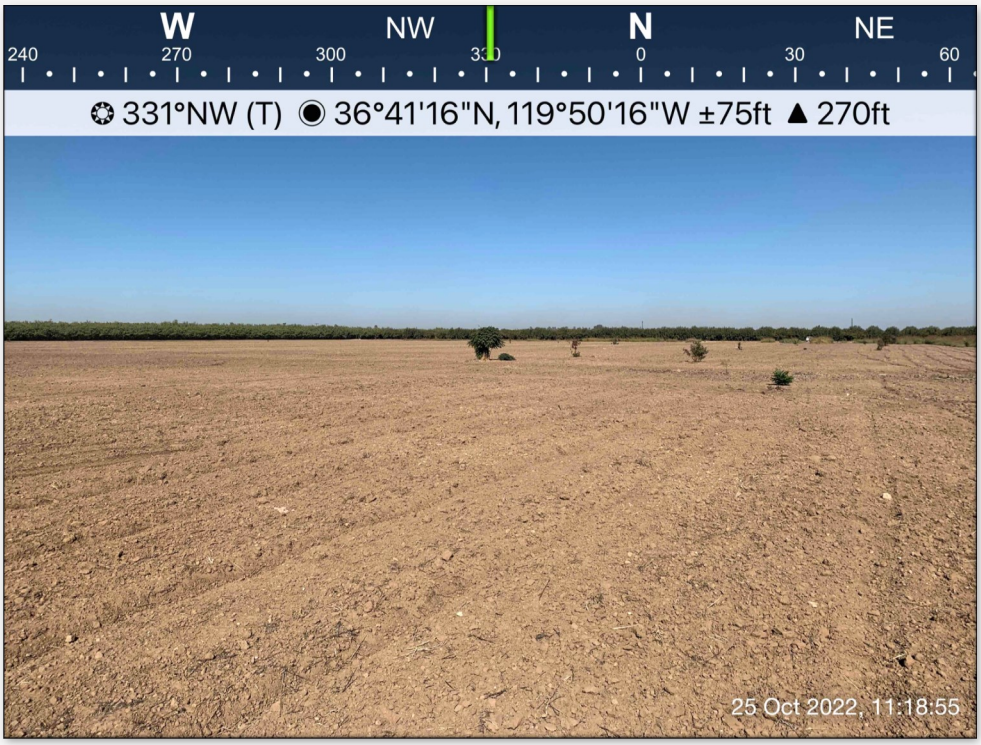


Photograph 2

Overview of the APE looking southwest.

Photograph 3

Overview of the APE looking east.



Photograph 4

Overview of the APE looking northwest.

Photograph 5

Eastern boundary of the APE looking north.

Photograph 6

Northern boundary of the APE looking east.

Photograph 7

Western boundary of the APE looking north.

Photograph 8

Southern boundary of the APE looking east.

Photograph 9

Tall grass in the northeast corner of the APE was being cut during the biological survey. The rest of the APE had recently been cleared of vegetation.

Photograph 10

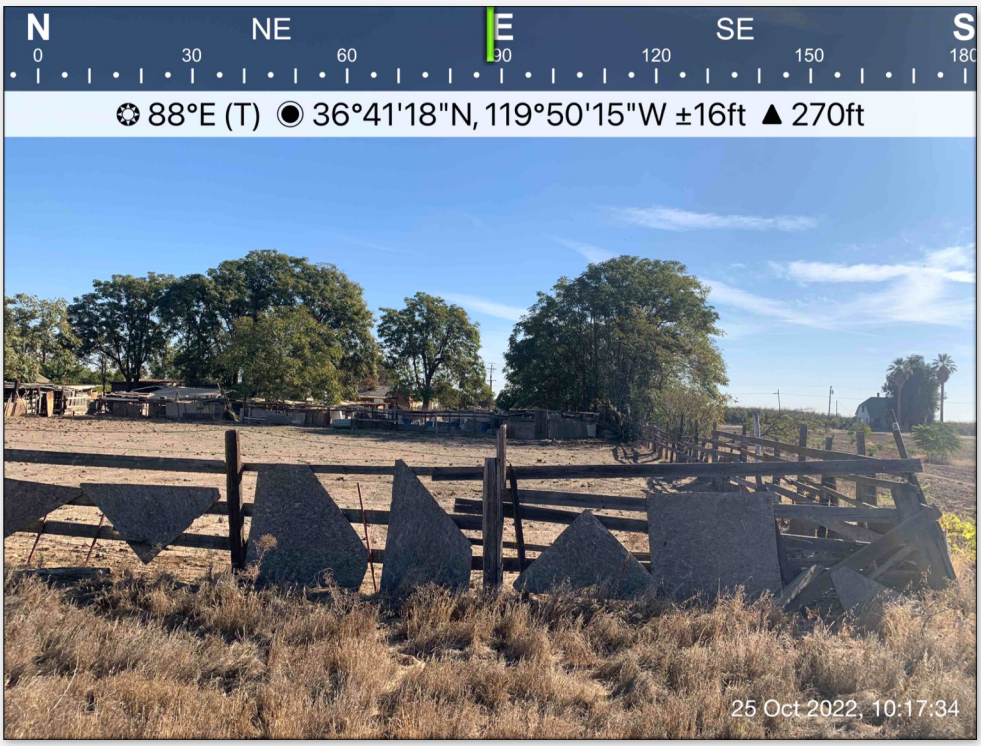
A small mammal burrow found within the APE.

Photograph 11

Overview of Fresno Colony Canal No 24 that runs along the southern boundary of the APE. The Project will tie-in to this canal.

Photograph 12

Another overview of Fresno Colony Canal No 24.



Photograph 13

Surrounding land outside of the APE looking east consisted of rural housing.

Photograph 14

Surrounding land outside of the APE looking southeast consisted of rural housing.

Photograph 15

Surrounding land outside of the APE looking north consisted of agricultural orchards.

Photograph 16

Surrounding land outside of the APE looking east consisted of rural housing.

Appendix C: Photos of the Horner Project Area

FRESNO IRRIGATION DISTRICT

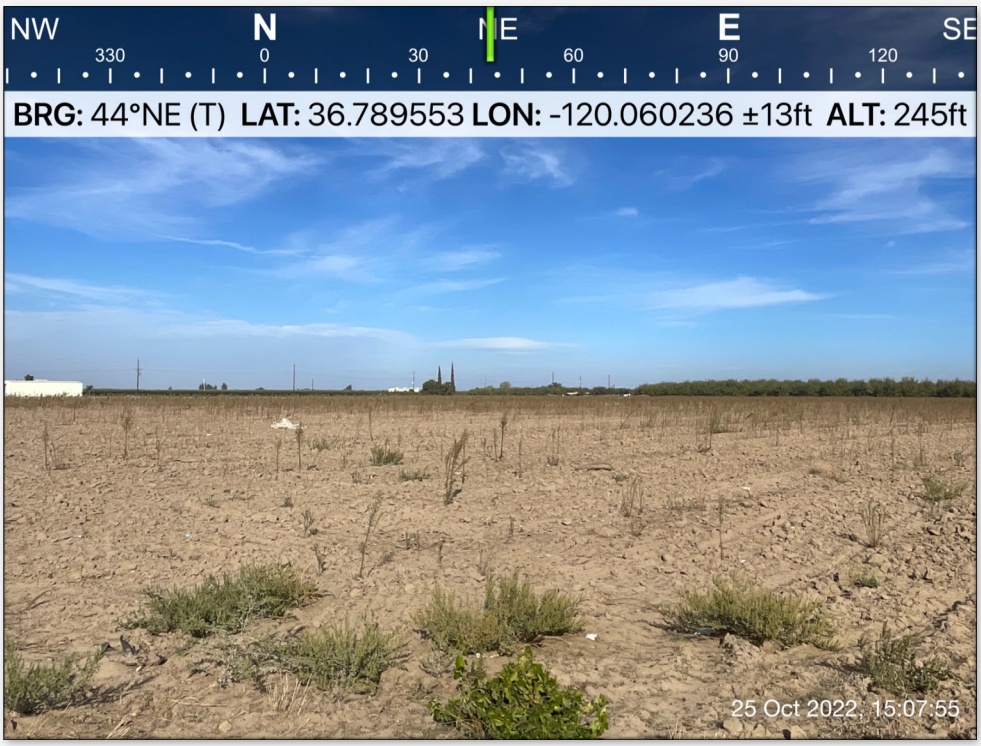
MULTIPLE RECHARGE BASINS PROJECT

Photograph 1

Overview of the APE looking south.

Photograph 2

Another overview of the APE looking south.



Photograph 3

Overview of the APE looking northeast.

Photograph 4

Overview of the APE looking southwest. The single family dwelling is excluded from the APE.

Photograph 5

Northern boundary of the APE looking west.

Photograph 6

Eastern boundary of the APE looking south.

Photograph 7

Southern boundary of the APE looking west.

Photograph 8

Western boundary of the APE looking north.

Photograph 9

Overview of Big Sandridge Canal No. 65. A small portion of the canal is in the southeast corner of the APE but will be excluded from the Project at this basin.

Photograph 10

Overview of Little Sandridge Canal No. 66 that the Project will tie-in to. This canal bisects the APE.

Photograph 11

Evidence of gophers within the APE.

Photograph 12

Tracks found within the APE.

Photograph 13

Domestic dogs observed within the APE and surrounding areas.

Photograph 14

Surrounding land outside of the APE looking northeast consisted of agricultural orchards.

Photograph 15

Surrounding land outside of the APE looking south consisted of agricultural grapes.

Photograph 16

Surrounding land outside of the APE looking northwest consisted of a rural house surrounded by agricultural fields.

Appendix D: Photos of the Kenneson-Sanchez Project Area

FRESNO IRRIGATION DISTRICT

MULTIPLE RECHARGE BASINS PROJECT

Photograph 1

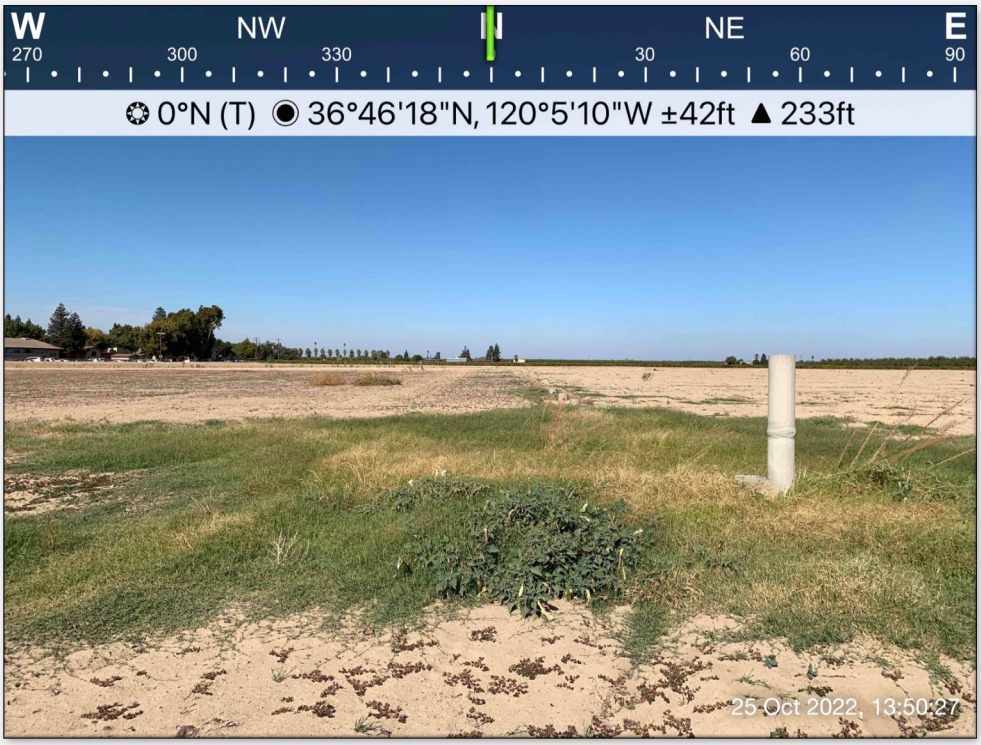
Overview of the APE looking southwest.

Photograph 2

Overview of the APE looking southeast.

Photograph 3

Overview of the APE looking southeast.



Photograph 4

Overview of the APE looking north.

Photograph 5

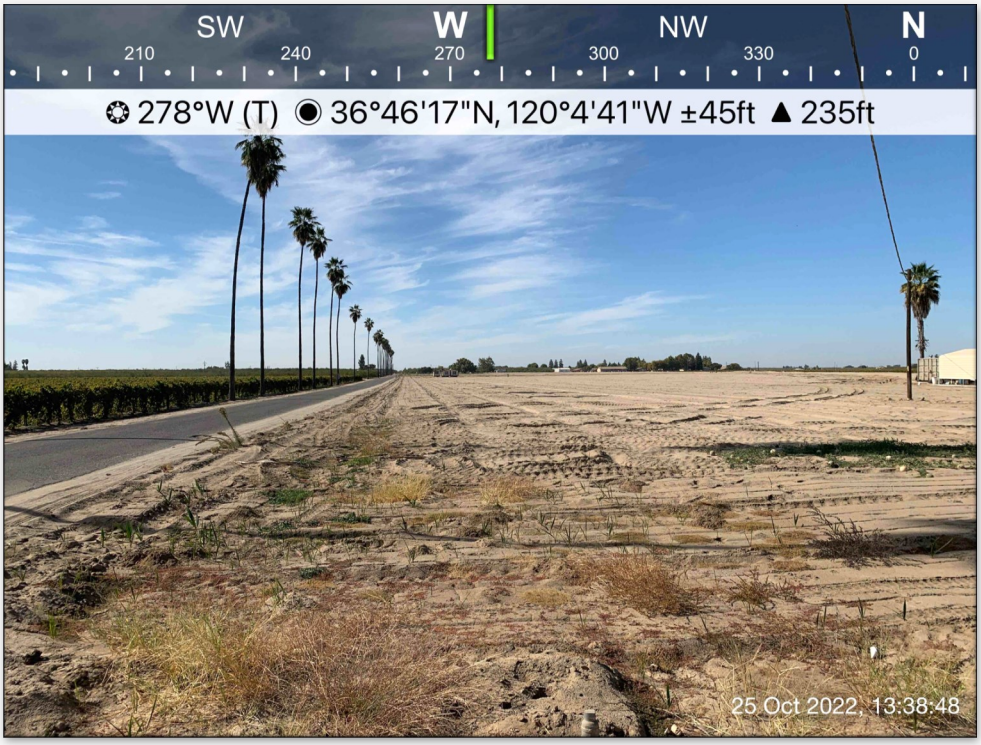
Eastern boundary of the APE looking south.

Photograph 6

Northern boundary of the APE looking west.

Photograph 7

Western boundary of the APE looking south.



Photograph 8

Southern boundary of the APE looking west.

Photograph 9

Overview of Big Sandridge Canal No. 65 that bisects the APE. The Project will tie-in to this Canal.

Photograph 10

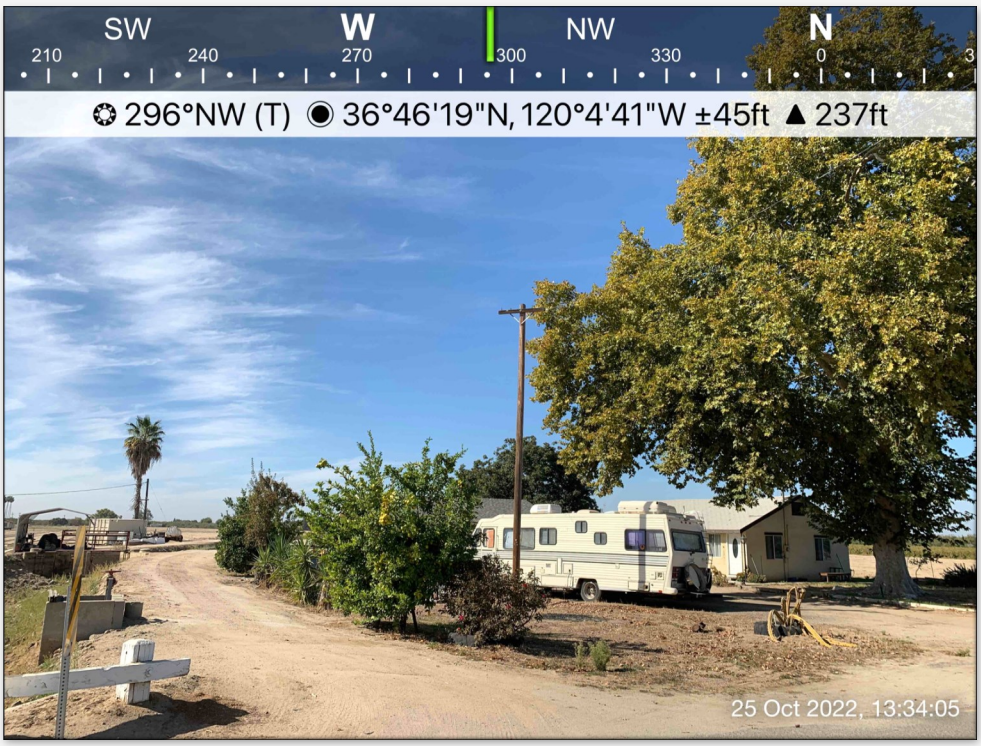
Another overview of Big Sandridge Canal No. 65.

Photograph 11

An example of a small nest box within the APE.

Photograph 12

Surrounding land outside of the APE looking north consisted of agricultural grapes.



Photograph 13

Overview of the rural house which borders the APE to the east.

Photograph 14

Surrounding land outside of the APE west consisted of Sun Empire Elementary School.

Appendix E: Carter-Bybee CNDDB 9-Quad Search

FRESNO IRRIGATION DISTRICT

MULTIPLE RECHARGE BASINS PROJECT

Selected Elements by Common Name

California Department of Fish and Wildlife

California Natural Diversity Database

Query Criteria: Quad IS (Herndon (3611978) OR Madera (3612081) OR Gregg (3611988) OR Lanes Bridge (3611987) OR Fresno North (3611977) OR Fresno South (3611967) OR Kearney Park (3611968) OR Kerman (3612061) OR Biola (3612071))

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
alkali-sink goldfields *Lasthenia chrysantha*	PDAST5L030	None	None	G2	S2	1B.1
American badger *Taxidea taxus*	AMAJF04010	None	None	G5	S3	SSC
Antioch efferian robberfly *Efferia antiochi*	IIDIP07010	None	None	G1G2	S1S2	
black-crowned night heron *Nycticorax nycticorax*	ABNGA11010	None	None	G5	S4	
blunt-nosed leopard lizard *Gambelia sila*	ARACF07010	Endangered	Endangered	G1	S1	FP
burrowing owl *Athene cunicularia*	ABNSB10010	None	None	G4	S3	SSC
California alkali grass *Puccinellia simplex*	PMPOA53110	None	None	G2	S2	1B.2
California glossy snake *Arizona elegans occidentalis*	ARADB01017	None	None	G5T2	S2	SSC
California horned lark *Eremophila alpestris actia*	ABPAT02011	None	None	G5T4Q	S4	WL
California jewelflower *Caulanthus californicus*	PDBRA31010	Endangered	Endangered	G1	S1	1B.1
California linderiella *Linderiella occidentalis*	ICBRA06010	None	None	G2G3	S2S3	
California satintail *Imperata brevifolia*	PMPOA3D020	None	None	G3	S3	2B.1
California tiger salamander - central California DPS *Ambystoma californiense pop. 1*	AAAAA01181	Threatened	Threatened	G2G3T3	S3	WL
coast horned lizard *Phrynosoma blainvillii*	ARACF12100	None	None	G3G4	S3S4	SSC
Crotch bumble bee *Bombus crotchii*	IIHYM24480	None	None	G2	S1S2	
Fresno kangaroo rat *Dipodomys nitratoides exilis*	AMAFD03151	Endangered	Endangered	G3TH	SH	
great egret *Ardea alba*	ABNGA04040	None	None	G5	S4	
Great Valley Mixed Riparian Forest *Great Valley Mixed Riparian Forest*	CTT61420CA	None	None	G2	S2.2	

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
hairy Orcutt grass *Orcuttia pilosa*	PMPOA4G040	Endangered	Endangered	G1	S1	1B.1
hardhead *Mylopharodon conocephalus*	AFCJB25010	None	None	G3	S3	SSC
heartscale *Atriplex cordulata var. cordulata*	PDCHE040B0	None	None	G3T2	S2	1B.2
hoary bat *Lasiurus cinereus*	AMACC05030	None	None	G3G4	S4	
Hoover's calycadenia *Calycadenia hooveri*	PDAST1P040	None	None	G2	S2	1B.3
Hoover's eriastrum *Eriastrum hooveri*	PDPLM03070	Delisted	None	G3	S3	4.2
Hurd's metapogon robberfly *Metapogon hurdi*	IIDIP08010	None	None	G1G2	S1S2	
lesser saltscale *Atriplex minuscula*	PDCHE042M0	None	None	G2	S2	1B.1
Madera leptosiphon *Leptosiphon serrulatus*	PDPLM09130	None	None	G3	S3	1B.2
midvalley fairy shrimp *Branchinecta mesovallensis*	ICBRA03150	None	None	G2	S2S3	
molestan blister beetle *Lytta molesta*	IICOL4C030	None	None	G2	S2	
Munz's tidy-tips *Layia munzii*	PDAST5N0B0	None	None	G2	S2	1B.2
Northern California legless lizard *Anniella pulchra*	ARACC01020	None	None	G3	S3	SSC
Northern Claypan Vernal Pool *Northern Claypan Vernal Pool*	CTT44120CA	None	None	G1	S1.1	
Northern Hardpan Vernal Pool *Northern Hardpan Vernal Pool*	CTT44110CA	None	None	G3	S3.1	
pallid bat *Antrozous pallidus*	AMACC10010	None	None	G4	S3	SSC
palmate-bracted bird's-beak *Chloropyron palmatum*	PDSCR0J0J0	Endangered	Endangered	G1	S1	1B.1
pincushion navarretia *Navarretia myersii ssp. myersii*	PDPLM0C0X1	None	None	G2T2	S2	1B.1
recurved larkspur *Delphinium recurvatum*	PDRAN0B1J0	None	None	G2?	S2?	1B.2
San Joaquin kit fox *Vulpes macrotis mutica*	AMAJA03041	Endangered	Threatened	G4T2	S2	
San Joaquin pocket mouse *Perognathus inornatus*	AMAFD01060	None	None	G2G3	S2S3	

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
San Joaquin Valley Orcutt grass *Orcuttia inaequalis*	PMPOA4G060	Threatened	Endangered	G1	S1	1B.1
Sanford's arrowhead *Sagittaria sanfordii*	PMALI040Q0	None	None	G3	S3	1B.2
snowy egret *Egretta thula*	ABNGA06030	None	None	G5	S4	
spiny-sepaled button-celery *Eryngium spinosepalum*	PDAPI0Z0Y0	None	None	G2	S2	1B.2
succulent owl's-clover *Castilleja campestris var. succulenta*	PDSCR0D3Z1	Threatened	Endangered	G4?T2T3	S2S3	1B.2
Swainson's hawk *Buteo swainsoni*	ABNKC19070	None	Threatened	G5	S3	
tricolored blackbird *Agelaius tricolor*	ABPBXB0020	None	Threatened	G1G2	S1S2	SSC
valley elderberry longhorn beetle *Desmocerus californicus dimorphus*	IICOL48011	Threatened	None	G3T2T3	S3	
vernal pool fairy shrimp *Branchinecta lynchi*	ICBRA03030	Threatened	None	G3	S3	
western mastiff bat *Eumops perotis californicus*	AMACD02011	None	None	G4G5T4	S3S4	SSC
western spadefoot *Spea hammondii*	AAABF02020	None	None	G2G3	S3	SSC
western yellow-billed cuckoo *Coccyzus americanus occidentalis*	ABNRB02022	Threatened	Endangered	G5T2T3	S1	

Record Count: 51

Appendix F: Badhesha CNDDB 9-Quad Search

FRESNO IRRIGATION DISTRICT

MULTIPLE RECHARGE BASINS PROJECT

Selected Elements by Common Name

California Department of Fish and Wildlife

California Natural Diversity Database

Query Criteria: Quad IS (Fresno South (3611967) OR Fresno North (3611977) OR Herndon (3611978) OR Clovis (3611976) OR Malaga (3611966) OR Conejo (3611956) OR Caruthers (3611957) OR Raisin (3611958) OR Kearney Park (3611968))

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
alkali-sink goldfields *Lasthenia chrysantha*	PDAST5L030	None	None	G2	S2	1B.1
American badger *Taxidea taxus*	AMAJF04010	None	None	G5	S3	SSC
Antioch efferian robberfly *Efferia antiochi*	IIDIP07010	None	None	G1G2	S1S2	
black-crowned night heron *Nycticorax nycticorax*	ABNGA11010	None	None	G5	S4	
burrowing owl *Athene cunicularia*	ABNSB10010	None	None	G4	S3	SSC
California glossy snake *Arizona elegans occidentalis*	ARADB01017	None	None	G5T2	S2	SSC
California jewelflower *Caulanthus californicus*	PDBRA31010	Endangered	Endangered	G1	S1	1B.1
California linderiella *Linderiella occidentalis*	ICBRA06010	None	None	G2G3	S2S3	
California satintail *Imperata brevifolia*	PMPOA3D020	None	None	G3	S3	2B.1
California tiger salamander - central California DPS *Ambystoma californiense pop. 1*	AAAAA01181	Threatened	Threatened	G2G3T3	S3	WL
coast horned lizard *Phrynosoma blainvillii*	ARACF12100	None	None	G3G4	S3S4	SSC
Crotch bumble bee *Bombus crotchii*	IIHYM24480	None	None	G2	S1S2	
double-crested cormorant *Nannopterum auritum*	ABNFD01020	None	None	G5	S4	WL
Fresno kangaroo rat *Dipodomys nitratoides exilis*	AMAFD03151	Endangered	Endangered	G3TH	SH	
giant gartersnake *Thamnophis gigas*	ARADB36150	Threatened	Threatened	G2	S2	
great egret *Ardea alba*	ABNGA04040	None	None	G5	S4	
Greene's tuctoria *Tuctoria greenei*	PMPOA6N010	Endangered	Rare	G1	S1	1B.1
hairy Orcutt grass *Orcuttia pilosa*	PMPOA4G040	Endangered	Endangered	G1	S1	1B.1
hoary bat *Lasiurus cinereus*	AMACC05030	None	None	G3G4	S4	

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Hoover's eriastrum *Eriastrum hooveri*	PDPLM03070	Delisted	None	G3	S3	4.2
Hurd's metapogon robberfly *Metapogon hurdi*	IIDIP08010	None	None	G1G2	S1S2	
least Bell's vireo *Vireo bellii pusillus*	ABPBW01114	Endangered	Endangered	G5T2	S2	
lesser saltscale *Atriplex minuscula*	PDCHE042M0	None	None	G2	S2	1B.1
Madera leptosiphon *Leptosiphon serrulatus*	PDPLM09130	None	None	G3	S3	1B.2
molestan blister beetle *Lytta molesta*	IICOL4C030	None	None	G2	S2	
Northern California legless lizard *Anniella pulchra*	ARACC01020	None	None	G3	S3	SSC
Northern Claypan Vernal Pool *Northern Claypan Vernal Pool*	CTT44120CA	None	None	G1	S1.1	
pallid bat *Antrozous pallidus*	AMACC10010	None	None	G4	S3	SSC
San Joaquin kit fox *Vulpes macrotis mutica*	AMAJA03041	Endangered	Threatened	G4T2	S2	
San Joaquin pocket mouse *Perognathus inornatus*	AMAFD01060	None	None	G2G3	S2S3	
San Joaquin Valley Orcutt grass *Orcuttia inaequalis*	PMPOA4G060	Threatened	Endangered	G1	S1	1B.1
Sanford's arrowhead *Sagittaria sanfordii*	PMALI040Q0	None	None	G3	S3	1B.2
snowy egret *Egretta thula*	ABNGA06030	None	None	G5	S4	
succulent owl's-clover *Castilleja campestris var. succulenta*	PDSCR0D3Z1	Threatened	Endangered	G4?T2T3	S2S3	1B.2
Swainson's hawk *Buteo swainsoni*	ABNKC19070	None	Threatened	G5	S3	
tricolored blackbird *Agelaius tricolor*	ABPBXB0020	None	Threatened	G1G2	S1S2	SSC
valley elderberry longhorn beetle *Desmocerus californicus dimorphus*	IICOL48011	Threatened	None	G3T2T3	S3	
vernal pool fairy shrimp *Branchinecta lynchi*	ICBRA03030	Threatened	None	G3	S3	
western mastiff bat *Eumops perotis californicus*	AMACD02011	None	None	G4G5T4	S3S4	SSC
western pond turtle *Emys marmorata*	ARAAD02030	None	None	G3G4	S3	SSC

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
western spadefoot	AAABF02020	None	None	G2G3	S3	SSC
Spea hammondii						
western yellow-billed cuckoo	ABNRB02022	Threatened	Endangered	G5T2T3	S1	
Coccyzus americanus occidentalis						

Record Count: 42

Appendix G: Horner CNDDB 9-Quad Search

FRESNO IRRIGATION DISTRICT

MULTIPLE RECHARGE BASINS PROJECT

Selected Elements by Common Name

California Department of Fish and Wildlife

California Natural Diversity Database

Query Criteria: Quad IS (Biola (3612071) OR Bonita Ranch (3612082) OR Madera (3612081) OR Gregg (3611988) OR Herndon (3611978) OR Kearney Park (3611968) OR Kerman (3612061) OR Jamesan (3612062) OR Gravelly Ford (3612072))

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
alkali-sink goldfields *Lasthenia chrysantha*	PDAST5L030	None	None	G2	S2	1B.1
American badger *Taxidea taxus*	AMAJF04010	None	None	G5	S3	SSC
blunt-nosed leopard lizard *Gambelia sila*	ARACF07010	Endangered	Endangered	G1	S1	FP
brittlescale *Atriplex depressa*	PDCHE042L0	None	None	G2	S2	1B.2
burrowing owl *Athene cunicularia*	ABNSB10010	None	None	G4	S3	SSC
California alkali grass *Puccinellia simplex*	PMPOA53110	None	None	G2	S2	1B.2
California linderiella *Linderiella occidentalis*	ICBRA06010	None	None	G2G3	S2S3	
California tiger salamander - central California DPS *Ambystoma californiense pop. 1*	AAAAA01181	Threatened	Threatened	G2G3T3	S3	WL
coast horned lizard *Phrynosoma blainvillii*	ARACF12100	None	None	G3G4	S3S4	SSC
Earlimart orache *Atriplex cordulata var. erecticaulis*	PDCHE042V0	None	None	G3T1	S1	1B.2
Fresno kangaroo rat *Dipodomys nitratoides exilis*	AMAFD03151	Endangered	Endangered	G3TH	SH	
hairy Orcutt grass *Orcuttia pilosa*	PMPOA4G040	Endangered	Endangered	G1	S1	1B.1
heartscale *Atriplex cordulata var. cordulata*	PDCHE040B0	None	None	G3T2	S2	1B.2
hoary bat *Lasiurus cinereus*	AMACC05030	None	None	G3G4	S4	
Hoover's eriastrum *Eriastrum hooveri*	PDPLM03070	Delisted	None	G3	S3	4.2
lesser saltscale *Atriplex minuscula*	PDCHE042M0	None	None	G2	S2	1B.1
Lost Hills crownscale *Atriplex coronata var. vallicola*	PDCHE04371	None	None	G4T3	S3	1B.2
Madera leptosiphon *Leptosiphon serrulatus*	PDPLM09130	None	None	G3	S3	1B.2
midvalley fairy shrimp *Branchinecta mesovallensis*	ICBRA03150	None	None	G2	S2S3	

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
molestan blister beetle *Lytta molesta*	IICOL4C030	None	None	G2	S2	
Munz's tidy-tips *Layia munzii*	PDAST5N0B0	None	None	G2	S2	1B.2
Northern Claypan Vernal Pool *Northern Claypan Vernal Pool*	CTT44120CA	None	None	G1	S1.1	
Northern Hardpan Vernal Pool *Northern Hardpan Vernal Pool*	CTT44110CA	None	None	G3	S3.1	
palmate-bracted bird's-beak *Chloropyron palmatum*	PDSCR0J0J0	Endangered	Endangered	G1	S1	1B.1
recurved larkspur *Delphinium recurvatum*	PDRAN0B1J0	None	None	G2?	S2?	1B.2
San Joaquin coachwhip *Masticophis flagellum ruddocki*	ARADB21021	None	None	G5T2T3	S2?	SSC
San Joaquin kit fox *Vulpes macrotis mutica*	AMAJA03041	Endangered	Threatened	G4T2	S2	
San Joaquin pocket mouse *Perognathus inornatus*	AMAFD01060	None	None	G2G3	S2S3	
Sanford's arrowhead *Sagittaria sanfordii*	PMALI040Q0	None	None	G3	S3	1B.2
spiny-sepaled button-celery *Eryngium spinosepalum*	PDAPI0Z0Y0	None	None	G2	S2	1B.2
subtle orache *Atriplex subtilis*	PDCHE042T0	None	None	G1	S1	1B.2
succulent owl's-clover *Castilleja campestris var. succulenta*	PDSCR0D3Z1	Threatened	Endangered	G4?T2T3	S2S3	1B.2
Swainson's hawk *Buteo swainsoni*	ABNKC19070	None	Threatened	G5	S3	
tricolored blackbird *Agelaius tricolor*	ABPBXB0020	None	Threatened	G1G2	S1S2	SSC
valley elderberry longhorn beetle *Desmocerus californicus dimorphus*	IICOL48011	Threatened	None	G3T2T3	S3	
Valley Sacaton Grassland *Valley Sacaton Grassland*	CTT42120CA	None	None	G1	S1.1	
vernal pool fairy shrimp *Branchinecta lynchi*	ICBRA03030	Threatened	None	G3	S3	
vernal pool smallscale *Atriplex persistens*	PDCHE042P0	None	None	G2	S2	1B.2
western spadefoot *Spea hammondii*	AAABF02020	None	None	G2G3	S3	SSC

Record Count: 39

Appendix H: Kenneson-Sanchez CNDDB 9-Quad Search

FRESNO IRRIGATION DISTRICT

MULTIPLE RECHARGE BASINS PROJECT

Selected Elements by Common Name

California Department of Fish and Wildlife

California Natural Diversity Database

Query Criteria: Quad IS (Biola (3612071) OR Bonita Ranch (3612082) OR Madera (3612081) OR Gregg (3611988) OR Herndon (3611978) OR Kearney Park (3611968) OR Kerman (3612061) OR Jamesan (3612062) OR Gravelly Ford (3612072))

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
alkali-sink goldfields *Lasthenia chrysantha*	PDAST5L030	None	None	G2	S2	1B.1
American badger *Taxidea taxus*	AMAJF04010	None	None	G5	S3	SSC
blunt-nosed leopard lizard *Gambelia sila*	ARACF07010	Endangered	Endangered	G1	S1	FP
brittlescale *Atriplex depressa*	PDCHE042L0	None	None	G2	S2	1B.2
burrowing owl *Athene cunicularia*	ABNSB10010	None	None	G4	S3	SSC
California alkali grass *Puccinellia simplex*	PMPOA53110	None	None	G2	S2	1B.2
California linderiella *Linderiella occidentalis*	ICBRA06010	None	None	G2G3	S2S3	
California tiger salamander - central California DPS *Ambystoma californiense pop. 1*	AAAAA01181	Threatened	Threatened	G2G3T3	S3	WL
coast horned lizard *Phrynosoma blainvillii*	ARACF12100	None	None	G3G4	S3S4	SSC
Earlimart orache *Atriplex cordulata var. erecticaulis*	PDCHE042V0	None	None	G3T1	S1	1B.2
Fresno kangaroo rat *Dipodomys nitratoides exilis*	AMAFD03151	Endangered	Endangered	G3TH	SH	
hairy Orcutt grass *Orcuttia pilosa*	PMPOA4G040	Endangered	Endangered	G1	S1	1B.1
heartscale *Atriplex cordulata var. cordulata*	PDCHE040B0	None	None	G3T2	S2	1B.2
hoary bat *Lasiurus cinereus*	AMACC05030	None	None	G3G4	S4	
Hoover's eriastrum *Eriastrum hooveri*	PDPLM03070	Delisted	None	G3	S3	4.2
lesser saltscale *Atriplex minuscula*	PDCHE042M0	None	None	G2	S2	1B.1
Lost Hills crownscale *Atriplex coronata var. vallicola*	PDCHE04371	None	None	G4T3	S3	1B.2
Madera leptosiphon *Leptosiphon serrulatus*	PDPLM09130	None	None	G3	S3	1B.2
midvalley fairy shrimp *Branchinecta mesovallensis*	ICBRA03150	None	None	G2	S2S3	

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
molestan blister beetle *Lytta molesta*	IICOL4C030	None	None	G2	S2	
Munz's tidy-tips *Layia munzii*	PDAST5N0B0	None	None	G2	S2	1B.2
Northern Claypan Vernal Pool *Northern Claypan Vernal Pool*	CTT44120CA	None	None	G1	S1.1	
Northern Hardpan Vernal Pool *Northern Hardpan Vernal Pool*	CTT44110CA	None	None	G3	S3.1	
palmate-bracted bird's-beak *Chloropyron palmatum*	PDSCR0J0J0	Endangered	Endangered	G1	S1	1B.1
recurved larkspur *Delphinium recurvatum*	PDRAN0B1J0	None	None	G2?	S2?	1B.2
San Joaquin coachwhip *Masticophis flagellum ruddocki*	ARADB21021	None	None	G5T2T3	S2?	SSC
San Joaquin kit fox *Vulpes macrotis mutica*	AMAJA03041	Endangered	Threatened	G4T2	S2	
San Joaquin pocket mouse *Perognathus inornatus*	AMAFD01060	None	None	G2G3	S2S3	
Sanford's arrowhead *Sagittaria sanfordii*	PMALI040Q0	None	None	G3	S3	1B.2
spiny-sepaled button-celery *Eryngium spinosepalum*	PDAPI0Z0Y0	None	None	G2	S2	1B.2
subtle orache *Atriplex subtilis*	PDCHE042T0	None	None	G1	S1	1B.2
succulent owl's-clover *Castilleja campestris var. succulenta*	PDSCR0D3Z1	Threatened	Endangered	G4?T2T3	S2S3	1B.2
Swainson's hawk *Buteo swainsoni*	ABNKC19070	None	Threatened	G5	S3	
tricolored blackbird *Agelaius tricolor*	ABPBXB0020	None	Threatened	G1G2	S1S2	SSC
valley elderberry longhorn beetle *Desmocerus californicus dimorphus*	IICOL48011	Threatened	None	G3T2T3	S3	
Valley Sacaton Grassland *Valley Sacaton Grassland*	CTT42120CA	None	None	G1	S1.1	
vernal pool fairy shrimp *Branchinecta lynchi*	ICBRA03030	Threatened	None	G3	S3	
vernal pool smallscale *Atriplex persistens*	PDCHE042P0	None	None	G2	S2	1B.2
western spadefoot *Spea hammondii*	AAABF02020	None	None	G2G3	S3	SSC

Record Count: 39

Appendix I: Carter-Bybee IPaC Search

FRESNO IRRIGATION DISTRICT

MULTIPLE RECHARGE BASINS PROJECT

United States Department of the Interior

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

In Reply Refer To: December 16, 2022
Project Code: 2023-0016291
Project Name: Multiple Recharge Basin Project- Carter-Bybee Basin

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

To Whom It May Concern:

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

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

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

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

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

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

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

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

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

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

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

Attachment(s):

- Official Species List

Official Species List

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

This species list is provided by:

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

Project Summary

Project Code: 2023-0016291
Project Name: Multiple Recharge Basin Project- Carter-Bybee Basin
Project Type: Water Supply Facility - New Constr
Project Description: The Carter-Bybee Basin APE is approximately 45 acres including the additional 50-foot buffer surrounding the APE. It is located approximately five miles west of the City of Fresno and one mile south of the San Joaquin River, southeast of the intersection of West Barstow Avenue and North Jameson Avenue. The site was previously used to cultivate grapes but was recently cleared of vegetation. The basin would connect to Herndon Canal No. 39. Each basin/site would have a monitoring well, perimeter fencing and new berm construction that would not exceed six feet, measured from the exterior toe to the top of new levee.

Project Location:

Approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/@36.81686445,-119.99078949118254,14z

Counties: Fresno County, California

Endangered Species Act Species

There is a total of 8 threatened, endangered, or candidate species on this species list.

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

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

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

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

Mammals

NAME	STATUS
Fresno Kangaroo Rat *Dipodomys nitratoides exilis* There is **final** critical habitat for this species. Your location does not overlap the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/5150	Endangered
San Joaquin Kit Fox *Vulpes macrotis mutica* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/2873	Endangered

Reptiles

NAME	STATUS
Blunt-nosed Leopard Lizard *Gambelia silus* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/625	Endangered

Amphibians

NAME	STATUS
California Tiger Salamander *Ambystoma californiense* Population: U.S.A. (Central CA DPS) There is **final** critical habitat for this species. Your location does not overlap the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/2076	Threatened

Fishes

NAME	STATUS
Delta Smelt *Hypomesus transpacificus*	Threatened

There is **final** critical habitat for this species. Your location does not overlap the critical habitat.
Species profile: https://ecos.fws.gov/ecp/species/321

Insects

NAME	STATUS
Monarch Butterfly *Danaus plexippus*	Candidate

No critical habitat has been designated for this species.
Species profile: https://ecos.fws.gov/ecp/species/9743

Crustaceans

NAME	STATUS
Vernal Pool Fairy Shrimp *Branchinecta lynchi*	Threatened

There is **final** critical habitat for this species. Your location does not overlap the critical habitat.
Species profile: https://ecos.fws.gov/ecp/species/498

Flowering Plants

NAME	STATUS
Hairy Orcutt Grass *Orcuttia pilosa*	Endangered

There is **final** critical habitat for this species. Your location does not overlap the critical habitat.
Species profile: https://ecos.fws.gov/ecp/species/2262

Critical habitats

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

IPaC User Contact Information

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

Appendix J: Badhesha IPaC Search

FRESNO IRRIGATION DISTRICT

MULTIPLE RECHARGE BASINS PROJECT

United States Department of the Interior

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

In Reply Refer To: December 16, 2022
Project Code: 2023-0016294
Project Name: Multiple Recharge Basin Project- Badhesha Basin

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

To Whom It May Concern:

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

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

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

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

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

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

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

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

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

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

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

Attachment(s):

- Official Species List

Official Species List

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

This species list is provided by:

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

Project Summary

Project Code: 2023-0016294
Project Name: Multiple Recharge Basin Project- Badhesha Basin
Project Type: Water Supply Facility - New Constr
Project Description: The Badhesha Basin APE is approximately 33 acres including the additional 50-foot buffer surrounding the APE (Figure 4). It is located approximately three miles southwest of the City of Fresno, California. The site was previously used to cultivate grapes but was recently cleared of vegetation. The basin would connect to Fresno Colony Canal No. 24.

Project Location:

Approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/@36.688510199999996,-119.83884097567062,14z

Counties: Fresno County, California

Endangered Species Act Species

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

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

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

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

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

Mammals

NAME	STATUS
Fresno Kangaroo Rat *Dipodomys nitratoides exilis* There is **final** critical habitat for this species. Your location does not overlap the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/5150	Endangered
San Joaquin Kit Fox *Vulpes macrotis mutica* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/2873	Endangered

Reptiles

NAME	STATUS
Blunt-nosed Leopard Lizard *Gambelia silus* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/625	Endangered

Amphibians

NAME	STATUS
California Tiger Salamander *Ambystoma californiense* Population: U.S.A. (Central CA DPS) There is **final** critical habitat for this species. Your location does not overlap the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/2076	Threatened

Fishes

NAME	STATUS
Delta Smelt *Hypomesus transpacificus*	Threatened

There is **final** critical habitat for this species. Your location does not overlap the critical habitat.
Species profile: https://ecos.fws.gov/ecp/species/321

Insects

NAME	STATUS
Monarch Butterfly *Danaus plexippus*	Candidate

No critical habitat has been designated for this species.
Species profile: https://ecos.fws.gov/ecp/species/9743

Crustaceans

NAME	STATUS
Vernal Pool Fairy Shrimp *Branchinecta lynchi*	Threatened

There is **final** critical habitat for this species. Your location does not overlap the critical habitat.
Species profile: https://ecos.fws.gov/ecp/species/498

Critical habitats

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

IPaC User Contact Information

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

Appendix K: Horner IPaC Search

FRESNO IRRIGATION DISTRICT

MULTIPLE RECHARGE BASINS PROJECT

United States Department of the Interior

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

In Reply Refer To: December 16, 2022
Project Code: 2023-0016297
Project Name: Multiple Recharge Basin Project- Horner Basin

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

To Whom It May Concern:

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

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

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

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

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

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

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

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

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

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

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

Attachment(s):

- Official Species List

Official Species List

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

This species list is provided by:

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

Project Summary

Project Code: 2023-0016297
Project Name: Multiple Recharge Basin Project- Horner Basin
Project Type: Water Supply Facility - New Constr
Project Description: The Horner Basin APE is approximately 40 acres including the additional 50-foot buffer surrounding the APE (Figure 5). It is located approximately two miles southwest of the census-designated place of Biola, California. The site is currently fallowed, and the one single family residence would remain on-site and be surrounded by basin levees. The basin would connect to Little Sandridge Canal No. 66 and exclude Big Sandridge Canal No. 65.

Project Location:

Approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/@36.7913367,-120.05825599053861,14z

Counties: Fresno County, California

Endangered Species Act Species

There is a total of 8 threatened, endangered, or candidate species on this species list.

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

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

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

---

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

Mammals

NAME	STATUS
Fresno Kangaroo Rat *Dipodomys nitratoides exilis* There is **final** critical habitat for this species. Your location does not overlap the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/5150	Endangered
San Joaquin Kit Fox *Vulpes macrotis mutica* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/2873	Endangered

Reptiles

NAME	STATUS
Blunt-nosed Leopard Lizard *Gambelia silus* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/625	Endangered

Amphibians

NAME	STATUS
California Tiger Salamander *Ambystoma californiense* Population: U.S.A. (Central CA DPS) There is **final** critical habitat for this species. Your location does not overlap the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/2076	Threatened

Fishes

NAME	STATUS
Delta Smelt *Hypomesus transpacificus*	Threatened

There is **final** critical habitat for this species. Your location does not overlap the critical habitat.
Species profile: https://ecos.fws.gov/ecp/species/321

Insects

NAME	STATUS
Monarch Butterfly *Danaus plexippus*	Candidate

No critical habitat has been designated for this species.
Species profile: https://ecos.fws.gov/ecp/species/9743

Valley Elderberry Longhorn Beetle *Desmocerus californicus dimorphus*	Threatened

There is **final** critical habitat for this species. Your location does not overlap the critical habitat.
Species profile: https://ecos.fws.gov/ecp/species/7850

Crustaceans

NAME	STATUS
Vernal Pool Fairy Shrimp *Branchinecta lynchi*	Threatened

There is **final** critical habitat for this species. Your location does not overlap the critical habitat.
Species profile: https://ecos.fws.gov/ecp/species/498

Critical habitats

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

IPaC User Contact Information

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

Appendix L: Kenneson-Sanchez IPaC Search

FRESNO IRRIGATION DISTRICT

MULTIPLE RECHARGE BASINS PROJECT

United States Department of the Interior

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

In Reply Refer To: December 16, 2022
Project Code: 2023-0016299
Project Name: Multiple Recharge Basin Project- Kenneson-Sanchez Basin

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

To Whom It May Concern:

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

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

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

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

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

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

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

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

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

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

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

Attachment(s):

- Official Species List

Official Species List

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

This species list is provided by:

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

Project Summary

Project Code: 2023-0016299
Project Name: Multiple Recharge Basin Project- Kenneson-Sanchez Basin
Project Type: Water Supply Facility - New Constr
Project Description: The Kenneson-Sanchez Basin APE is approximately 57 acres including the additional 50-foot buffer surrounding the APE. It is located approximately three miles southwest of the census-designated place of Biola, California. The site is adjacent to Sun Empire Elementary School. The site is currently fallowed, and the one single family residence would remain on-site and be surrounded by basin levees. The basin would connect to Big Sandridge Canal No. 65.

Project Location:

Approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/@36.772738000000004,-120.08283601689351,14z

Counties: Fresno County, California

Endangered Species Act Species

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

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

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

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

---

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

Mammals

NAME	STATUS
Fresno Kangaroo Rat *Dipodomys nitratoides exilis* There is **final** critical habitat for this species. Your location does not overlap the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/5150	Endangered
San Joaquin Kit Fox *Vulpes macrotis mutica* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/2873	Endangered

Reptiles

NAME	STATUS
Blunt-nosed Leopard Lizard *Gambelia silus* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/625	Endangered

Amphibians

NAME	STATUS
California Tiger Salamander *Ambystoma californiense* Population: U.S.A. (Central CA DPS) There is **final** critical habitat for this species. Your location does not overlap the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/2076	Threatened

Fishes

NAME	STATUS
Delta Smelt *Hypomesus transpacificus*	Threatened

There is **final** critical habitat for this species. Your location does not overlap the critical habitat.
Species profile: https://ecos.fws.gov/ecp/species/321

Insects

NAME	STATUS
Monarch Butterfly *Danaus plexippus*	Candidate

No critical habitat has been designated for this species.
Species profile: https://ecos.fws.gov/ecp/species/9743

Crustaceans

NAME	STATUS
Vernal Pool Fairy Shrimp *Branchinecta lynchi*	Threatened

There is **final** critical habitat for this species. Your location does not overlap the critical habitat.
Species profile: https://ecos.fws.gov/ecp/species/498

Critical habitats

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

IPaC User Contact Information

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

Appendix M: Carter-Bybee NRCS Soils Report

FRESNO IRRIGATION DISTRICT

MULTIPLE RECHARGE BASINS PROJECT

United States Department of Agriculture

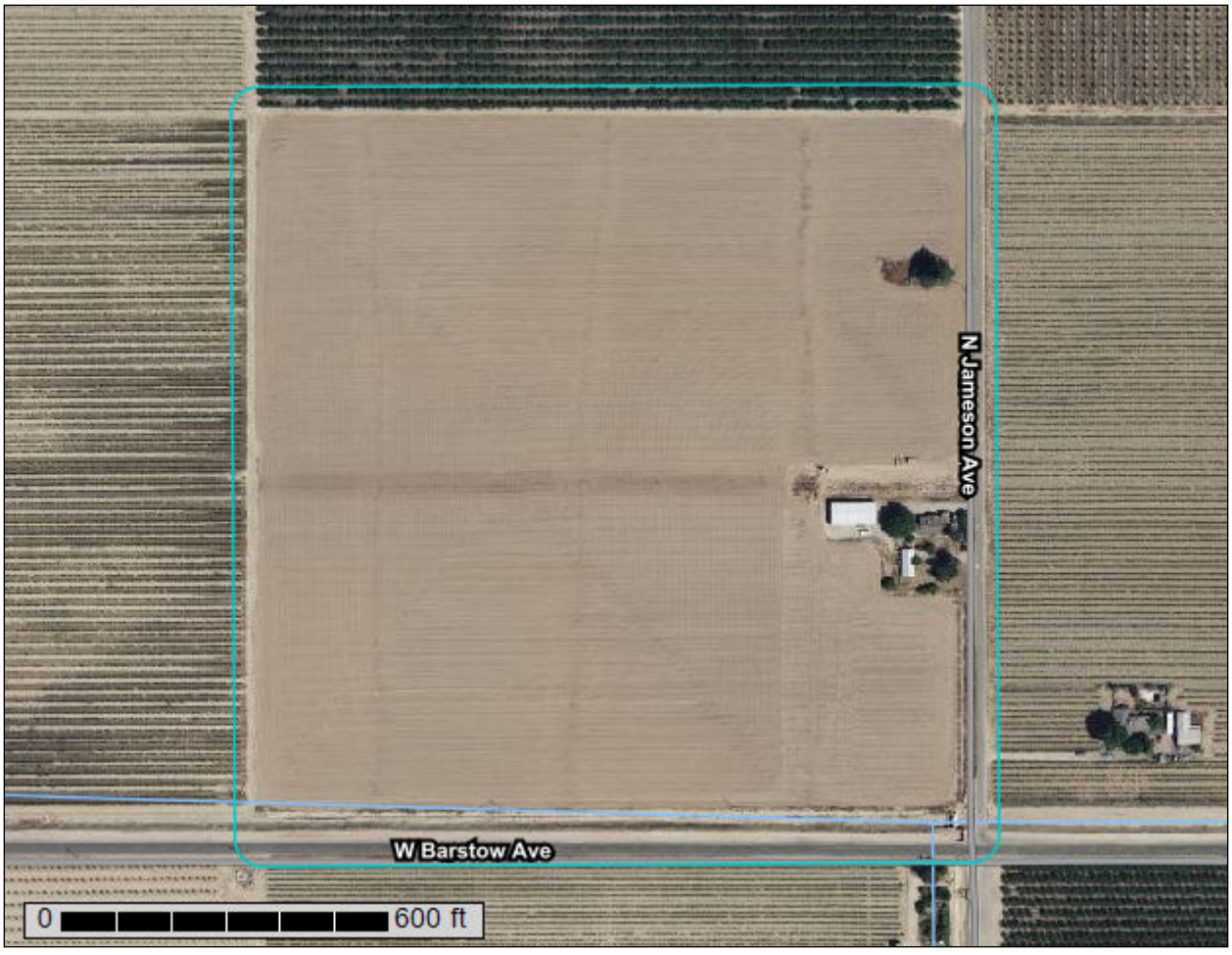
NRCS

Natural Resources Conservation Service

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

Custom Soil Resource Report for Eastern Fresno Area, California

Carter-Bybee Basin



September 26, 2022

Preface

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

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

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

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

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

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

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

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

Contents

How Soil Surveys Are Made

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

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

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Custom Soil Resource Report
Soil Map

Map Scale: 1:3,320 if printed on A portrait (8.5" x 11") sheet.

N

Meters
0 45 90 180 270

Feet
0 150 300 600 900

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 11N WGS84

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils
- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

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

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

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Eastern Fresno Area, California
Survey Area Data: Version 14, Sep 3, 2021

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

Date(s) aerial images were photographed: Mar 16, 2022—May 30, 2022

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
Hg	Hanford sandy loam, silty substratum	37.2	81.5%
TzbA	Tujunga loamy sand, 0 to 3 percent slopes	8.5	18.5%
Totals for Area of Interest		**45.7**	**100.0%**

Map Unit Descriptions

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however,

onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

Eastern Fresno Area, California

Hg—Hanford sandy loam, silty substratum

Map Unit Setting

National map unit symbol: hl5k
Elevation: 200 to 500 feet
Mean annual precipitation: 8 to 15 inches
Mean annual air temperature: 61 to 63 degrees F
Frost-free period: 250 to 275 days
Farmland classification: Prime farmland if irrigated

Map Unit Composition

Hanford and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Hanford

Setting

Landform: Flood plains, alluvial fans
Landform position (two-dimensional): Toeslope, footslope
Landform position (three-dimensional): Base slope, rise
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium derived from granite

Typical profile

Ap - 0 to 16 inches: sandy loam
C - 16 to 40 inches: sandy loam
2C - 40 to 60 inches: silty clay loam

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: Very low
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Moderate (about 8.6 inches)

Interpretive groups

Land capability classification (irrigated): 2s
Land capability classification (nonirrigated): 4s
Hydrologic Soil Group: A
Ecological site: R017XY904CA - Subirrigated Deep Alluvial Fans
Hydric soil rating: No

Minor Components

Unnamed

Percent of map unit: 15 percent
Landform: Flood plains, alluvial fans

Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

TzbA—Tujunga loamy sand, 0 to 3 percent slopes

Map Unit Setting

National map unit symbol: hlc1
Elevation: 180 to 400 feet
Mean annual precipitation: 8 to 12 inches
Mean annual air temperature: 62 to 64 degrees F
Frost-free period: 225 to 275 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Tujunga and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Tujunga

Setting

Landform: Alluvial fans, flood plains
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Base slope
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium derived from granite

Typical profile

A - 0 to 4 inches: loamy sand
C - 4 to 60 inches: stratified sand to loamy sand

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Somewhat excessively drained
Runoff class: Very low
Capacity of the most limiting layer to transmit water (Ksat): High to very high (5.95 to 19.98 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: NoneOccasional
Frequency of ponding: None
Available water supply, 0 to 60 inches: Low (about 4.2 inches)

Interpretive groups

Land capability classification (irrigated): 4s
Land capability classification (nonirrigated): 4s
Hydrologic Soil Group: A
Ecological site: R017XY906CA - Non-Alkali San Joaquin Valley Desert
Hydric soil rating: No

Minor Components

Unnamed, loamy coarse sand

Percent of map unit: 12 percent
Landform: Flood plains, alluvial fans
Hydric soil rating: No

Unnamed, compact substratum

Percent of map unit: 2 percent
Landform: Flood plains, alluvial fans
Hydric soil rating: No

Unnamed, flooded

Percent of map unit: 1 percent
Landform: Flood plains
Hydric soil rating: Yes

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Appendix N: Badhesha NRCS Soils Report

FRESNO IRRIGATION DISTRICT

MULTIPLE RECHARGE BASINS PROJECT

United States Department of Agriculture

NRCS

Natural Resources Conservation Service

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

Custom Soil Resource Report for Eastern Fresno Area, California

Badhesha Basin

September 26, 2022

Preface

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

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

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

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

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

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

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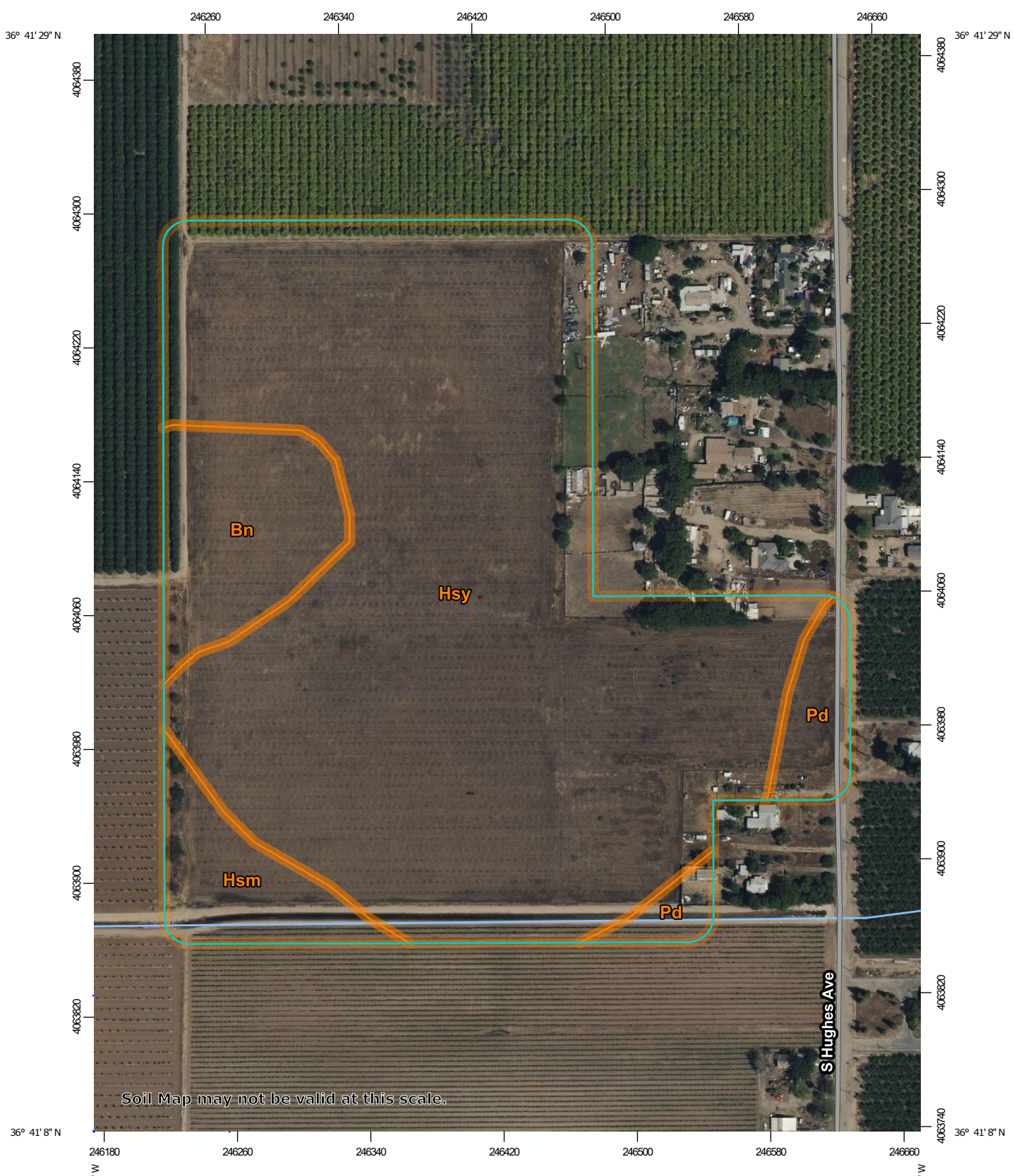
Soil Map



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N

Meters: 0 45 90 180 270

Feet: 0 150 300 600 900

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 11N WGS84

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- Miscellaneous Water
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- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

Water Features
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Transportation
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- Local Roads

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Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Eastern Fresno Area, California
Survey Area Data: Version 14, Sep 3, 2021

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

Date(s) aerial images were photographed: Mar 16, 2022—May 30, 2022

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
Bn	Borden loam	3.0	9.0%
Hsm	Hesperia sandy loam, deep	1.9	5.8%
Hsy	Hesperia fine sandy loam, deep, saline-sodic	27.2	80.7%
Pd	Pachappa loam, moderately deep	1.5	4.5%
Totals for Area of Interest		**33.7**	**100.0%**

Map Unit Descriptions

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or

landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

Eastern Fresno Area, California

Bn—Borden loam

Map Unit Setting

National map unit symbol: hl1z
Elevation: 200 to 300 feet
Mean annual precipitation: 8 to 10 inches
Mean annual air temperature: 61 to 63 degrees F
Frost-free period: 225 to 250 days
Farmland classification: Prime farmland if irrigated

Map Unit Composition

Borden and similar soils: 85 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Borden

Setting

Landform: Fan remnants
Landform position (two-dimensional): Shoulder
Landform position (three-dimensional): Rise
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium derived from granite

Typical profile

Ap - 0 to 7 inches: loam
Bt - 7 to 30 inches: sandy clay loam
BCk - 30 to 38 inches: sandy clay loam
C - 38 to 60 inches: stratified sandy loam to clay loam

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.57 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 5 percent
Maximum salinity: Nonsaline to slightly saline (0.0 to 4.0 mmhos/cm)
Available water supply, 0 to 60 inches: Moderate (about 8.6 inches)

Interpretive groups

Land capability classification (irrigated): 1
Land capability classification (nonirrigated): 4c
Hydrologic Soil Group: C
Ecological site: R017XY906CA - Non-Alkali San Joaquin Valley Desert
Hydric soil rating: No

Minor Components

Unnamed, cl

Percent of map unit: 5 percent
Landform: Depressions on fan remnants
Hydric soil rating: No

Unnamed, sl

Percent of map unit: 5 percent
Landform: Fan remnants
Hydric soil rating: No

Hsm—Hesperia sandy loam, deep

Map Unit Setting

National map unit symbol: 2yc9l
Elevation: 200 to 280 feet
Mean annual precipitation: 9 to 12 inches
Mean annual air temperature: 63 to 64 degrees F
Frost-free period: 304 to 318 days
Farmland classification: Prime farmland if irrigated

Map Unit Composition

Hesperia and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Hesperia

Setting

Landform: Alluvial fans
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium derived from granite

Typical profile

Ap1 - 0 to 5 inches: sandy loam
Ap2 - 5 to 11 inches: sandy loam
Bt - 11 to 32 inches: sandy loam
Btk - 32 to 43 inches: sandy loam
2Bdk - 43 to 63 inches: stratified silt loam
2Cd - 63 to 79 inches: stratified silt loam

Properties and qualities

Slope: 0 percent
Depth to restrictive feature: 43 inches to densic material
Drainage class: Well drained
Runoff class: Negligible

Capacity of the most limiting layer to transmit water (Ksat): Moderately low (0.01 to 0.14 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: Rare
Frequency of ponding: None
Calcium carbonate, maximum content: 5 percent
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum: 2.0
Available water supply, 0 to 60 inches: Low (about 4.3 inches)

Interpretive groups
Land capability classification (irrigated): 3s
Land capability classification (nonirrigated): 4s
Hydrologic Soil Group: B
Hydric soil rating: No

Minor Components

Unnamed, coarse sandy loam surface
Percent of map unit: 12 percent
Landform: Knolls on alluvial fans
Hydric soil rating: No

Unnamed, hydric
Percent of map unit: 3 percent
Landform: Swales on alluvial fans
Hydric soil rating: Yes

Hsy—Hesperia fine sandy loam, deep, saline-sodic

Map Unit Setting
National map unit symbol: 2yc9h
Elevation: 210 to 290 feet
Mean annual precipitation: 9 to 11 inches
Mean annual air temperature: 63 to 64 degrees F
Frost-free period: 311 to 325 days
Farmland classification: Prime farmland if irrigated and reclaimed of excess salts and sodium

Map Unit Composition
Hesperia and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Hesperia

Setting
Landform: Alluvial fans
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear

Parent material: Alluvium derived from granite

Typical profile

Ap1 - 0 to 5 inches: fine sandy loam
Ap2 - 5 to 11 inches: fine sandy loam
Btn - 11 to 32 inches: fine sandy loam
Btkn - 32 to 43 inches: fine sandy loam
2Bdkn - 43 to 63 inches: stratified silt loam
2Cd - 63 to 79 inches: stratified silt loam

Properties and qualities

Slope: 0 percent
Depth to restrictive feature: 43 inches to densic material
Drainage class: Well drained
Runoff class: Negligible
Capacity of the most limiting layer to transmit water (Ksat): Moderately low (0.01 to 0.14 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: Rare
Frequency of ponding: None
Calcium carbonate, maximum content: 5 percent
Maximum salinity: Slightly saline to moderately saline (4.0 to 8.0 mmhos/cm)
Sodium adsorption ratio, maximum: 25.0
Available water supply, 0 to 60 inches: Low (about 4.7 inches)

Interpretive groups

Land capability classification (irrigated): 3s
Land capability classification (nonirrigated): 6s
Hydrologic Soil Group: B
Ecological site: R017XY906CA - Non-Alkali San Joaquin Valley Desert
Hydric soil rating: No

Minor Components

Unnamed

Percent of map unit: 15 percent
Landform: Alluvial fans
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

Pd—Pachappa loam, moderately deep

Map Unit Setting

National map unit symbol: hl7n
Elevation: 200 to 450 feet
Mean annual precipitation: 8 to 15 inches
Mean annual air temperature: 61 to 63 degrees F
Frost-free period: 225 to 250 days
Farmland classification: Prime farmland if irrigated

Map Unit Composition

Pachappa and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Pachappa

Setting

Landform: Alluvial fans
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Base slope
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium derived from granite

Typical profile

Ap - 0 to 4 inches: loam
Bt - 4 to 19 inches: clay loam
C - 19 to 42 inches: loam
2C - 42 to 60 inches: silt loam

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 1.98 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 5 percent
Maximum salinity: Nonsaline to slightly saline (0.0 to 4.0 mmhos/cm)
Available water supply, 0 to 60 inches: Moderate (about 8.8 inches)

Interpretive groups

Land capability classification (irrigated): 1
Land capability classification (nonirrigated): 4c
Hydrologic Soil Group: B
Ecological site: R017XY904CA - Subirrigated Deep Alluvial Fans
Hydric soil rating: No

Minor Components

Unnamed, deep to silty substratum

Percent of map unit: 5 percent
Landform: Alluvial fans
Hydric soil rating: No

Unnamed, shallow to silty substratum

Percent of map unit: 5 percent
Landform: Alluvial fans
Hydric soil rating: No

Unnamed, clay loam surface

Percent of map unit: 5 percent
Landform: Alluvial fans

Hydric soil rating: No

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Appendix O: Horner NRCS Soils Report

FRESNO IRRIGATION DISTRICT

MULTIPLE RECHARGE BASINS PROJECT

United States Department of Agriculture

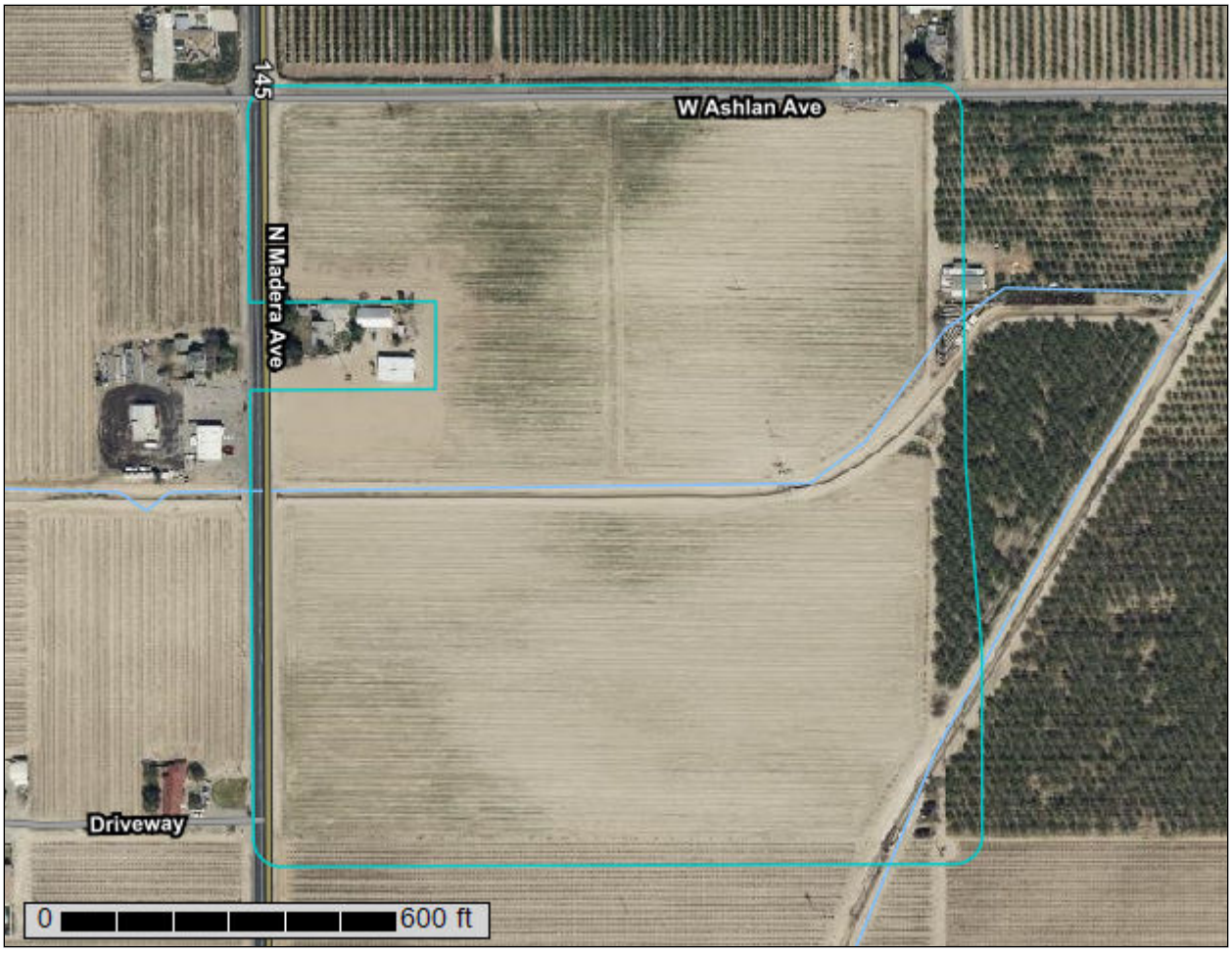
NRCS

Natural Resources Conservation Service

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

Custom Soil Resource Report for Eastern Fresno Area, California

Horner Basin



September 26, 2022

Preface

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

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

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

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

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

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

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Contents

How Soil Surveys Are Made

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

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

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

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

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

scientists classified and named the soils in the survey area, they compared the individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

The objective of soil mapping is not to delineate pure map unit components; the objective is to separate the landscape into landforms or landform segments that have similar use and management requirements. Each map unit is defined by a unique combination of soil components and/or miscellaneous areas in predictable proportions. Some components may be highly contrasting to the other components of the map unit. The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The delineation of such landforms and landform segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, onsite investigation is needed to define and locate the soils and miscellaneous areas.

Soil scientists make many field observations in the process of producing a soil map. The frequency of observation is dependent upon several factors, including scale of mapping, intensity of mapping, design of map units, complexity of the landscape, and experience of the soil scientist. Observations are made to test and refine the soil-landscape model and predictions and to verify the classification of the soils at specific locations. Once the soil-landscape model is refined, a significantly smaller number of measurements of individual soil properties are made and recorded. These measurements may include field measurements, such as those for color, depth to bedrock, and texture, and laboratory measurements, such as those for content of sand, silt, clay, salt, and other components. Properties of each soil typically vary from one point to another across the landscape.

Observations for map unit components are aggregated to develop ranges of characteristics for the components. The aggregated values are presented. Direct measurements do not exist for every property presented for every map unit component. Values for some properties are estimated from combinations of other properties.

While a soil survey is in progress, samples of some of the soils in the area generally are collected for laboratory analyses and for engineering tests. Soil scientists interpret the data from these analyses and tests as well as the field-observed characteristics and the soil properties to determine the expected behavior of the soils under different uses. Interpretations for all of the soils are field tested through observation of the soils in different uses and under different levels of management. Some interpretations are modified to fit local conditions, and some new interpretations are developed to meet local needs. Data are assembled from other sources, such as research information, production records, and field experience of specialists. For example, data on crop yields under defined levels of management are assembled from farm records and from field or plot experiments on the same kinds of soil.

Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree of accuracy that a given soil will have a high water table within certain depths in most years, but they cannot predict that a high water table will always be at a specific level in the soil on a specific date.

After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and

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

Soil Map

The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce the map, and a description of each soil map unit.

Custom Soil Resource Report
Soil Map

Map Scale: 1:3,110 if printed on A portrait (8.5" x 11") sheet.

N

Meters: 0 45 90 180 270

Feet: 0 150 300 600 900

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 10N WGS84

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils
- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

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

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

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Eastern Fresno Area, California
Survey Area Data: Version 14, Sep 3, 2021

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

Date(s) aerial images were photographed: Mar 16, 2022—May 30, 2022

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
Ha	Hanford coarse sandy loam	33.6	83.5%
Hg	Hanford sandy loam, silty substratum	6.6	16.5%
Totals for Area of Interest		**40.2**	**100.0%**

Map Unit Descriptions

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however,

onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

Eastern Fresno Area, California

Ha—Hanford coarse sandy loam

Map Unit Setting

National map unit symbol: hl5c
Elevation: 200 to 500 feet
Mean annual precipitation: 8 to 15 inches
Mean annual air temperature: 61 to 63 degrees F
Frost-free period: 250 to 275 days
Farmland classification: Prime farmland if irrigated

Map Unit Composition

Hanford and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Hanford

Setting

Landform: Flood plains, alluvial fans
Landform position (two-dimensional): Toeslope, footslope
Landform position (three-dimensional): Base slope, rise
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium derived from granite

Typical profile

Ap - 0 to 16 inches: coarse sandy loam
C - 16 to 72 inches: coarse sandy loam

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: Very low
Capacity of the most limiting layer to transmit water (Ksat): High (1.98 to 5.95 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Moderate (about 7.8 inches)

Interpretive groups

Land capability classification (irrigated): 2s
Land capability classification (nonirrigated): 4s
Hydrologic Soil Group: A
Ecological site: R017XY904CA - Subirrigated Deep Alluvial Fans
Hydric soil rating: No

Minor Components

Unnamed

Percent of map unit: 15 percent
Landform: Flood plains, alluvial fans
Down-slope shape: Linear

Across-slope shape: Linear
Hydric soil rating: No

Hg—Hanford sandy loam, silty substratum

Map Unit Setting

National map unit symbol: hl5k
Elevation: 200 to 500 feet
Mean annual precipitation: 8 to 15 inches
Mean annual air temperature: 61 to 63 degrees F
Frost-free period: 250 to 275 days
Farmland classification: Prime farmland if irrigated

Map Unit Composition

Hanford and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Hanford

Setting

Landform: Flood plains, alluvial fans
Landform position (two-dimensional): Toeslope, footslope
Landform position (three-dimensional): Base slope, rise
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium derived from granite

Typical profile

Ap - 0 to 16 inches: sandy loam
C - 16 to 40 inches: sandy loam
2C - 40 to 60 inches: silty clay loam

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: Very low
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Moderate (about 8.6 inches)

Interpretive groups

Land capability classification (irrigated): 2s
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Hydrologic Soil Group: A
Ecological site: R017XY904CA - Subirrigated Deep Alluvial Fans
Hydric soil rating: No

Minor Components

Unnamed

Percent of map unit: 15 percent
Landform: Flood plains, alluvial fans
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

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Appendix P: Kenneson-Sanchez NRCS Soils Report

FRESNO IRRIGATION DISTRICT

MULTIPLE RECHARGE BASINS PROJECT

United States Department of Agriculture

NRCS

Natural Resources Conservation Service

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

Custom Soil Resource Report for Eastern Fresno Area, California

Kenneson-Sanchez Basin

September 26, 2022

Preface

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

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

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

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

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

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

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Contents

How Soil Surveys Are Made

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

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

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

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

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

scientists classified and named the soils in the survey area, they compared the individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

The objective of soil mapping is not to delineate pure map unit components; the objective is to separate the landscape into landforms or landform segments that have similar use and management requirements. Each map unit is defined by a unique combination of soil components and/or miscellaneous areas in predictable proportions. Some components may be highly contrasting to the other components of the map unit. The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The delineation of such landforms and landform segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, onsite investigation is needed to define and locate the soils and miscellaneous areas.

Soil scientists make many field observations in the process of producing a soil map. The frequency of observation is dependent upon several factors, including scale of mapping, intensity of mapping, design of map units, complexity of the landscape, and experience of the soil scientist. Observations are made to test and refine the soil-landscape model and predictions and to verify the classification of the soils at specific locations. Once the soil-landscape model is refined, a significantly smaller number of measurements of individual soil properties are made and recorded. These measurements may include field measurements, such as those for color, depth to bedrock, and texture, and laboratory measurements, such as those for content of sand, silt, clay, salt, and other components. Properties of each soil typically vary from one point to another across the landscape.

Observations for map unit components are aggregated to develop ranges of characteristics for the components. The aggregated values are presented. Direct measurements do not exist for every property presented for every map unit component. Values for some properties are estimated from combinations of other properties.

While a soil survey is in progress, samples of some of the soils in the area generally are collected for laboratory analyses and for engineering tests. Soil scientists interpret the data from these analyses and tests as well as the field-observed characteristics and the soil properties to determine the expected behavior of the soils under different uses. Interpretations for all of the soils are field tested through observation of the soils in different uses and under different levels of management. Some interpretations are modified to fit local conditions, and some new interpretations are developed to meet local needs. Data are assembled from other sources, such as research information, production records, and field experience of specialists. For example, data on crop yields under defined levels of management are assembled from farm records and from field or plot experiments on the same kinds of soil.

Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree of accuracy that a given soil will have a high water table within certain depths in most years, but they cannot predict that a high water table will always be at a specific level in the soil on a specific date.

After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and

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

Soil Map

The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce the map, and a description of each soil map unit.

Custom Soil Resource Report
Soil Map

Map Scale: 1:4,530 if printed on A landscape (11" x 8.5") sheet.

N

Meters: 0 50 100 200 300

Feet: 0 200 400 800 1200

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 10N WGS84

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils
- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

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

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

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Eastern Fresno Area, California
Survey Area Data: Version 14, Sep 3, 2021

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

Date(s) aerial images were photographed: Mar 16, 2022—Mar 21, 2022

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
Ha	Hanford coarse sandy loam	33.7	59.2%
Hg	Hanford sandy loam, silty substratum	10.3	18.1%
Hsm	Hesperia sandy loam, deep	12.9	22.7%
Totals for Area of Interest		**56.9**	**100.0%**

Map Unit Descriptions

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

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Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

Eastern Fresno Area, California

Ha—Hanford coarse sandy loam

Map Unit Setting

National map unit symbol: hl5c
Elevation: 200 to 500 feet
Mean annual precipitation: 8 to 15 inches
Mean annual air temperature: 61 to 63 degrees F
Frost-free period: 250 to 275 days
Farmland classification: Prime farmland if irrigated

Map Unit Composition

Hanford and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Hanford

Setting

Landform: Flood plains, alluvial fans
Landform position (two-dimensional): Toeslope, footslope
Landform position (three-dimensional): Base slope, rise
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium derived from granite

Typical profile

Ap - 0 to 16 inches: coarse sandy loam
C - 16 to 72 inches: coarse sandy loam

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: Very low
Capacity of the most limiting layer to transmit water (Ksat): High (1.98 to 5.95 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Moderate (about 7.8 inches)

Interpretive groups

Land capability classification (irrigated): 2s
Land capability classification (nonirrigated): 4s
Hydrologic Soil Group: A
Ecological site: R017XY904CA - Subirrigated Deep Alluvial Fans
Hydric soil rating: No

Minor Components

Unnamed

Percent of map unit: 15 percent
Landform: Flood plains, alluvial fans
Down-slope shape: Linear

Across-slope shape: Linear
Hydric soil rating: No

Hg—Hanford sandy loam, silty substratum

Map Unit Setting

National map unit symbol: hl5k
Elevation: 200 to 500 feet
Mean annual precipitation: 8 to 15 inches
Mean annual air temperature: 61 to 63 degrees F
Frost-free period: 250 to 275 days
Farmland classification: Prime farmland if irrigated

Map Unit Composition

Hanford and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Hanford

Setting

Landform: Flood plains, alluvial fans
Landform position (two-dimensional): Toeslope, footslope
Landform position (three-dimensional): Base slope, rise
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium derived from granite

Typical profile

Ap - 0 to 16 inches: sandy loam
C - 16 to 40 inches: sandy loam
2C - 40 to 60 inches: silty clay loam

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: Very low
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Moderate (about 8.6 inches)

Interpretive groups

Land capability classification (irrigated): 2s
Land capability classification (nonirrigated): 4s
Hydrologic Soil Group: A
Ecological site: R017XY904CA - Subirrigated Deep Alluvial Fans
Hydric soil rating: No

Minor Components

Unnamed

Percent of map unit: 15 percent
Landform: Flood plains, alluvial fans
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

Hsm—Hesperia sandy loam, deep

Map Unit Setting

National map unit symbol: 2yc9l
Elevation: 200 to 280 feet
Mean annual precipitation: 9 to 12 inches
Mean annual air temperature: 63 to 64 degrees F
Frost-free period: 304 to 318 days
Farmland classification: Prime farmland if irrigated

Map Unit Composition

Hesperia and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Hesperia

Setting

Landform: Alluvial fans
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium derived from granite

Typical profile

Ap1 - 0 to 5 inches: sandy loam
Ap2 - 5 to 11 inches: sandy loam
Bt - 11 to 32 inches: sandy loam
Btk - 32 to 43 inches: sandy loam
2Bdk - 43 to 63 inches: stratified silt loam
2Cd - 63 to 79 inches: stratified silt loam

Properties and qualities

Slope: 0 percent
Depth to restrictive feature: 43 inches to densic material
Drainage class: Well drained
Runoff class: Negligible
Capacity of the most limiting layer to transmit water (Ksat): Moderately low (0.01 to 0.14 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: Rare

Frequency of ponding: None
Calcium carbonate, maximum content: 5 percent
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum: 2.0
Available water supply, 0 to 60 inches: Low (about 4.3 inches)

Interpretive groups

Land capability classification (irrigated): 3s
Land capability classification (nonirrigated): 4s
Hydrologic Soil Group: B
Hydric soil rating: No

Minor Components

Unnamed, coarse sandy loam surface

Percent of map unit: 12 percent
Landform: Knolls on alluvial fans
Hydric soil rating: No

Unnamed, hydric

Percent of map unit: 3 percent
Landform: Swales on alluvial fans
Hydric soil rating: Yes

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Appendix Q: Carter-Bybee NMFS EFH Mapper

FRESNO IRRIGATION DISTRICT

MULTIPLE RECHARGE BASINS PROJECT

EFH Mapper Report

EFH Data Notice

Essential Fish Habitat (EFH) is defined by textual descriptions contained in the fishery management plans developed by the regional fishery management councils. In most cases mapping data can not fully represent the complexity of the habitats that make up EFH. This report should be used for general interest queries only and should not be interpreted as a definitive evaluation of EFH at this location. A location-specific evaluation of EFH for any official purposes must be performed by a regional expert. Please refer to the following links for the appropriate regional resources.

West Coast Regional Office
Alaska Regional Office

Query Results

Degrees, Minutes, Seconds: Latitude = 36º 49' 1" N, Longitude = 120º 0' 33" W
Decimal Degrees: Latitude = 36.817, Longitude = -119.991

The query location intersects with spatial data representing EFH and/or HAPCs for the following species/management units.

EFH

No Essential Fish Habitats (EFH) were identified at the report location.

Salmon EFH

No Pacific Salmon Essential Fish Habitat (EFH) were identified at the report location.

HAPCs

No Habitat Areas of Particular Concern (HAPC) were identified at the report location.

EFH Areas Protected from Fishing

No EFH Areas Protected from Fishing (EFHA) were identified at the report location.

Spatial data does not currently exist for all the managed species in this area. The following is a list of species or management units for which there is no spatial data. ****For links to all EFH text descriptions see the complete data inventory: open data inventory -->**
Pacific Coastal Pelagic Species, Jack Mackerel, Pacific (Chub) Mackerel, Pacific Sardine, Northern Anchovy - Central Subpopulation, Northern Anchovy - Northern Subpopulation, **Pacific Highly Migratory Species**, Bigeye Thresher Shark - North Pacific, Bluefin Tuna - Pacific, Dolphinfish (Dorado or Mahimahi) - Pacific, Pelagic Thresher Shark - North Pacific, Swordfish - North Pacific

Appendix R: Badhesha NMFS EFH Mapper

FRESNO IRRIGATION DISTRICT

MULTIPLE RECHARGE BASINS PROJECT

EFH Mapper Report

EFH Data Notice

Essential Fish Habitat (EFH) is defined by textual descriptions contained in the fishery management plans developed by the regional fishery management councils. In most cases mapping data can not fully represent the complexity of the habitats that make up EFH. This report should be used for general interest queries only and should not be interpreted as a definitive evaluation of EFH at this location. A location-specific evaluation of EFH for any official purposes must be performed by a regional expert. Please refer to the following links for the appropriate regional resources.

West Coast Regional Office
Alaska Regional Office

Query Results

Degrees, Minutes, Seconds: Latitude = 36º 41' 18" N, Longitude = 120º 9' 41" W
Decimal Degrees: Latitude = 36.688, Longitude = -119.839

The query location intersects with spatial data representing EFH and/or HAPCs for the following species/management units.

EFH

No Essential Fish Habitats (EFH) were identified at the report location.

Salmon EFH

No Pacific Salmon Essential Fish Habitat (EFH) were identified at the report location.

HAPCs

No Habitat Areas of Particular Concern (HAPC) were identified at the report location.

EFH Areas Protected from Fishing

No EFH Areas Protected from Fishing (EFHA) were identified at the report location.

Spatial data does not currently exist for all the managed species in this area. The following is a list of species or management units for which there is no spatial data. ****For links to all EFH text descriptions see the complete data inventory: open data inventory -->**
Pacific Coastal Pelagic Species, Jack Mackerel, Pacific (Chub) Mackerel, Pacific Sardine, Northern Anchovy - Central Subpopulation, Northern Anchovy - Northern Subpopulation, **Pacific Highly Migratory Species**, Bigeye Thresher Shark - North Pacific, Bluefin Tuna - Pacific, Dolphinfish (Dorado or Mahimahi) - Pacific, Pelagic Thresher Shark - North Pacific, Swordfish - North Pacific

Appendix S: Horner NMFS EFH Mapper

FRESNO IRRIGATION DISTRICT

MULTIPLE RECHARGE BASINS PROJECT

EFH Mapper Report

EFH Data Notice

Essential Fish Habitat (EFH) is defined by textual descriptions contained in the fishery management plans developed by the regional fishery management councils. In most cases mapping data can not fully represent the complexity of the habitats that make up EFH. This report should be used for general interest queries only and should not be interpreted as a definitive evaluation of EFH at this location. A location-specific evaluation of EFH for any official purposes must be performed by a regional expert. Please refer to the following links for the appropriate regional resources.

West Coast Regional Office
Alaska Regional Office

Query Results

Degrees, Minutes, Seconds: Latitude = 36º 47' 30" N, Longitude = 121º 56' 29" W
Decimal Degrees: Latitude = 36.792, Longitude = -120.059

The query location intersects with spatial data representing EFH and/or HAPCs for the following species/management units.

EFH

No Essential Fish Habitats (EFH) were identified at the report location.

Salmon EFH

No Pacific Salmon Essential Fish Habitat (EFH) were identified at the report location.

HAPCs

No Habitat Areas of Particular Concern (HAPC) were identified at the report location.

EFH Areas Protected from Fishing

No EFH Areas Protected from Fishing (EFHA) were identified at the report location.

Spatial data does not currently exist for all the managed species in this area. The following is a list of species or management units for which there is no spatial data. ****For links to all EFH text descriptions see the complete data inventory: open data inventory -->**
Pacific Coastal Pelagic Species, Jack Mackerel, Pacific (Chub) Mackerel, Pacific Sardine, Northern Anchovy - Central Subpopulation, Northern Anchovy - Northern Subpopulation, **Pacific Highly Migratory Species**, Bigeye Thresher Shark - North Pacific, Bluefin Tuna - Pacific, Dolphinfish (Dorado or Mahimahi) - Pacific, Pelagic Thresher Shark - North Pacific, Swordfish - North Pacific

Appendix T: Kenneson-Sanchez NMFS EFH Mapper

FRESNO IRRIGATION DISTRICT

MULTIPLE RECHARGE BASINS PROJECT

EFH Mapper Report

EFH Data Notice

Essential Fish Habitat (EFH) is defined by textual descriptions contained in the fishery management plans developed by the regional fishery management councils. In most cases mapping data can not fully represent the complexity of the habitats that make up EFH. This report should be used for general interest queries only and should not be interpreted as a definitive evaluation of EFH at this location. A location-specific evaluation of EFH for any official purposes must be performed by a regional expert. Please refer to the following links for the appropriate regional resources.

West Coast Regional Office
Alaska Regional Office

Query Results

Degrees, Minutes, Seconds: Latitude = 36º 46' 26" N, Longitude = 121º 55' 1" W
Decimal Degrees: Latitude = 36.774, Longitude = -120.083

The query location intersects with spatial data representing EFH and/or HAPCs for the following species/management units.

EFH

No Essential Fish Habitats (EFH) were identified at the report location.

Salmon EFH

No Pacific Salmon Essential Fish Habitat (EFH) were identified at the report location.

HAPCs

No Habitat Areas of Particular Concern (HAPC) were identified at the report location.

EFH Areas Protected from Fishing

No EFH Areas Protected from Fishing (EFHA) were identified at the report location.

Spatial data does not currently exist for all the managed species in this area. The following is a list of species or management units for which there is no spatial data. ****For links to all EFH text descriptions see the complete data inventory: open data inventory -->**
Pacific Coastal Pelagic Species, Jack Mackerel, Pacific (Chub) Mackerel, Pacific Sardine, Northern Anchovy - Central Subpopulation, Northern Anchovy - Northern Subpopulation, **Pacific Highly Migratory Species**, Bigeye Thresher Shark - North Pacific, Bluefin Tuna - Pacific, Dolphinfish (Dorado or Mahimahi) - Pacific, Pelagic Thresher Shark - North Pacific, Swordfish - North Pacific

Appendix C: Cultural Resources Phase I Pedestrian Survey

Draft

CLASS III INVENTORY/PHASE I SURVEY, FRESNO IRRIGATION DISTRICTION, FOUR BASINS PROJECT, FRESNO COUNTY, CALIFORNIA

Prepared for:

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January 2023
PN 36510.24

TABLE OF CONTENTS

Chapter **Page**

LIST OF FIGURES

Page

LIST OF TABLES

Page

MANAGEMENT SUMMARY

An intensive Class III Inventory/Phase I cultural resources survey was conducted for the Fresno Irrigation District (FID) Four Basins Project (Project), Fresno County, California. This study involved the Horner, Kenneson-Sanchez, Carter-Bybee and Badhesha Basins, and was conducted by ASM Affiliates, Inc., with Peter Carey, M.A., RPA, serving as principal investigator. Background studies and fieldwork for the survey were completed in August – November 2022. The study was undertaken to assist with compliance with the California Environmental Quality Act (CEQA).

The proposed project consists of the construction of four groundwater recharge basins on a total of approximately 151 acres (ac). The area of potential effect (APE) for the project was defined as all areas of potential ground-surface disturbance including staging, lay-down, and work areas. The vertical APE, defined as the maximum depth of basin excavation, is 20 feet (ft).

A records search of site files and maps was obtained from the Southern San Joaquin Valley Archaeological Information Center (SSJVIC), California State University, Bakersfield. According to the records search results, no previous archaeological surveys had been completed within the Project APEs but three cultural resources, all historic-era in age, were known within the APE limits. An additional historic-era site had been recorded within a 0.5-mile (mi) radius of the Project. Only one previous archaeological survey had been completed within 0.5-mi of the Project APEs.

A search of the Native American Heritage Commission (NAHC) *Sacred Lands File* was also completed. Based on the NAHC records, no sacred sites or traditional cultural places had been identified within or adjacent to the Project APE. Outreach letters and follow-up emails were sent to tribal organizations on the NAHC contact-list. The Big Sandy Rancheria responded, expressing no concerns but asking to be notified if any archaeological discoveries are made during Project construction.

The Class III inventory/Phase I survey fieldwork was conducted in June 2022 with parallel transects spaced at approximately 15-meter (m) intervals walked across the APE. Ground surface visibility within the APE was excellent. Three previously recorded cultural resources, the Herndon and Big Sandridge canals and a derelict single-family residence, were revisited and their site records updated. Two additional cultural resources, both historic-era canals, were also identified and recorded: the Little Sandridge and Fresno Colony canals. Although the four canals are potentially significant and eligible for National Register of Historic Places (NRHP) and California Register of Historical Resources (CRHR) listing under Criterion A/1 due to their association with the development of irrigated agriculture in the San Joaquin Valley, each of these resources lack integrity. They are recommended as not significant or NRHP/CRHR eligible. The fifth resource, a ruined house dating from approximately 1910, also lacks integrity, is not significant and is recommended as not NRHP/CRHR eligible.

Based on these findings, a determination of No Effect/No Significant Impact is recommended for the FID Four Basins Project. It is further recommended that an archaeologist be contacted if cultural resources are identified during the construction of the proposed Project.

1. INTRODUCTION AND REGULATORY CONTEXT

ASM Affiliates was retained by Provost and Pritchard Consulting Group to conduct an intensive Class III inventory Phase I cultural resources survey for the FID Four Basins Project, Fresno County, California. The purpose of this investigation was to assist with compliance with Section 106 of the National Historic Preservation Act (NHPA), as amended, and the California Environmental Quality Act (CEQA). The investigation was undertaken, specifically, to ensure that no significant adverse effects or impacts to historical resources or historic properties occur as a result of the construction of this project.

This current study included:

- A background records search and literature review to determine if any known archaeological sites were present in the project zone and/or whether the APE had been previously and systematically studied by archaeologists;
- A search of the NAHC *Sacred Lands File* to determine if any traditional cultural places or cultural landscapes have been identified within the APE, with outreach letters sent and follow-up calls made to the NAHC tribal contact list;
- An on-foot, intensive inventory of the Project APE to identify and record previously undiscovered cultural resources and to examine known sites; and
- A preliminary assessment of any such resources found within the subject property.

This study was conducted by ASM Affiliates, Inc., of Tehachapi, California, with Peter Carey, M.A., RPA, serving as principal investigator. Fieldwork was conducted by ASM Field Director/Associate Archaeologist Robert Azpitarte, B.A., with the help of Maggie Lemus, B.A., and Maria Silva, B.A., ASM Assistant Archaeologists.

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

1.1 PROJECT LOCATION, DESCRIPTION, AND APE

The proposed Project consists of the construction of four discontiguous recharge basins. Descriptions of the Project and construction details, including the locations of the four basins, are provided below; maps of the Project locations are included in Appendix A:

Carter-Bybee Recharge Basin:

The proposed project includes construction of a new approximately 40-ac recharge basin located at the NW corner of North Jameson and West Barstow avenues (APNs 016-450-54, 75, and 76). The property was previously planted in grapes and has since been cleared (Figure 1). This project is in a critical location for FID to perform recharge, including the capture and use of storm and flood water. FID owns the conveyance canals and Pipeline 157 adjacent to and crossing the project

site. The project will provide a significant recharge benefit estimated at 840 acre-ft/year (AF/yr). The proposed project includes the following construction components which would connect to Herndon Canal No. 39, which has an existing check structure:

- New berm construction would not exceed 6-ft, measured from the exterior toe to the top of new levee;
- Basin depth will be up to 20 feet bgs;
- Settling channels in each basin;
- Canal outlet structure – 5 cfs;
- Basin inlet structure – 400 cfs;
- Metering stand and propeller flow meter;
- Reroute Carter No. 517 pipeline along perimeter;
- Perimeter fencing- cattle fence;
- Monitoring well;
- The proposed project may also include a recovery well located next to Herndon Canal No. 39 and deliver water to that canal. The well would have a 250hp pump and be utilized during irrigation season when surface water deliveries are being made; and,
- Excavation will be balanced on site if possible.

For the canal connections to this and the other proposed basins, FID would cut a notch (less than 50-ft wide) in the existing canal wall, insert a pipeline, and put up to two structures (one inlet, one outlet), pre-cast concrete ideally or cast in place into canal.

Badhesha Rechange Basin:

The District is in escrow for APN 328-091-18, approximately 28-ac of agricultural property near the intersection of North Avenue and Hughes Avenue (Figure 2). FID plans to construct the Project to expand its groundwater recharge efforts. FID wishes to begin the required environmental documentation and advance the engineering to an approximate 50% design level for possible funding opportunities. The project may also include an extraction well. The APE will extend south of the Fresno Colony No. 24 canal. A proposed turnout will be installed. The basin will be fenced and will have the following additional design/construction features:

- New berm construction would not exceed 6-ft, measured from the exterior toe to the top of new levee;
- Basin depth will be up to 20-ft bgs;
- Settling channels in each basin;
- Canal outlet structure – 5 cfs;
- Basin inlet structure – 50 cfs;
- Metering stand and propeller flow meter;
- Diversion check structure 50 cfs;
- Perimeter fencing- cattle fence;
- The proposed project will include a recovery well. The well would have a 250hp pump and be utilized during irrigation season when surface water deliveries are being made.
- Monitoring well; and,

- Excavation will be balanced on site if possible.

Canal connections to the proposed basin would be as described above.

Horner Recharge Basin

The District is in escrow for APN 016-330-20S, approximately 35-ac of agricultural property near the intersection of Ashlan Avenue and Madera Avenue (Figure 3). FID plans to construct the Project to expand its groundwater recharge efforts. FID wishes to begin the required environmental documentation and advance the engineering to an approximate 50% design level for possible funding opportunities. The project may also include an extraction well. The APE will exclude a single-family dwelling and 2-ac to the west, resulting in a 2-ac carve-out. The Project will tie into the Little Sandridge Canal No. 66, which runs through the center of the property, but will exclude the Big Sandridge Canal No. 65, at its southeast corner. The Project area is to be fenced and it will include the following features:

- New berm construction would not exceed 6-ft, measured from the exterior toe to the top of new levee;
- Basin depth up to 20-ft bgs;
- Settling channels on each basin;
- Canal outlet structure- 5 cfs;
- Basin inlet structure – 35 cfs;
- Metering stand and propeller flow meter;
- Diversion check structure- 35 cfs;
- Perimeter fencing- cattle fence;
- The proposed project may also include a recovery well. The well would have a 250hp pump and be utilized during irrigation season when surface water deliveries are being made;
- Monitoring well; and
- Basin excavation to be balanced on site if possible.

Canal connections to the proposed basin would be as described above.

Kenneson-Sanchez Recharge Basin

The District is in escrow for APNs 015-400-005 and -006, approximately 48-acres of agricultural property at the intersection of Clinton and Modoc Avenues (Figure 4). FID plans to construct the Project to expand its groundwater recharge efforts. The project may also include an extraction well. A school is located directly west and chain link fencing is proposed around the school site. A single-family residence to the east will not be included or disturbed. The Big Sandridge Canal currently runs through the middle of these properties. It will be realigned outside the basin to run along Clinton Avenue. The basin will be connected to the existing infrastructure of the Big Sandridge Canal No. 65. The Project will include the following features:

- New berm construction would not exceed 6-ft, measured from the exterior toe to the top of new levee;

- Basin depth will be 5-ft bgs. But vertical APE is 20-ft bgs;
- Canal outlet structure;
- Metering stand and propeller flow meter;
- Diversion structure;
- Monitoring well;
- Perimeter fencing-cattle fence;
- The proposed project may also include a recovery well;
- The well would have a 100-125-hp pump and would be utilized during irrigation season when surface water deliveries are being made.
- Basin excavation to be balanced on site.
- Settling channels for the basin.

The canal connection to the proposed basin would be as described above.

The Project APE was defined as all areas of potential ground-surface disturbance including staging, lay-down, and work areas. Property lines limit the APE for each basin. The horizontal APEs are then as follows:

Carter-Bybee: 40-ac
Badesha: 28-ac
Horner: 35-ac
Kenneson- Sanchez: 48-ac

The total/combined horizontal APE is 151-ac. The vertical APE, defined as the maximum depth of excavation for the basins, is 20-ft.

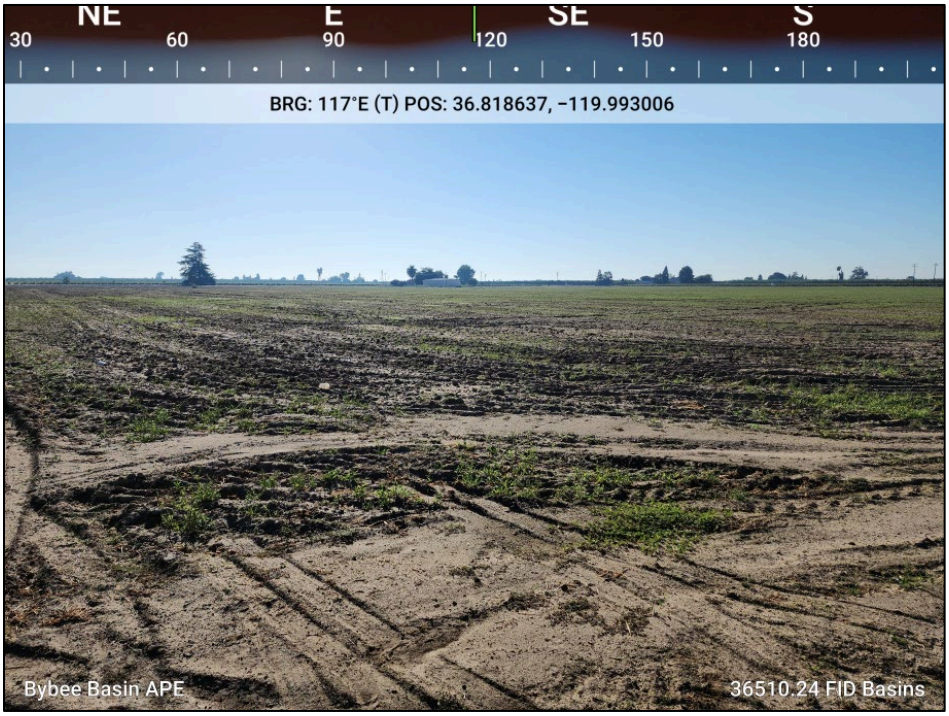

Figure 1. Overview of Carter-Bybee Recharge Basin APE.

Figure 2. Overview of Badhesha Recharge Basin APE.

Figure 3. Overview of Horner Recharge Basin APE.

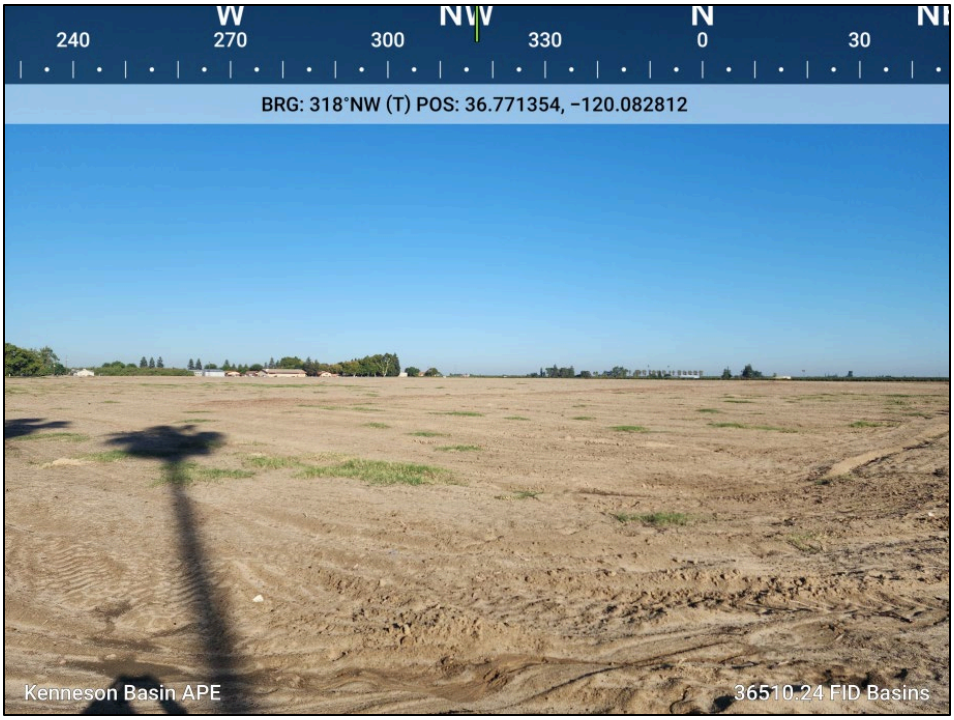

Figure 4. Overview of Kenneson-Sanchez Recharge Basin APE.

1.2 REGULATORY CONTEXT

1.2.1 California Environmental Quality Act

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

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

(A) Are associated with events that have made a significant contribution to the broad patterns of California's history and cultural heritage;

(B) Are associated with the lives of persons important in our past;

(C) Embody the distinctive characteristics of a type, period, region, or method of construction, or represent the work of an important creative individual, or possess high artistic values; or

(D) Have yielded, or may be likely to yield, information important in prehistory or history.

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

> an archaeological artifact, object, or site about which it can be clearly demonstrated that, without merely adding to the current body of knowledge, there is a high probability that it meets any of the following criteria:
>
> (1) Contains information needed to answer important scientific research questions and that there is a demonstrable public interest in that information.
>
> (2) Has a special and particular quality such as being the oldest of its type or the best available example of its type.
>
> (3) Is directly associated with a scientifically recognized important prehistoric or historic event or person (PRC § 21083.2(g)).

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

1.2.2 National Historic Preservation Act

Section 106 of the National Historic Preservation Act (NHPA) of 1966, as amended (Title 54 USC 300101 et seq.; 33 CFR Part 325 Appendix C; 36 CFR Part 800) is applicable to federal undertakings, including projects financed or permitted by federal agencies, regardless of whether the activities occur on land that is managed by federal agencies, other governmental agencies, or private landowners. Its purpose is to determine whether adverse effects will occur to significant cultural resources, defined as "historical properties" that are listed in or determined eligible for listing in the National Register of Historic Places (NRHP). The criteria for NRHP eligibility are defined at 36 CFR § 60.4 and include:

> The quality of significance in American history, architecture, archaeology, engineering, and culture is present in districts, sites, buildings, structures, and objects that possess integrity of location, design, setting, materials, workmanship, feeling, and association, and that:
>
> (a) are associated with events that have made a significant contribution to the broad patterns of our history; or,
>
> (b) are associated with the lives of persons significant in our past; or,
>
> (c) embody the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction; or,
>
> (d) have yielded or may be likely to yield, information important in prehistory or history.

There are, however, restrictions to the kinds of historical properties that can be NRHP listed. These have been identified by the Advisory Council on Historic Preservation (ACHP), as follows:

Ordinarily cemeteries, birthplaces, or graves of historical figures, properties owned by religious institutions or used for religious purposes, structures that have been moved from their original locations, reconstructed historic buildings, properties primarily commemorative in nature, and properties that have achieved significance within the past 50 years shall not be considered eligible for the NRHP. However, such properties will qualify if they are integral parts of districts that do meet the criteria or if they fall within the following categories:

(a) A religious property deriving primary significance from architectural or artistic distinction or historical importance; or,

(b) A building or structure removed from its original location but which is significant primarily for architectural value, or which is the surviving structure most importantly associated with a historic person or event; or,

(c) A birthplace or grave of a historical figure of outstanding importance if there is no appropriate site or building directly associated with his productive life; or,

(d) A cemetery which derives its primary significance from graves of persons of transcendent importance, from age, from distinctive design features, or from association with historic events; or,

(e) A reconstructed building when accurately executed in a suitable environment and presented in a dignified manner as part of a restoration master plan, and when no other building or structure with the same association has survived; or,

(f) A property primarily commemorative in intent if design, age, tradition, or symbolic value has invested it with its own exceptional significance; or,

(g) A property achieving significance within the past 50 years if it is of exceptional importance. (http://www.achp.gov/nrcriteria.html)

2. ENVIRONMENTAL AND CULTURAL BACKGROUND

2.1 ENVIRONMENTAL BACKGROUND AND GEOARCHAEOLOGICAL CONTEXT

At the time of the cultural resources survey, the four APEs consisted of recently cleared agricultural lands adjacent to active farm fields. Although this general location currently may be characterized as a dry open valley bottom, historically it may have included swampy lands, lying a few miles south of the San Joaquin River (Preston 1981:17). Prior to development, oak groves and valley grasslands would have dominated (ibid:70). However, it is likely that Riparian Woodlands were once present along local the drainages, including along the San Joaquin River north of the APEs (see Schoenherr 1992).

A Caltrans geoarchaeological study that includes the general area provides a guide for the likelihood of subsurface archaeological deposits within the APEs (see Meyer et al. 2010). This study involved first determining the location and ages of late Pleistocene (>25,000 years old) landforms in the southern San Joaquin Valley. These were identified by combining a synthesis of 2,400 published paleontological, soils and archaeological chronometric dates with geoarchaeological field testing. The ages of surface landforms were then mapped to provide an assessment for the potential for buried archaeological deposits. These ages were derived primarily from the Soil Survey Geographic Database (SSURGO) and the State Soils Geographic (STATSGO) database. A map was created from this information that ranked locations in 7 ordinal classes for sensitivity for buried soils, from Very Low to Very High. This map can be employed to provide a general measure of the potential for buried archaeological deposits in any given location. According to this model, the APEs have a Moderate potential for buried archaeological deposits. The presence of buried sites and cultural resources is therefore considered to be possible though not necessarily probable within the APEs.

2.2 ETHNOGRAPHIC CONTEXT

Penutian-speaking Yokuts tribal groups occupied the southern San Joaquin Valley region and much of the nearby Sierra Nevada. Ethnographic information about the Yokuts was collected primarily by Powers (1971, 1976 [originally 1877]), Kroeber (1925), Gayton (1930, 1948), Driver (1937), Latta (1977), and Harrington (n.d.). For a variety of historical reasons, existing research information emphasizes the central Yokuts tribes who occupied both the valley and particularly the foothills of the Sierra. The northernmost tribes suffered from the influx of Euro-Americans during the Gold Rush and their populations were in substantial decline by the time ethnographic studies began in the early twentieth century. In contrast, the southernmost tribes were partially removed by the Spanish to missions and eventually absorbed into multi-tribal communities on the Sebastian Indian Reservation (on Tejon Ranch), and later the Tule River Reservation and Santa Rosa Rancheria to the north, as well as other reservations in the foothills and Sierras. The result is an unfortunate scarcity of ethnographic detail on valley tribes, especially in relation to the rich

information collected from the central foothills tribes where native speakers of the Yokuts dialects are still found. Regardless, the general details of indigenous life-ways were similar across the broad expanse of Yokuts territory, particularly in terms of environmentally influenced subsistence and adaptation and with regard to religion and belief, which were similar everywhere.

Following Kroeber (1925: Plate 47), the APEs most likely lies in Pitkachi (Pitkache in Latta [1977:163]) territory. The village for this group nearest the APEs was *Gewachiu* (*Gewachie* in Latta [1977:163]) on the south bank of the San Joaquin River, northwest of the four APEs.

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

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

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

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

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

Although population estimates vary and population size was greatly affected by the introduction of Euro-American diseases and social disruption, the Yokuts were one of the largest, most successful groups in Native California. Cook (1978) estimates that the Yokuts region contained 27 percent of the aboriginal population in the state at the time of contact; other estimates are even higher. Many Yokut descendants continue to live in Fresno County, either on tribal reservations, or in local towns and communities.

2.3 PRE-CONTACT ARCHAEOLOGICAL BACKGROUND

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

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

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

Substantial evidence for human occupation of California first occurs during the middle Holocene, roughly 7,500 to 4,000 YBP. This period is known as the *Early Horizon*, or alternatively as the Early Millingstone along the Santa Barbara Channel. In the south, populations concentrated along

the coast with minimal visible use of inland areas. Adaptation emphasized hard seeds and nuts with tool-kits dominated by mullers and grindstones (manos and metates). Additionally, little evidence for Early Horizon occupation exists in most inland portions of the state, partly due to a severe cold and dry paleoclimatic period occurring at this time. Regardless of specifics, Early Horizon population density was low with a subsistence adaptation more likely tied to plant food gathering than hunting.

Environmental conditions improved dramatically after about 4,000 YBP during the *Middle Horizon* (or Intermediate Period). This period known climatically as the Holocene Maximum (circa 3,800 YBP) and was characterized by significantly warmer and wetter conditions than previously experienced. Archaeologically, it was marked by large population increase and radiation into new environments along coastal and interior south-central California and the Mojave Desert (Whitley 2000). In the Delta region to the north, this same period of favorable environmental conditions was characterized by the appearance of the Windmiller culture which exhibited a high degree of ritual elaboration (especially in burial practices) and perhaps even rudimentary mound-building tradition (Meighan, personal communication, 1985). Along with ritual elaboration, Middle Horizon times experienced increasing subsistence specialization, perhaps correlating with the appearance of acorn processing technology. Penutian speaking peoples (including the Yokuts) are also posited to have entered the state roughly at the beginning of this period and, perhaps to have brought this technology with them (cf. Moratto 1984). Likewise it appears the so-called "Shoshonean Wedge" in southern California or the Takic speaking groups that include the Gabrielino/Fernandeño, Tataviam and Kitanemuk, may have moved into the region at this time, rather than at about 1,500 BP as first suggested by Kroeber (1925).

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

Consultants 2004; Whitley et al. 2007). Whether this same demographic process holds for the southern San Joaquin Valley, including the study area, is yet to be determined.

The beginning of the *Late Horizon* is set variously at 1,500 and 800 YBP, with a consensus for the shorter chronology. Increasing evidence suggests the importance of the Middle-Late Horizons transition (AD 800 to 1200) in the understanding of south-central California. This corresponds to the so-called Medieval Climatic Anomaly, a period of climatic instability that included major droughts and resulted in demographic disturbances across much of the west (Jones et al. 1999). It is also believed to have resulted in major population decline and abandonments across south-central California, involving as much as 90 percent of the interior populations in some regions including the Carrizo Plain (Whitley et al. 2007). It is not clear whether site abandonment was accompanied by a true reduction in population or an agglomeration of the same numbers of peoples into fewer but larger villages. What is clear is that Middle Period villages and settlements were widely dispersed across the landscape; many at locations that lack contemporary evidence of fresh water sources. Late Horizon sites, in contrast, are typically located where fresh water was available during the historical period, if not currently.

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

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

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

2.4 HISTORIC CONTEXT

Euro-American movement into the San Joaquin Valley was later dating that on the coast, partly because of armed opposition from the valley's Native American tribes. The discovery of gold in northern California in 1848, however, resulted in a dramatic increase of population, consisting in good part of fortune seekers and gold miners. Some new immigrants began ranching in the San Joaquin Valley to supply the miners and mining towns. Ranchers grazed cattle and sheep, and farmers dry-farmed or used limited irrigation to grow grain crops, leading to the creation of small agricultural communities throughout the valley (JRP Historical Consulting 2009). The southern

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

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

Following the passage of statewide 'No-Fence' laws in 1874, ranching practices began to decline, while farming expanded in the San Joaquin Valley in both large land holdings and smaller, subdivided properties. As the farming population grew, so did the demand for irrigation. Three competing partnerships developed during this period which had a great impact on control of water, land reclamation and ultimately agricultural development in the San Joaquin Valley: Livermore and Chester, Haggin and Carr, and Miller and Lux, perhaps the most famous of the enterprises. Livermore and Chester were responsible, among other things, for developing the large Hollister plow (three feet wide by two feet deep), pulled by a 40-mule team, which was used for ditch digging. Haggin and Carr were largely responsible for reclaiming the beds of the Buena Vista and Kern lakes (Morgan 1914). Miller and Lux ultimately became one of the biggest private property holders in the country, controlling the rights to over 22,000 square miles. They recognized early-on that control of water would have important economic implications, and they played a major role in the water development of the state. They controlled, for example, over 100 miles of the San Joaquin River with the San Joaquin and Kings River Canal and Irrigation System. They were also embroiled for many years in litigation against Haggin and Carr over control of the water rights to the Kern River. Descendants of Henry Miller continue to play a major role in California water rights, with his great grandson, George Nickel, Jr., the first to develop the concept of water banking, thus creating a system to buy and sell water (Levine 2011). Numerous small irrigation districts also developed in the Fresno and Kings counties region during the latter decades of the 19th century as a result of the Wright Act of 1887. These suffered from competition, confusion over water rights, and droughts in the 1890s, which left many districts not viable.

Fresno County was formed in 1856 from portions of Merced, Mariposa and Tulare counties. The first focus of Euro-American settlement in the county occurred at Millerton, close to Fort Miller, which was the initial county seat. A flood in 1867 inundated Millerton, causing many settlers to move to Centerville. The Fresno area at the time was primarily used for sheep herding due to insufficient water for dryland farming. The Central Pacific Railroad reached the Fresno area in 1872, connecting it with important market towns elsewhere in the state, dramatically impacting agriculture production (Pacific Legacy 2006). "Fresno Station" soon became "Fresno," named after the ash trees that are common along the San Joaquin River. Fresno was made the county seat in 1874 and was incorporated in 1885. By 1890, the population had grown to more than 10,000 (Brady and Roper 2011; https://www.fresno.gov/darm/historic-preservation/history-of-fresno/; accessed 7/29/2020).

In 1871, Moses J. Church constructed the first irrigation system and formed the Fresno Canal and Irrigation Company (FCIC), predecessor to the Fresno Irrigation District (FID). The initial intention was to lengthen the Centerville Ditch to the natural channel of Fancher Creek. Subsequently the creek itself was extended to service properties to the south and west. This was completed in 1874 with the creek, sometimes referred to as the Fancher Creek Canal or the Fresno Canal, ultimately extending for about 9.1-mi (Brady and Roper 2011). According to Grunsky (1898), the Fancher Creek/Fresno Canal was uncontrolled by structures at the turn of the century.

The Fresno Irrigation District (FID) was formed in 1920 as the successor to the Fresno Canal and Land Company. This included the rights to 800 miles of canals and distribution works, purchased for $1.75 million, including Fancher Creek/Fresno Canal. The FID now services 245,000-ac in the Fresno – Clovis area. (https://www.fresnoirrigation.com/history; accessed 7/29/2020).

2.5 RESEARCH DESIGN

2.5.1 Pre-Contact Archaeology

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

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

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

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

- Villages, primarily located on or near permanent water sources, occupied by large groups during the winter aggregation season;
- Seasonal camps, again typically located at water sources, occupied during other parts of the year tied to locally and seasonally available food sources;

- Special activity areas, especially plant processing locations containing bedrock mortars (BRMs), commonly (though not exclusively) near existing oak woodlands, and invariably at bedrock outcrops or exposed boulders;
- Stone quarries and tool workshops, occurring in two general contexts: at or below naturally occurring chert exposures on the eastern front of the Temblor Range; and at quartzite cobble exposures, often on hills or ridges;
- Ritual sites, most commonly pictographs (rock art) found at rockshelters or large exposed boulders, and cemeteries, both commonly associated with villages; and
- A variety of small lithic scatters (low density surface scatters of stone tools).

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

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

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

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

2.5.2 Historical Archaeology: Native American

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

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

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

For Criteria A, C and D, eligibility requires site integrity (including the ability to convey historical association for Criterion A). These may include intact archaeological deposits for Criterion D, as well as setting and feel for Criteria C and A. Historical properties may lack physical integrity, as normally understood in heritage management, but still retain their significance to Native American tribes as Traditional Cultural Properties if they retain their tribal associations and uses.

2.5.3 Historical Archaeology: Euro-American

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

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

For agricultural sites, potentially pertinent to the Project APEs, Caltrans (2007) has identified six themes to guide research: Site Structure and Land Use Pattern; Economic Strategies; Ethnicity and Cultural Adaptation; Agricultural Technology and Science; Household Composition and Lifeways; and Labor History. Expected site types would include farm and ranch homesteads and facilities, line camps, and refuse dumps. In general terms, historical Euro-American archaeological sites would be evaluated for NRHP eligibility under Criterion D, research potential. However, they also potentially could be eligible under Criteria A and B for their associate values with major historical trends or individuals. Historical landscapes might also be considered.

Historical structures are typically evaluated for NRHP eligibility under Criteria A and/or B, for their associative values with major historical trends or individuals, and C for potential design or engineering importance.

With respect to irrigation canals and features, Caltrans (2000) has identified the *Development of Irrigated Agriculture* as a significant theme or event in California history, including in the San Joaquin Valley. In the years following California's statehood and the gold rush, increasing population created an increasing market for agricultural products. The total irrigated acreage in the state grew from 60,000 acres in 1860 to nearly 400,000 acres by 1880, an increase of more than 650 percent, and the San Joaquin Valley contained the highest percentage of that land (approximately 47 percent) (Caltrans 2000). Private water companies, land colonies, mutual water companies, and irrigation districts were established in the mid- to late nineteenth century to build irrigation systems to further develop the state's agriculture industry. Irrigation districts became the most influential of these organizations, especially after state legislation—the Wright Act of 1887—causing irrigation districts to grow in number, power, as well as the actual amount of irrigated land throughout the state. Forty-nine irrigation districts were organized between 1887 and 1896, most of them located between Stockton and Bakersfield. However, by the late 1920s, only seven of the original districts were still in existence, among them the Modesto, Turlock, and Tulare irrigation districts (Caltrans 2000). Under the impetus of increased demand during World War I, agricultural production reached a new peak in 1920. Companies like Pacific Gas & Electric and San Joaquin Valley Light and Power helped finance large irrigation reservoirs to feed district canals in return for the power generated. By 1930, there were 94 active districts in California, and the land watered by these agencies mushroomed to 1.6 million acres (Caltrans 2000). Irrigation districts provided more than 90 percent of the surface water used for irrigation in the San Joaquin Valley before the Central Valley Project came on-line in the 1940s (Caltrans 2000). Most were located in the San Joaquin Valley, with the most successful in Modesto, Turlock, Merced, and Fresno.

The period of significance for this theme begins with the earliest development of irrigated agriculture in the San Joaquin Valley, with the construction of the earthen ditches in Visalia in 1852. Irrigated agriculture continues to be an important industry and influence in the Valley. The period of significance ends in 1964 following recommended guidance for closing a period of significance when activities continued to have importance, but no more specific date can be defined to end the historic period, and there is no justification for exceptional significance to extend the period of significance to an end date within the last 50 years (National Register of Historic Places 1997).

An associated property type for this theme would be a water conveyance system. Components and features of water conveyance systems include diversion structures, conduits, flow control devices, cleansing devices, and associated resources and settings. They would be eligible under NRHP Criterion A/CRHR Criterion 1 for their association with this significant theme if:

- The association with the theme is important--simply because a water conveyance existed during the period of significance is not enough for that system to be eligible;

- The resource retains high overall integrity because of the high number of comparable examples. The property should retain most of the seven aspects of integrity: location, design, setting, materials, workmanship, feeling, and association.
- Due to the nature of this type of resource, repairs and modifications are acceptable but not if they substantially changed the resource.

Water conveyance systems potentially would be eligible under NRHP Criterion B/CRHR Criterion 2 for their association with this significant theme if they:

- Are associated with an important person's productive life ***and*** represent the property that is most closely associated with that person;
- The resource retains high overall integrity. The property should retain most of the seven aspects of integrity: location, design, setting, materials, workmanship, feeling, and association.
- Due to the nature of this type of resource, repairs and modifications are acceptable but not if those modifications substantially changed the resource.

Water conveyance systems will rarely be found eligible under Criterion B. In California notable names for which there might be associations with water planning, construction, or engineering include Anthony Chabot, George Chaffey, Frederick Eaton, William Mulholland, George Maxwell, Robert Marshall, Elwood Mead and C. E. Grunsky (Caltrans 2000).

A second potential NRHP/CRHR theme identified by Caltrans (2000) that could be applicable to water conveyance systems is *Technological Innovation in Irrigated Agriculture in California, 1852-1964*. Water conveyance systems would be eligible under the technological innovation theme under Criterion C/3 if they have:

- Unique values.
- Are the best or are an excellent example of the property type that possess distinctive characteristics of the type and through those characteristics clearly illustrates at least one of the following;
    - the pattern of features common to a particular class of resources;
    - the individuality or variation of features that occurs within the class;
    - the evolution of that class; or
    - the transition between classes of resources.
- The earliest, best preserved, largest, or sole surviving example of particular types of water conveyance systems.
- A design innovation of evolutionary trends in engineering.
- Were designed by a figure of acknowledged greatness in the field or by someone unknown whose workmanship is distinguishable from others by its style and quality ***and*** represent a good example of that designer's work.
- The resource retains high overall integrity and most of the seven aspects of integrity: location, design, setting, materials, workmanship, feeling, and association.

A large water conveyance system with multiple components will often be evaluated as a district rather than as a single property. An eligible historic district must possess a significant

concentration or linkage of resources that are united historically or aesthetically by plan or physical development. It should be a significant and distinguishable entity, although its components need not possess individual distinction (Caltrans 2000).

A third potential NRHP/CRHR theme identified by Caltrans (2000) is *Construction of the CVP Engineering and Associated Features, 1937 to 1956*. Property types associated with the CVP consist of structures built for storage, regulation, delivery of water, and hydro-electric power development. In addition, there are property types associated with the ongoing operation and maintenance of the CVP and with the protection of fish affected by construction of the CVP facilities. These properties include dams, power-plants, water conveyance structures, canals and appurtenant features, laterals, sub-laterals, drains, pumping plants, buildings, dikes, and fish facilities. A core feature of the CVP are the conveyance systems used to carry water from the storage and diversion facilities to the farmlands, or to pumping plants for further geographical redistribution. The backbone of the conveyance system is comprised of the 500-mi of main canals. These include the Contra Costa Canal, Delta Cross Channel, Delta-Mendota Canal, Friant-Kern Canal, and Madera Canal. All main canals but the Delta Cross Channel and the first section of the Contra Costa Canal (near Rock Slough) are concrete lined. All of the main canals are typically defined to include operating roads on one or both sides of the canal prism. For the CVP, the water conveyance scope is huge: in addition to the over 500-mi of main canals, it contains thousands of miles of laterals (and sub- and sub-sub-laterals) that deliver water from the main canals to irrigation ditches on farms. Also falling within this property type are about 84-mi of drains that carry excess water away from farm fields (Bailey 2010). The period of significance for laterals, sub-laterals, and drains begins in 1937 with the initial construction of the first CVP canal, the Contra Costa Canal, and ends in 1956 with the end of construction for the facilities associated with this historic context.

Laterals, sub-laterals, and drains could be eligible under the following NRHP/CRHR criteria for their association with this significant theme as follows:

- Criterion A/1: They have had a significant impact on the settlement, agricultural economy, or development patterns of the project area; they have been defining elements in the evolution of the cultural landscape; they are directly associated with important events.
- Criterion B/2: not applicable.
- Criterion C/3: They are among the best or a rare surviving example of a distinctive type of latera, sub-lateral, or drain; they represent the evolving technology in the design of laterals, sub-laterals, and drains; they represent a unique design solution developed in response to a difficult engineering challenge; they were identified during the construction period as an individually significant feature; or
- Criterion D/4: They have the ability to yield information important to understanding the history of the CVP.

3. ARCHIVAL RECORDS SEARCH

An archival records search was conducted at the California State University, Bakersfield, Southern San Joaquin Valley Information Center (SSJVIC), by SSJVIC staff members on 23 August 2022 to determine: (i) if prehistoric or historical cultural resources had previously been recorded within the APE; (ii) if the APE had been systematically surveyed by archaeologists prior to the initiation of this field study; and/or (iii) whether the region of the Project was known to contain archaeological sites and to thereby be archaeologically sensitive. Additionally, a search of the NAHC *Sacred Lands File* was conducted in order to ascertain whether traditional cultural places or cultural landscapes had been identified within the APE. The results of this archival records search are summarized here and are available in Confidential Appendix B, which also includes maps of previous surveys and previously recorded resources.

According to the records search results, no previous archaeological surveys had been completed within the APEs, but three cultural resources were known within them (Table 1). These are two historical canals and one historical single-family residence. Two additional resources were known within a 0.5-mi radius of the APE: a historical canal and another single-family residence. Only one previous archaeological survey had been completed within 0.5-mi of the APE: Report FR-02414, "Cultural Resources Inventory of Caltrans District 6 Rural Conventional Highways, Fresno, Western Kern, Kings, Madera & Tulare Counties," Far Western Anthropological Research Group, 2010.

A search of the Native American Heritage Commission (NAHC) *Sacred Lands File* was completed on 14 October 2022. Based on the NAHC records, no sacred sites or traditional cultural places had been identified within or adjacent to the APE (Appendix B). Outreach letters and follow-up emails were sent to tribal organizations on the NAHC contact list. One email response, from the Big Sandy Rancheria, was received. This stated that: "we have no comments or concerns with the Fresno Irrigation District Basins Project, in Fresno County. Of course, if at anytime, discovery of any cultural significance, we request, at a minimum be contacted."

Historical USGS topographical quadrangles and aerial photographs (at historicaerials.com) were also examined to determine whether there was evidence of historical development within the APE. Based on these sources, a series of canals within or adjacent to the four proposed basins were all present by the mid-1940s. Possible structures were also present along the south side of the Carter-Bybee Basin APE, near its western side, and also the west side of the Kenneson-Sanchez basin.

Based on the records search and other sources, the APE appeared to have low cultural resources sensitivity.

Table 1. Previously Recorded Cultural Resources within Project APEs

Cultural Resource	Description	Location
P-10-005573	Historical Herndon Canal	Carter-Bybee Basin
P-10-005793	Historical Big Sandridge Canal	Horner & Kenneson-Sanchez Basins
P-10-006626	Historical Single-Family Residence	Carter-Bybee Basin

4. METHODS AND RESULTS

An intensive Class III inventory/Phase I survey of the Project APE was conducted on 22 - 23 September 2022 by ASM Field Director Robert Azpitarte, B.A., assisted by ASM Assistant Archaeologists Maggie Lemus, B.A., and Maria Silva, B.A. The APE was examined with the field crew walking parallel transects space at approximately 15-m intervals, in order to identify surface artifacts, archaeological indicators (e.g., shellfish or animal bone), and/or archaeological deposits (e.g., organically enriched midden soil); tabulation and recording of surface diagnostic artifacts; site sketch mapping; preliminary evaluation of site integrity; and site recording, following the California Office of Historic Preservation Instructions for Recording Historic Resources, using DPR 523 forms. Special attention was paid to rodent burrow back dirt piles, in the hope of identifying sub-surface soil conditions that might be indicative of archaeological features or remains.

4.1 SURVEY RESULTS

The APE consists of fallow agricultural land adjacent to active agricultural properties. Visibility was excellent for Phase I/Class II survey. Three previously recorded cultural resources were re-identified within the Project APEs and their site records were updated. In addition, two previously unrecorded resources were identified and recorded. All of these resources are historic-era in age, as follows. Site records and site record updates are included in Confidential Appendix C, including photographs of the sites. Maps of resource locations are in Confidential Appendix A.

Previously Recorded Resources:

P-10-005573/CA-FRE-3608H (Herndon Canal)

The resource is a segment of the late-19th century Herndon Canal, now known as Herndon Canal No. 39. The canal segment is within the Carter-Bybee Basin APE and is located about 13-mi northwest of the City of Fresno. The canal segment measures approximately 1,130-ft (E-W) by 32-ft (N-S) by 8-ft deep and is at an elevation of roughly 262 -ft amsl. The resource is in good condition.

The origin of this canal lies with E.B. and Robert Perrin, who owned approximately one-quarter million acres of land in California. The brothers gained control of the Fresno Canal and Irrigation District from Moses Church and built the canal, then called the Perrin Canal, between 1886 and 1891. It obtains water from the Kings River (Applied Earthworks 2006 site record). The canal and the district were apparently a small concern at that time (e.g., the canal, district and brothers are not mentioned in Grunsky's [1898] irrigation study for the region, and E.B. Perrin's only mention in the Lippincott [1902] monograph is as the owner of a well). The canal was acquired by the FID in the 1920s and the canal alignment had been changed by 1923 (ibid.).

Dr. Edward B. Perrin was born in Alabama in 1839, moved to California following the Civil War and speculated in real estate. He created five "agricultural colonies" in what would become Fresno

County, subdividing his acreage into 20-ac lots which he marketed as small-holdings with "the finest tract of raisin land ever offered," as his advertising brochure proclaimed.

According to Thickens:

> "Dr. E.B. Perrin first speculated in Fresno lands in 1868. In anticipation of coming railroad developments, he bought up property in [8 other counties]. In Fresno County he acquired more than 130,000 acres, and to provide them with water, he organized the Upper San Joaquin Canal Company in 1876. This enterprise failed because, to use his own words, "they struck financial difficulties and hard rock." Not until he bought the Fresno Canal and Irrigation Company from [Moses] Church in 1887 did he successfully irrigate his land. The establishment of the Perrin Colonies around Fresno dated from that time. The first colony of 7040 acres lay west of the American Colony; the others, five in number, were north and northwest of the city" (1946:171).

Multiple segments of the Herndon Canal have previously been recorded (and, in some cases, evaluated for NRHP/CRHR eligibility), starting in 1993 (JRP Historical Consulting); with additional segments recorded in 2001 (Caltrans), 2006 (Applied Earthworks), 2009 (JRP Historical Consulting), 2010 (LSA associates), and 2018 (Applied Earthworks). Different segments have been recommended as significant and eligible under Criteria A/1 and B/2 but not C/3 or D/4 (Applied Earthworks 2018); significant under Criterion A/1 only, but not eligible due to lack of integrity (LSA 2010); and not eligible due to lack of integrity (Applied Earthworks 2006, Caltrans 2001, and JRP Historical Consulting 2003). The consensus appears to be that the canal overall lacks integrity and thus is not NRHP or CRHR eligible or significant.

The recorded segment for the current study is similar to the previously recorded segments. The canal is earthen in construction with moderately sloped walls and with a number of contemporary/modern control structures installed, including weirs, slide gates, single-box cast concrete culvert/road crossing, and stand-pipes. An additional poured concrete control structure was being built in the canal at the time of the survey.

P-10-005793/CA-FRE-3513H (Big Sandridge Canal)

This resource consists of two segments of the late-19th century Big Sandridge Canal, now known as Big Sandridge Canal No. 65. The recorded segments of the canal are located in the southeast corner of the Horner and through the middle of the Kenneson-Sanchez basins, about 16-mi west of the City of Fresno. The canal segments (Segment A, Kenneson-Sanchez Basin APE, and B, Horner Basin APE) measure approximately 1,430-ft (E-W) by 32-ft (N-S) by 8-ft deep and 205-ft (NE-SW) by 32-ft (N-S) by 8-ft deep, respectively. Segment A and B are situated at an elevation between 230 and 240-ft amsl. Both segments are in good condition.

Based on historical maps, this canal was constructed between 1891 and 1902, but its builder is not known. It may have been the Fresno Canal and Irrigation District but it was eventually acquired by the FID. The canal is a distributary off the Herndon Canal, which receives its water from the Kings River (JRP Historical Consulting 2009 site record).

A segment of the Big Sandridge Canal was originally recorded in 2009 (JRP Historical Consulting) but not evaluated for NRHP/CRHR eligibility. The recorded segments for the current study are similar to the previously recorded segment. Segment A, in the Kenneson-Sanchez basin, has earthen sides and a series of contemporary/modern concrete and steel structures, including a poured concrete single-box culvert/road crossing, slide gates and a steel and concrete control structure. The canal sides have been covered with gunite immediately adjacent to the structure. Segment B, in the Horner Basin, likewise has numerous modern/contemporary control structures and a single-box culvert/road crossing. One side of the canal has also been coated in gunite in this segment.

P-10-006626

The resource consists of a single-family residence with two outbuildings and a concrete pad foundation. The building complex is located in the Carter-Bybee Basin APE about 13-mi northwest of the City of Fresno. The site measures approximately 135-ft (E-W) by 60-ft (N-S) and is situated at an elevation of roughly 268-ft amsl. The resource is in very poor condition, and likely now represents an attractive nuisance.

The buildings were originally recorded but not evaluated in 2015 (Applied Earthworks, Inc.). They reported to consist of "one residence and one outbuilding with attached shed" which were partially burned. They were believed to date to 1910 based on county assessor records. Although the buildings still stand, very substantial damage to the buildings has occurred since the initial recording. Except for the roof, the house is now partially dilapidated on all sides in addition to the fire damage to the back (west) façade. Similarly, neither of the outbuilding walls remain intact and their interiors are visible from all sides. A single concrete pad foundation not recorded in 2015 and measuring 14.5-ft by 8-ft was noted just behind (west) of the outbuilding. Modern domestic debris (clothes, plastics, glass, ceramics) was found scattered about the site and industrial debris (plastic buckets, milled wood) was found concentrated near the front (east) of the property.

Newly Recorded:

Fresno Colony Canal

The resource is a segment of the late-19th century Fresno Colony Canal, now known as Fresno Colony Canal No. 24. The recorded segment of the canal is located along the south side of the Badhesha Basin APE, less than 5-mi southwest of the City of Fresno. The canal segment measures approximately 975-ft (E-W) by 20-ft (N-S) by 6-ft deep. It is situated at an elevation of roughly 266-ft amsl. The resource is in good condition.

The Fresno Colony Canal is a distributary of the Fresno Canal. When and who built the Fresno Colony Canal are uncertain, although a historical map (in Wallace E. Elliot and Company 1882) suggests that it may have present (or at least was being planned) by the early 1880s. Notably, Thomas E. Hughes filed a subdivision for 2,880-ac in 1881 immediately south of and adjacent to the then-existing limits of the City of Fresno. This was to create the so-called Fresno Colony, a subdivision of 1,440 small holdings, each comprising about 20-ac (Hansen v. Rogers 1927). It is possible if not likely that the canal was built as part of Hughes' subdivision.

Hughes was born in North Carolina in 1830 and came to California, by wagon train, in 1853. He moved to Fresno in 1878 and quickly became a prominent and influential citizen, perhaps the richest in the county. In 1881 he founded the Fresno County Bank and the Fresno Fruit Packing Company, in addition to the Fresno Colony. Hughes lost his fortune in the panic of 1893, however, but his farming "colony" continued to be successful and was eventually incorporated into the city limits (Thicken 1946).

Based on historical maps and aerial photographs (at historicaerials.com), the route of the Fresno Colony Canal was changed between 1947 and 1962. Previously it had trended southwest from the southwest corner of the Badhesha Basin APE. The route was straightened east-west sometime during that 15-years stretch.

The recorded segment is earthen in construction with moderately sloped walls. No associated features (i.e., weirs, slide gates, concrete cast culverts, standing pipes) were observed within this segment.

Little Sandridge Canal

The resource is a segment of the Little Sandridge Canal, now known as Little Sandridge No. 66. The recorded segment of the canal is located in the Kenneson-Sanchez Basin Ape, about 15-mi west of the City of Fresno. The canal segment measures approximately 1,265-ft (E-W) by 20-ft (N-S) by 6-ft deep and situated at an elevation of roughly 242 -ft amsl. The resource is in good condition.

Little Sandridge Canal is a distributary off the Big Sandridge Canal and, like that larger ditch, little is know of it, including when it was built and by whom. It was present by 1923 based on historical maps, however.

The recorded segment is earthen in construction with moderately sloping walls and a U-shaped bottom. Modern/contemporary concrete control structures and a cast concrete road crossing are present. A large metal industrial building borders the canal on one side.

5. SUMMARY AND RECOMMENDATIONS

An intensive Class III inventory/Phase I cultural resources survey was conducted for the FID Four Basins Project, Fresno County, California. A records search of site files and maps was conducted at the SSJVIC and a search of the NAHC *Sacred Lands File* was completed. No Native American sacred sites or cultural landscapes had been identified within or immediately adjacent to the study APE, and no archaeological sites had been recorded within the APE.

The survey fieldwork of the 151-ac APE was conducted in September 2022 with parallel transects spaced at approximately 15-m intervals walked across the APE. Three previously recorded cultural resources, the Herndon (P-10-005573) and Big Sandridge (P-10-005793) canals and a derelict single-family residence (P-10-006626), were revisited and their site records updated. Two additional cultural resources, both historic-era canals, were also identified and recorded: the Little Sandridge and Fresno Colony canals.

5.1 EVALUATIONS & RECOMMENDATIONS

An intensive Class III inventory/Phase I survey determined that five historical cultural resources are present within the Project APEs. NRHP/CRHR eligibility evaluations for these resources are as follows:

P-10-005573/CA-FRE-3608H (Herndon Canal)

Five segments of the late 19th century Herndon Canal have been evaluated previously and the canal is typically recommended as potentially eligible under Criterion A/1, as representative of the development of irrigated agriculture in the region, but not eligible under B/2, association with a historically notable individual; C/3, due to its style, technology or design; nor D/4, research potential. With only one exception (out of five evaluations) the previously recorded segments have been recommended as not NRHP/CRHR due to lack of integrity.

We concur that the newly recorded segment of this linear resource is potentially eligible under Criterion A/1 but not under the three other criteria. With respect to integrity, the recorded segment retains its integrity of location and, partly, to setting, but changes to the water control structures and the construction of concrete road crossings have altered its other characteristics. This segment no longer retains integrity of design, materials, workmanship, feeling and association. It is recommended as not NRHP/CRHR eligible for this reason, and it does not constitute a historic property or historical resource.

P-10-005793/CA-FRE-3513H (Big Sandridge Canal)

The recorded segment of the Big Sandridge Canal is also representative of the development of irrigated agriculture, as a significant historical event, and thus is potentially eligible for NRHP/CRHR listing under Criterion A/1. It is not associated with an important known historical figure (B/2); is not distinctive in terms of design, style or material (C/3); and has no research

potential (D/4). With respect to integrity, the recorded segment retains its integrity of location and, partly, to setting, but changes to the water control structures and the construction of concrete road crossings have altered its other characteristics. This segment no longer retains integrity of design, materials, workmanship, feeling and association. This segment of the Big Sandridge Canal is recommended as not NRHP/CRHR eligible for this reason, and it does not constitute a historic property or historical resource.

P-10-006626

This cultural resource is a 1910 single-family residence that was partly burned down in a fire and has subsequently deteriorated even more dramatically. It does not appear to be potentially NRHP/CRHR eligible under Criteria A/1, B/2, C/3 or D/4. Further, it no longer retains any characteristics of integrity. It is recommended as not NRHP/CRHR eligible for this reason, and it does not constitute a historic property or historical resource.

Fresno Colony Canal

This canal, apparently dating from the 1880s, is potentially NRHP/CRHR eligible under Criterion A/1 for its association with an important historical event, the development of irrigated agriculture in the San Joaquin Valley. It is not associated with an important known historical figure (B/2); is not distinctive in terms of design, style or material (C/3); and has no research potential (D/4). With respect to integrity, the route of the canal was altered circa 1950, diminishing its integrity of location, with land use changes further compromising its setting, feeling and association. This segment of the Fresno Colony Canal is recommended as not NRHP/CRHR eligible due to lack of integrity, and it does not constitute a historic property or historical resource.

Little Sandridge Canal

The late-19th or early-20th century Little Sandridge Canal is representative of the development of irrigated agriculture, and thus is potentially eligible for NRHP/CRHR listing under Criterion A/1. It is not associated with an important known historical figure (B/2); is a common property type that is not distinctive in terms of design, style or material (C/3); and has no research potential (D/4). Although it retains its integrity of location, it has experienced changes to its water control structures along with the construction of concrete road crossings and differences in land-use that have developed recently. This segment no longer retains integrity of setting, design, materials, workmanship, feeling and association. This segment of the Little Sandridge Canal is recommended as not NRHP/CRHR eligible for this reason, and it does not constitute a historic property or historical resource.

A finding of No Effect/No Significant Impacts, accordingly, is recommended for the FID Four Basins Project. In the unlikely event that previously unknown cultural resources are identified during the development or use of the APEs, it is recommended that a qualified archaeologist be notified to evaluate the discovery and implement appropriate evaluation and/or protection measures.

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CONFIDENTIAL APPENDICES