State Route 12 Major Pavement Rehabilitation (2R) Project

Initial Study with Proposed Mitigated Negative Declaration

SOLANO COUNTY, CALIFORNIA
DISTRICT 4 – PM 7.7 to PM 14.1
EA 04-2Q550/EFIS 0419000024

Prepared by the
State of California, Department of Transportation

September 2022

Caltrans

General Information about this Document

What's in this document:

The California Department of Transportation (Caltrans), has prepared this Draft Initial Study with Proposed Mitigated Negative Declaration (Draft IS/MND), which examines the potential environmental impacts of the alternatives being considered for the proposed Project located in Solano County, California. Caltrans is the lead agency under the California Environmental Quality Act (CEQA). The document tells you why the Project is being proposed, what alternatives we have considered for the Project, how the existing environment could be affected by the Project, the potential impacts of each of the alternatives, and the proposed avoidance, minimization, and/or mitigation measures (all measures are listed in Appendix A).

What you should do:

- Please read this document.
- This Draft IS/MND and other Project information are available to download at the Caltrans environmental document website (https://dot.ca.gov/caltrans-near-me/district-4/d4-popular-links/d4-environmental-docs). The technical studies listed in Appendix D are available to review electronically upon request. In addition, the Draft IS/MND will be made available at the following location:
    - Suisun City Library
      601 Pintail Dr
      Suisun City, CA 94585
    - Fairfield Civic Center Library
      1150 Kentucky St
      Fairfield, CA 94533
- We'd like to hear what you think. If you have any comments about the proposed Project, please send your written comments via postal mail or email to Caltrans by the November 7, 2022, deadline.
- Send comments via postal mail to:

  Maxwell Lammert
  California Department of Transportation, District 4
  P.O. Box 23660, MS 8B, Oakland, CA 94623
- Send comments via email to: Maxwell.Lammert@dot.ca.gov

What happens next:

After comments are received from the public and reviewing agencies, Caltrans may give environmental approval to the proposed Project, do additional environmental studies, or abandon the Project. If the Project is given environmental approval and funding is obtained, Caltrans could design and construct all or part of the Project.

Alternative formats:

For individuals with sensory disabilities, this document can be made available in Braille, in large print, on audiocassette, or on computer disk. To obtain a copy in one of these alternative formats, please call or write to Department of Transportation, District 4, Attn: Maxwell Lammert, Environmental Planning, PO Box 23660, MS 8B, Oakland, CA 94623; (510) 286-5935 (Voice), or use the California Relay Service 1 (800) 735-2929 (TTY to Voice), 1 (800) 735-2922 (Voice to TTY), 1-800-855-3000 (Spanish TTY to Voice and Voice to TTY), 1 (800) 854-7784 (Spanish and English Speech-to-Speech), or 711.

Initial Study with Proposed Mitigated Negative Declaration

04-SOL-12	7.7/14.1	04-2Q550
Dist. – Co. – Rte.	PM	E.A.

Project title:	State Route 12 Major Pavement Rehabilitation (2R) Project
Lead agency name and address:	California Department of Transportation, District 4 P.O. Box 23660, MS 8B, Oakland, CA 94623
Contact person and phone number:	Maxwell Lammert, Branch Chief Phone: (510)-506-9862
Project location:	State Route (SR) 12 from 0.5 mile east of Walter Road/Lawler Ranch Parkway to 0.5 mile east of Shiloh/Lambie Road in Solano County.
General plan description:	Highway
Zoning:	Transportation Corridor
Other public agencies whose approval is required (e.g., permits, financial approval, or participation agreements)	• Clean Water Act, Section 404 Authorization from the U.S. Army Corps of Engineers • Clean Water Act 401 Water Quality Certification from the Regional Water Quality Control Board – San Francisco Bay • Section 1602 Lake and Streambed Alteration Agreement from the California Department of Fish and Wildlife • Incidental Take Permit from California Department of Fish and Wildlife • Biological Opinion from United States Fish and Wildlife Service • Maintenance and Individual Permit from San Francisco Bay Conservation and Development Commission

The document, maps, Project information, and supporting technical studies are available for review weekdays from 8 a.m. to 5 p.m. at the Caltrans District 4 Office, 111 Grand Avenue, Oakland, CA 94612. The document is also available to download at the Caltrans environmental document website (https://dot.ca.gov/caltrans-near-me/district-4/d4-popular-links/d4-environmental-docs).

9/30/2022

Scott M. Williams
Caltrans District 4, Acting Office Chief
Office of Environmental Analysis
CEQA Lead Agency

Date

Proposed Mitigated Negative Declaration

Pursuant to Division 13, Public Resources Code

Project Description

The California Department of Transportation (Caltrans) has prepared this Draft Initial Study with Proposed Mitigated Negative Declaration (IS/MND) for the proposed State Route 12 Major Pavement Rehabilitation (2R) Project (Project) at Post Mile (PM) 7.7 to PM 14.1 in Solano County, California. The Project would rehabilitate the existing mainline travel lane and shoulder roadway pavement on State Route (SR) 12 from 0.5 mile east of Walter Road/Lawler Ranch Parkway (westernmost end) to 0.5 mile east of Shiloh/Lambie Road (easternmost end). The Project proposes to replace asphalt concrete surfacing and overlay, replace the temporary barriers located in the median with permanent concrete barriers type 60M, replace shoulder and centerline rumble strips, replace metal beam guardrail with Midwest guardrail system, upgrade crash cushions to current standards, upgrade drainage systems, widen shoulders, remove and replace the existing asphalt concrete dikes, and provide erosion control where necessary. In addition, the Project proposes to upgrade the bridge railings at the Union Creek bridge and Denverton Creek bridge to be consistent with current Caltrans standards.

Determination

The Proposed Mitigated Negative Declaration is included to notify the public and reviewing agencies that Caltrans intends to adopt a Mitigated Negative Declaration for this Project. This Mitigated Negative Declaration is subject to change based on comments received by the public and reviewing agencies.

Caltrans has prepared an Initial Study for this Project and, pending public review, expects to determine from this study that the proposed Project would not have a significant effect on the environment for the reasons described in the following paragraphs.

The Project would have no effect on agricultural and forestry, cultural resources, geology and soils, mineral resources, population and housing, recreational resources, tribal cultural resources, or utilities and service systems.

In addition, the Project would have less than significant effects to aesthetics, air quality, energy, greenhouse gas emissions, hazards and hazardous materials, hydrology and water quality, land use and planning, and noise.

With the following mitigation measures incorporated, the Project would have less than significant effects to biological resources:

- **MM-BIO-1: Compensation to Offset Project Permanent Impacts.** To offset permanent impacts from the Project, Caltrans will implement a compensation package based on the

estimated impacts on protected natural resources, including wetlands, waters, and suitable habitat in the range of the listed species. Compensation will be determined in coordination with the U.S. Fish and Wildlife Service (USFWS), U.S. Army Corps of Engineers (USACE), Regional Water Quality Control Board (RWQCB), California Department of Fish and Wildlife (CDFW), and/or Bay Conservation and Development Commission (BCDC) during the design phase. At a minimum, the compensation will be a 1:1 ratio and will be accomplished through a combination of onsite mitigation and/or purchase of mitigation credits. Compensation will include any one or a combination of the following approaches:

- Offsite mitigation through the purchase of credits at an approved conservation bank(s)
- Development of a compensation plan that will provide in-lieu funding to a nearby restoration program or restoration project that would create, restore, preserve, or enhance resources similar to those adversely affected by the Project
- Onsite restoration within the Caltrans right of way (ROW)

The Mitigation and Monitoring Plan will be developed and tailored for the proposed mitigation site before construction.

Compensation for temporary impacts on protected natural resources will be achieved through onsite in-kind habitat restoration to return the site to pre-construction conditions or better.

Caltrans will provide a Funding Assurance Letter to the appropriate regulatory resource agencies stating that sufficient funds for California tiger salamander habitat compensation have been budgeted in a mitigation subordinate Expenditure Authorization.

- **MM-BIO-2: Wetland Mitigation Monitoring**. After construction, Caltrans would monitor onsite vegetation at temporarily impacted wetland habitats and where any additional wetland enhancement or restoration is implemented as compensatory mitigation. Reports to environmental regulatory agencies on the status of monitoring following Project completion would be submitted as determined in Project permits and authorization. The Caltrans mitigation requirement would be considered satisfied once the target acreage of wetland habitat to be restored is successful, as determined and approved by the regulatory agencies requiring compensatory mitigation.

_____ _____

Melanie Brent
Caltrans District 4, Deputy District Director
Division of Environmental Planning and Engineering
CEQA Lead Agency

Date

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Chapter 1 Project Description

1.1 Introduction

The California Department of Transportation (Caltrans) is the lead agency under the California Environmental Quality Act (CEQA) for the State Route 12 Major Pavement Rehabilitation (2R) Project (Project) from Post Mile (PM) 7.7 to PM 14.1 in Solano County, California (Figure 1-1). The proposed Project extends along State Route (SR) 12 from 0.5 mile east of Walter Road/Lawler Ranch Parkway to 0.5 mile east of Shiloh/Lambie Road in Solano County (Figure 1-2, included at the end of this chapter).

The Project involves the following activities:

- Resurfacing the existing pavement on both mainline traveled ways and shoulders
- Replacing temporary barriers in the median with concrete barriers type 60M
- Replacing shoulder and centerline rumble strips, metal beam guardrails (MBGR), culverts, and crash cushions
- Relocating dikes that are within 7.0 to 7.5 feet of the existing edge of traveled way
- Upgrading drainage systems and bridge railings at the Union Creek and Denverton Creek bridges to be consistent with current Caltrans standards

SR 12 is an east-west route that extends from the Sierra Nevada foothills to the City of Sebastopol in Sonoma County. Within the Project limits, SR 12 is a two-lane conventional highway, one lane in each direction, that travels east to west providing connection to Calaveras, San Joaquin, Sacramento, Solano, Napa, and Sonoma counties. SR 12 is used for local and interregional travel and movement of goods and services and connects the Bay Area and the Central Valley.

1.2 Project Funding

This Project is considered a Major Pavement Rehabilitation (2R) under the 2018 State Highway Operation and Protection Program (SHOPP), which funds the repair and preservation of the State Highway System, safety improvements, and some highway operational improvements. It has also been determined that this Project is eligible for Federal-aid funding. The proposed SHOPP funding fiscal year is 2023/2024.

1.3 Project Background

The following projects have previously been completed in the Project area:

- Project EA 04-0T10U4 (PM 7.9/20.6), Paving and Widening Project, was completed in 2011. Between PM 7.9 to 14.1, the project replaced asphalt concrete (AC) surfacing at various locations while placing 0.1-foot AC overlay on the existing pavement.
- Project EA 04-3A6304 (PM 7.9/20.6), Median Barrier Project, was completed in 2007. This project installed K-rails along the centerline of the highway with crash cushions and channelizers. The scope of this project did not include pavement resurfacing.
- Project EA 04-0P7504 (PM 7.5/13.6 and 20.5/25.0), AC Digouts Project, was completed in October 2021. The project performed cold-planing of AC pavement and placement of hot mix asphalt.

1.4 Purpose and Need

1.4.1 Purpose

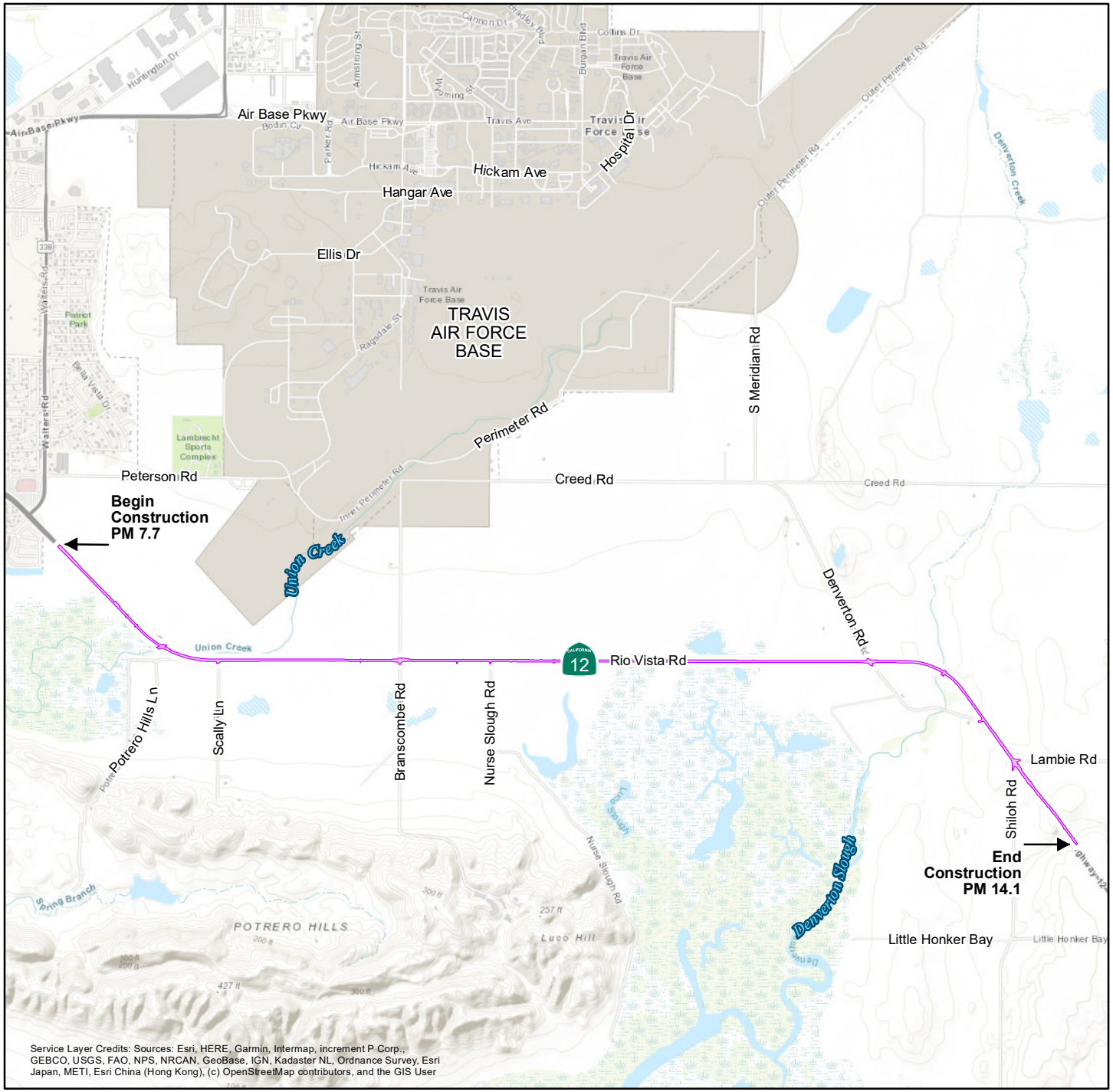
The purpose of this Project is to rehabilitate the facility to a state of good repair such that the roadway would be in a condition that requires minimal maintenance, extends the life of the existing pavement, and improves ride quality.

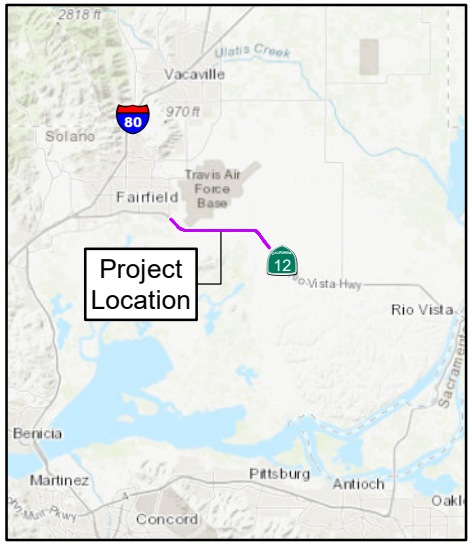
1.4.2 Need

The 2016 pavement condition survey for this section of roadway indicates the existing pavement is in fair condition with a low ride quality (Caltrans 2018). If this condition is not corrected, the roadway will deteriorate to a major rehabilitation category, which would require additional repairs.

1.5 Project Description

This Project proposes to resurface the existing pavement on both mainline traveled ways and shoulders. The Project would replace existing K-rails located in the median with permanent concrete barriers type 60M (Figures 1-3 and 1-4), replace rumble strips along the shoulder and centerline, and replace existing MBGR with Midwest guardrail system (MGS). The existing shoulders within the Project limits are between 7.0 and 7.5 feet wide and would be widened to 8 feet between PM 9.0 to PM 12.5. The existing AC dikes that are within 7.0 to 7.5 feet of the existing edge of traveled way would be relocated to the edge of pavement to accommodate the standard 8-foot shoulders from PM 9.0 to PM 12.5. The Project would also upgrade the existing crash cushions to current standards and repair damaged drainage systems. At some locations along the highway, vegetation removal would be required for equipment staging and construction access.





LEGEND

Project Footprint

N

0 5,000 Feet

Caltrans

Figure 1-1
Vicinity Map

State Route 12
Major Pavement Rehabilitation Project
EA 04-2Q550, SOL-12-PM 7.7/14.1
Solano County, California

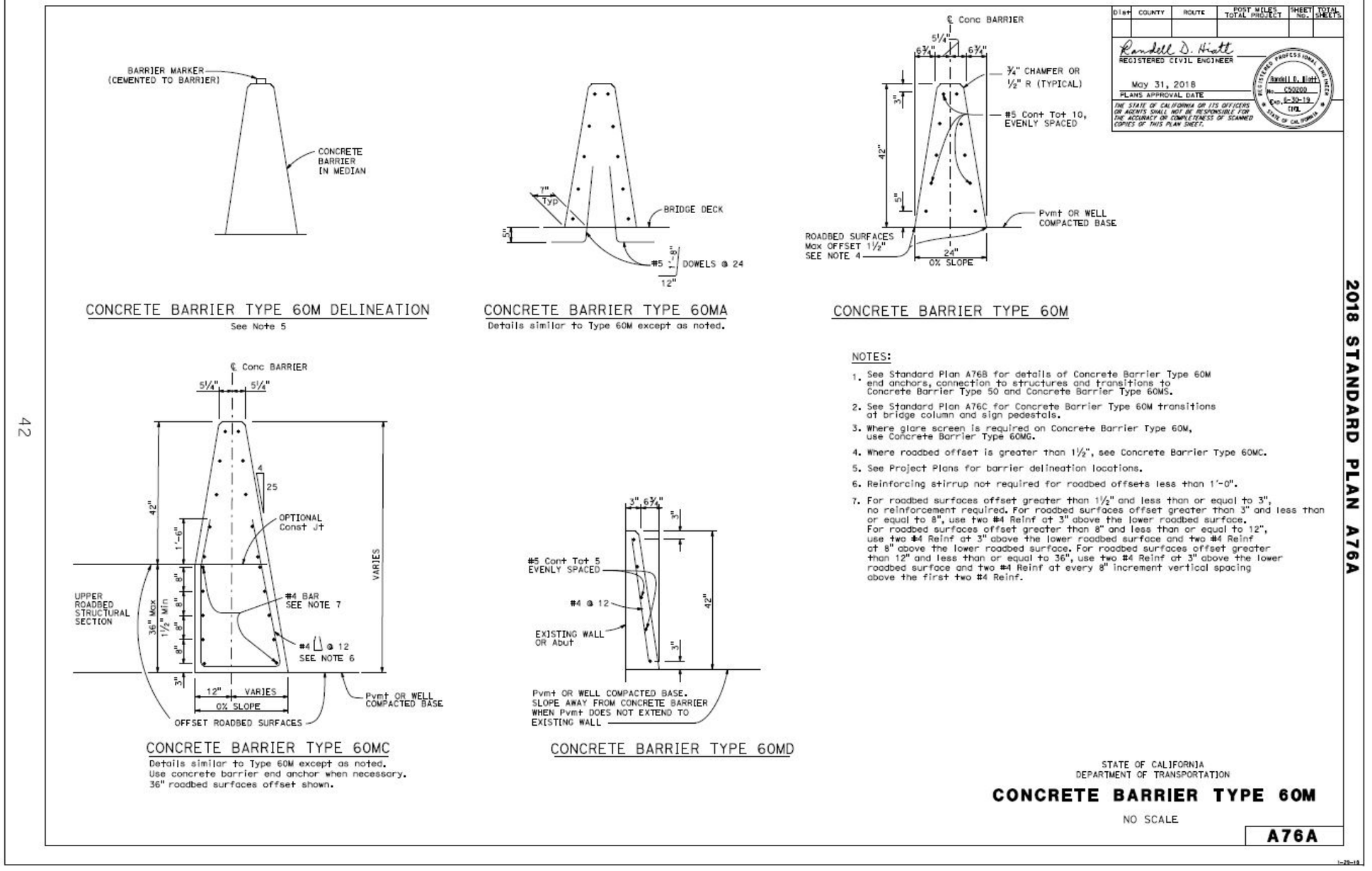


Figure 1-3. Typical Concrete Barrier Type 60M

Two bridges along SR 12 within the Project area, the Union Creek bridge and Denverton Creek bridge, would also be upgraded to meet current Caltrans design standards, as follows:

- The existing bridges are approximately 40 feet wide with 8-foot shoulders and lane widths of 11 feet. The concrete deck on each side of the bridge would be reconstructed and widened by 3 feet for a total 6-foot widening. California ST-75 bridge railings would be installed on both sides of the bridges.
- The deck surfaces would be overlayed with polyester concrete.
- Concrete barriers type 60M would be installed in the medians.

Figure 1-4. Example Concrete Barrier Type 60M with Optional Lighting Attached
Note that lighting will not be installed as part of this Project.

1.6 Project Alternatives

This section describes the construction methodology of the Build Alternative as described in Section 1.5, as well as the potential impacts of the No-Build Alternative.

1.6.1 Pre-construction Activities

CONSTRUCTION STAGING AREAS

Before construction, off-pavement staging areas within Caltrans right of way (ROW) would be established at various locations along SR 12 as identified in Figure 1-1. Preparing the staging locations may require some brush removal to store equipment.

BEST MANAGEMENT PRACTICES

Best management practices (BMPs), including project features and avoidance and minimization measures (AMMs), would be implemented at various Project phases (pre-construction, during construction, and post-construction). These measures are used to minimize environmental disturbance; a comprehensive list of project features and AMMs is provided in Appendix A. Pre-construction measures would include the following:

- Caltrans would delineate construction areas and environmentally sensitive areas (ESAs) (i.e., areas containing sensitive habitats adjacent to or within the Project limits for which physical disturbance is not allowed) on the final construction plans.

- Construction work windows would be incorporated where applicable to avoid impacts to sensitive wetlands and vernal pools and wet weather when California tiger salamanders migrate.

- An agency-approved biologist would conduct pre-construction surveys for special-status species. The biologist would be present during construction activities, including installation of exclusionary fencing around ESAs, vegetation clearing and grubbing, ground disturbance, and other work activities when there is a potential for special-status species to be impacted.

- A Storm Water Pollution Prevention Plan (SWPPP) would be developed and temporary construction BMPs would be implemented in compliance with the requirements of the State Water Resources Control Board as outlined in the Construction General Permit (CGP).

UTILITIES

Utility owners located within the Project limits consist of Pacific Gas & Electric (PG&E), American Telephone and Telegraph Company (AT&T), Fairfield Suisun Sewer District, Cable Com, and the City of Fairfield. Overhead utility wires are visible at the following PM locations: 9.02, 9.90, and 13.56. Relocation of utilities is not anticipated.

RIGHT OF WAY

Temporary construction easements (TCE) would be required at the Union Creek bridge to conduct bridge work activities in the creek, including creek dewatering and diversion. The remainder of the proposed work is expected to be within Caltrans ROW.

VEGETATION REMOVAL

Vegetation removal for equipment staging areas and construction access would be avoided to the extent feasible. Caltrans standard vegetation control would be constructed under the new MGS.

Landscape plantings based on aesthetics are typically not installed along a conventional highway. However, it is possible that further environmental investigation, resource agency permit conditions, or a change of scope, as determined by the Caltrans Division of Environmental Engineering, could necessitate planting as required environmental mitigation. Any plantings determined would require a plant establishment period of a minimum of 1 year. Tree removals are not anticipated.

1.6.2 Construction Activities

PAVEMENT REHABILITATION

The pavement surface would be rehabilitated by being overlaid to extend its functional life and improve quality to highway users. The existing pavement damage includes transverse cracks, longitudinal cracks, rutting, potholes, raveling, and severe alligator cracks along the outer wheel paths of the road. The existing damaged pavement would be dug-out or removed to a depth of stable material in areas with localized intermediate to advanced distress. Full-depth AC would be removed and replaced at damaged localized areas. The pavement would be laid with 0.2-foot rubberized hot mix asphalt, geosynthetic pavement interlayer, and 0.1-foot hot mix asphalt. Tack coat would be applied in between hot mix asphalt lifts. Cracks wider than 0.25 inch would be sealed prior to overlays. Existing AC dikes and overside drains would be removed and replaced in-kind. The AC dikes from PM 9.0 to PM 12.5 would be relocated at the edge of the proposed 8-foot shoulder. Shoulder backing would be placed along edges of the asphalt pavement and behind the AC dike. The shoulder backing would be filled with hot mix asphalt and would include gravel, sand, and concrete. New pavement stripes would be thermoplastic with high-performance glass beads with enhanced wet-night visibility.

MEDIAN BARRIER

The Project would replace the existing concrete barrier (K-rail) located in the median with a new concrete barrier type 60M to meet current Caltrans highway safety standards. Existing concrete barriers are located within the median at the following PMs: 7.7 to 8.76, 9.03 to 9.76, 10.03 to 10.27, 10.52 to 12.35, and 12.66 to 13.4. New concrete barriers type 60M would be built on top of the existing pavement in the same locations, and the existing concrete barriers would be removed. The existing crash cushions would be removed and replaced with crash cushions that are designed for concrete barriers type 60M. Construction of the new barriers would

require excavation to a maximum depth of approximately 10 inches for installation of rebar stakes prior to placement of the new barriers.

RUMBLE STRIPS AND GUARDRAILS

The Project would replace the existing centerline rumble strips and replace the existing MBGR with MGS. The new centerline rumble strips would be placed where there would be no concrete barrier in the median between PM 13.6 and 14.1, and the shoulder rumble strips would be placed between PM 7.7 and 14.1. Existing MBGR railings are located outside the edge of pavement between PM 8.52 and 8.56, PM 12.9 and 12.95, and PM 14.0 and 14.1.

Minor concrete vegetation control would be used for the installation of MGS. The anticipated maximum depth of excavation would be between 3.5 feet to 4.5 feet for the installation of MGS posts and 5/16 inch for installation of the rumble strips. Excavation would occur for installation of the MGS wood posts and would vary based on soil conditions. Typically, a truck-mounted auger would be used for the installation of new wood posts.

CULVERT REPLACEMENT AND DRAINAGE

Open-trench methods would be used during the replacement of culverts. This method includes a portion of the roadway being sawcut and removed to expose the culvert. The width of the trench would be 4 feet to repair a 24-inch pipe, 4.5 feet to repair a 30-inch pipe, and 5 feet to install a 36-inch pipe. The pipes would then be removed, and new pipes would be installed in-kind. The trench would be backfilled with slurry cement or controlled low-strength material and compacted. Tack coat would be applied to all exposed surfaces prior to laying hot mix asphalt. Existing AC dikes and overside drains would be replaced.

Within the Project limits, Caltrans has identified six culverts in poor condition that would be replaced. Approximately 253 linear feet of culvert would be replaced using open-trench methods**.** Culverts to be replaced are listed in Table 1-1, with their location and pipe size.

Table 1-1. Culverts to be Replaced

Location (PM)	Pipe Size (inches)	Notes
8.3	30	Replace entire pipe (80.4 feet)
8.4	30	Replace entire pipe (77.5 feet)
9.65	24	Replace 10 feet of pipe at outlet
10.2	36	Replace 10 feet of pipe at outlet
10.7	24	Replace 10 feet of pipe at outlet
13.7	24	Replace entire pipe (65 feet)

BRIDGE WORK

The existing Union Creek bridge is approximately 72.4 feet long and 40 feet wide, and the existing Denverton Creek bridge is approximately 57.5 feet long and 40 feet wide. Both bridges currently have 8-foot shoulders and lane widths of 11 feet. Work on the bridges will be performed as follows:

Demolition

Removal of the existing bridge would be completed using a concrete saw to score concrete beginning at the exterior of the bridge. An excavator with a hydraulic hammer would break up the concrete. Torches and a saw would be used to cut the rebar. A water truck would be used for dust control during demolition, and a compressor hand tool would be used to chip away at traffic stripes, pavement markings, or markers. Concrete and metal waste and debris would be hauled away to a recycling facility. Any asbestos or lead would be disposed of per regulatory requirements for hazardous waste disposal. Temporary railings would be installed to maintain worker safety during construction. Measures for preventing debris from falling into the creek, such as netting, would also be installed.

Construction

After demolition is completed, 3 feet of new concrete deck would be constructed along both sides of the bridge to accommodate the widening. Both Union Creek and Denverton Creek bridges would require construction of new wingwalls. The bridge would be widened by a total of 6 feet (3 feet on each side). The shoulders on the bridge would remain the same, at 8 feet, while the lane widths would increase from 11 feet to 12 feet. The remaining widening is necessary for the new California ST-75 bridge railings along each shoulder of the bridge and a concrete barrier type 60M in the median. The deck surfaces would then be prepared by completing the removal of any traffic stripes, pavement markings, or markers, and cleaning the deck with high-

pressure water jet and dust blowing equipment. Lastly, a polyester concrete overlay would be placed on the 46-foot-wide bridges.

Post-construction

Post-construction, both the Union Creek and Denverton Creek bridges would be 46 feet wide, 6 feet wider than their existing 40-foot width. The bridges would remain their current lengths of 72.4 feet and 57.5 feet, respectively. The bridge shoulders would remain 8 feet, and the lane widths would increase by 1 foot to provide 12-foot-wide lanes in each direction.

TEMPORARY CREEK DIVERSION

A temporary creek diversion would be used at Union Creek and Denverton Creek to provide dry work areas during bridge abutment wingwall construction. Piped diversion would be used, which includes a bypass pipe to serve as a temporary diversion for creek flows. Water would be carried by the bypass pipe past the work areas and discharged further downstream. Concrete barriers and gravel filled bags would be used to create a temporary dam. Falsework and equipment access within the creek would be allowed after the work area is dewatered. For the Union Creek bridge, a TCE would be required to complete this work.

TRAFFIC

Construction would require lane closures during non-peak hours and at night as per the lane closure windows provided by Caltrans District 4 Highway Operations. One-way traffic control would be used during construction. A detailed Traffic Management Plan (TMP) would be prepared to minimize the delays to the traveling public and any disruption to emergency services. Exact lane closure hours would be provided during the design phase of the Project. Both lanes would remain open during construction at both the Union Creek and Denverton Creek bridges.

GROUND DISTURBANCE

The Project is anticipated to have 0.42 acre of new impervious areas (from shoulder widening on the bridges and installation of MGS) and 2.6 acres of total disturbed soil areas.

EROSION CONTROL

Permanent erosion control measures would be implemented, allowing disturbed areas to be stabilized as a means of sediment control. Based on the Project site and scope of work, measures expected to be employed to achieve permanent erosion control include, but are not limited to, rolled erosion control product (netting), fiber rolls, hydroseed, hydromulch, and decompaction. All state and federal waters and wetlands would be protected from sediment and pollutant discharges in accordance

with applicable laws, permits, and Caltrans requirements. All construction spoils and debris would be tested and cleared prior to handling or would be hauled to a permitted disposal site. These measures would be implemented prior to construction completion at all locations where the soil surface is disturbed, including construction staging areas.

EQUIPMENT

Equipment would include the following: paving machines (pavers), cold plane machines (grinders), rollers, compactors, augers, concrete trucks, utility trucks, pickup trucks, backhoes, excavators, cranes, forklifts, dump trucks, haul trucks, jack hammers, saw cutters, vacuum cleaners, water trucks, generators, a portable light cart, and street sweepers.

SCHEDULE

Construction is anticipated to begin in January 2025 and end in April 2027, with a total of 350 working days estimated. Construction activities within the creek would be limited to the dry season between June 1 and October 31. Some nighttime construction is proposed.

1.6.3 Post-construction Activities

All construction materials and debris would be removed from the construction work areas and recycled or properly disposed of offsite. Caltrans would restore all areas temporarily disturbed by Project activities, such as staging areas and access roads, to at least pre-construction conditions in accordance with applicable permits and Caltrans requirements.

1.6.4 No-Build Alternative

The No-Build Alternative would not construct the proposed Project and the purpose and need would not be met. With the No-Build Alternative, the condition of the pavement would continue to deteriorate and would require frequent maintenance, costly repairs, and pose greater safety risk to highway users.

1.7 Permits and Approvals Needed

Table 1-2 summarizes the permits anticipated for the proposed Project by the respective agencies, as well as permit status. Approval of Project funding is required by the California Transportation Commission board for each phase of the Project.

Table 1-2. Required Permits

Agency	Permit
United States Army Corps of Engineers	Clean Water Act Section 404 Permit for filling or dredging waters of the United States
United States Fish and Wildlife Service	Biological Opinion
California Department of Fish and Wildlife	1602 Lake and Streambed Alteration Agreement
San Francisco Regional Water Quality Control Board	Clean Water Act Section 401 Water Quality Certification
California Department of Fish and Wildlife	Incidental Take Permit
San Francisco Bay Conservation and Development Commission	Maintenance and Individual Permit

1.8 Standardized Measures

1.8.1 Project Elements of the Build Alternative

The proposed Build Alternative includes standardized measures (that is, project features) that are part of the Project description. Standardized measures (such as BMPs) are those measures that are generally applied to most or all Caltrans projects. These measures are not specific to the circumstances of a particular project.

Project-specific AMMs are included in Section 2.1 for relevant physical, biological, social, and economic factors that might be affected by the proposed Project, and are listed with the following project features in Appendix A.

1.8.2 Project Features

PF-AES-1: Vegetation Protection. Existing trees and vegetation would be preserved to the extent feasible. Trees and vegetation outside of the clearing and grubbing limits would be protected from the contractor's operations, equipment, and materials storage. Tree trimming and pruning, where required, would be under the direction of a certified arborist.

PF-AES-2: Erosion Control. After construction, all areas cleared within the Project limits for uses such as contractor access, staging, and trenching operations would be treated with appropriate erosion control measures where required.

PF-AES-3: Construction Staging. Except as detailed in the Contract Plans, staging areas would not affect existing landscaped areas resulting in death and/or removal of trees and shrubs, or disruption and destruction of existing irrigation facilities.

PF-AES-4: Construction Waste. During construction operations, unsightly material and equipment in staging areas would be placed where they are less visible and/or covered where possible.

PF-AES-5: Construction Lighting. Construction lighting would be directed toward the immediate vicinity of active work and would avoid light trespass through directional lighting, shielding, and other measures as needed.

PF-AQ-1: Control Measures for Construction Emissions of Fugitive Dust. Dust control measures would be implemented to minimize airborne dust and soil particles generated from construction. For disturbed soil areas, the use of tackifier to control dust emissions would be included in the construction contract. Any material stockpiles would be watered, sprayed with tackifier, or covered to minimize dust production and wind erosion.

PF-AQ-2: Idling and Access Points. Idling times would be minimized either by shutting off equipment when not in use or reducing the maximum idling time to 5 minutes (as required by the California airborne toxics control measure [Title 13, Section 2485 of California Code of Regulations]). Clear signage would be provided for construction workers at all access points. Construction activities involving the extended idling of diesel equipment or vehicles would be prohibited, to the extent feasible.

PF-AQ-3: Maintaining Construction Equipment and Vehicles. All construction equipment and vehicles would be maintained and properly tuned in accordance with manufacturer's specifications. All equipment would be checked by a certified mechanic and determined to be running in proper condition prior to operation.

PF-BIO-1: Documentation at Project Site. A Permit Compliance Binder would be maintained at the construction site at all times and presented to resource agency (U.S. Army Corps of Engineers [USACE], U.S. Fish and Wildlife Service [USFWS], California Department of Fish and Wildlife [CDFW], Bay Conservation and Development Commission [BCDC] and/or Regional Water Quality Control Board [RWQCB]) personnel upon request. The Permit Compliance Binder would include a copy of all original permits and agreements, and any extensions and amendments to the permits and agreements.

PF-BIO-2: Work According to Documents. Except as they are contradicted by measures within the permits and agreements, all work would be conducted in conformance with the Project description in the permits and agreements and the AMMs provided in the permits and agreements.

PF-BIO-3: Agency-Approved Biologist(s). Prior to construction, the qualifications of the biological monitor(s) would be submitted to USFWS and CDFW for review and approval.

PF-BIO-4: Designation of Environmentally Sensitive Areas and Construction and Storage Areas. Caltrans will delineate construction areas and ESAs (defined as areas containing sensitive habitats adjacent to or within construction work areas for which physical disturbance is not allowed) on the final construction plans. The approved biological monitor will be onsite to direct the installation of high-visibility, orange ESA fencing to prevent encroachment of construction personnel and equipment onto sensitive areas during construction activities, as needed. Staging, storage, and parking areas will be located on paved or graveled surfaces within the ROW and away from any designated ESAs, as specified by the Project biologist, to avoid construction impacts to natural communities. Equipment and materials storage sites will be located as far away from residential and park uses as practicable. At the discretion of the Caltrans biologist, ESA fencing may be removed at times when construction is no longer active in the area.

PF-BIO-5: Wildlife Exclusion Fencing. Before ground-disturbing activities commence, high-visibility wildlife exclusion fencing (WEF) (suitable for amphibian and small mammal exclusion) would be installed along ESA/ground-disturbance boundaries to protect sensitive wildlife and to keep them from entering the work site. The final Project plans and specifications in the bid solicitation package would depict the locations WEF would be installed and specify acceptable fencing material and installation methods and prohibited construction-related activities in ESA. The WEF would be maintained as follows until ground-disturbing activities near the ESA are complete:

- Supports for the WEF would be placed on the inside of the work area to prevent wildlife from using them to climbing into the work area.
- The fence fabric would be at least 36 inches high.
- The fencing would be made of a heavy plastic sheeting material that is too smooth for salt marsh harvest mouse to climb.

- The toe of the fence fabric would be buried approximately 6 inches in the ground to prevent wildlife from crawling or burrowing underneath it.

PF-BIO-6: Fence and Signpost Caps. Fence or signposts would have the top of the post capped and/or the top three post holes covered or filled with screws or bolts to prevent the entrapment of wildlife, specifically birds of prey.

PF-BIO-7: Restore Disturbed Areas. Temporarily disturbed areas, including staging areas, would be restored to the maximum extent practicable. Construction-related materials would be removed. Exposed slopes and bare ground would be reseeded with native species to stabilize and prevent erosion.

PF-BIO-8: Invasive Weed Control. To reduce the spread of non-native, invasive plants, these species would be controlled within the Project footprint to the maximum extent practicable, in accordance with Caltrans' Highway Design Manual Topic 110.5, Control of Noxious Weeds – Exotic and Invasive Species, and Executive Order 13112, Invasive Species, and by methods approved by a Caltrans' landscape architect or vegetation control specialist. Vehicles and equipment would be thoroughly cleaned before arriving on the site to prevent the spread of noxious weeds from other locations. In work areas where California Department of Food and Agriculture listed noxious weeds or California Invasive Plant Council (Cal-IPC) Moderate- or High-rated weed species occur in fruit or flower and may be disturbed during construction-related activities, the contractor would be required to clear vegetation at the beginning of location disturbance, and contain the plant material associated with these noxious weeds, and dispose of them in a manner that will not promote the spread of the species. Areas subject to noxious weed removal or disturbance will be replanted with fast growing native grasses or a native erosion control seed mixture.

PF-BIO-9: Construction Site Best Management Practices. The following site restrictions would be implemented to avoid or minimize potential effects on listed species and their habitats:

- Speed Limit. Vehicles would not exceed 15 miles per hour in unpaved areas of the Project footprint, to reduce dust and excessive soil disturbance.

- Trash Control. Food and food-related trash items would be secured in sealed trash containers and removed from the site at the end of each day.

- Pets. Pets would be prohibited from entering the Project limits during construction.

- Firearms. Firearms would be prohibited within the Project limits, except for those carried by authorized security personnel or local, state, or federal law enforcement officials.

PF-BIO-10: Vegetation Removal. Native vegetation would be cleared only when necessary and would be cut above soil level except in areas that would be excavated. Pre-construction and bird nesting surveys would be conducted prior to removal of vegetation. If active nests are found, then an appropriate buffer would be established, and the nest would be monitored for compliance with the Migratory Bird Treaty Act and Fish and Game Code Section 3503.

During vegetation removal in potential salt marsh harvest mouse habitat, the agency-approved biologist would inspect areas to be cleared immediately prior to vegetation removal and would monitor the vegetation removal process. Herbaceous vegetation would be removed from impact areas to eliminate cover for salt marsh harvest mice, thereby discouraging them from entering impact areas. Vegetation removal would start at the road shoulder and proceed away from the work area and toward contiguous areas of suitable habitat to allow any salt marsh harvest mice in the exclusion area to passively relocate into adjacent habitat. Vegetation would not be removed during a flooding event that inundates the marsh because these are the conditions in which salt marsh harvest mice are most likely to be present in the biological study area (BSA). Initial removal of pickleweed, salt-grass, and other vegetation in the marked areas would be done using hand tools exclusively. This would allow any small mammals, including salt marsh harvest mice, to escape the BSA under the cover of vegetation, and would encourage movement of such small mammals toward available vegetated habitat outside the BSA. All herbaceous vegetation that could potentially conceal a salt marsh harvest mouse within the BSA would be removed. All vegetation that is removed would be hauled offsite the day it is removed and would not be left on the site to provide potential cover for small mammal species.

PF-BIO-11: Construction Lighting and Signage. Construction area lighting would be used only where necessary for safety and signage. Downcast lighting and shielding to minimize artificial lighting of natural areas would be used throughout the Project footprint.

PF-BIO-12: Cover Staged Materials. Culverts, pipes, hoses, and similar structures less than 12 inches in diameter would be closed, covered or capped to prevent animal entry upon arrival to the Project site. Culverts, pipes, hoses, and similar structures would be inspected for wildlife before it is buried, capped, used, or moved.

PF-BIO-13: Nesting Bird Protection. During the bird nesting season (February 1 to September 30), an agency-approved biologist would conduct pre-construction surveys for active bird nests no more than 3 days before the start of ground or vegetation disturbance events and every 14 days during Project activities.

Tree and/or shrub trimming would be conducted outside of bird nesting season unless monitoring results show no active nesting is taking place as discussed for the following buffer zones.

If an active nest is identified during construction that may be impacted by Project activities, a no-disturbance buffer of 300 feet for raptors and 50 feet for non-raptors would be established immediately and the agency-approved biologist would be notified so that the nest can be monitored. A reduced or enlarged buffer and other protection measures would be implemented as needed and in consultation with the appropriate wildlife agency.

PF-BIO-14: Worker Environmental Awareness Training. Before the onset of construction, an agency-approved biologist would conduct training for all construction personnel. At a minimum, the training would include the following:

- A description of all special-status species and their habitats
- The potential occurrence of these species in the job sites
- An explanation of the status of these species and protection under the federal Endangered Species Act, California Endangered Species Act, and all other federal, state, and local regulatory requirements
- The measures to be implemented to conserve listed species and their habitats as they relate to the work site
- Boundaries within which construction may occur

A fact sheet conveying this information would be prepared and distributed to all construction crews and project personnel entering the project footprint. Upon completion of the program, personnel would sign a form stating that they attended the program and understand all AMMs and implications of the federal Endangered Species Act, California Endangered Species Act, and all other federal, state, and local regulatory requirements.

PF-BIO-15: Prohibition of Monofilament Netting. Erosion control materials (i.e., wattles, matting, and blankets) will not contain plastic monofilament netting that could

entrap or harm wildlife. Acceptable substitutes would include coconut coir matting or tackifying hydroseeding compounds.

PF-BIO-16: Discovery of Injured or Dead Special-Status Species. Immediately upon discovery of any dead, or injured, or species regulated by USFWS, National Marine Fisheries Service (NMFS), or CDFW, Caltrans would provide appropriate notifications to the agency(s) with jurisdiction. Storage and transport to the nearest wildlife care facility may be necessary in direct coordination with agencies.

PF-BIO-17: Wildlife Species Relocation. If wildlife is encountered during construction, all work in the vicinity that could result in the injury or death of the wildlife would be stopped immediately and it would be allowed to leave the job site unharmed. If it is determined that they could be injured or killed by construction activities, the agency-approved biologist, in coordination with Caltrans and the appropriate state and federal wildlife agencies, would identify appropriate methods for capture, handling, exclusion, and relocation of individuals that could be affected. The agency-approved biologist, with appropriate handling permits or licenses from state and/or federal wildlife protection agencies as required, would do the following:

- Conduct, monitor, and supervise all capture, handling, exclusion, and relocation activities
- Ensure that sufficient personnel are available for safe and efficient collection of the wildlife
- Ensure that proper training and any required permitting or licensing is current for personnel identifying, handling, and conducting safe capture of listed species

Where listed species cannot be captured, handled, excluded, or relocated, actions that could injure or kill individuals would be avoided or delayed until the species leaves the affected area.

PF-BIO-18: Aquatic Species Relocation. Aquatic species relocation will occur within Union Creek prior to and during dewatering efforts. An aquatic species relocation plan will be developed and submitted to the agencies for approval prior to dewatering occurring.

PF-CULT-1: Discovery of Cultural Resources. If previously unidentified cultural resources are unearthed during construction, work would be halted in that area until a qualified archaeologist can assess the significance of the discovery.

PF-CULT-2: Discovery of Human Remains. If remains are discovered during dredging activities, all work within 60 feet of the discovery would halt and Caltrans

Cultural Studies Office would be called. Caltrans Cultural Studies Office Staff would assess the remains and, if they are determined to be human, would contact the County Coroner, per Public Resources Code, Sections 5097.98, 5097.99, and 7050.5 of the California Health and Safety Code. If the coroner determines the remains to be Native American, then the coroner would contact the Native American Heritage Commission, which would assign a Most Likely Descendant. Caltrans would consult with the Most Likely Descendant on treatment and reburial of the remains. Further provisions of Public Resources Code, Section 5097.98 would be followed as applicable.

PF-Energy-1: Minimize Energy Consumption from Construction Activities. Energy consumption from construction activities would be minimized by the use of construction BMPs, including, but not limited to the following:

- Limit idling of vehicles and equipment.
- Use solar power as a power source, if feasible.
- Ensure regular maintenance of construction vehicles and equipment.
- If feasible, recycle nonhazardous waste and excess materials to reduce disposal offsite.

PF-GHG-1: Energy Reduction. Solar energy would be used to reduce the use of non-renewable energy during construction.

PF-HAZ-1: Caltrans Standard Specifications and Hazardous Waste Regulations. The current Caltrans Standard Specifications Section 13-4, Job Site Management, would be implemented to prevent and control spills or leaks from construction equipment and from storage of fuels, paints, cleaners, solvents, and lubricants. All aspects of the Project associated with transport, storage, use, and disposal of hazardous materials would be done in accordance with the California Health and Safety Code and the appropriate local, state, and federal hazardous waste regulations. Handling and management of hazardous materials would comply with the current Caltrans Standard Specification Section 14-11, Hazardous Waste and Contamination, which outlines handling, storing, and disposing of hazardous waste.

PF-HAZ-2: Soil and Groundwater Investigation. A soil and groundwater investigation for metals, primarily lead, and other contaminants of concern (e.g., petroleum hydrocarbons and volatile organic compounds) would be completed during the Project's design phase to characterize and profile the soil and groundwater to be encountered by the construction of the proposed build

alternatives. Depending upon the findings of the site investigation, appropriate hazardous waste management special provisions would be prepared and included in the Project specifications.

PF-WQ-1: Stormwater Pollution Prevention Plan. To comply with the CGP, the Project contractor is required to implement a SWPPP containing BMPs for stormwater pollution control. The SWPPP would be prepared by the contractor and approved by Caltrans and would detail the implementation of temporary construction site BMPs during all phases of construction to avoid or minimize stormwater and effects to surface water, groundwater, or domestic water supplies. The SWPPP would include erosion control BMPs implemented to minimize wind- or water-related erosion. These prevention measures would also fulfill the requirements of the San Francisco Regional Water Quality Control Board (RWQCB). The Caltrans BMP Guidance Handbook would provide the design staff with guidance for including appropriate provisions in the construction contract that would prevent or minimize stormwater and non-stormwater discharges and protect sensitive areas. At a minimum, protective measures would include the following:

- Any discharging of pollutants from vehicle and equipment cleaning into any storm drains or watercourses would be disallowed.
- Vehicle and equipment fueling and maintenance operations would be kept at least 50 feet away from watercourses, except at established commercial gas stations or an established vehicle maintenance facility.
- All grindings and asphaltic-concrete waste would be stored within previously disturbed areas absent of habitat and at a minimum of 50 feet from any downstream riparian habitat, aquatic habitat, culvert, or drainage feature.
- Dedicated fueling and refueling practices would be designated as part of the approved SWPPP. Dedicated fueling areas would be protected from stormwater runoff and be located at least 50 feet from downslope drainage facilities and water courses.
- Fueling must be performed on level-grade areas. Onsite fueling would only be used when and where sending vehicles and equipment offsite for fueling is impractical. When fueling must occur onsite, the contractor would designate an area to be used subject to the approval of the resident engineer representing Caltrans. Drip pans or absorbent pads would be used during onsite vehicle and equipment fueling.

- Spill containment kits would be maintained onsite at all times during construction operations and/or staging or fueling of equipment.

- Dust control measures would be implemented. These would consist of regular truck watering of construction access areas and disturbed soil areas, including the use of organic soil stabilizers, if required, to minimize airborne dust and soil particles generated from graded areas. For disturbed soil areas, the use of tackifier to control dust emissions blowing off of the ROW or out of the construction area during construction would be included in the construction contract. Watering guidelines would be established to avoid any excessive runoff that may flow into contiguous areas. Any material stockpiles would be watered, sprayed with tackifier, or covered to minimize dust production and wind erosion. All of these efforts would be consistent with the RWQCB or approved SWPPP. Dust control would be addressed during the environmental education session.

- Coir rolls or straw wattles would be installed along or at the base of slopes during construction to capture sediment.

- Graded areas would be protected from erosion using a combination of silt fences, fiber rolls along toes of slopes or along edges of designated staging areas, and erosion control netting (such as jute or coir) as appropriate on sloped areas.

PF-WQ-2: Construction Site BMPs. To prevent or reduce impacts to water quality during construction, construction site BMPs would be deployed for sediment control and material management. These include the following:

- **Job Site Management:** This non-stormwater discharge and waste management practice includes considerations for operations, illicit discharge detention and reporting, vehicle and equipment cleaning, vehicle and equipment fueling, and material use.

- **Temporary Fiber Rolls:** A fiber roll consists of straw or other similar materials placed on the face of the slopes at regular intervals to intercept runoff, reduce its flow velocity, release the runoff as sheet flow, and provide removal of sediment from the runoff.

- **Silt Fence:** A silt fence is a temporary linear sediment barrier of permeable fabric designed to intercept and slow the flow of sediment-laden sheet flow runoff. Silt fences allow sediment to settle from runoff before water leaves the construction site. Silt fences are placed below the toe of exposed and erodible slopes, downslope of exposed soil areas, around temporary stockpiles and along

streams and channels. Silt fences should not be used to divert flow or in streams, channels, or anywhere flow is concentrated.

- **Drainage Inlet Protection:** Drainage inlet protection is a practice to reduce sediment from stormwater runoff discharging from the construction site prior to entering the storm drainage system. Effective drainage inlet protection allows sediment to settle out of stormwater or filters sediment from the stormwater before it enters the drain inlet. Drainage inlet protection is the last line of sediment control defense prior to stormwater leaving the construction site.

- **Portable Concrete Washout:** This waste management BMP contains procedures and practices that would minimize or eliminate the discharge of concrete waste materials to the storm drain systems or watercourses.

- **Temporary Cover:** This BMP involves the placement of geosynthetic fabrics (geotextiles), plastic covers, or erosion control blankets/mats to stabilize the disturbed soil area and protect soil from erosion by wind or water.

- **Stockpile Management:** This BMP consists of procedures and practices to eliminate pollution of stormwater from stockpiles of soil and paving materials (such as concrete rubble, aggregate, and AC). These procedures include locating stockpiles away from drainages, and providing perimeter sediment barriers, soil stabilization, and wind erosion control measures.

- **Solid Waste Management:** This BMP consists of procedures and practices to minimize or eliminate the discharge of pollutants to storm drain systems or watercourses as a result of creation, stockpiling, or removal of construction site wastes. Measures include education as well as collection, storage, and disposal practices (such as plywood and tarp directly on streambed).

- **Stream Diversion System:** The system consists of upstream and downstream berms, with a pipe conveying runoff to create a dry working environment for temporary access. The system would be required at specific culvert locations and used during the summer months for one or both summers of the construction period. Each stream diversion system would be removed immediately after in-stream work is completed at the location, and would not be left in place during the wet season (typically beginning October 15). A risk analysis would be done to determine the design flow for the stream diversion system.

PF-WQ-3: Permanent Treatment BMPs. Permanent treatment BMPs are as follows:

- **Design Pollution Prevention BMP Strategy:** The goal of an effective erosion control strategy is to maintain the natural pre-construction conditions. Existing vegetation would be preserved to the maximum extent practicable, and areas disturbed by construction activities would be minimized using construction site BMPs. Preservation involves the identification and protection of desirable vegetation to provide erosion and sediment control benefits. No slopes would be steeper than a 2:1 ratio. When slopes steeper than 2:1 are required, a geotechnical recommendation would be required to support the steeper slope. Disturbed soil areas created by construction activities would receive erosion control treatments sufficient to address the erosion potential of the slope. Permanent design pollution prevention measures would be identified during later Project phases and may include decompaction, compost mulch, fiber rolls, coir netting, and hydroseed/hydromulch.

- **Treatment BMP Strategy:** Treatment BMPs would address the post-construction water quality impacts and remove pollutants from stormwater runoff before discharging to receiving waters. The locations of the treatment BMPs would be determined during later Project phases.

PF-NOI-1: Idling of Internal Combustion Engines. Unnecessary idling of internal combustion engines would be avoided within 100 feet of sensitive receptors.

PF-NOI-2: Maintaining Internal Combustion Engines. All internal combustion engines would be maintained properly to minimize noise generation. Internal combustion engine driven equipment must be equipped with manufacturer recommended intake and exhaust mufflers that are in good condition and appropriate for the equipment.

PF-NOI-3: Quiet Air Compressors. The Project would use quiet air compressors and other quiet equipment where such technology exists.

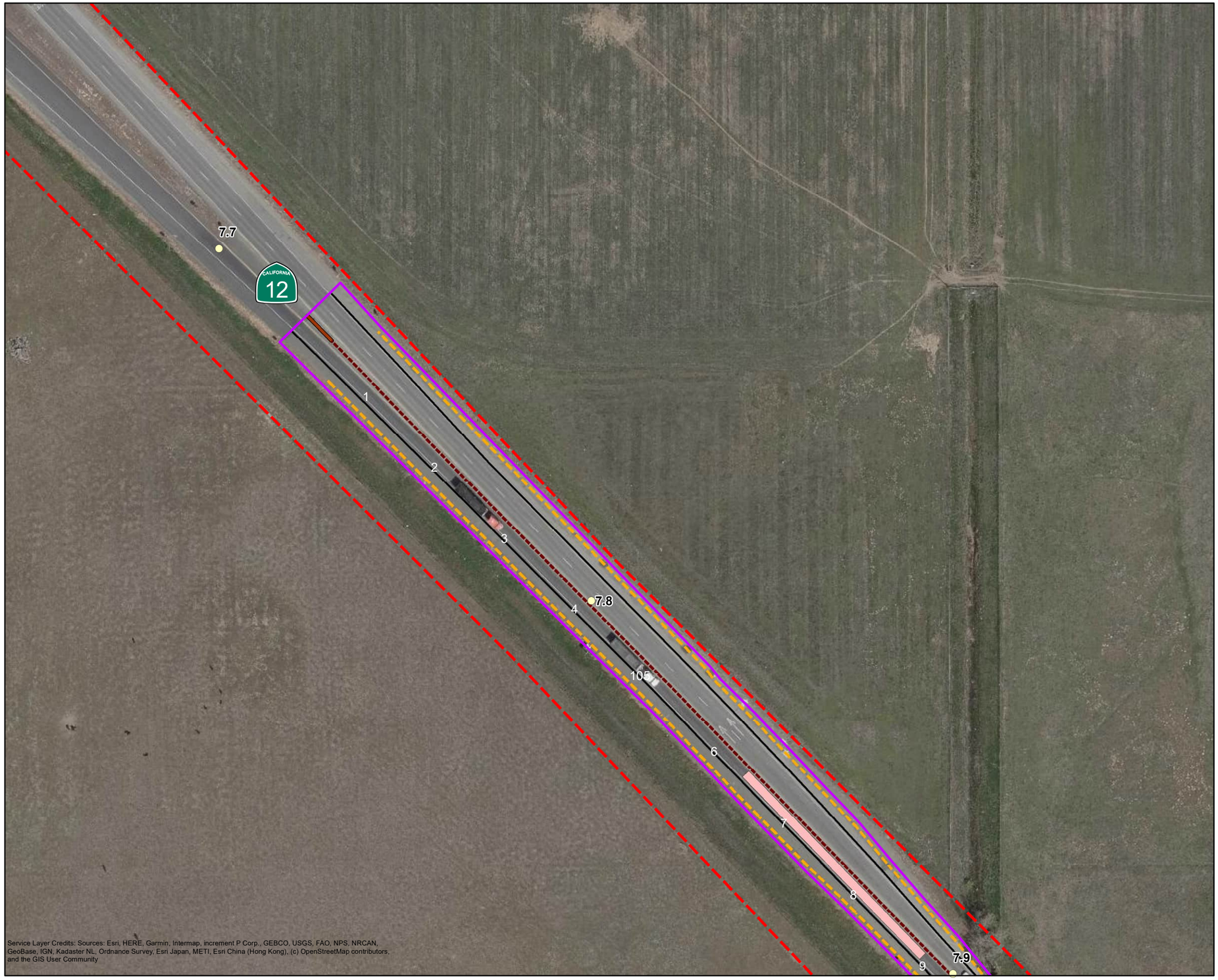
PF-NOI-4: Construction Schedule. Construction activities would mostly occur during the day, between 6 a.m. and 9 p.m. Noisy operations would be scheduled to occur within the same time period to the greatest extent possible. The total noise level would not be significantly greater than the level produced if operations are performed separately. Some nighttime construction would occur and would adhere to Caltrans Standard Specification 14-8.02.

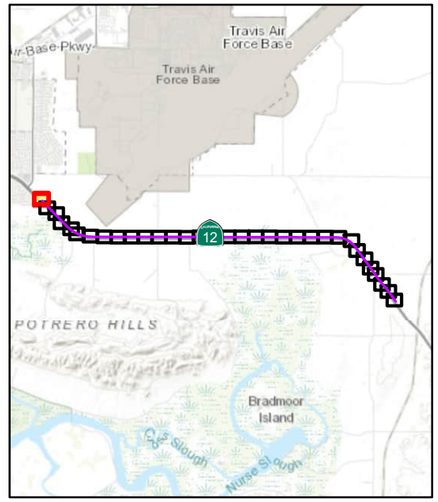
PF-TRA-1: Traffic Management Plan. A Traffic Management Plan (TMP) would be developed by Caltrans during the design phase. The TMP would include public information, motorist information, incident management, construction, and alternate routes. In addition, one-way traffic control, lane closures, flaggers and phasing, portable changeable message signs, flaggers and the California Highway Patrol's Construction Zone Enhanced Enforcement Program would be incorporated into the TMP to minimize delays to local residents and highway users, as feasible. The TMP would also provide access for police and emergency service providers. Lane closures would be planned in coordination with Caltrans and Solano County and would include notices to emergency services providers, and the public in advance.

PF-UTIL-1: Trash Management. All food-related trash items, such as wrappers, cans, bottles, and food scraps, would be disposed of in closed containers and removed by the contractor at least once daily from the Project limits. A trash reduction system would also be developed by the contractor, approved by Caltrans, and implemented per Caltrans Statewide National Pollutant Discharge Elimination System Permit and San Francisco RWQCB Cease and Desist Order.

PF-UTIL-2: Treated Wood Waste. Wood removed from metal beam guardrails would be considered treated wood waste and disposed of by the contractor pursuant to Caltrans Standard Specifications.

PF-UTIL-3: Notify Utility Owners of Construction Schedule. Caltrans would notify utility companies of construction schedules for proposed Project work to minimize potential disruption of utility service.





LEGEND

- Post Miles
- Caltrans Right of Way
- Project Footprint (51.04 acres)
- AC Surfacing
- Cut and Fill Limits
- Remove Concrete Barrier (Type K) Install Concrete Barrier (Type 60MC)
- Remove and Replace Crash Cushion
- Shoulder Rumble Strip

Solano County 2021 Aerial Photography

Project Footprint was developed from Master_Design.dgn provided by Caltrans

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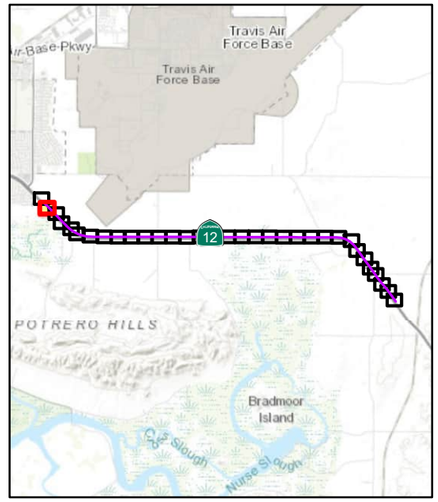
Project Elements Mapbook
Map 01 of 33

State Route 12
Major Pavement Rehabilitation Project
EA 04-2Q550, SOL-12-PM 7.7/14.1
Solano County, California



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Project Elements Mapbook
Map 02 of 33

State Route 12
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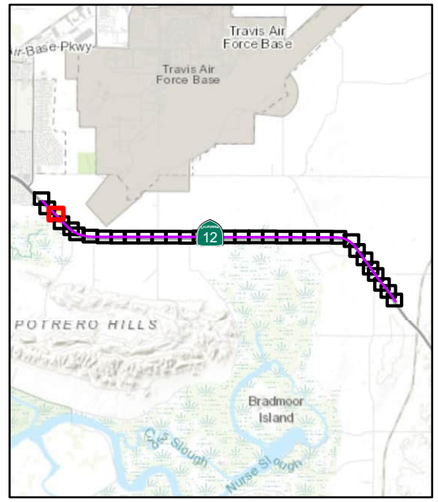

LEGEND

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Project Elements Mapbook
Map 03 of 33
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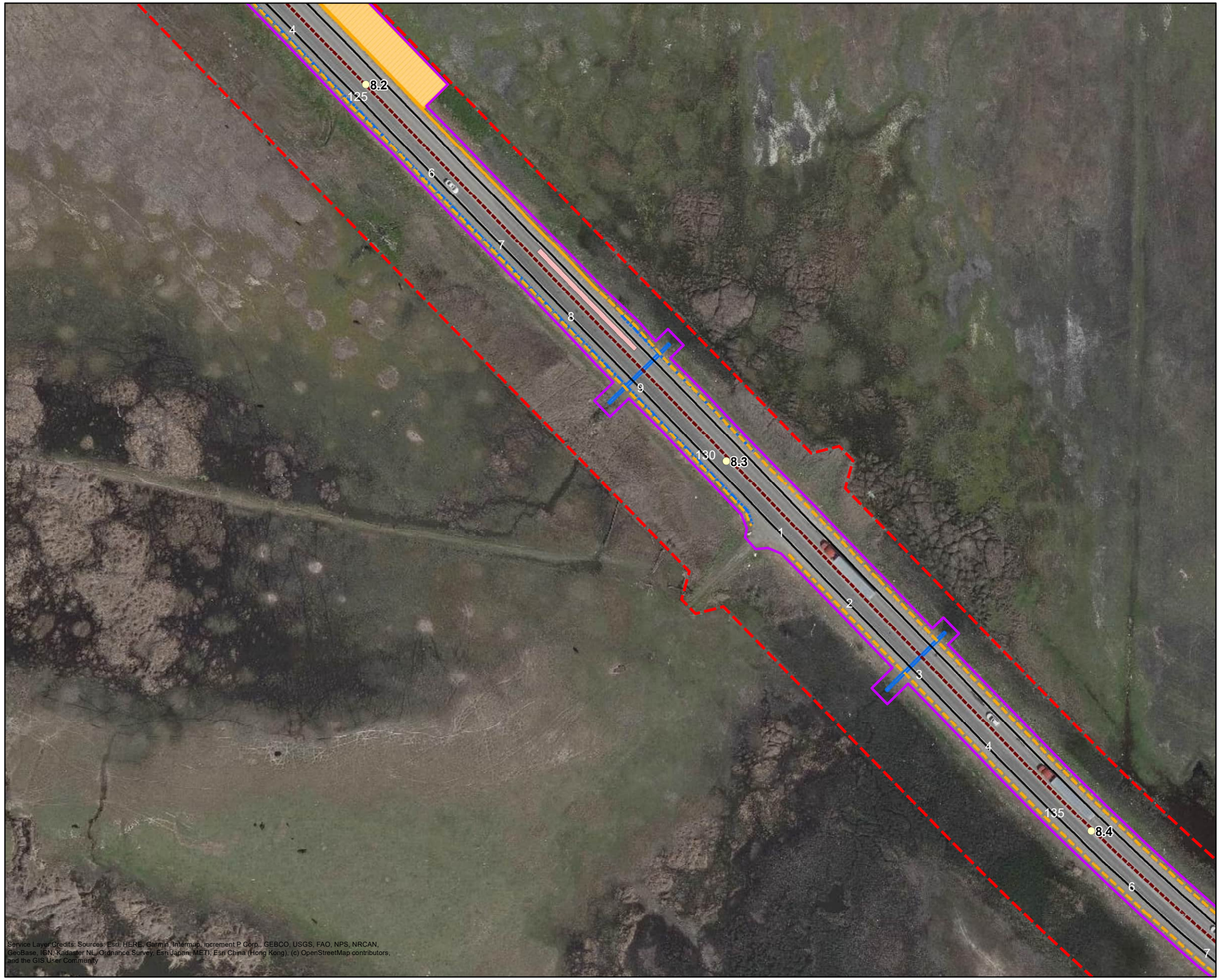

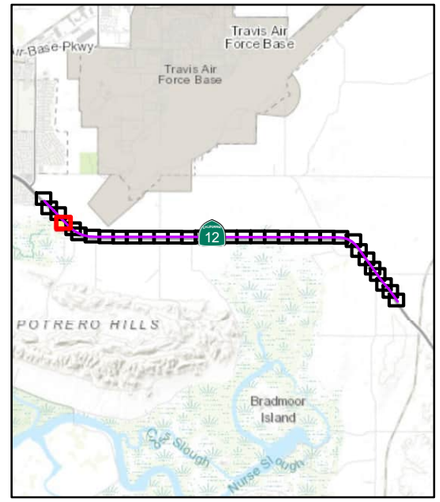

LEGEND

- Post Miles
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- Project Footprint (51.04 acres)
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- Cut and Fill Limits
- Replace 30" Concrete Culvert
- Remove Concrete Barrier (Type K) Install Concrete Barrier (Type 60MC)
- Remove HMA Dike. Install HMA Dike (Type E)
- Shoulder Rumble Strip

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Map 04 of 33

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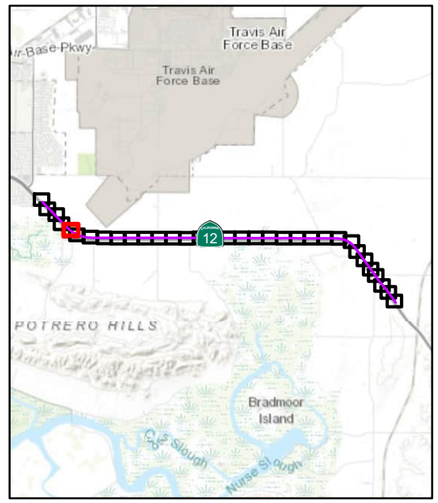

LEGEND

- Post Miles
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- Project Footprint (51.04 acres)
- AC Surfacing
- Existing Bridge
- New Bridge
- Shoulder Widening
- Staging Area
- Temporary Construction Easement
- Vegetation Control
- Cut and Fill Limits
- Replace 30" Concrete Culvert
- Bridge Rails
- Midwest Guardrail System
- Remove Concrete Barrier (Type K) Install Concrete Barrier (Type 60MC)
- Shoulder Rumble Strip

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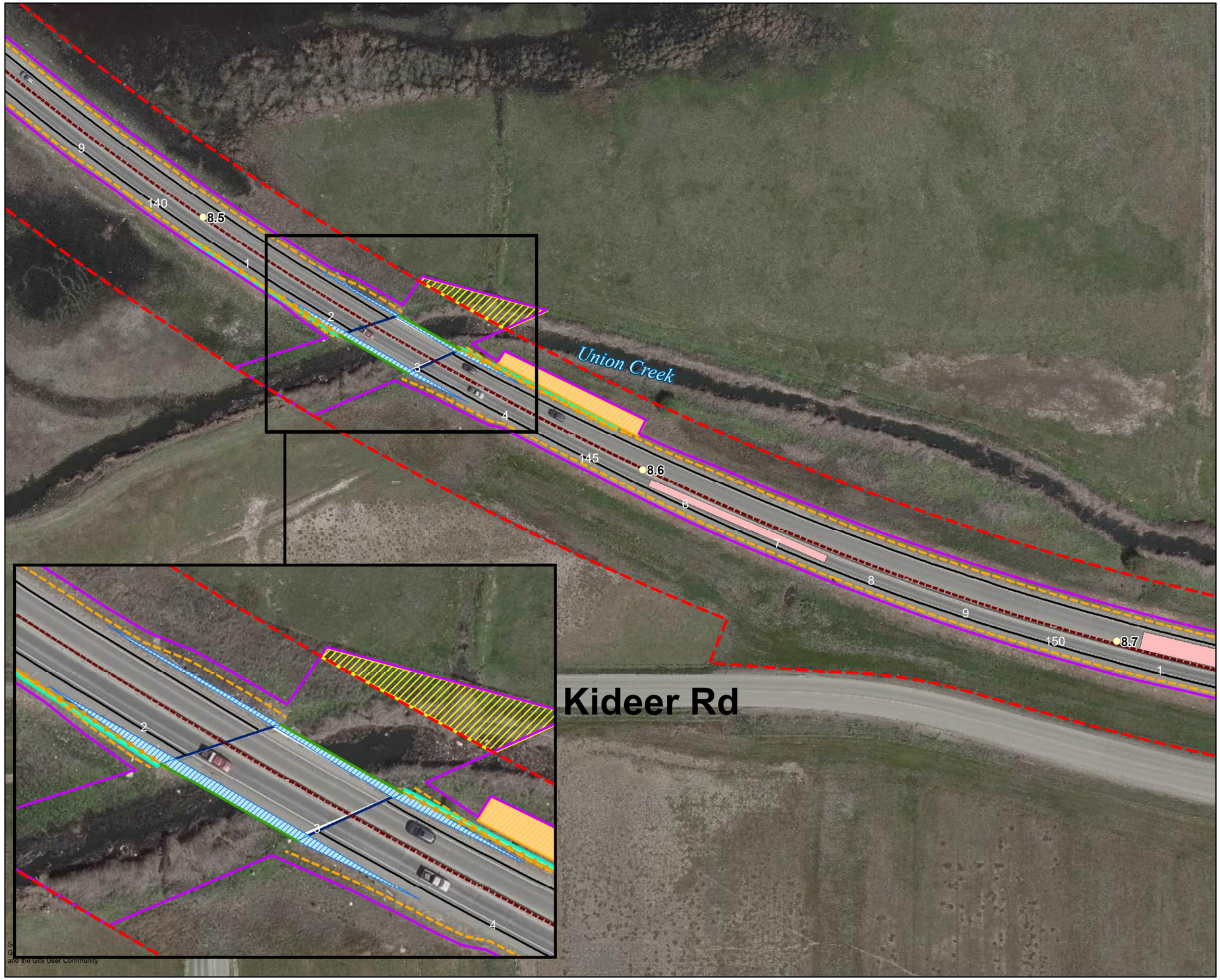

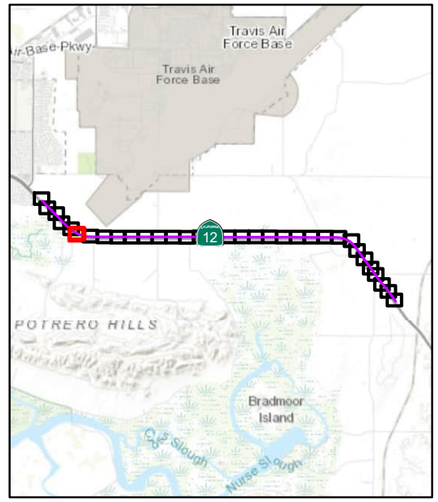

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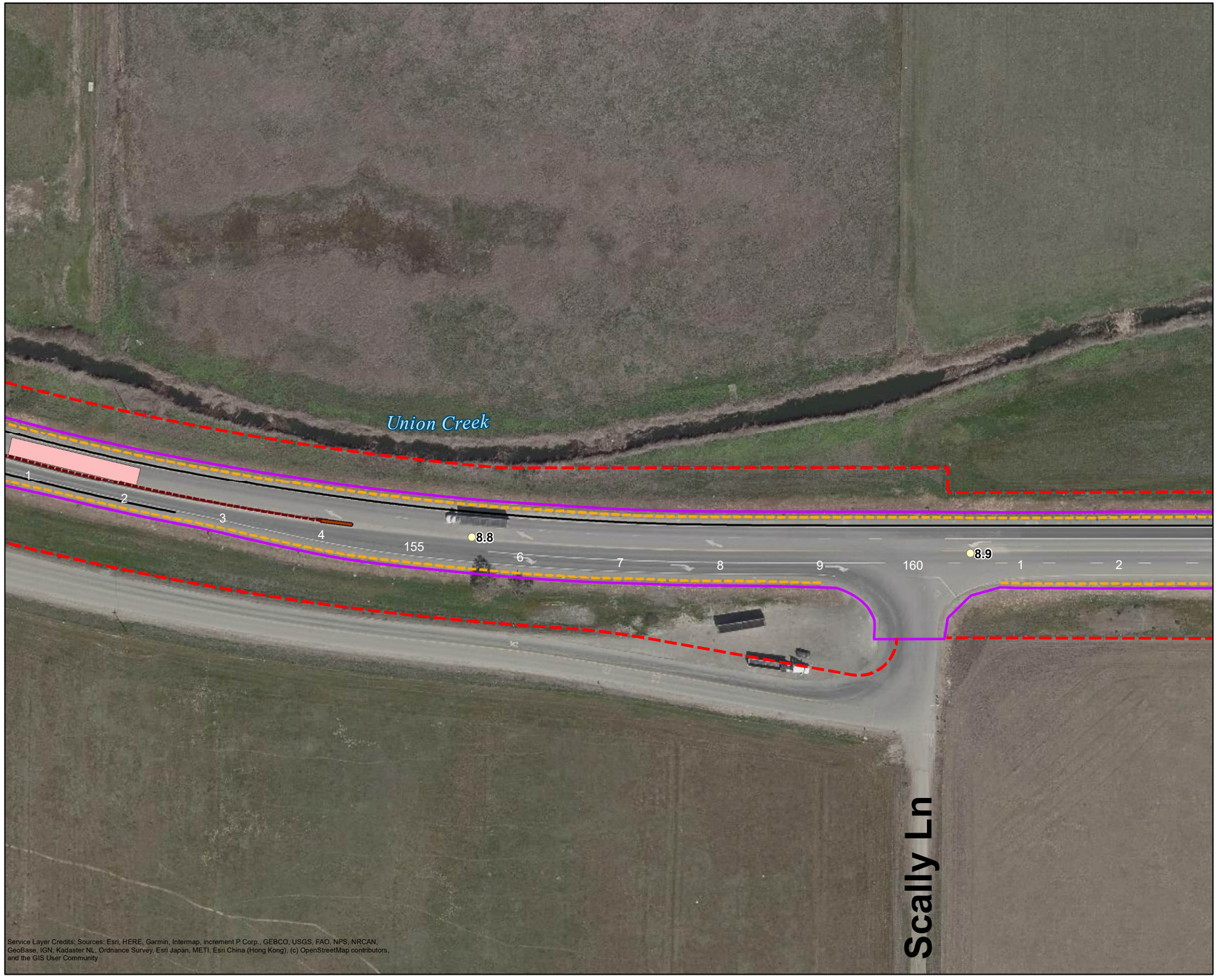

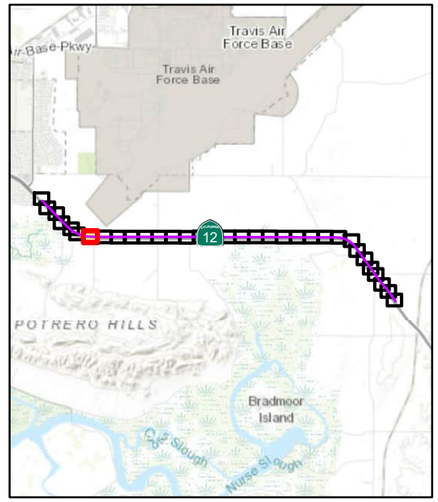

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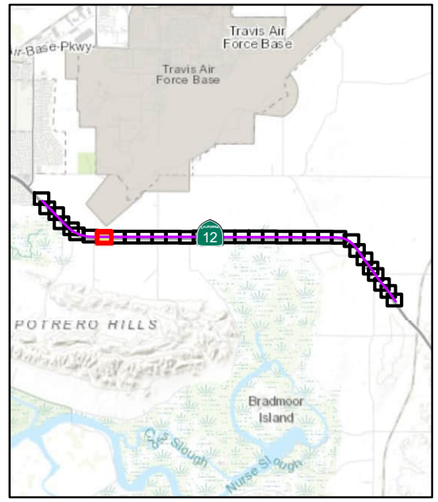
Caltrans

Project Elements Mapbook
Map 07 of 33
State Route 12
Major Pavement Rehabilitation Project
EA 04-2Q550, SOL-12-PM 7.7/14.1
Solano County, California



LEGEND

- Post Miles
- Caltrans Right of Way
- Project Footprint (51.04 acres)
- Cut and Fill Limits
- Remove Concrete Barrier (Type K) Install Concrete Barrier (Type 60MC)
- Remove and Replace Crash Cushion
- Shoulder Rumble Strip

Service Layer Credits: Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), (c) OpenStreetMap contributors, and the GIS User Community

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Project Footprint was developed from Master_Design.dgn provided by Caltrans

N

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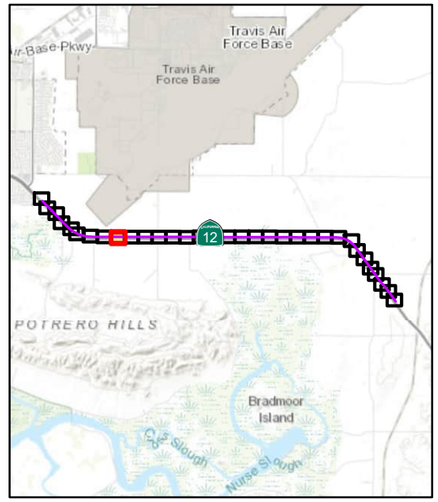
Feet

Project Elements Mapbook
Map 08 of 33
State Route 12
Major Pavement Rehabilitation Project
EA 04-2Q550, SOL-12-PM 7.7/14.1
Solano County, California



LEGEND

- Post Miles
- Caltrans Right of Way
- Project Footprint (51.04 acres)
- AC Surfacing
- Cut and Fill Limits
- Remove Concrete Barrier (Type K) Install Concrete Barrier (Type 60MC)
- Shoulder Rumble Strip

Service Layer Credits: Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), (c) OpenStreetMap contributors, and the GIS User Community

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N

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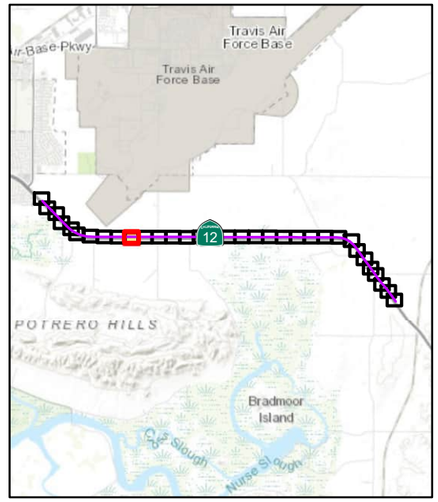
Feet

Caltrans

Project Elements Mapbook
Map 09 of 33

State Route 12
Major Pavement Rehabilitation Project
EA 04-2Q550, SOL-12-PM 7.7/14.1
Solano County, California



LEGEND

- Post Miles
- Caltrans Right of Way
- Project Footprint (51.04 acres)
- AC Surfacing
- Cut and Fill Limits
- Remove Concrete Barrier (Type K) Install Concrete Barrier (Type 60MC)
- Remove HMA Dike. Install HMA Dike (Type E)
- Shoulder Rumble Strip

Solano County 2021 Aerial Photography

Project Footprint was developed from Master_Design.dgn provided by Caltrans

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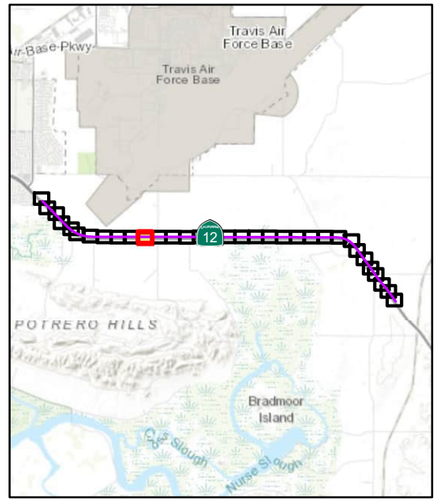
Caltrans

Project Elements Mapbook
Map 10 of 33

State Route 12
Major Pavement Rehabilitation Project
EA 04-2Q550, SOL-12-PM 7.7/14.1
Solano County, California



LEGEND

- Post Miles
- Caltrans Right of Way
- Project Footprint (51.04 acres)
- Rock Slope Protection
- Cut and Fill Limits
- Replace 10' Pipe
- Remove Concrete Barrier (Type K) Install Concrete Barrier (Type 60MC)
- Remove and Replace Crash Cushion
- Shoulder Rumble Strip

Service Layer Credits: Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), (c) OpenStreetMap contributors, and the GIS User Community

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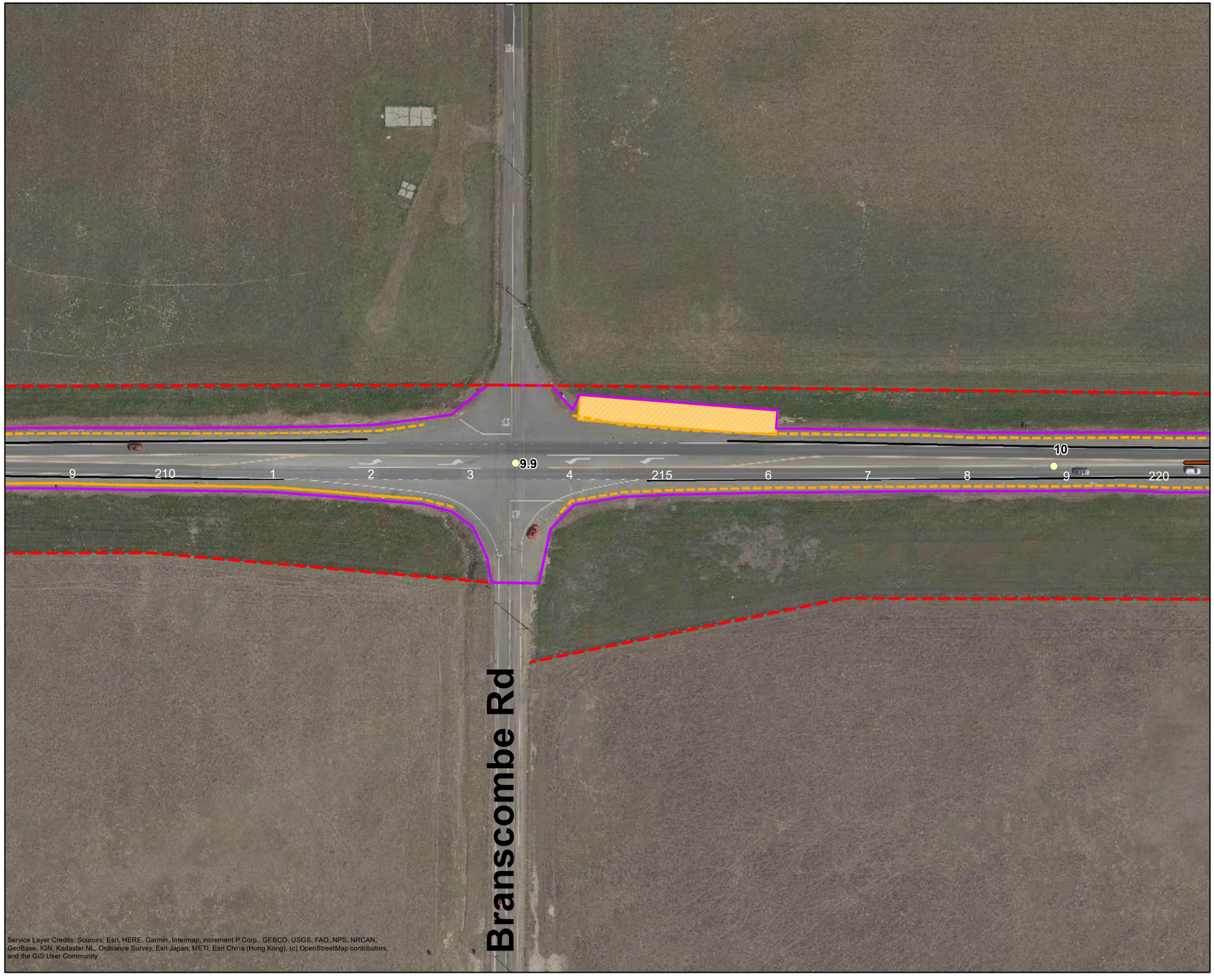
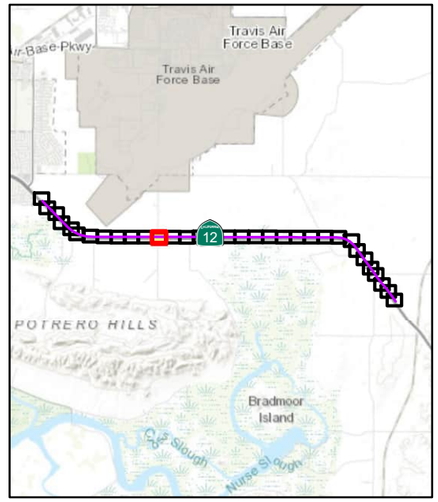
Project Elements Mapbook
Map 11 of 33

State Route 12
Major Pavement Rehabilitation Project
EA 04-2Q550, SOL-12-PM 7.7/14.1
Solano County, California





LEGEND

- Post Miles
- Caltrans Right of Way
- Project Footprint (51.04 acres)
- Staging Area
- Cut and Fill Limits
- Remove and Replace Crash Cushion
- Shoulder Rumble Strip

Solano County 2021 Aerial Photography

Project Footprint was developed from Master_Design.dgn provided by Caltrans

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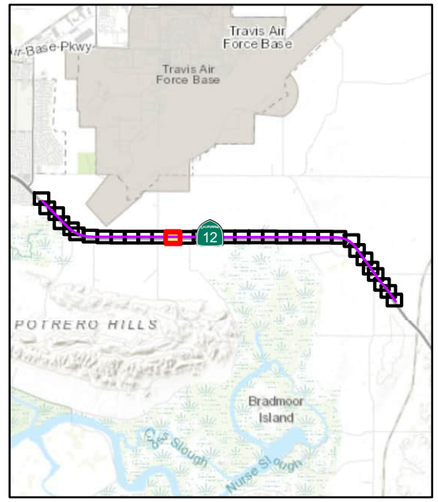
Project Elements Mapbook
Map 12 of 33
State Route 12
Major Pavement Rehabilitation Project
EA 04-2Q550, SOL-12-PM 7.7/14.1
Solano County, California



LEGEND

- Post Miles
- Caltrans Right of Way
- Project Footprint (51.04 acres)
- AC Surfacing
- Rock Slope Protection
- Cut and Fill Limits
- Replace 10' Pipe
- Remove Concrete Barrier (Type K) Install Concrete Barrier (Type 60MC)
- Remove and Replace Crash Cushion
- Shoulder Rumble Strip

Solano County 2021 Aerial Photography

Project Footprint was developed from Master_Design.dgn provided by Caltrans

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Feet

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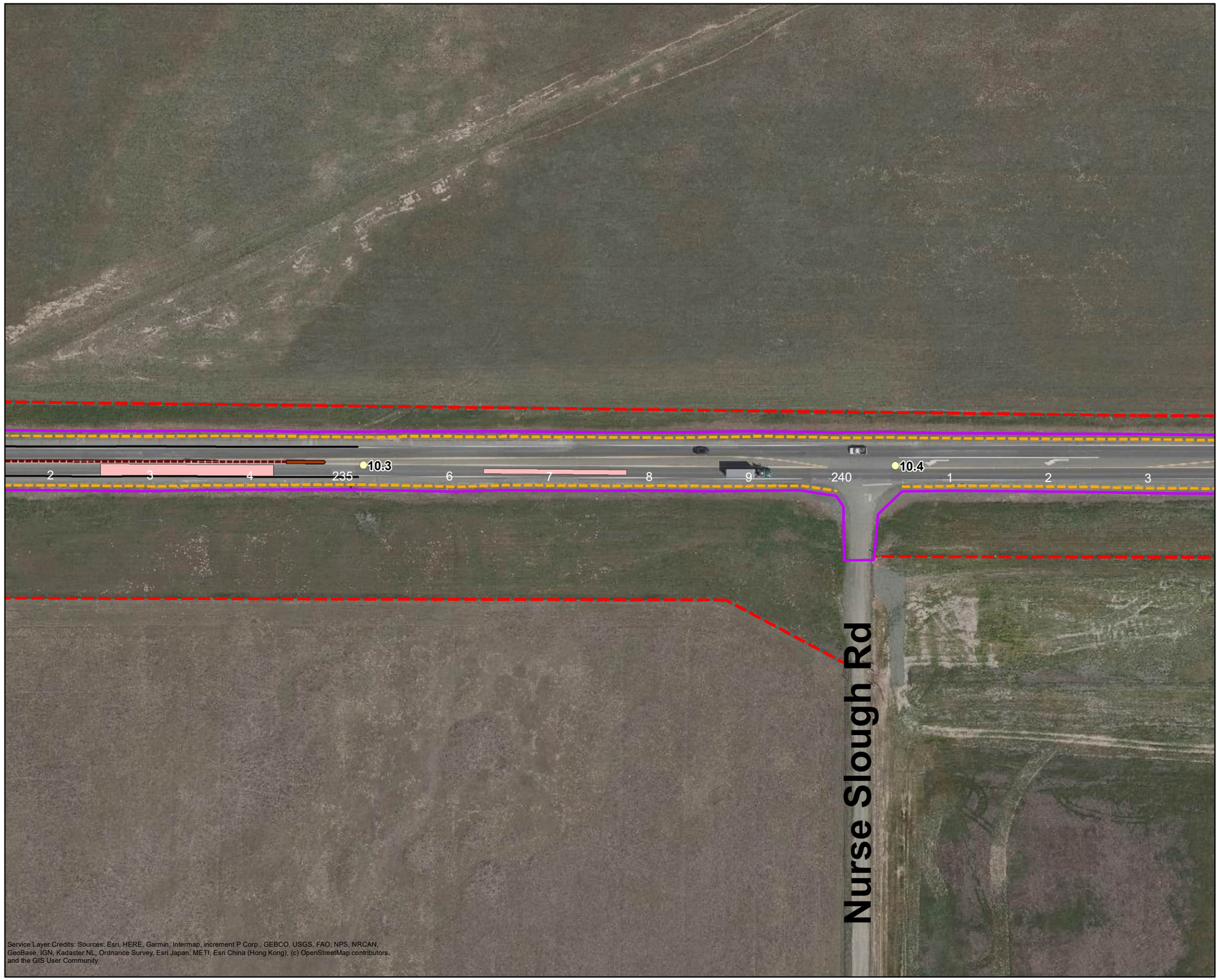
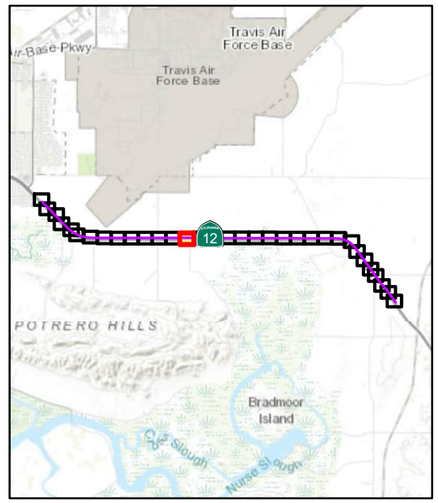
Project Elements Mapbook
Map 13 of 33

State Route 12
Major Pavement Rehabilitation Project
EA 04-2Q550, SOL-12-PM 7.7/14.1
Solano County, California





LEGEND

- Post Miles
- Caltrans Right of Way
- Project Footprint (51.04 acres)
- AC Surfacing
- Cut and Fill Limits
- Remove Concrete Barrier (Type K) Install Concrete Barrier (Type 60MC)
- Remove and Replace Crash Cushion
- Shoulder Rumble Strip

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N

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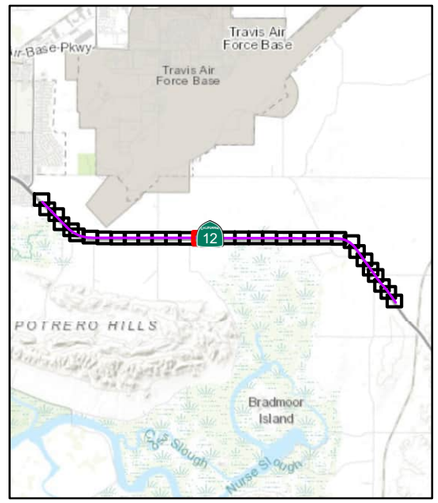
Feet

Caltrans

Project Elements Mapbook
Map 14 of 33
State Route 12
Major Pavement Rehabilitation Project
EA 04-2Q550, SOL-12-PM 7.7/14.1
Solano County, California



LEGEND

- Post Miles
- Caltrans Right of Way
- Project Footprint (51.04 acres)
- AC Surfacing
- Cut and Fill Limits
- Remove Concrete Barrier (Type K) Install Concrete Barrier (Type 60MC)
- Remove and Replace Crash Cushion
- Shoulder Rumble Strip

Solano County 2021 Aerial Photography

Project Footprint was developed from Master_Design.dgn provided by Caltrans

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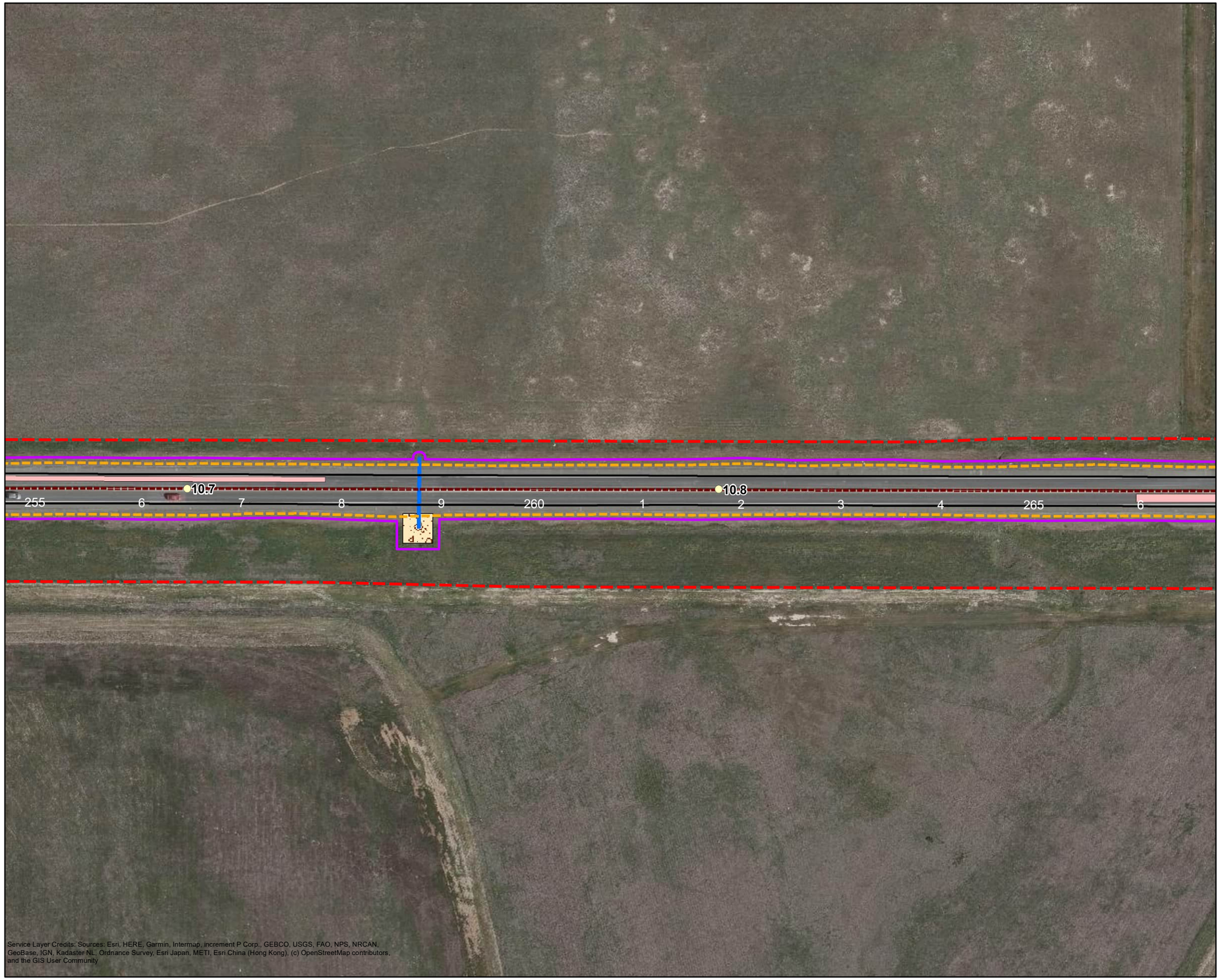
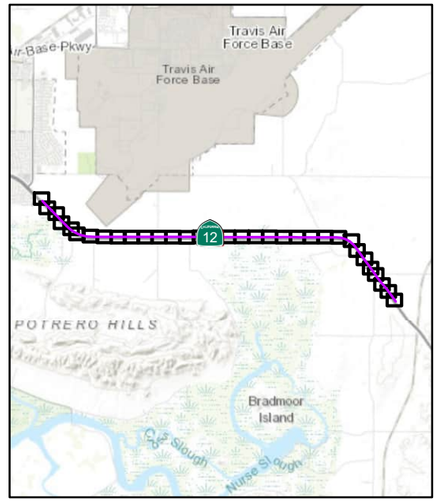
Feet

Caltrans

Project Elements Mapbook
Map 15 of 33

State Route 12
Major Pavement Rehabilitation Project
EA 04-2Q550, SOL-12-PM 7.7/14.1
Solano County, California





LEGEND

- Post Miles
- Caltrans Right of Way
- Project Footprint (51.04 acres)
- AC Surfacing
- Rock Slope Protection
- Cut and Fill Limits
- Replace 10' Pipe
- Remove Concrete Barrier (Type K) Install Concrete Barrier (Type 60MC)
- Shoulder Rumble Strip

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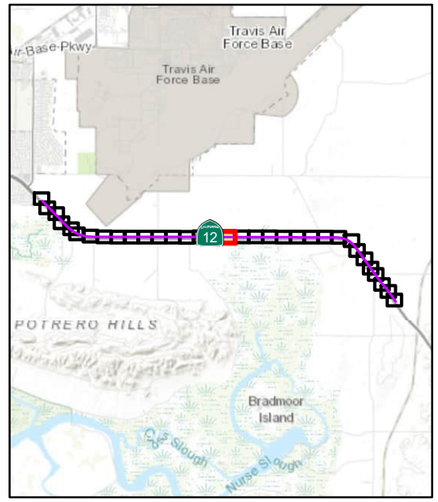
Project Elements Mapbook
Map 16 of 33

State Route 12

Major Pavement Rehabilitation Project

EA 04-2Q550, SOL-12-PM 7.7/14.1

Solano County, California



LEGEND

- Post Miles
- Caltrans Right of Way
- Project Footprint (51.04 acres)
- AC Surfacing
- Cut and Fill Limits
- Remove Concrete Barrier (Type K) Install Concrete Barrier (Type 60MC)
- Remove HMA Dike. Install HMA Dike (Type E)
- Shoulder Rumble Strip

Service Layer Credits: Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), (c) OpenStreetMap contributors, and the GIS User Community

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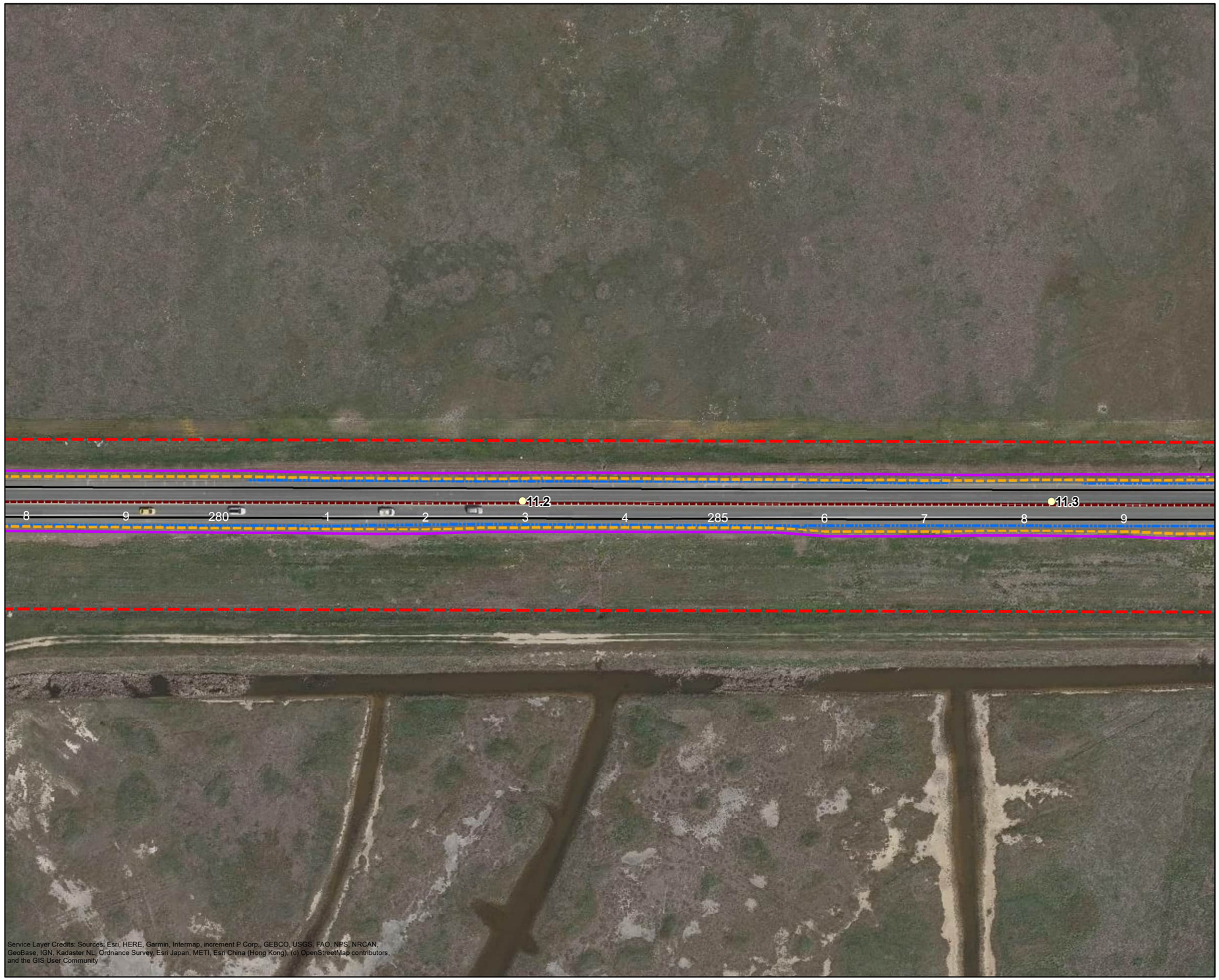
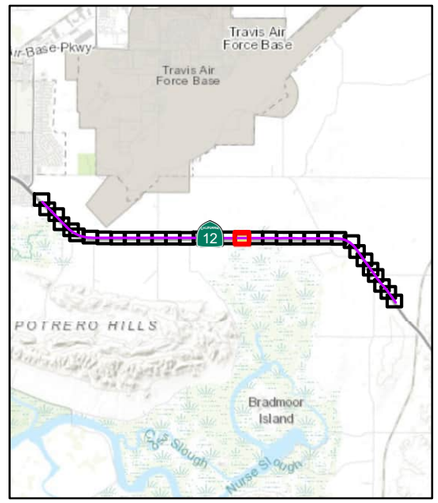
Project Elements Mapbook
Map 17 of 33
State Route 12
Major Pavement Rehabilitation Project
EA 04-2Q550, SOL-12-PM 7.7/14.1
Solano County, California





LEGEND

- Post Miles
- Caltrans Right of Way
- Project Footprint (51.04 acres)
- Cut and Fill Limits
- Remove Concrete Barrier (Type K) Install Concrete Barrier (Type 60MC)
- Remove HMA Dike. Install HMA Dike (Type E)
- Shoulder Rumble Strip

Solano County 2021 Aerial Photography

Project Footprint was developed from Master_Design.dgn provided by Caltrans

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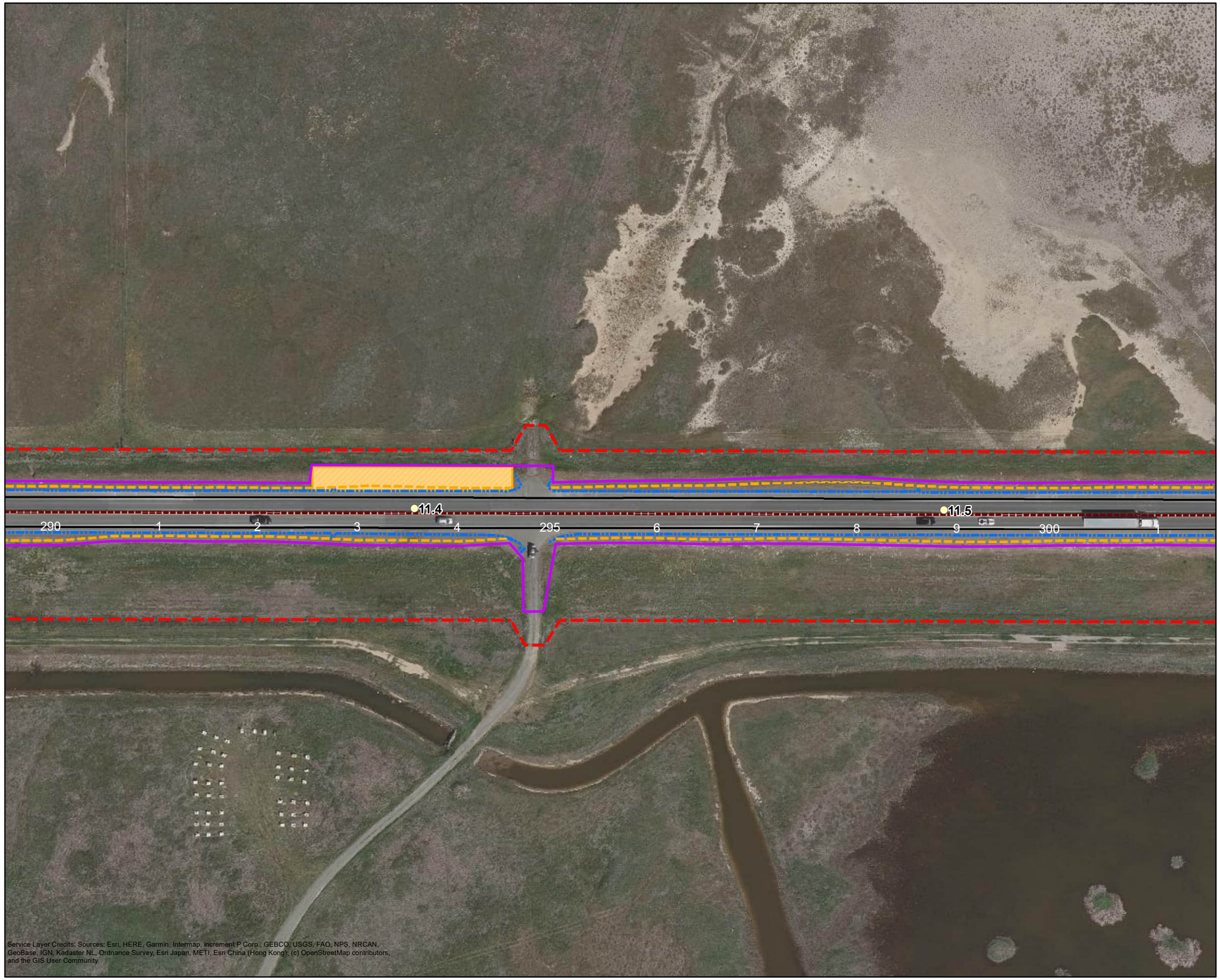
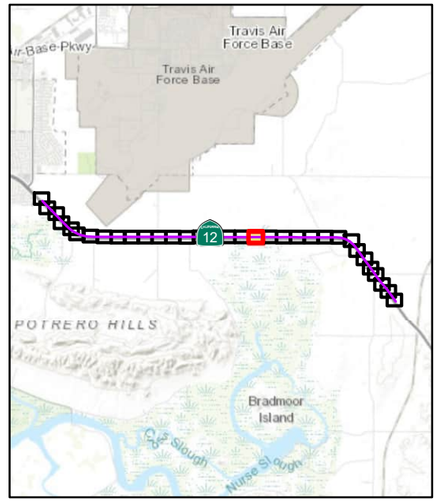
Caltrans

Project Elements Mapbook
Map 18 of 33
State Route 12
Major Pavement Rehabilitation Project
EA 04-2Q550, SOL-12-PM 7.7/14.1
Solano County, California





LEGEND

- Post Miles
- Caltrans Right of Way
- Project Footprint (51.04 acres)
- Staging Area
- Cut and Fill Limits
- Remove Concrete Barrier (Type K) Install Concrete Barrier (Type 60MC)
- Remove HMA Dike. Install HMA Dike (Type E)
- Shoulder Rumble Strip

Solano County 2021 Aerial Photography

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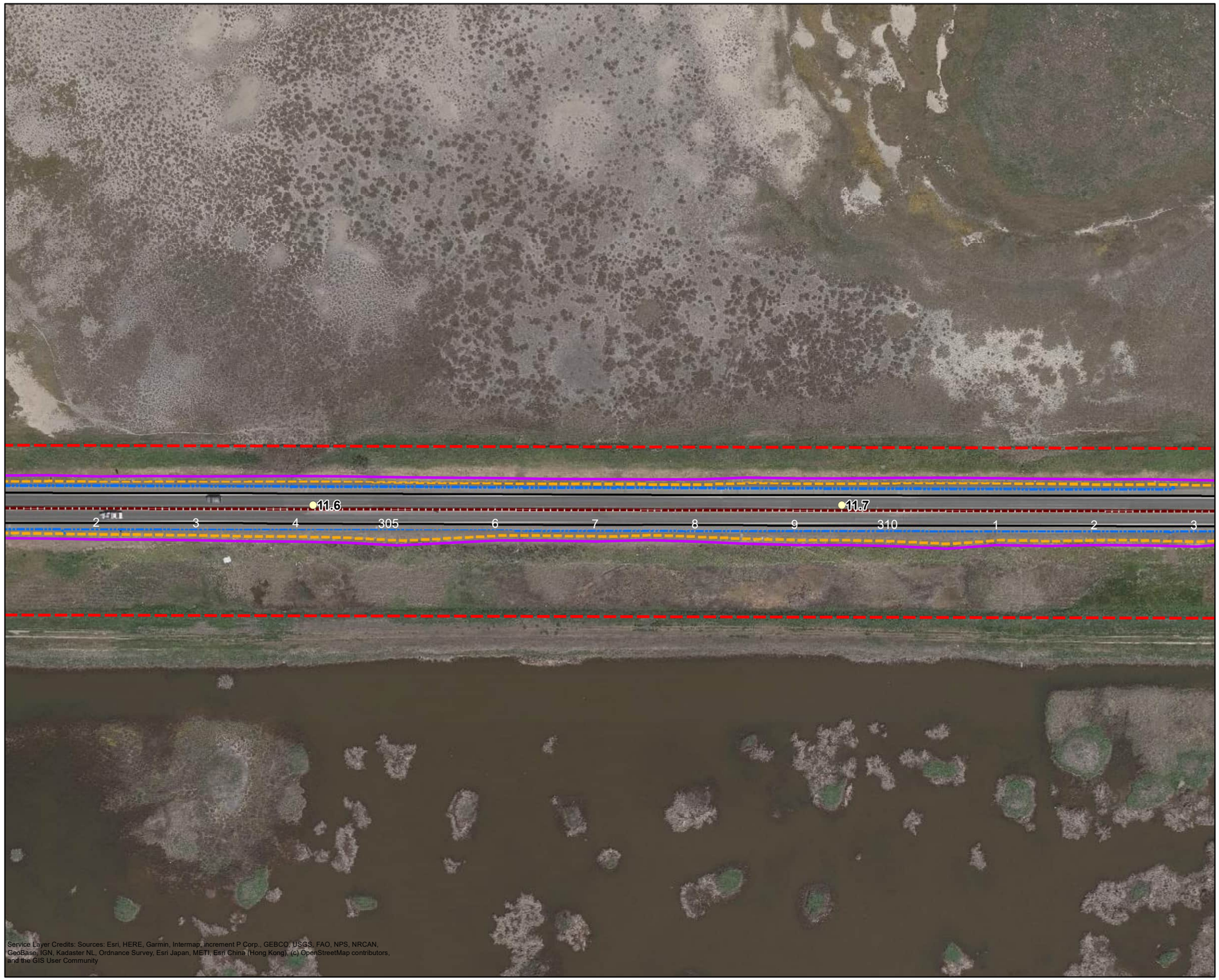
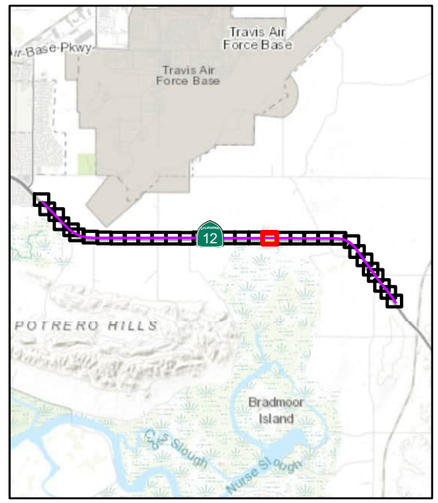
Project Elements Mapbook
Map 19 of 33

State Route 12
Major Pavement Rehabilitation Project
EA 04-2Q550, SOL-12-PM 7.7/14.1
Solano County, California





LEGEND

- Post Miles
- Caltrans Right of Way
- Project Footprint (51.04 acres)
- Cut and Fill Limits
- Remove Concrete Barrier (Type K) Install Concrete Barrier (Type 60MC)
- Remove HMA Dike. Install HMA Dike (Type E)
- Shoulder Rumble Strip

Service Layer Credits: Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), (c) OpenStreetMap contributors, and the GIS User Community

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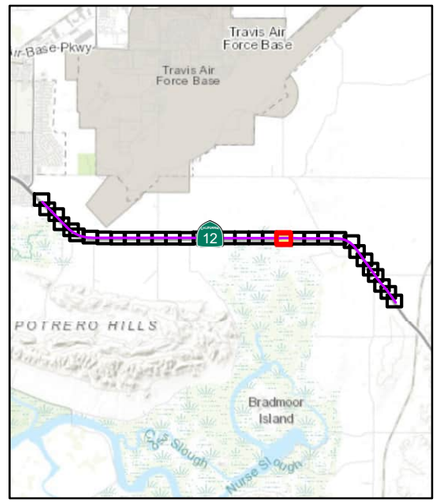
Project Elements Mapbook
Map 20 of 33
State Route 12
Major Pavement Rehabilitation Project
EA 04-2Q550, SOL-12-PM 7.7/14.1
Solano County, California



LEGEND

- Post Miles
- Caltrans Right of Way
- Project Footprint (51.04 acres)
- Cut and Fill Limits
- Remove Concrete Barrier (Type K) Install Concrete Barrier (Type 60MC)
- Remove HMA Dike. Install HMA Dike (Type E)
- Shoulder Rumble Strip

Solano County 2021 Aerial Photography

Project Footprint was developed from Master_Design.dgn provided by Caltrans

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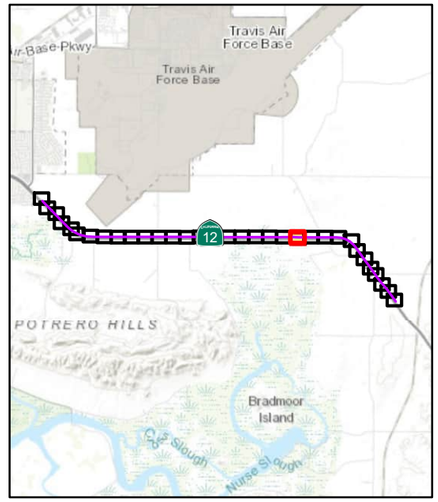
Feet

Caltrans

Project Elements Mapbook
Map 21 of 33
State Route 12
Major Pavement Rehabilitation Project
EA 04-2Q550, SOL-12-PM 7.7/14.1
Solano County, California



LEGEND

- Post Miles
- Caltrans Right of Way
- Project Footprint (51.04 acres)
- Cut and Fill Limits
- Remove Concrete Barrier (Type K) Install Concrete Barrier (Type 60MC)
- Shoulder Rumble Strip

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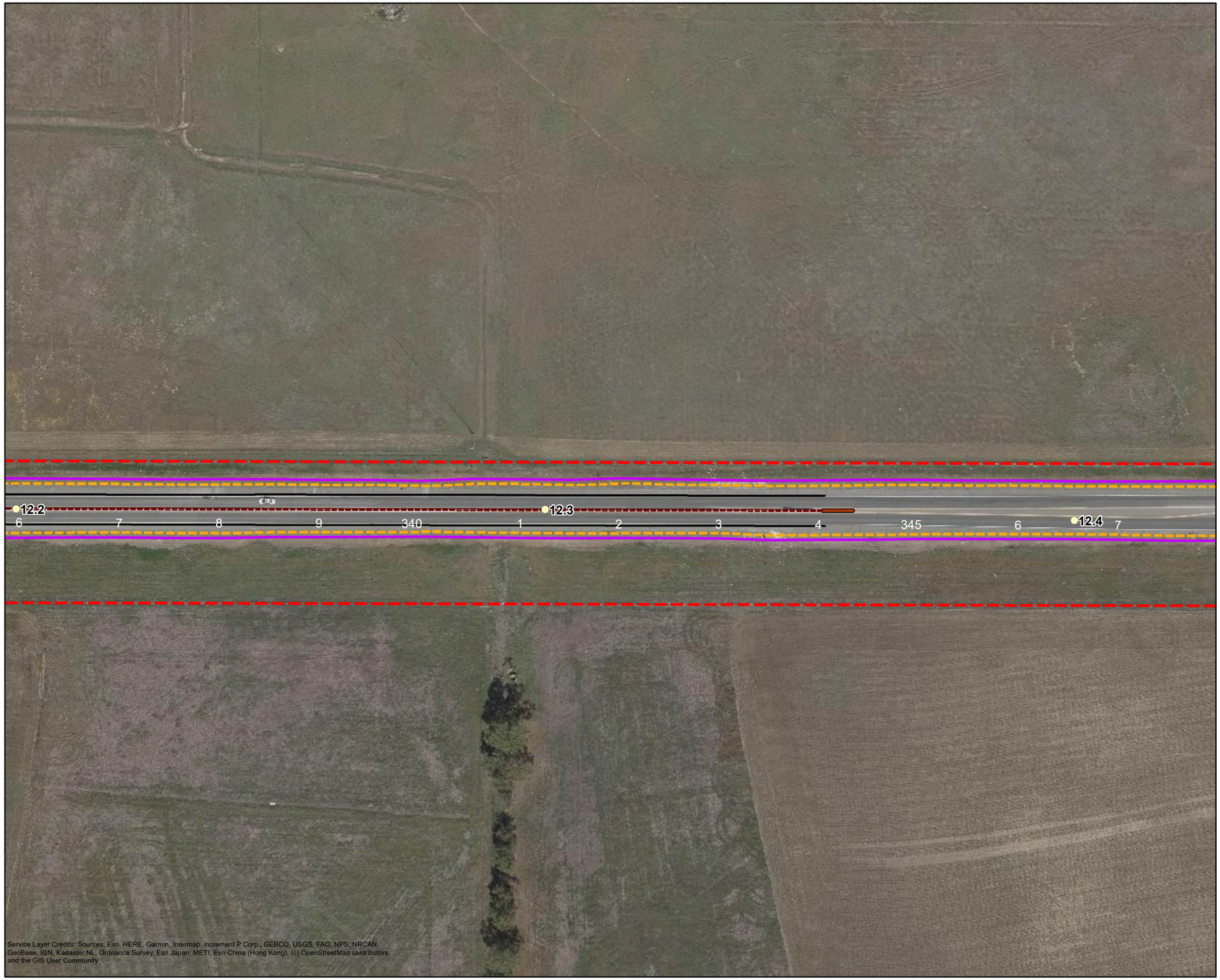
Feet

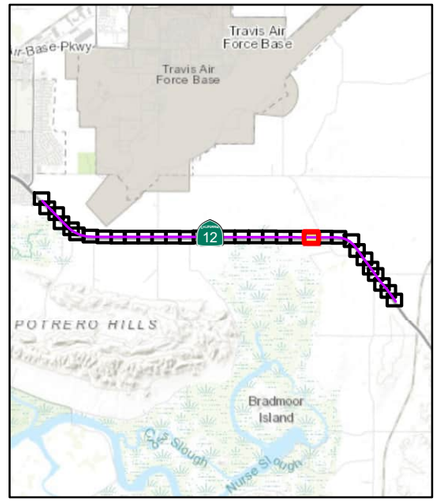
Caltrans

Service Layer Credits: Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), (c) OpenStreetMap contributors, and the GIS User Community

Project Elements Mapbook
Map 22 of 33

State Route 12
Major Pavement Rehabilitation Project
EA 04-2Q550, SOL-12-PM 7.7/14.1
Solano County, California





LEGEND

- Post Miles
- Caltrans Right of Way
- Project Footprint (51.04 acres)
- Cut and Fill Limits
- Remove Concrete Barrier (Type K) Install Concrete Barrier (Type 60MC)
- Remove and Replace Crash Cushion
- Shoulder Rumble Strip

Solano County 2021 Aerial Photography

Project Footprint was developed from Master_Design.dgn provided by Caltrans

N

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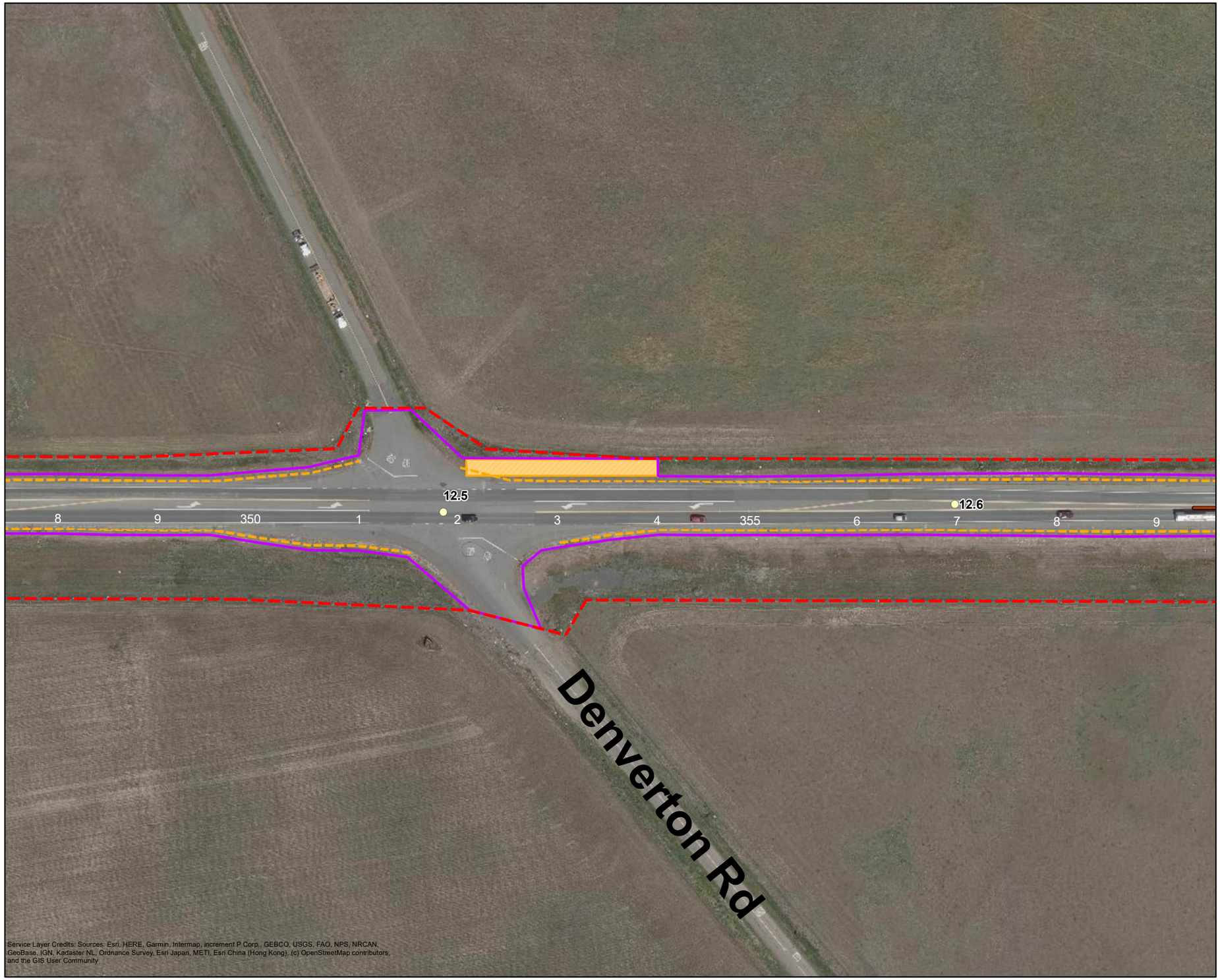
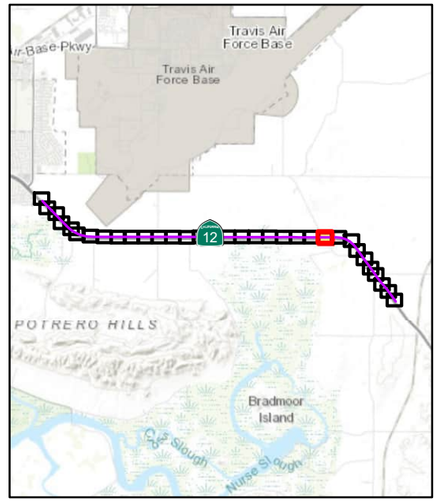
Feet

Caltrans

Project Elements Mapbook
Map 23 of 33

State Route 12
Major Pavement Rehabilitation Project
EA 04-2Q550, SOL-12-PM 7.7/14.1
Solano County, California





LEGEND

- Post Miles
- Caltrans Right of Way
- Project Footprint (51.04 acres)
- Staging Area
- Cut and Fill Limits
- Remove and Replace Crash Cushion

Solano County 2021 Aerial Photography

Project Footprint was developed from Master_Design.dgn provided by Caltrans

N

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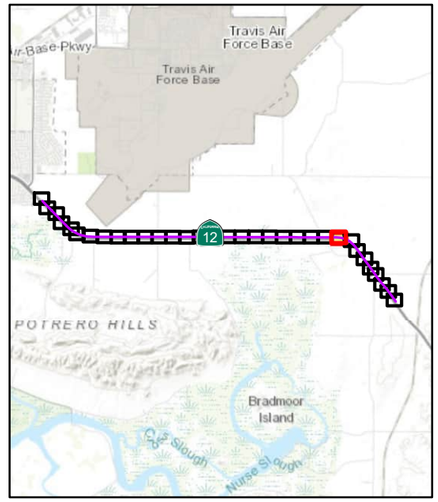
Feet

Caltrans

Project Elements Mapbook
Map 24 of 33
State Route 12
Major Pavement Rehabilitation Project
EA 04-2Q550, SOL-12-PM 7.7/14.1
Solano County, California

Service Layer Credits: Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), (c) OpenStreetMap contributors, and the GIS User Community



LEGEND

- Post Miles
- Caltrans Right of Way
- Project Footprint (51.04 acres)
- Cut and Fill Limits
- Remove Concrete Barrier (Type K) Install Concrete Barrier (Type 60MC)
- Remove and Replace Crash Cushion
- Shoulder Rumble Strip

Solano County 2021 Aerial Photography

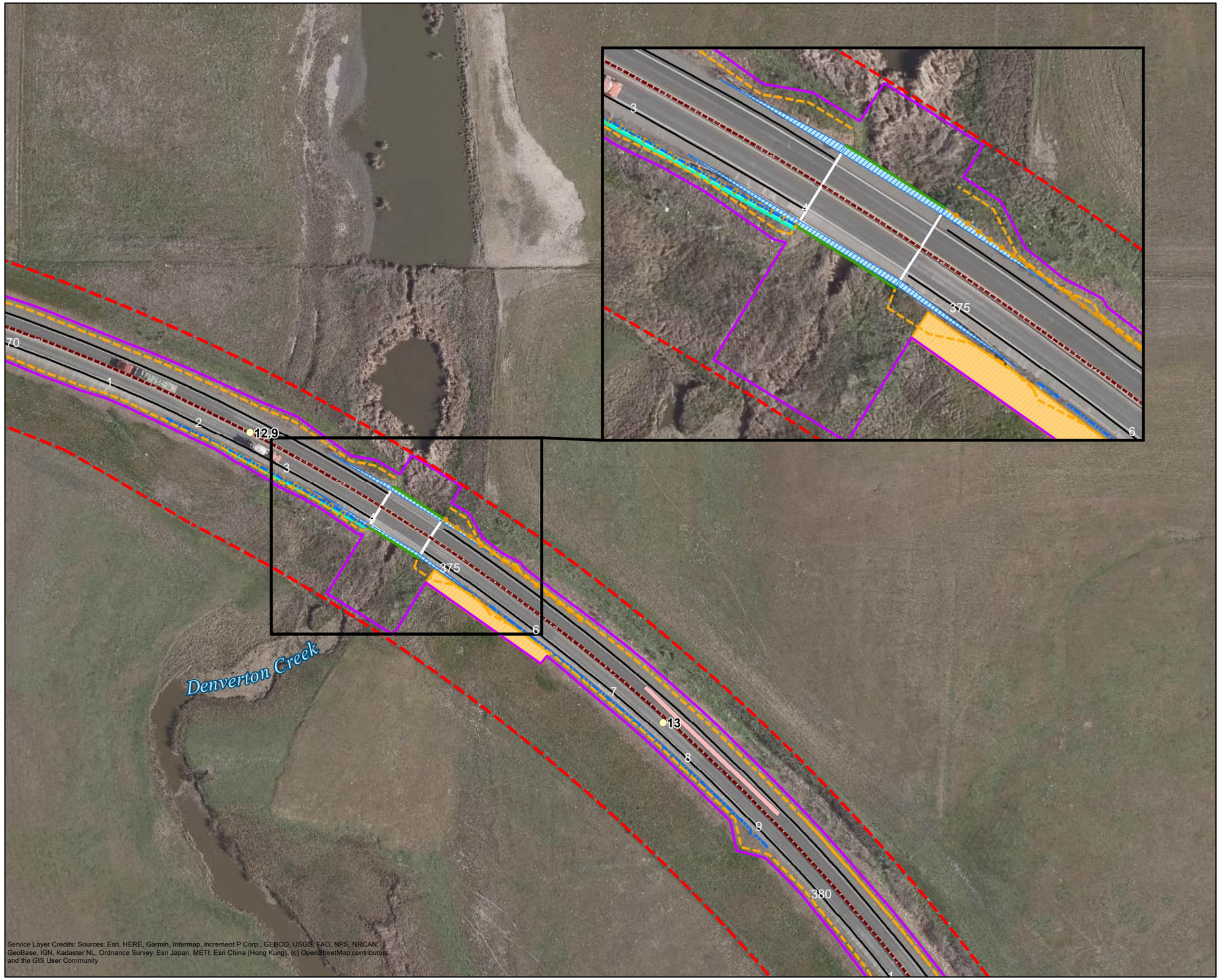
Project Footprint was developed from Master_Design.dgn provided by Caltrans

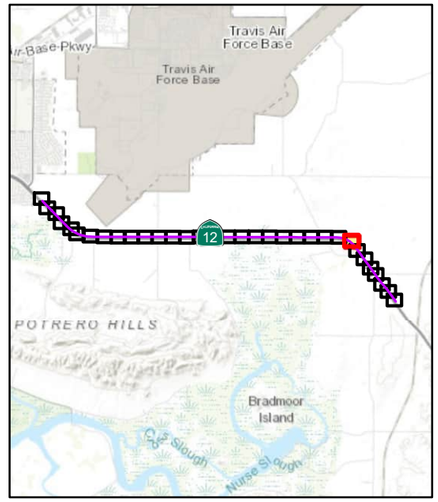
N

0 100
Feet

Caltrans

Project Elements Mapbook
Map 25 of 33
State Route 12
Major Pavement Rehabilitation Project
EA 04-2Q550, SOL-12-PM 7.7/14.1
Solano County, California





LEGEND

- Post Miles
- Caltrans Right of Way
- Project Footprint (51.04 acres)
- AC Surfacing
- Existing Bridge
- New Bridge
- Shoulder Widening
- Staging Area
- Vegetation Control
- Cut and Fill Limits
- Bridge Rails
- Midwest Guardrail System
- Remove Concrete Barrier (Type K) Install Concrete Barrier (Type 60MC)
- Remove HMA Dike. Install HMA Dike (Type E)
- Shoulder Rumble Strip

Solano County 2021 Aerial Photography

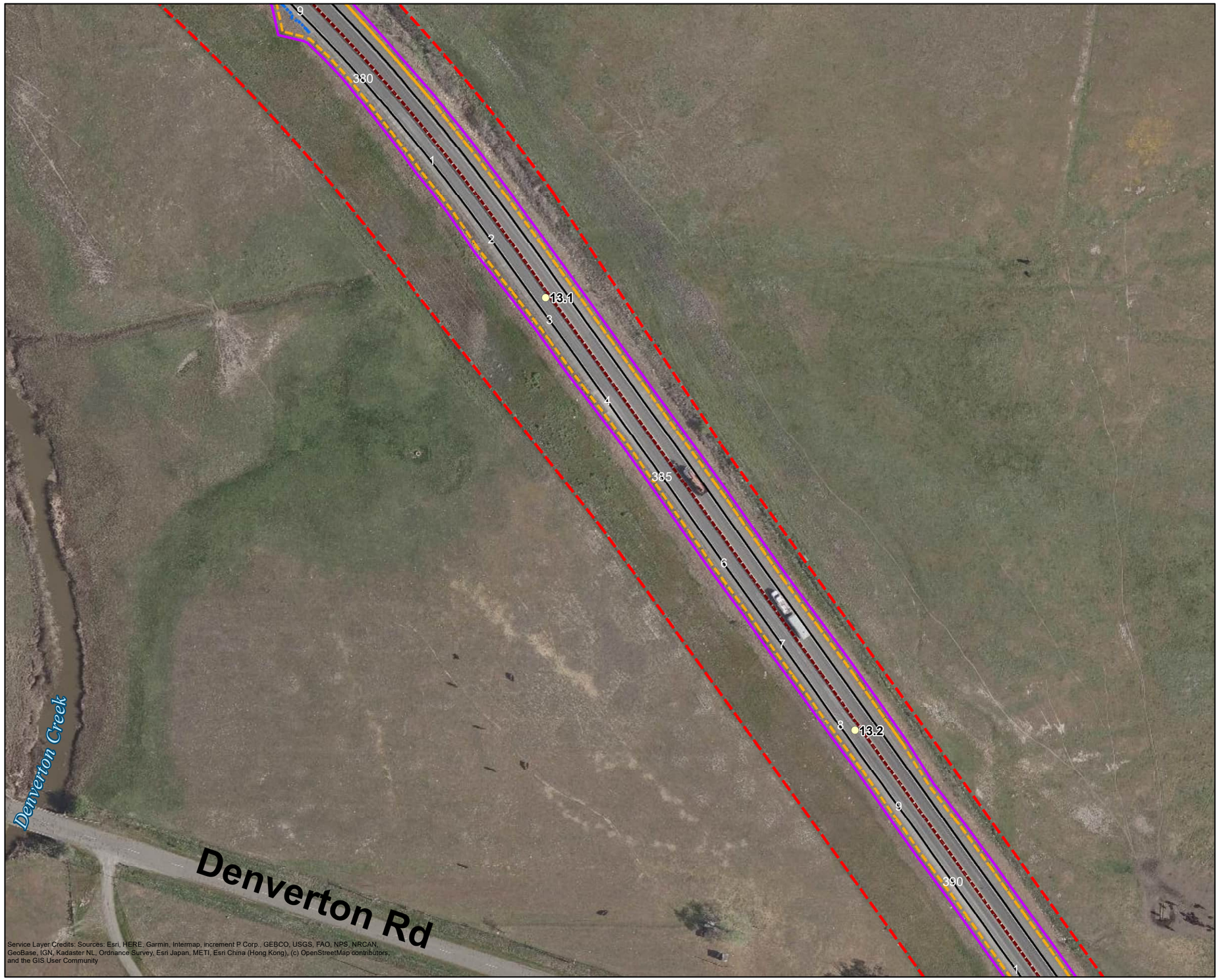
Project Footprint was developed from Master_Design.dgn provided by Caltrans

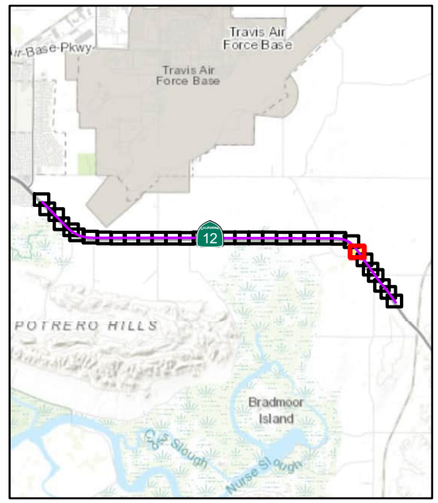
N

0 100
Feet

Caltrans

Project Elements Mapbook
Map 26 of 33
State Route 12
Major Pavement Rehabilitation Project
EA 04-2Q550, SOL-12-PM 7.7/14.1
Solano County, California





LEGEND

- Post Miles
- Caltrans Right of Way
- Project Footprint (51.04 acres)
- Cut and Fill Limits
- Remove Concrete Barrier (Type K) Install Concrete Barrier (Type 60MC)
- Remove HMA Dike. Install HMA Dike (Type E)
- Shoulder Rumble Strip

Solano County 2021 Aerial Photography

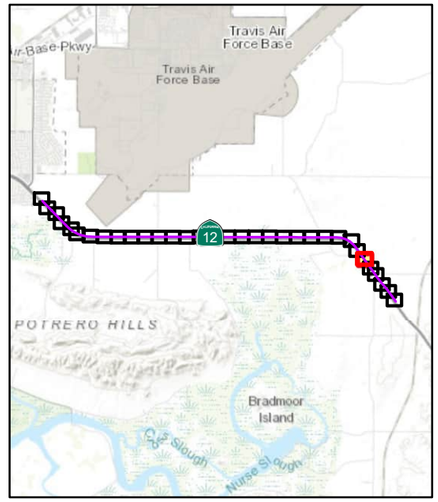
Project Footprint was developed from Master_Design.dgn provided by Caltrans

N

0 100
Feet

Caltrans

Project Elements Mapbook
Map 27 of 33
State Route 12
Major Pavement Rehabilitation Project
EA 04-2Q550, SOL-12-PM 7.7/14.1
Solano County, California



LEGEND

- Post Miles
- Caltrans Right of Way
- Project Footprint (51.04 acres)
- Cut and Fill Limits
- Remove Concrete Barrier (Type K) Install Concrete Barrier (Type 60MC)
- Remove and Replace Crash Cushion
- Shoulder Rumble Strip

Solano County 2021 Aerial Photography

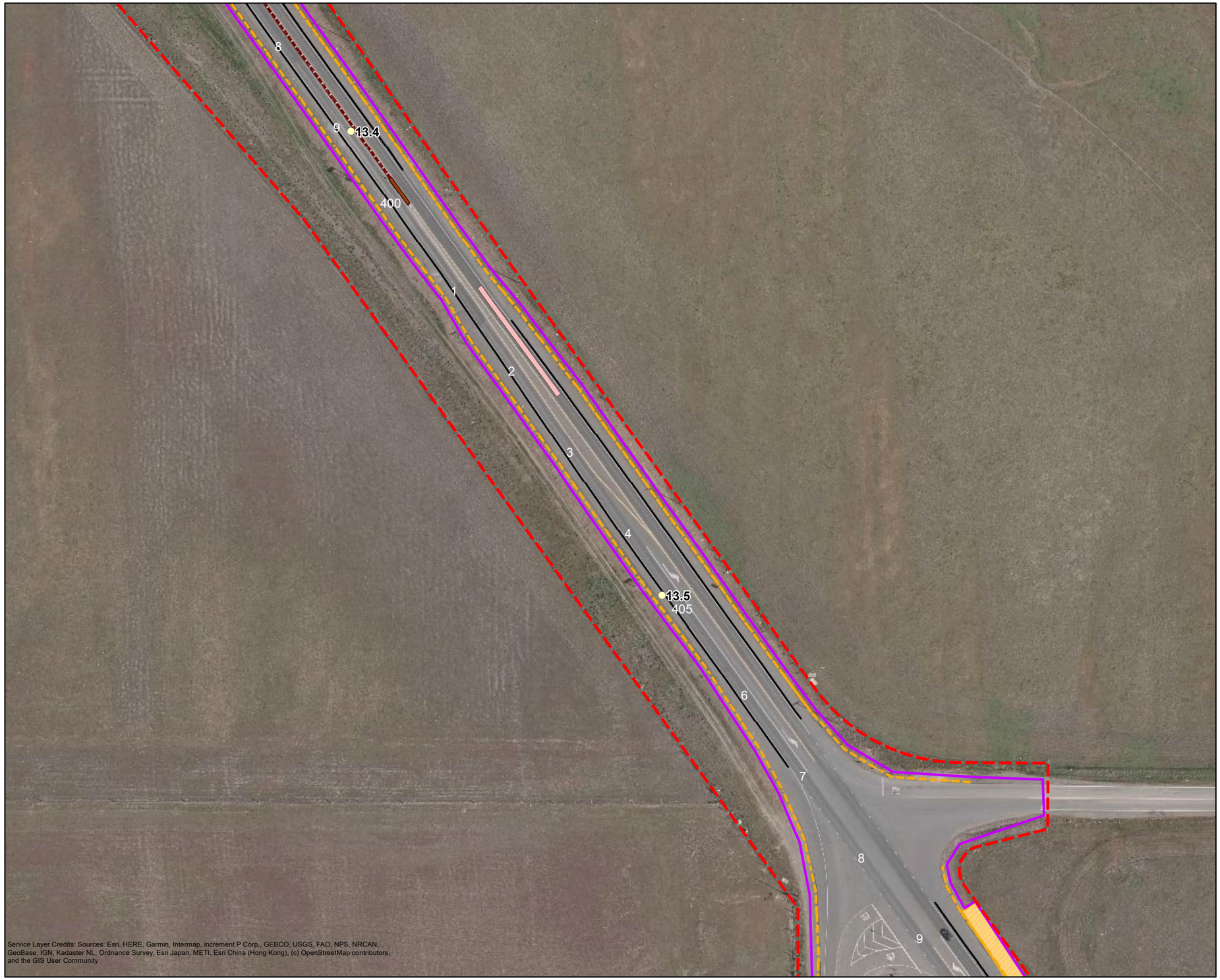
Project Footprint was developed from Master_Design.dgn provided by Caltrans

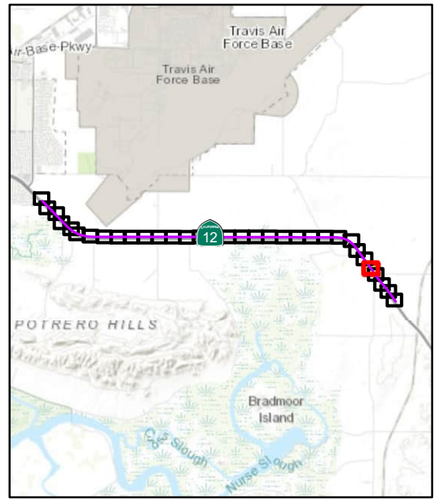
N

0 100
Feet

Service Layer Credits: Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), (c) OpenStreetMap contributors, and the GIS User Community

Project Elements Mapbook
Map 28 of 33
State Route 12
Major Pavement Rehabilitation Project
EA 04-2Q550, SOL-12-PM 7.7/14.1
Solano County, California





LEGEND

- Post Miles
- Caltrans Right of Way
- Project Footprint (51.04 acres)
- AC Surfacing
- Staging Area
- Cut and Fill Limits
- Remove Concrete Barrier (Type K) Install Concrete Barrier (Type 60MC)
- Remove and Replace Crash Cushion
- Shoulder Rumble Strip

Solano County 2021 Aerial Photography

Project Footprint was developed from Master_Design.dgn provided by Caltrans

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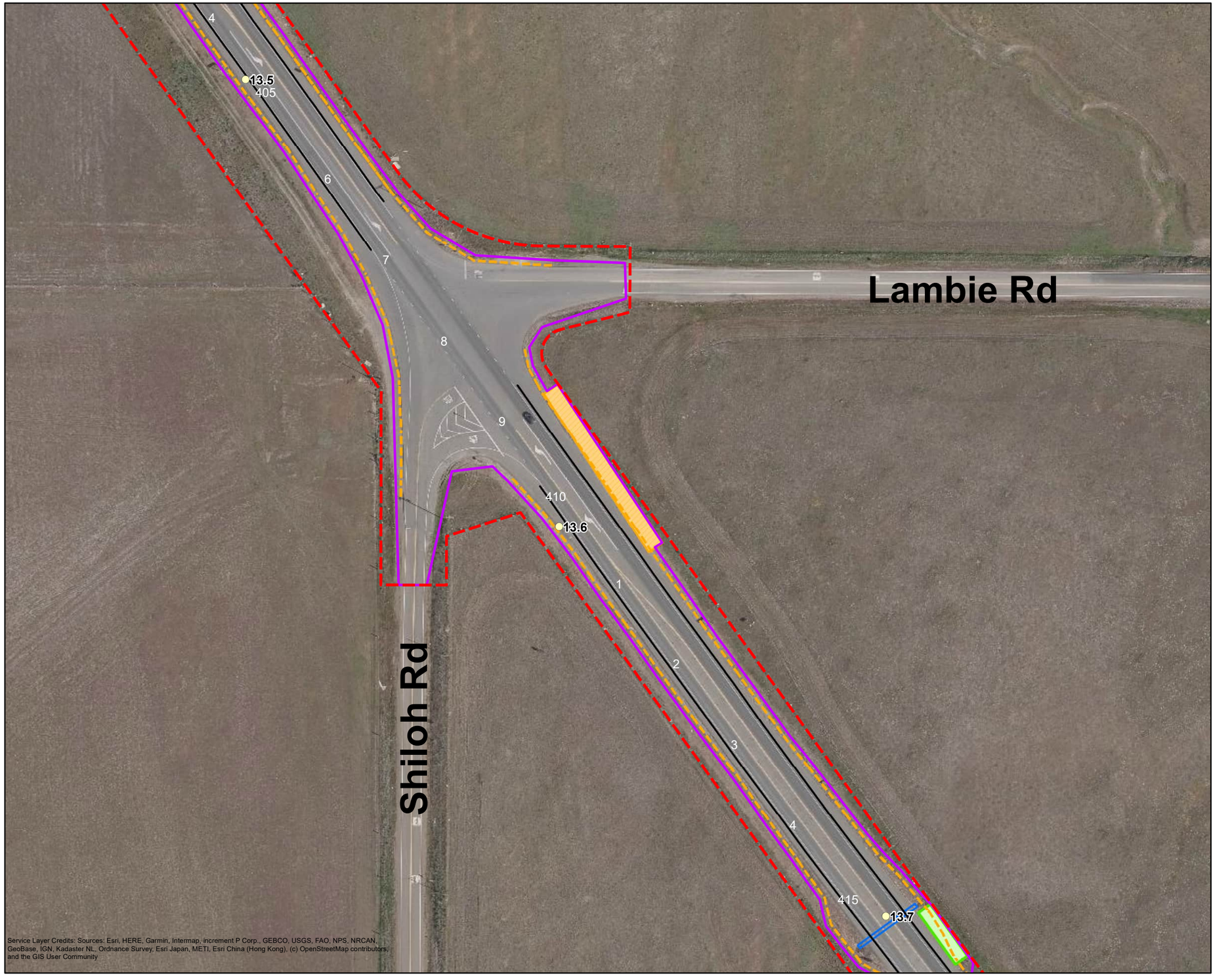
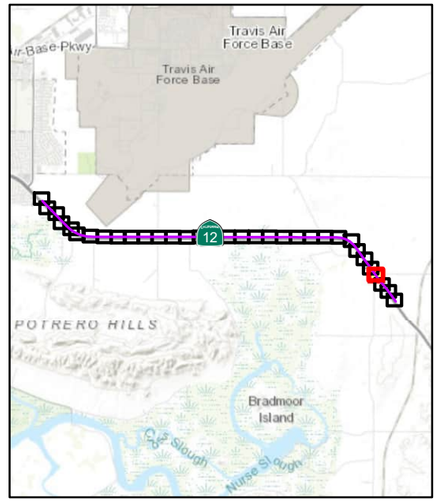
Service Layer Credits: Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), (c) OpenStreetMap contributors, and the GIS User Community

Project Elements Mapbook
Map 29 of 33
State Route 12
Major Pavement Rehabilitation Project
EA 04-2Q550, SOL-12-PM 7.7/14.1
Solano County, California





LEGEND

- Post Miles
- Caltrans Right of Way
- Project Footprint (51.04 acres)
- Bioswale
- Staging Area
- Cut and Fill Limits
- Replace 24" CSP Culvert
- Shoulder Rumble Strip

Solano County 2021 Aerial Photography

Project Footprint was developed from Master_Design.dgn provided by Caltrans

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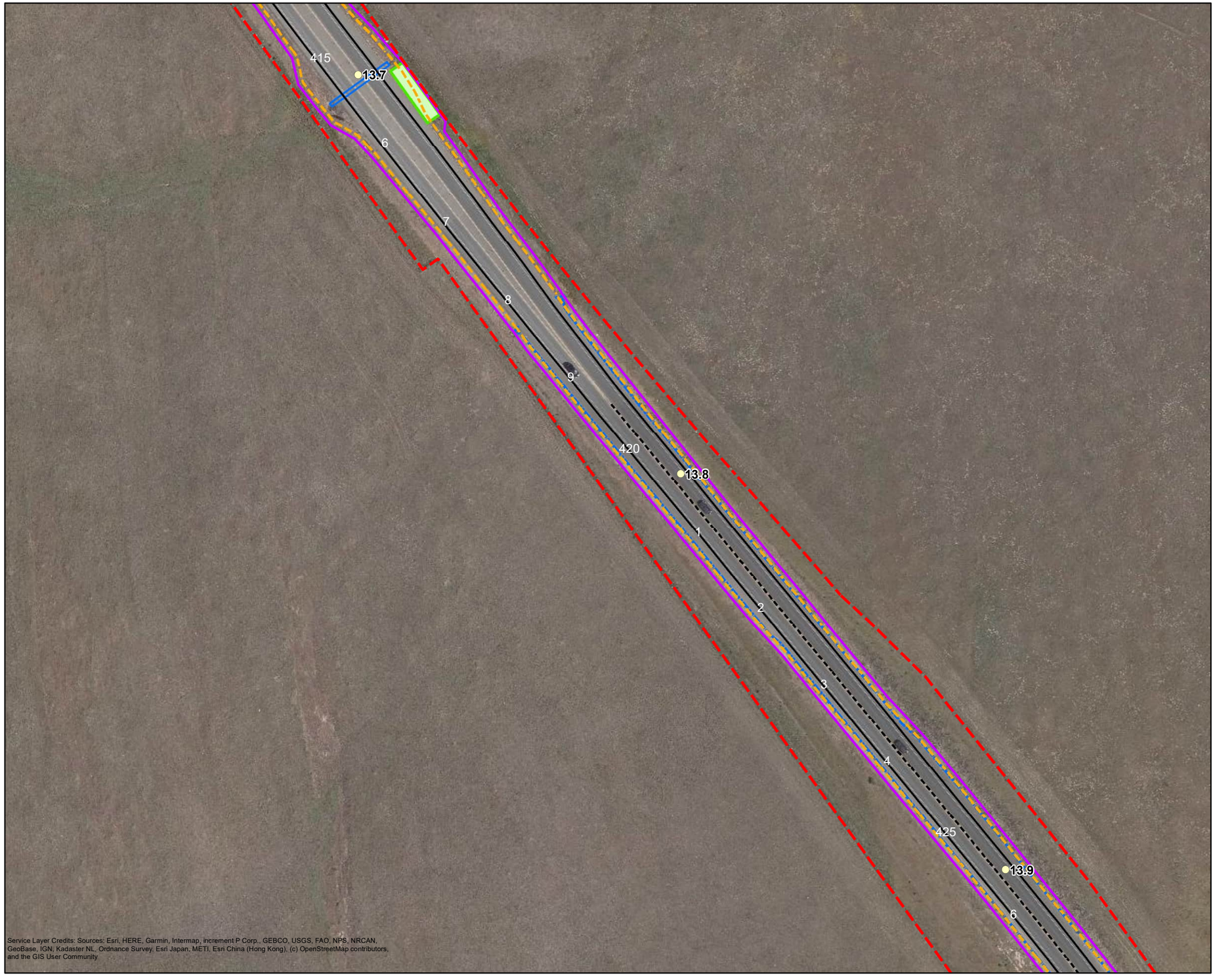
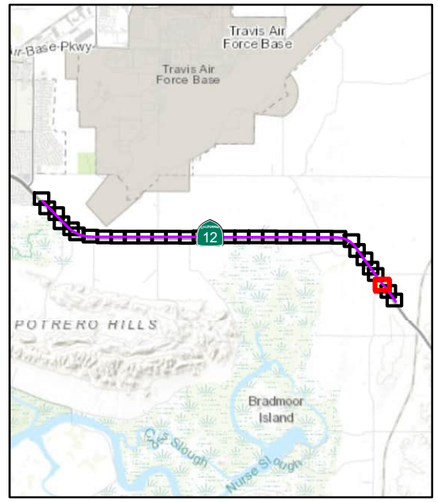
Project Elements Mapbook
Map 30 of 33

State Route 12
Major Pavement Rehabilitation Project
EA 04-2Q550, SOL-12-PM 7.7/14.1
Solano County, California





LEGEND

- Post Miles
- Caltrans Right of Way
- Project Footprint (51.04 acres)
- Bioswale
- Cut and Fill Limits
- Replace 24" CSP Culvert
- Centerline Rumble Strip
- Remove HMA Dike. Install HMA Dike (Type E)
- Shoulder Rumble Strip

Solano County 2021 Aerial Photography

Project Footprint was developed from Master_Design.dgn provided by Caltrans

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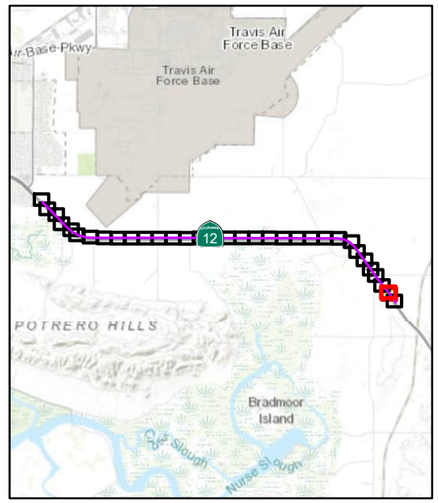
Project Elements Mapbook
Map 31 of 33
State Route 12
Major Pavement Rehabilitation Project
EA 04-2Q550, SOL-12-PM 7.7/14.1
Solano County, California



LEGEND

- Post Miles
- Caltrans Right of Way
- Project Footprint (51.04 acres)
- Cut and Fill Limits
- Centerline Rumble Strip
- Midwest Guardrail System
- Remove HMA Dike. Install HMA Dike (Type E)
- Shoulder Rumble Strip

Solano County 2021 Aerial Photography

Project Footprint was developed from Master_Design.dgn provided by Caltrans

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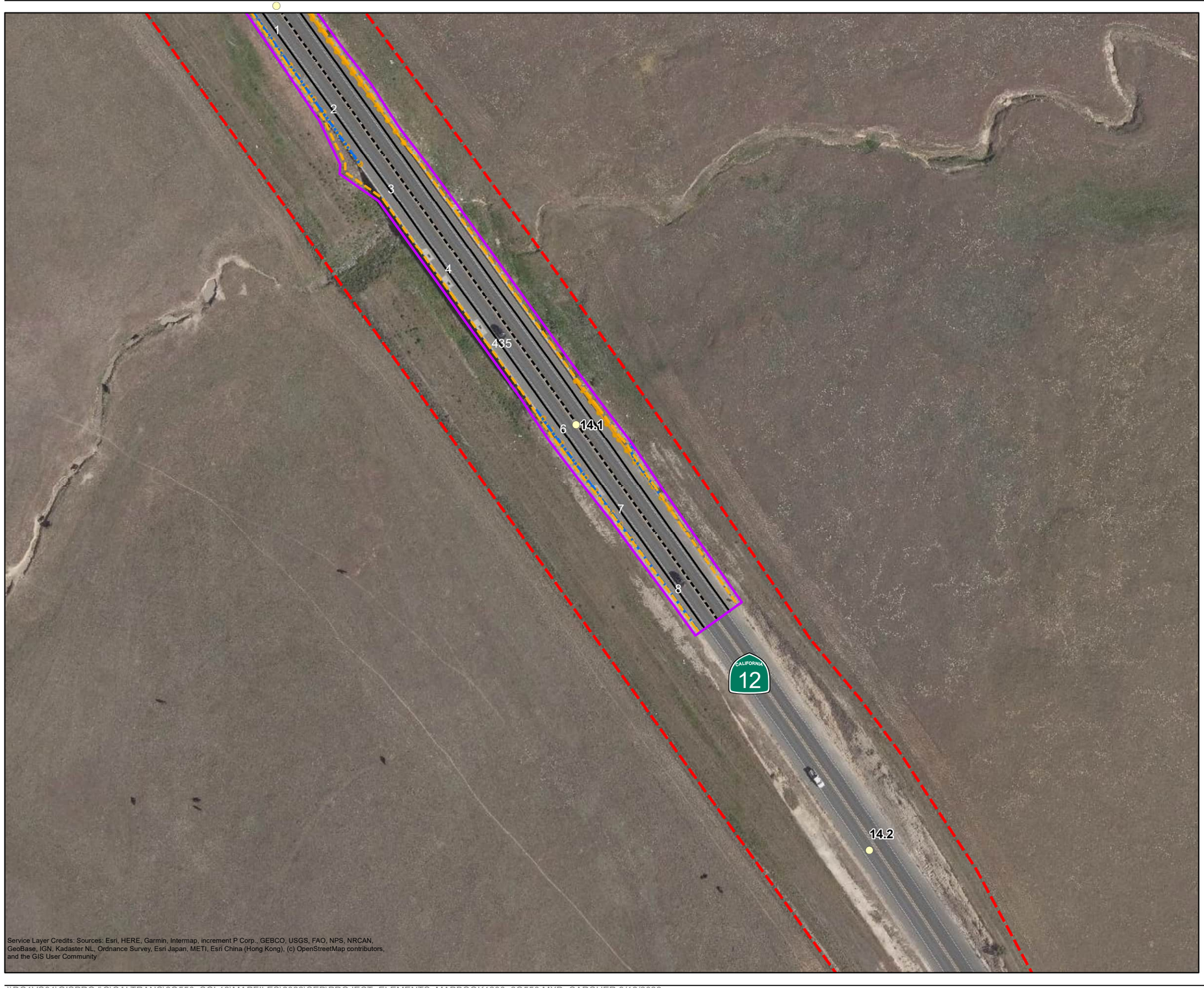
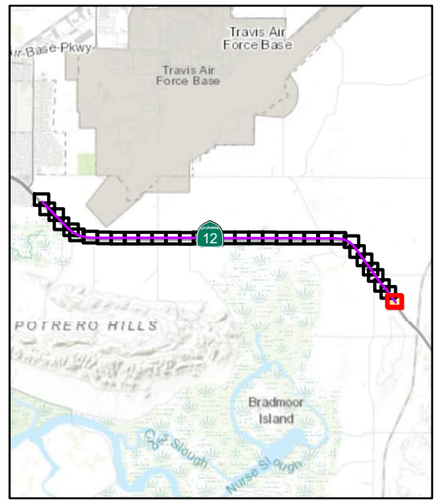
Project Elements Mapbook
Map 32 of 33

State Route 12
Major Pavement Rehabilitation Project
EA 04-2Q550, SOL-12-PM 7.7/14.1
Solano County, California





LEGEND

- Post Miles
- Caltrans Right of Way
- Project Footprint (51.04 acres)
- Cut and Fill Limits
- Centerline Rumble Strip
- Midwest Guardrail System
- Remove HMA Dike. Install HMA Dike (Type E)
- Shoulder Rumble Strip

Service Layer Credits: Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), (c) OpenStreetMap contributors, and the GIS User Community

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Project Elements Mapbook
Map 33 of 33
State Route 12
Major Pavement Rehabilitation Project
EA 04-2Q550, SOL-12-PM 7.7/14.1
Solano County, California

Chapter 2 California Environmental Quality Act Evaluation

The following discussions evaluate potential environmental impacts of the proposed Project as described in Chapter 1 as they relate to the CEQA checklist to comply with CEQA Guidelines (Title 14 California Code of Regulations, Division 6, Chapter 3, Section 15091).

2.1 Environmental Factors Potentially Affected

As part of the scoping and environmental analysis carried out for the proposed Project, some environmental issues were considered but had no adverse impacts identified. As a result, there is limited discussion in this document on the following resources: agriculture and forestry, cultural resources, geology and soils, mineral resources, population and housing, recreational resources, tribal cultural resources, and utilities/ service systems.

The environmental factors checked in Table 2-1 would be potentially affected by the proposed Project. Further analyses of these environmental factors are included in the following sections.

Table 2-1. Environmental Factors Potentially Affected

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

2.2 Determination

On the basis of this initial evaluation:

	I find that the proposed Project COULD NOT have a significant effect on the environment, and a NEGATIVE DECLARATION will be prepared.
X	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 ENVIRONMENTAL IMPACT REPORT or NEGATIVE DECLARATION pursuant to applicable standards, and (b) have been avoided or mitigated pursuant to that earlier ENVIRONMENTAL IMPACT REPORT or NEGATIVE DECLARATION, including revisions or mitigation measures that are imposed upon the proposed Project, nothing further is required.

Signature:	Date:
Printed Name: Scott M. Williams	

2.3 CEQA Environmental Checklist

The CEQA checklist (presented at the beginning of each resource section that follows, in the form of a table listing the pertinent questions applicable to the resource and a single column where the degree of impact is indicated) identifies physical, biological, social, and economic factors that might be affected by the proposed Project. In many cases, technical studies performed in connection with the Project indicate that there are no impacts to a particular resource. A “no impact” answer in the last column reflects this determination. The words “significant” and “significance” used throughout the checklist are related to CEQA impacts. The questions in this form are intended to encourage the thoughtful assessment of impacts and do not represent thresholds of significance.

As noted previously, project features, which may include both design elements of the proposed Project and standardized measures that are applied to all or most Caltrans projects, such as BMPs and measures included in the Standard Plans and Specifications or as Standard Special Provisions, are an integral part of the Project and are considered prior to any significance determinations. A full list of the proposed Project’s project features, AMMs, and mitigation measures can be reviewed in Appendix A.

Section 2.1.1 through Section 2.1.21 of this section present the CEQA Determinations under Appendix G of the CEQA Guidelines. The CEQA determination depend on the level of potential environmental impact that would result from the Project. The level of significance determinations is defined as follows:

- No Impact: Indicates no physical environmental change from existing conditions.
- Less than Significant Impact: Indicates the potential for an environmental impact that is not significant with or without the implementation of AMMs.
- Less than Significant Impact with Mitigation Incorporated: Indicates the potential for a significant impact that would be mitigated with the implementation of a mitigation measure to a level of less than significant.
- Potentially Significant Impact: Indicates the potential for significant and unavoidable environmental impact.

2.3.1 Aesthetics

Except as provided in Public Resources Code Section 21099, would the Project:

Question	CEQA Determination
a) Have a substantial adverse effect on a scenic vista?	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
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 a publicly accessible vantage point). If the project is in an urbanized area, would the project conflict with applicable zoning and other regulations governing scenic quality?	Less Than Significant Impact
d) Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?	Less Than Significant Impact

CEQA Significance Determinations for Aesthetics

A Visual Impact Assessment was completed for the Project (Caltrans 2022a), with details of the assessment included in this section. SR 12 in Solano County is not listed as eligible for State Scenic Highway designation. SR 12 is neither on the National Highway System nor the Interstate System and does not include landscape plants installed or maintained by Caltrans.

SR 12 is a two-lane highway with one lane eastbound and one westbound; the directions of travel are currently separated by concrete barriers, with very light traffic on both sides. The visual character throughout the Project area is mildly scenic. A brief view of Union Creek and the Denverton Slough can be seen when traveling through the Project area near each end, at PMs 7.7 and 14.1, respectively. From PM 7.7 to PM 14.1, the foreground consists of low-growing grasses and various shrubs sparsely scattered along SR 12. The dominant views are of pasture and agricultural lands that span from the midground into the background, which consists of rural vegetated hills.

Visual change as a result of the Project would be low. The installation of the proposed concrete barriers type 60M in the median would result in a minimal height increase from the existing concrete barriers located in the median. The widening of the shoulders from PM 9.0 to PM 12.5 would result in little visual change from the current shoulder width.

Primary visual changes would occur mostly due to the bridge widening and guardrail replacement. The proposed bridge guardrails would be higher than the existing guardrails and would cause a reduction in the visibility of the foreground roadside. Distant views to rural hills and agricultural plains would not change due to the Project. The proposed bridge rails for both the Denverton and Union Creek bridges would be see-through railings that would preserve views to the maximum extent feasible and would help reduce visual changes from the Project.

a, b) No Impact

The Project is located on SR 12 in Solano County and is not listed or listed as eligible as a State Scenic Highway designation. The Project would not substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a State Scenic Highway; therefore, resulting in no impact.

c) Less Than Significant Impact

The Project would replace existing concrete barriers within the median with concrete barriers type 60M, replace rumble strips along the shoulder and centerline, and replace the existing MBGR with MGS. Limited vegetation removal is proposed at staging areas to allow construction access. Tree removal and replacement planting are unlikely to be required. The character of the highway would be unchanged and visual changes would be negligible and unlikely to be noticed by roadway users. Existing vistas would be unaltered. With implementation of PF-AES-1 through PF-AES-5 and AMM-AES-1 through AMM-AES-4, temporary construction impacts including vegetation removal, usage of see-through bridge rails, and visual change from construction activities would minimize potential impacts. The Project would be compatible with the existing visual character of the surrounding area and the quality of the state route. The Project would not substantially degrade the existing visual character or quality of public views of the site and its surrounding; therefore, impacts would be less than significant.

d) Less Than Significant Impact

The Project would not create a new source of substantial light or glare. During construction, workers would limit construction lighting to the minimum necessary to provide for worker safety. PF-AES-5 would ensure lighting impacts to be minimal by using directional lighting and shielding to minimize potential illumination on surrounding land uses. In addition, the daily duration of construction lighting would be limited to early morning or evening hours and would not adversely affect day or nighttime views in the area; therefore, the impact would be less than significant.

AVOIDANCE AND MINIMIZATION MEASURES

AMM-AES-1: Minimize Construction Appearance. During construction, Caltrans would minimize the appearance of construction equipment and staging areas on SR 12 and would locate construction equipment and materials in a screened staging area beyond direct view of the motoring public and residential properties to the extent feasible

AMM-AES-2: Rail Design. During the design phase, Caltrans would design the bridge rails and guardrails along SR 12 to be see-through, which would allow views of the surrounding environment, as directed by Caltrans Landscape Architecture staff.

AMM-AES-3: Glare Effects. During the design phase, Caltrans would reduce glare by ensuring the design would be treated with a combination of roughening surface texture and coloring concrete to reduce glare, as directed by the Caltrans Office of Landscape Architecture.

AMM-AES-4: Post-Construction Site Grading and Contours. Prior to completion of construction activities, Caltrans would use contour grading and slope rounding to produce smooth, flowing contours consistent with site topography, to increase context sensitivity and reduce engineered appearance of slopes.

2.3.2 Agriculture and Forestry Resources

In determining whether impacts to agricultural resources are significant environmental effects, lead agencies may refer to the California Agricultural Land Evaluation and Site Assessment Model (1997) prepared by the California Dept. of Conservation as an optional model to use in assessing impacts on agriculture and farmland. In determining whether impacts to forest resources, including timberland, are significant environmental effects, lead agencies may refer to information compiled by the California Department of Forestry and Fire Protection regarding the state's inventory of forest land, including the Forest and Range Assessment Project and the Forest Legacy Assessment project; and forest carbon measurement methodology provided in Forest Protocols adopted by the California Air Resources Board. Would the Project:

Question	CEQA Determination
a) Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?	No Impact
b) Conflict with existing zoning for agricultural use, or a Williamson Act contract?	No Impact
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
d) Result in the loss of forest land or conversion of forest land to non-forest use?	No Impact
e) Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland, to non-agricultural use or conversion of forest land to non-forest use?	No Impact

CEQA Significance Determinations for Agriculture and Forest Resources

The Project site is on SR 12 from 0.5 mile east of Walter Road/Lawler Ranch Parkway to 0.5 mile east of Shiloh/Lambie Road in Solano County. The site is identified on the California Important Farmland database as urban and built-up, grazing, and other land (California Department of Conservation 2022a).

The Project would be constructed within Caltrans ROW with the exception of a TCE that would be required at the Union Creek bridge to conduct bridge work activities in the creek. The Solano County Zoning Map shows that the north side of the Project limits is zoned as Exclusive Agriculture 160 acres (A-160) and the south side of the Project limits is zoned as Marsh Preservation, Suisun Marsh Agriculture 160 acres (ASM-160), and Exclusive Agriculture 160 acres (A-160) (Solano County n.d.).

a, c, d, e) No Impact

The Project area is designated by the Farmland Mapping and Monitoring Program as urban and built-up, grazing, and other land (California Department of Conservation 2022a). Therefore, there would be no conversion of Prime Farmland, Unique Farmland, or Farmland of Statewide Importance to non-agricultural use. In addition, the California Timberland Productivity Act discourages premature or unnecessary conversion of timberland to urban and other uses and discourages expansion of urban services into timberland (California Department of Tax and Fee Administration 2022). The California Timberland Productivity Act does not apply because there are no forest resources or timberlands in the Project vicinity or at the Project site.

b) No Impact

The Project is in an area zoned Exclusive Agriculture 160 acres (A-160) and Suisun Marsh Agriculture 160 acres (ASM-160). However, work would be conducted within existing Caltrans ROW except for a TCE at the Union Creek bridge. The Project would not conflict with the existing zoning or result in conversion to non-agriculture use. The Project is adjacent to parcels that are under a Williamson Act contract (Solano County 2020), but the TCE would not be on a parcel under a Williamson Act contract. Therefore, the Project would not conflict with a Williamson Act contract and therefore would result in no impact.

2.3.3 Air Quality

Where available, the significance criteria established by the applicable air quality management district or air-pollution-control district may be relied upon to make the following determinations. Would the Project:

Question	CEQA Determination
a) Conflict with or obstruct implementation of the applicable air quality plan?	No Impact
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?	Less Than Significant
c) Expose sensitive receptors to substantial pollutant concentrations?	No Impact
d) Result in other emissions (such as those leading to odors) adversely affecting a substantial number of people?	No Impact

CEQA SIGNIFICANCE DETERMINATIONS FOR AIR QUALITY

a, c, d) No Impact

This Project is exempt from the requirement to determine air quality conformity per 40 CFR 93.126 (Table 2, Exempt Projects: Pavement resurfacing and/or rehabilitation). Therefore, an Air Quality Study is not required (Caltrans 2022b). Construction activities would be temporary and would not conflict with an air quality plan or generate emissions resulting in substantial pollutant concentrations or excessive odors; therefore, there would be no impact.

b) Less Than Significant Impact

The Project would be required to comply with Caltrans Standard Specification 14-9, Air Quality, which requires compliance with air-pollution-control rules, regulations, ordinances, and statutes that apply in the Project area. Construction activities would be temporary; therefore, air pollutants generated from construction would be minimal to negligible. Implementation of Caltrans Standard Specifications, such as complying with air-pollution-control rules, regulations, ordinances, and statues that apply to work performed under the scope of the proposed Project, and the use of BMPs would result in a less than significant impact.

PF-AQ-1 through PF-AQ-3 would ensure minimal to negligible impacts from emissions during the construction phase.

2.3.4 Biological Resources

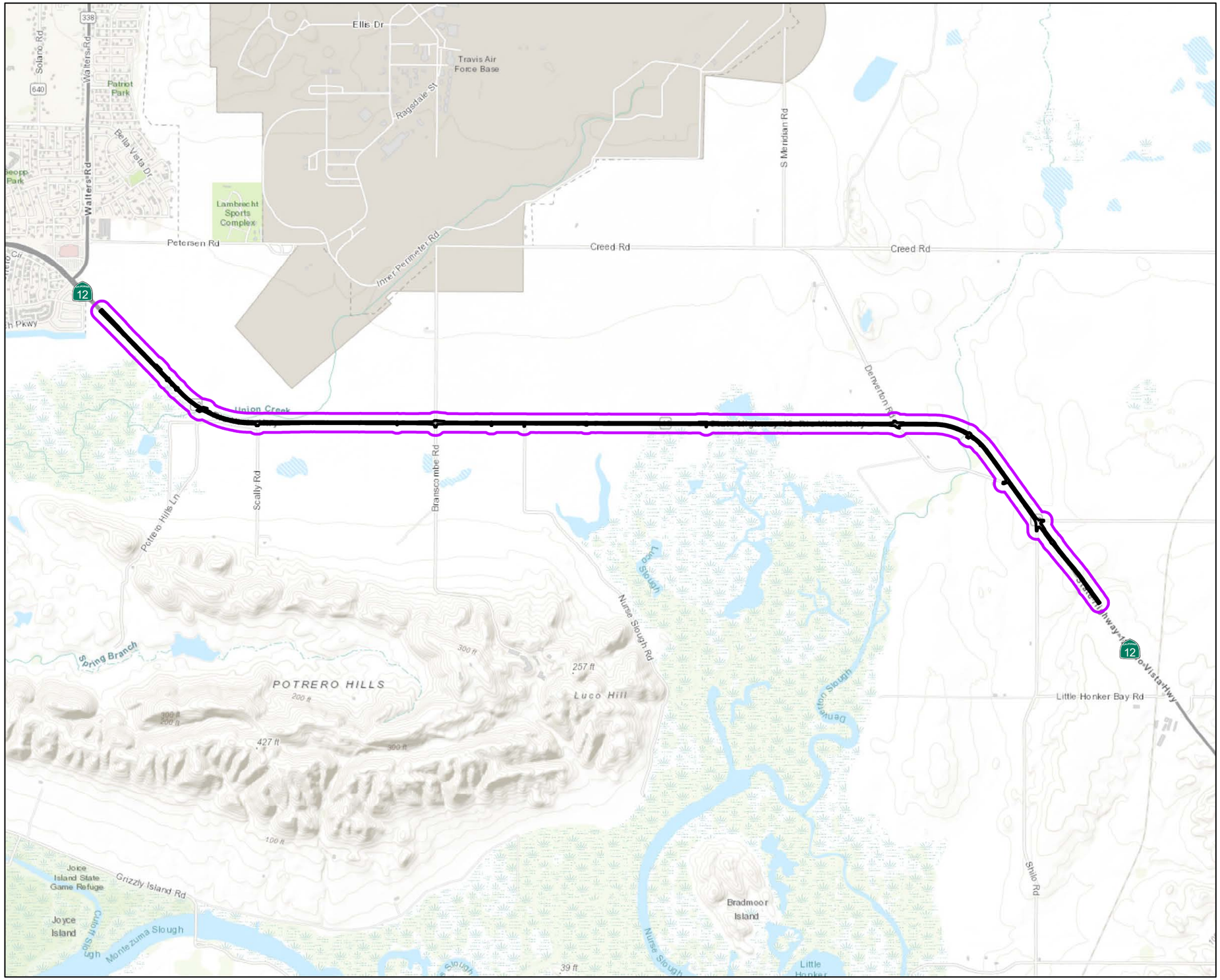
Would the Project:

Question	CEQA Determination
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, U.S. Fish and Wildlife Service, or NOAA Fisheries?	Less Than Significant Impact with Mitigation Incorporated
b) Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by the California Department of Fish and Game or US Fish and Wildlife Service?	Less Than Significant Impact with Mitigation Incorporated
c) Have a substantial adverse effect on state or federally protected wetlands (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?	Less Than Significant Impact with Mitigation Incorporated
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 useof native wildlife nursery sites?	Less Than Significant Impact
e) Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?	No Impact
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

CEQA Significance Determinations for Biological Resources

A Natural Environment Study was prepared for the Project to evaluate the effects of this Project on biological resources, including sensitive plants and wildlife species (Caltrans 2022h). This section summarizes the findings of this study.

The 452-acre biological study area (BSA) for the Project includes the Project footprint plus a variable-sized buffer of at least 250 feet around the Project footprint on all sides (Figure 2-1). The BSA can be generalized as predominately disturbed, non-native, ruderal grassland along both sides of SR 12, but intermittently mixed with a mosaic of brackish marsh, wetland, and vernal pool habitats.



LEGEND

- Biological Study Area (452.03 acres)
- Project Footprint (51.04 acres)

N

0 3,000 6,000
Feet

FIGURE 2-1
Biological Study Area
State Route 12
Major Pavement Rehabilitation Project
EA 04-2Q550, SOL-12-PM 7.7/14.1
Solano County, California

Databases were used to evaluate potential impacts that could occur to sensitive biological resources as a result of the Project. The database search included the California Natural Diversity Database (CNDDB), the USFWS Information for Planning and Conservation Database, the California Native Plant Society (CNPS) Inventory of Rare and Endangered Plants of California, and the National Wetlands Inventory database.

In addition to database queries, field surveys conducted during the months of February, March, April, and July 2021 included an aquatic assessment, Swainson's hawk protocol surveys, and rare plant survey. During the months of February, March, and April 2022, field surveys conducted included a reconnaissance-level field survey and habitat assessment, aquatic resources delineation, and a California tiger salamander coverboard survey.

a) Less Than Significant Impact with Mitigation Incorporated

The Project would have less than significant adverse effects with mitigation incorporated, either directly or through habitat modification, on any identified candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by the CDFW, USFWS, or the National Oceanic and Atmospheric Administration (NOAA) NMFS.

The special-status species in this section are potentially present within or adjacent to the BSA. A special-status species list for the Project area is provided in Appendix E.

Special-Status Plant Species: No special-status plant species were observed within the BSA during the 2021 protocol-level rare plant survey. Therefore, there would be no impacts to special-status plant species.

Swainson's Hawk: The Swainson's hawk (*Buteo swainsoni*) is a state threatened species that breeds in California and winters in Central and South America. Swainson's hawks require large, open grasslands with abundant prey in association with suitable nest trees. The grassland areas surrounding the BSA offer foraging habitat to Swainson's hawk.

There are eight documented occurrences of Swainson's hawk within 5 miles of the BSA. The closest occurrence of a nesting Swainson's hawk is approximately 3.4 miles east of the BSA, near the intersection of Lambie Road and Goose Haven Road. There are no documented occurrences within 0.25 mile of the BSA. Although suitable nesting trees are sparse within the SR 12 Project limits, there are approximately six groves of suitable nesting trees adjacent to the highway on the eastern half of the Project starting at Nurse Slough Road. Additional groves of

suitable nesting trees are within 0.25 mile of the BSA on the western portion of the Project. The agricultural areas surrounding the BSA offer foraging habitat for *Buteo*-genus hawks, including the Swainson's hawk.

Protocol-level surveys for Swainson's hawk were conducted in March and April 2021 to determine if any nesting birds are present in the vicinity of the BSA. No nests or Swainson's hawk individuals were observed in the BSA during those surveys.

Construction activities would result in temporary disturbance to Swainson's hawk foraging habitat from vegetation clearing and permanent loss of foraging habitat. Disturbance to Swainson's hawk from construction activities could result in the incidental failure of active nests, leading to loss of fertile eggs or nestlings; however, the Project is unlikely to result in take of nests, eggs, young, or individual Swainson's hawks with implementation of project features and AMMs.

Implementation of PF-BIO-4, PF-BIO-5, PF-BIO-7, PF-BIO-10, PF-BIO-13, PF-BIO-14, PF-BIO-17, AMM-BIO-1 through AMM-BIO-3, and AMM-BIO-6 would minimize potential impacts to Swainson's hawk and/or Swainson's hawk nests and eggs if present. Additional AMMs specific to Swainson's hawk would be implemented if required by CDFW during the permitting phase of the Project. Implementation of MM-BIO-1 would compensate for impacts to California tiger salamander habitat, which often overlaps with Swainson's hawk. Therefore, MM-BIO-1 would indirectly benefit Swainson's hawk. Impacts would be considered less than significant.

Western Burrowing Owl: The western burrowing owl (*Athene cunicularia*) is a state species of special concern. Breeding habitat for this species consists of open areas with mammal burrows and includes native prairie, pastures, fallow fields, road and railway rights-of-way, and urban habitats. Foraging habitat includes cropland, pastures, fallow fields, and areas with vegetation greater than 3 feet tall.

There are multiple CNDDB records of the western burrowing owl within 5 miles of the BSA, including throughout the Potrero Hills and on and surrounding Travis Air Force Base. Areas of the BSA composed of grasslands are potentially suitable nesting habitat for burrowing owls. Two adult burrowing owls were observed in two locations within the Project footprint during a reconnaissance survey conducted on October 18, 2021. Although focused surveys for this species were not conducted, a burrowing owl was observed using ground squirrel burrows within the Project footprint. There are several storm drains and culverts within the ROW that may function as temporary roosts for the western burrowing owl. Construction activities would have temporary impacts on potential burrowing owl breeding habitat.

Impacts to western burrowing owl would be less than significant. The implementation of PF-BIO-2, PF-BIO-4 through PF-BIO-7, PF-BIO-10, PF-BIO-13, PF-BIO-14, AMM-BIO-1, AMM-BIO-2, and AMM-BIO-7 would further lessen the impacts of the Project on this species.

Northern Harrier: The northern harrier *(Circus cyaneus)* is a state species of special concern, with one occurrence approximately 5 miles southwest of the BSA. The BSA contains suitable nesting habitat within the tall vegetation of the brackish marsh as well as additional habitat for foraging in the freshwater wetland and non-native grasslands This species has moderate potential to occur in the BSA. Project-related construction activities would occur within and adjacent to potential nesting and foraging northern harrier habitat. Accidental spills or runoff from the Project footprint could potentially enter and degrade the brackish marsh habitat; however, measures such as PF-WQ-1 through PF-WQ-3 would be implemented to minimize and avoid this potential indirect impact; no impact to habitat is anticipated.

Demolition and construction activities such as the use of hydraulic hammers to break up existing concrete on the bridges at Union Creek and Denverton Creek would generate noise that could disrupt the nesting northern harrier's behavior. Disruption of reproduction and disturbance due to noise could result in the abandonment of eggs and/or young.

Impacts to the northern harrier would be less than significant. The implementation of PF-BIO-2, PF-BIO-4 through PF-BIO-7, PF-BIO-10, PF-BIO-13, PF-BIO-14, PF-WQ-1 through PF-WQ-3, and AMM-BIO-1 and AMM-BIO-2 would further lessen impacts to the species.

California Ridgway's Rail: The California Ridgway's rail (formerly California Clapper Rail) (*Rallus obsoletus obsoletus*) is listed as federally endangered and state endangered and is a state fully protected species. Critical habitat has not been designated for the California Ridgway's rail. This species occurs primarily in tidal salt and brackish marshes that have consistent tidal flows or access to tidal channel networks.

A total of six occurrences of California Ridgway's rail have been documented within a 5-mile radius of the BSA, with no occurrences overlapping the BSA. The closest occurrence is approximately 4,500 feet southwest of the BSA. The BSA has little to no natural tidal channels and no California cordgrass. Use of brackish marshes by California Ridgway's rail is largely restricted to major sloughs and rivers. The BSA contains portions of suitable foraging and dispersal tidal marsh habitat. Most vegetated areas in the BSA do not provide the higher marsh vegetation necessary for cover, retreat, and breeding; though narrow strips of vegetation are present along

the waterward sides of SR 12, these areas likely do not provide enough cover for this cryptic species. In addition, most areas do not provide a nearby connection to breeding habitat. Therefore, California Ridgway's rail are not expected to be found in the BSA.

Implementation of PF-BIO-3 through PF-BIO-7, PF-BIO-9, PF-BIO-11, PF-BIO-13, PF-BIO-14, PF-WQ-1 through PF-WQ-3, AMM-BIO-1, AMM-BIO-2, and AMM-BIO-4 would minimize potential impacts to California Ridgway's rail. Impacts would be less than significant.

California Black Rail: California black rail (*Laterallus jamaicensis coturniculus*) is a state threatened and state fully protected species. California black rail habitat generally includes salt marshes, freshwater marshes, and wet meadows. Most California populations are nonmigratory, and these habitat types serve for breeding, foraging, and overwintering. Near tidal areas, the rails also require dense cover of upland vegetation. Typical associated vegetation includes pickleweed in salt marshes and bulrush (*Scirpus* spp.) in less saline habitats. California black rail forages in the same habitats that it uses for breeding.

There are nine occurrences of the California black rail within a 5-mile radius of the BSA, none of which overlap the BSA. The closest occurrence is approximately 4,500 feet southwest of the BSA. California black rail has a moderate potential to occur in the BSA because the BSA contains extensive brackish bulrush marsh on both sides of the highway west of Union Creek.

Project-related construction activities that would occur within California black rail habitat along the edge of the Project footprint in bullrush brackish marshes include two culvert replacements west of Union Creek as well as the Union Creek bridge rail replacement and the Denverton Creek bridge rail replacement. Accidental spills or stormwater runoff could enter and degrade the brackish marsh habitat. Construction activities in or adjacent to the brackish marsh would indirectly and directly affect this species. Implementation of the AMMs, including restricting Project activities to approved work areas and installation of erosion control materials and construction site BMPs where applicable, would reduce the likelihood that accidental spills would enter or degrade the brackish marsh habitat.

Impact to the California black rail would be less than significant. The implementation of PF-BIO-3 through PF-BIO-7, PF-BIO-9, PF-BIO-11, PF-BIO-13, PF-BIO-14, PF-WQ-1 through PF-WQ-3, AMM-BIO-1, AMM-BIO-2, and AMM-BIO-4 would further minimize impacts to the species.

Tricolored Blackbird: The tricolored blackbird (*Agelaius tricolor*) is a state threatened species and a California species of special concern.

There are two reported CNDDB occurrences of tricolored blackbird in Suisun Marsh, with the closest occurrence less than 2 miles south of SR 12 near Potrero Hills. There is also a reported CNDDB occurrence of tricolored blackbird near Denverton Creek approximately 1 mile north of SR 12.

Within the Project footprint, the extensive brackish bulrush marsh west of and along the banks of Union Creek as well as bulrush marsh observed in other areas west and on the banks of Denverton Creek provide suitable habitat for this species.

There is potential for this species to nest near the BSA; therefore, Project construction has the potential to disturb nests, eggs, or individual tricolored blackbirds. Construction disturbance during the breeding season could result in the incidental failure of nearby nests, leading to loss of fertile eggs or nestlings. However, with the implementation of project features and AMMs, no take of nests, eggs, or individual is anticipated.

Potential Project impacts include temporary direct impacts on foraging habitat resulting from vegetation clearing. Indirect impacts to downstream habitat from accidental spills or incidental runoff from the Project footprint would be avoided with implementation of construction site BMPs.

Implementation of PF-BIO-4 through PF-BIO-7, PF-BIO-9, PF-BIO-10, PF-BIO-13, PF-BIO-14, PF-WQ-1 through PF-WQ-3, AMM-BIO-1, and AMM-BIO-2 would minimize potential impacts to tricolored blackbird. Impacts would be less than significant.

Western Pond Turtle: The western pond turtle (*Emys marmorata*) is a California special species of concern; it has no federal status. The western pond turtle is found in ponds, marshes, rivers, streams, and irrigation ditches that typically have rocky or muddy bottoms and support aquatic vegetation. The western pond turtle requires terrestrial habitat that is adjacent to aquatic habitat for nesting.

There are four CNDDB recorded occurrences of the western pond turtle within 5 miles of the BSA, and approximately 10 western pond turtles were observed in Union Creek at the north side of SR 12 during February 2022 surveys. Within the BSA, both Union Creek and Denverton Creek provide suitable habitat for this species.

Construction activities such as bridge work and dewatering would disturb western pond turtle aquatic habitat along the bed and banks of Union Creek and Denverton

Creek. Direct impacts to the western pond turtle during construction would be minimized with the implementation of AMM-BIO-7. The implementation of PF-BIO-4, PF-BIO-5, PF-BIO-7, PF-BIO-9, PF-BIO-10 through PF-BIO-14, AMM-BIO-1, and AMM-BIO-2 would further minimize potential impacts to western pond turtle. Impacts would be less than significant.

Nesting Migratory and Non-game Birds: Migratory bird species protected under the Migratory Bird Treaty Act and Fish and Game Codes Section 3503 and Section 3800 may occur in or near the BSA. Raptors that could potentially forage within the vicinity of the BSA during Project activities include golden eagle (*Aquila chrysaetos*), bald eagle (*Haliaeetus leucocephalus*), and red-tailed hawk (*Buteo jamaicensis*). The BSA and adjacent landscape provides nesting and foraging habitat for a wide range of bird species. Most birds found in the BSA are protected under the Migratory Bird Treaty Act. Biologists documented several species of birds in the BSA during other surveys. The habitat within the BSA is suitable foraging and potential breeding habitat for bird species.

Vegetation removal during construction would temporarily impact foraging habitat and potential nesting habitat. In addition, noise and visual disturbance could impact potential nesting birds through nest failure or abandonment. Pre-construction nesting bird surveys would be performed to determine nest activity, identify potentially active nests within the BSA during construction, and implement appropriate construction work buffers around active nests.

Impacts to migratory birds would be less than significant. Implementation of PF-BIO-4 through PF-BIO-7, PF-BIO-9, PF-BIO-11, PF-BIO-13, PF-BIO-14, AMM-BIO-1, and AMM-BIO-2 would minimize potential impacts to migratory birds such as the clapper rail and California black rail.

California Tiger Salamander: The California tiger salamander (*Ambystoma californiense*) is both state and federally listed as a threatened species. Critical habitat has been designated for California tiger salamander, but there is no designated critical habitat within the BSA. The closest designated critical habitat is located approximately 1 mile northeast of the BSA.

California tiger salamanders are typically associated with annual grasslands that provide underground refugia, created by burrowing animals, with nearby vernal pools or similar habitats consisting of season pools or ponds for breeding.

There are numerous CNDDB recorded occurrences of California tiger salamander within 5 miles of the BSA, with the closest recorded occurrence approximately 1 mile south of the BSA. California tiger salamander larvae or eggs have been observed in

seven ponds on the Potrero Hills Landfill property. California tiger salamander upland habitat is also present, as soil cracks, debris piles, and ground squirrel burrows occur throughout the Potrero Hills. An occurrence from March 2010 is located near SR 12 in the North Suisun Mitigation Bank immediately north of the Project. This occurrence included the observation of two California tiger salamander larvae in a temporary pond surrounded by grazed annual grasslands. This would place a breeding population of California tiger salamander within the BSA but outside the Project footprint.

California tiger salamander are assumed to move into grassy upland areas within 1.3 miles of suitable breeding locations. There are multiple features in the BSA, including seasonally inundated wetlands, ponds, and drainages, that could provide potential aquatic habitat for breeding. All grasslands within 1.3 miles of a suitable breeding site are considered suitable upland habitat. The annual grassland within the BSA is within 1.3 miles of a suitable breeding location and is assumed to potentially support California tiger salamander.

No California tiger salamanders, larvae, or eggs were observed during the 2022 surveys within the BSA. Surveys were performed for migrating adults and juveniles in 2022, and none were observed. In the absence of data from the study, a habitat assessment will be used to determine which culvert replacement location would be designed to facilitate California tiger salamander passage under the highway.

The majority of the Project is confined to the existing roadway and adjacent shoulders. The Project would have temporary impacts to approximately 2.63 acres and permanent impacts to 0.29 acre of upland California tiger salamander dispersal habitat, as well as temporary impacts to 0.002 acre and permanent impacts to 0.0004 acre of California tiger salamander aquatic habitat. Therefore, the Project would have a significant impact on the California tiger salamander.

However, with the implementation of PF-BIO-1 through PF-BIO-5, PF-BIO-7, PF-BIO-9 through PF-BIO-12, PF-BIO-15, PF-WQ-1 through PF-WQ-3, AMM-BIO-1, through AMM-BIO-3, MM-BIO-1, and MM-BIO-2, impacts to California tiger salamander would be reduced to less than significant with mitigation incorporated.

Salt Marsh Harvest Mouse: The salt marsh harvest mouse (*Reithrodontomys* raviventris) is both state and federally listed as an endangered species and is a state fully protected species. The salt marsh harvest mouse is known to inhabit tidal marsh, as well as other habitats. The species has been documented in the brackish marsh habitats immediately south of SR 12 on the western side of Union Creek. The closest record is less than 0.5 mile from the western end of the BSA. Additional records include occurrences 7.5 miles south of the SR 12 crossing of Nurse Slough.

Focused surveys were not conducted for the salt marsh harvest mouse, but suitable habitat for this species was observed during other site surveys. Because focused surveys for the salt marsh harvest mouse were not conducted, the Project assumes the salt marsh harvest mouse is potentially present in the salt/brackish marsh habitats on the southern side of SR 12 and all transitional areas within 50 feet of these marsh habitats.

The majority of the Project is confined to the existing roadway and adjacent shoulders. The replacement of two culverts, shoulder widening, and the work at Union Creek bridge would result in temporary and permanent direct impacts to brackish marsh habitat. Therefore, the Project would have a significant impact on the salt marsh harvest mouse.

Implementation of AMMs and MM-BIO-1 would reduce temporary and permanent impacts to salt marsh harvest mouse habitat. To mitigate permanent impacts, Caltrans will purchase credits post-construction from an approved conservation bank (if available) or via contribution to offsite local habitat restoration projects or programs (as specified in MM-BIO-1). The total credits to be purchased will be determined during final design and permitting. With implementation of PF-BIO-1 through PF-BIO-5, PF-BIO-7, PF-BIO-9, PF-BIO-10, PF-BIO-12, PF-BIO-14, PF-BIO-17, AMM-BIO-1 through AMM-BIO-3, and MM-BIO-1, impacts to salt marsh harvest mouse would be less than significant with mitigation incorporated.

Suisun Shrew: The Suisun shrew (*Sorex ornatus sinuosus*) is considered a species of special concern by the CDFW. It occurs in tidal and brackish marsh communities along the north shore of San Pablo and Suisun bays (Owens and Hoffmann 1983). There are no CNDDB recorded occurrences of this species within 5 miles of the BSA. Focused surveys were not conducted for Suisun shrews in the BSA, but suitable habitat for this species was observed during other site surveys. The salt/brackish marsh and adjacent transitional areas associated with Union Creek and Nurse Slough located on the south side of SR 12 provide conditions considered suitable for Suisun shrew.

The majority of the Project is confined to the existing roadway and adjacent shoulders. The replacement of two culverts, work on the Union Creek bridge, and shoulder widening would result in temporary and permanent direct impacts to brackish marsh habitat.

With implementation of PF-BIO-1 through PF-BIO-5, PF-BIO-7, PF-BIO-9, PF-BIO-10, PF-BIO-12, PF-BIO-14, PF-BIO-17, AMM-BIO-1 through AMM-BIO-3, and MM-BIO-1, impacts to Suisun shrew would be considered less than significant with mitigation incorporated.

Delta Green Ground Beetle: The Delta green ground beetle (*Elaphrus viridis*) is a federally listed threatened species. Delta green ground beetles are only known to exist in six areas in the Jepson Prairie area of Solano County. Primary habitat for the Delta green ground beetle is the immediate shoreline of seasonal wetlands on Pescadero clay loam and Solano-Pescadero complex soils that support the appropriate mix of sparse, low-growing vegetation and preferred prey (primarily springtails, such as *Collembola*).

There are five CNDDB records for Delta green ground beetle within 5 miles of the BSA. Large seasonal vernal pools that are suitable for Delta green ground beetle occurs within and near the BSA, but there are no suitable large vernal pools or seasonal lakes within the Project footprint. The closest suitable pools are located within 0.1 mile south of the ROW between Scally Lane and Branscombe Road. The Project is located outside of designated critical habitat for Delta green ground beetle; however, as the Project is near the known species range, presence is inferred for the playa pools.

The majority of the Project is confined to the existing roadway and adjacent shoulders. The Project footprint does not overlap with suitable habitat for Delta green ground beetle; therefore, there would be no direct permanent impact on suitable habitat.

To minimize indirect and direct impacts to the Delta green ground beetle and its habitat, the Project would implement PF-BIO-4, PF-BIO-5, PF-BIO-14, PF-WQ-1 through PF-WQ-3, and AMM-BIO-1 through AMM-BIO-3. Impacts to the Delta green ground beetle would be less than significant.

Special-Status Vernal Pool Branchiopods: Three species of special-status vernal pool branchiopods are federally listed and have potential to occur within the BSA. The vernal pool tadpole shrimp (*Lupidurus packardi*) and the conservancy fairy shrimp (*Branchinecta conservatio*) are both listed as federally endangered, while the vernal pool fairy shrimp (*Branchinecta lynchi)* is federally listed as threatened. Vernal pool branchiopods are dependent on the seasonal nature of their habitat, which consists of depressions that become inundated during winter rains and dry up completely by summer. There are 17 CNDDB recorded occurrences within a 5-mile radius and there is critical habitat present within the BSA for all three brachiopod species. There are several small to medium-sized vernal pools within the BSA.

The small to medium-sized pools that are expected to be suitable for vernal pool fairy shrimp would also be classified as habitat for conservancy fairy shrimp when the pools are in critical habitat. However, observations suggest conservancy fairy shrimp often are found in pools that are relatively large and turbid.

Most of the Project is confined to the existing roadway and adjacent shoulder and would avoid any impacts to vernal pools or other seasonal wetlands. The Project footprint does not overlap with suitable habitat for vernal pool tadpole shrimp or conservancy fairy shrimp; therefore, there would be no direct impacts on these vernal pool species.

The Project would temporarily impact 0.002 acre and permanently impact 0.005 acre of the potential vernal pool fairy shrimp habitat. However, with the implementation of PF-BIO-2 through PF-BIO-4, PF-BIO-7, PF-BIO-9, PF-BIO-14, PF-WQ-1 through PF-WQ-3, AMM-BIO-1 through AMM-BIO-3, and MM-BIO-1, impacts to special-status vernal pool branchiopods would be reduced to less than significant impact with mitigation incorporated.

Townsend's Big-eared Bat: Townsend's big-eared bat (*Corynorhinus townsendii)* is a California species of special concern. It is not listed under the federal or state Endangered Species Acts and no critical habitat has been designated for the species.

Townsend's big-eared bats are found throughout California, but the details of its distribution are not well known. The species requires cavity-type habitats such as caves, tree basal hollows, mines, tunnels, buildings, bridges, or other human-made structures for roosting, and they may use separate sites for night, day, hibernation, or maternity roosts. This species has been documented to use culvert structures for roosting and, depending on the culvert structure, could use culverts within the Project area.

There are no CNDDB occurrences for Townsend's big-eared bats within 5 miles of the BSA. However, the Union Creek and Denverton Creek bridges may be suitable for bat roosting.

Impacts to Townsend's big-eared bats would be less than significant. Implementation of PF-BIO-3, PF-BIO-4, PF-BIO-7, PF-BIO-9, PF-BIO-11, PF-BIO-13, PF-BIO-14, AMM-BIO-1 through AMM-BIO-3, and AMM-BIO-8, would further minimize potential impacts to Townsend's big-eared bats.

b) Less Than Significant Impact with Mitigation Incorporated

The vernal pools within the BSA were determined to be part of the CDFW sensitive natural community known as Northern Claypan Vernal Pool. This community has a global and state threat rank of 2 and is considered to be at risk due to restricted range, few occurrences, steep declines, severe threats, and other factors. The vernal pools, as well as other seasonal wetlands in the Project vicinity, function as critical

habitat for federally listed vernal pool tadpole shrimp, conservancy fairy shrimp, and vernal pool fairy shrimp, as previously described in the Special-Status Vernal Pool Branchiopods section.

In addition, Alkali heath marsh and salt marsh bulrush vegetation alliances are also classified as sensitive natural communities (Caltrans 2022h). Sensitive natural communities also include habitats that have high resource values, such as other wetlands and streams.

The Project would have temporary and permanent impacts to vernal pools and salt marsh bulrush vegetation. It is anticipated that 0.002 acre of vernal pool and 0.019 acre of salt marsh bulrush vegetation would be temporarily impacted. The permanent impacts to sensitive natural communities would be to 0.005 acre of vernal pools.

With implementation of PF-BIO-2 through PF-BIO-5, PF-BIO-7, PF-BIO-9, PF-BIO-12, PF-BIO-14, PF-WQ-1 through PF-WQ-3, AMM-BIO-1 through AMM-BIO-3, and MM-BIO-1, impacts to environmentally sensitive natural communities would be considered less than significant with mitigation incorporated.

c) Less Than Significant Impact with Mitigation Incorporated

An aquatic resources field survey was performed in February 2022 within the ROW adjacent to SR 12. Aquatic features were delineated from PM 7.7 to PM 8.9 at Scally Lane. Sample points were established for each given aquatic resource type to characterize wetlands and other waters of the United States for the Project (Caltrans 2022h). Within the ROW, approximately 14.08 acres of potentially jurisdictional waters of the United States were identified, including 11.10 acres of wetlands and 2.98 acres of other waters. The aquatic resources field survey will be verified by USACE during the design phase when the Project design is more refined.

The Project would temporarily impact 0.22 acre and permanently impact 0.07 acre of potentially jurisdictional wetlands, and temporarily impact 0.52 acre and permanently impact 0.04 acre of potentially jurisdictional other waters (Table 2-2) within the Project footprint. These temporary impacts would occur during vegetation clearing, dewatering activities, replacement of culverts, and other drainage improvements. Permanent impacts include shading of the bed and banks of the creeks from bridge widening, placement of rock slope protection at culvert outlets, and shoulder widening.

Table 2-2. Impacts to Potential Wetlands and Other Waters

Potential Waters of the United States	Temporary Impacts (acres)	Permanent Impacts (acres)
Wetlands	**0.201**	**0.015**
Estuarine and Marine Wetland	0.019	0
Freshwater Emergent Wetland	0.180	0.010
Vernal Pool	0.002	0.005
Other Waters	**0.380**	**0.063**
Culverted Waters	0.056	0
Drainages	0.209	0.023
Creeks	0.115	0.040
Total	**0.581**	**0.078**

Note: Totals are approximate due to rounding. Acreages are preliminary pending completion of protocol-level delineation of aquatic resources.

As part of MM-BIO-1, Caltrans will compensate for wetland and waters of the United States that are filled or disturbed as a part of the proposed Project to ensure no net loss of habitat functions and values. During the design phase, Caltrans will determine the mitigation ratios in coordination with the appropriate state and federal agencies. At a minimum, the compensation will be a 1:1 ratio and will be accomplished through a combination of onsite mitigation and/or purchase of mitigation credits. Development of the Mitigation and Monitoring Plan is a requirement of the regulatory permits and will include a description of the offsite and onsite restoration. The Mitigation and Monitoring Plan will be developed and tailored for the proposed mitigation site before construction.

With the implementation of PF-AQ-1, PF-BIO-1 through PF-BIO-4, PF-BIO-7, PF-BIO-9, PF-BIO-13, PF-WQ-1 through PF-WQ-3, AMM-BIO-1, AMM-BIO-3, MM-BIO-1, and MM-BIO-2, the Project would have a less than significant impact with mitigation incorporated on federally protected wetlands, as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, and coastal areas) through direct removal, filling, hydrological interruption, or other means.

d) Less than Significant Impact

Suisun Bay marshlands are found on the southern side of SR 12 in two locations within the Project limits, including near Union Creek and near Denverton Creek. These marshlands provide a wildlife dispersal corridor, including habitat to migrating waterfowl. The BSA contains transition habitat with grassland adjacent to marsh,

which is important habitat for salt marsh harvest mouse. The highway hinders movement and dispersal of small animals due to high traffic volumes and concrete barriers in the median. There are existing cross-culverts that may provide a link for aquatic species and species that use grassland habitat for dispersal. Essential fish habitat in Union Creek or Denverton Creek does not extend into the BSA; however, these streams provide aquatic habitat and dispersal for western pond turtle, tricolored blackbird, and other wildlife. The Project would replace the existing K-rail with concrete barriers type 60M, which already present a barrier to wildlife movement. The Project would not construct any new permanent barriers to wildlife movement or otherwise interfere with established native resident or migratory wildlife corridors or impede the use of native wildlife nursery sites from existing conditions.

Construction activities and WEF (PF-BIO-5) would temporarily preclude wildlife from the six culvert replacement work areas. In addition, a temporary creek diversion system would be used at both Union Creek and Denverton Creek while abutment wingwalls are built for the bridges. The temporary creek diversion system would be removed after Project completion; following Project completion, all disturbed areas would be restored. Therefore, post construction, the Project is not expected to affect the habitat's long-term suitability to support wildlife corridors or other animal movements. With AMM-BIO-9, Caltrans would coordinate with USFWS and CDFW to determine which culvert replacement location(s) would be designed to facilitate passage for the California tiger salamander.

Impacts to migratory wildlife corridors would be less than significant. Implementation of PF-BIO-4, through PF-BIO-6, PF-BIO-9, PF-BIO-12, PF-BIO-17, PF-BIO-18, and AMM-BIO-9 would further minimize potential impacts to wildlife passage.

e) No Impact

The Project would not conflict with any local policies or ordinances protecting biological resources. No trees would be removed during the Project; therefore, there would be no impact.

f) Less Than Significant Impact

The Project limits are located within the Solano Multispecies Habitat Conservation Plan (Solano HCP) (Solano County Water Agency 2012). The Solano HCP was developed to support the issuance of an incidental take permit required by the March 1999 Solano Project Contract Renewal Biological Opinion between the USFWS and Bureau of Reclamation. The Solano HCP covers approximately 557,000 acres of Solano County. The HCP ensures compliance with both state and federal endangered species regulations while accommodating future urban growth

and development and ongoing maintenance and operations of existing public and private facilities within Solano County.

The biological project features and AMMs as listed in Appendix A are consistent with those outlined in the Solano HCP, therefore resulting in a less than significant impact.

AVOIDANCE AND MINIMIZATION MEASURES

AMM-BIO-1: Biological Monitoring. The agency-approved biologist(s) would be onsite during vegetation clearing, installation of wildlife exclusion (WEF), initial ground-disturbing activities in previously undisturbed areas, installation of temporary creek diversion systems and dewatering, work that occurs in wetlands or in waters below Mean Higher High Water elevation in tidally influenced areas, and operation of loud equipment within 300 feet of brackish marsh areas, and thereafter when construction activities occur that could result in take of sensitive wildlife. The agency-approved biologist(s) would keep copies of applicable permits in their possession when onsite.

AMM-BIO-2: Pre-construction Surveys. Before initial ground-disturbing activities, the agency-approved biologist(s) would conduct work area surveys, including for special-status wildlife species. Focused surveys would be conducted 48 hours before construction and daily as needed.

AMM-BIO-3: Work Windows. The following measures would be implemented in and adjacent to delineated wetland areas in the Project area:

- Work within upland habitat for California tiger salamander would occur between March 1 and November 30.
- Work within 250 feet of vernal pools would occur between May 1 and November 1.
- Work in wetlands or other waters of the United States would be scheduled between June 1 and October 31.
- Work in estuarine and marine wetlands, would not occur within 2 hours before or after extreme high tide events (6.5 feet above Mean Lower Low Water elevation or greater as determined from the nearest NOAA tidal gage station to the activity) when the marsh plain is inundated.

AMM-BIO-4: California Clapper Rail and California Black Rail Pre-Construction Survey. Where California black rail habitat is present within 300 feet of the BSA or California clapper rail habitat is present within 700 feet of the BSA, or as determined

by CDFW, a pre-construction survey to determine if the species are present would be conducted for work occurring between February 1 and August 31. Specific survey requirements and timing would be determined in consultation with USFWS and CDFW.

If breeding California clapper rail or California black rail are determined to be present, Caltrans will immediately consult with USFWS and/or CDFW and establish an appropriate buffer for construction activities that could cause harassment during the rail nesting season. Caltrans would also implement California clapper rail or California black rail protection measures resulting from the consultation.

AMM-BIO-5: Listed Plant Surveys. Botanical surveys would be conducted in areas of suitable habitat for rare plant species during the appropriate blooming season(s). If a listed plant species is discovered in an area where there would be ground-disturbing activities, the location would be marked or fenced for avoidance. Ground-disturbing work near special-status plant species would proceed under supervision of an agency-approved biologist.

AMM-BIO-6: Swainson's Hawk Pre-Construction Surveys. If construction activities occur during the Swainson's hawk nesting season (March 15 to September 15), Caltrans would conduct focused Swainson's hawk surveys during the spring prior to construction, using guidelines such as the one set forth in the *Recommended Timing And Methodology for Swainson's Hawk Nesting Surveys in California's Central Valley* document (Swainson's Hawk Technical Advisory Committee 2000).If an active nest is discovered within 0.25 mile of the Project area, Caltrans would immediately stop any work that has potential to result in take of Swainson's hawk and coordinate with CDFW for further guidance.

AMM-BIO-7: Western Burrowing Owl Pre-Construction Surveys. An agency-approved biologist(s) would conduct pre-construction surveys for western burrowing owls prior to the breeding season (February 1 through August 31), including inspecting the job sites and adjacent areas, within 500 feet, for burrows with typical characteristics such as owl pellets, feathers, or white markings.

If burrowing owl activity is observed in locations planned for excavation and an adequate buffer cannot be established during the non-breeding season (September 1 through January 31), resident and migrant wintering burrowing owls may be evicted from the construction area using passive relocation techniques, including potentially providing suitable alternative burrows located within 330 feet of the occupied burrows that can be protected during Project construction. Prior to construction, Caltrans would prepare an Exclusion Plan for review and approval by CDFW.

AMM-BIO-8: Pre-Construction Bat Surveys and Avoidance Measures. The agency-approved biologist would conduct a visual inspection and habitat assessment for potentially suitable bat roosting habitat on existing structures or before tree trimming.

Assessments of bridges would inspect all open crevices. The pre-construction bat survey must be conducted during one of the following two time periods:

- March 1 to April 15
- August 31 to October 15

If the habitat assessment reveals suitable roosting habitat for bats, then the appropriate exclusionary measures would be implemented prior to construction during an agency-approved period.

If the habitat assessment reveals suitable bat habitat in trees and tree trimming is scheduled from April 16 through August 30 and/or October 16 through February 28, then presence/absence surveys would be conducted 2 to 3 days before tree trimming. If the presence/absence surveys do not find bats, then tree trimming may be conducted. If the presence/absence surveys indicate bat occupancy, the occupied trees would be trimmed during an agency-approved period.

AMM-BIO-9: Culvert Design. Prior to construction, Caltrans would coordinate with USFWS and CDFW to determine which culvert replacement location(s) would be designed to facilitate passage for California tiger salamander and other similar wildlife.

MITIGATION MEASURES

MM-BIO-1: Compensation to Offset Project Permanent Impacts. To offset permanent impacts from the Project, Caltrans will implement a compensation package based on the estimated impacts on protected natural resources, including wetlands, waters, and suitable habitat in the range of the listed species. Compensation will be determined in coordination with USFWS, USACE, RWQCB, CDFW, and/or BCDC during the design phase. At a minimum, the compensation will be a 1:1 ratio and will be accomplished through a combination of onsite mitigation and/or purchase of mitigation credits. Compensation will include any one or a combination of the following approaches:

- Offsite mitigation through the purchase of credits at an approved conservation bank(s)

- Development of a compensation plan that will provide in-lieu funding to a nearby restoration program or restoration project that would create, restore, preserve, or enhance resources similar to those adversely affected by the Project

- Onsite restoration within the Caltrans ROW

The Mitigation and Monitoring Plan will be developed and tailored for the proposed mitigation site before construction.

Compensation for temporary impacts on protected natural resources will be achieved through onsite in-kind habitat restoration to return the site to pre-construction conditions or better.

Caltrans will provide a Funding Assurance Letter to the appropriate regulatory resource agencies stating that sufficient funds for California tiger salamander habitat compensation have been budgeted.

MM-BIO-2: Wetland Mitigation Monitoring. After construction, Caltrans will monitor onsite vegetation at temporarily impacted wetland habitats and where any additional wetland enhancement or restoration is implemented as compensatory mitigation. Reports to environmental regulatory agencies on the status of monitoring following Project completion will be submitted as determined in Project permits and authorization. The Caltrans mitigation requirement will be considered satisfied once the target acreage of wetland habitat to be restored is successful, as determined and approved by the regulatory agencies requiring compensatory mitigation.

2.3.5 Cultural Resources

Would the Project:

Question	CEQA Determination
a) Cause a substantial adverse change in the significance of a historical resource pursuant to in §15064.5?	No Impact
b) Cause a substantial adverse change in the significance of an archaeological resource pursuant to §15064.5?	No Impact
c) Disturb any human remains, including those interred outside of formal cemeteries?	No Impact

CEQA Significance Determinations for Cultural Resources

This section summarizes the findings of the Section 106 Closeout Memo prepared by Caltrans (Caltrans 2022g). The Section 106 Closeout Memo summarizes the Historic Properties Survey Report and an Archaeological Survey Report prepared by Caltrans as part of its identification efforts. Caltrans determined a finding of no historic properties to be affected (Caltrans 2022g). No further archaeology or architectural history studies are required at this time.

a, b, c) No Impact

There are no known archaeological or historical resources known to be present within the area of potential effects; therefore, the proposed Project would not affect cultural resources and would result in no impact. Implementation of PF-CULT-1 and PF-CULT-2 would reduce potential impacts to undiscovered cultural resources.

2.3.6 Energy

Would the Project:

Question	CEQA Determination
a) Result in potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources, during project construction or operation?	Less Than Significant
b) Conflict with or obstruct a state or local plan for renewable energy or energy efficiency?	No Impact

CEQA Significance Determinations for Energy

An energy analysis report (Caltrans 2022c) was completed for the Project. This section summarizes the findings of this report.

a) Less Than Significant Impact

Activities that consume energy also generate byproducts. Greenhouse gases (GHGs) are the most closely studied byproducts of energy consumption because they are linked to climate change (also refer to Section 2.1.8, Greenhouse Gas Emissions). To assess gasoline and diesel consumed by construction equipment and vehicles, the Road Construction Emissions Model, version 9.0.0, provided by the Sacramento Metropolitan Air Quality Management District was used to quantify carbon dioxide (CO_2) emissions, and vehicle miles traveled (VMT) of workers' vehicles. In addition, U.S. Environmental Protection Agency (USEPA) GHG equivalencies formulas were used to convert GHG and VMT to fuel volumes. It was assumed that diesel would be used by construction vehicles and equipment, while gasoline would be used during a worker's commute. A summary of energy usage in terms of fuel consumption is shown in Table 2-2.

Table 2-3. Construction Equipment and Vehicle Fuel Consumption

Diesel (gallons)	Gasoline [a] (gallons)
67,156.39	4,191.48

[a] Gasoline fuel consumption was adjusted to account for the final Safer Affordable Fuel-Efficient (SAFE) Rule.

Construction activities would be short-term and would not increase roadway capacity on SR 12 that could affect energy use. During construction, BMPs, as described under PF-AQ-3 and PF-Energy-1, would be implemented for energy efficiency of construction equipment. Operation of the Project would have minimal energy

consumption pertaining to routine maintenance. The impact would be less than significant.

b) No Impact

The Project would resurface the pavement on both mainline traveled ways and shoulders and reconstruct two bridges along SR 12. Traffic volumes and types of vehicles using the roadway would not change from existing conditions. In addition, the Project would not conflict with state and local plans for renewable energy and energy efficiency; therefore, there would be no impact.

2.3.7 Geology and Soils

Would the Project:

Question	CEQA Determination
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.	No Impact
ii) Strong seismic ground shaking?	No Impact
iii) Seismic-related ground failure, including liquefaction?	No Impact
iv) Landslides?	No Impact
b) Result in substantial soil erosion or the loss of topsoil?	No Impact
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?	No Impact
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?	No Impact
e) Have soils incapable of adequately supporting the use of septic tanks or alternative waste water disposal systems where sewers are not available for the disposal of waste water?	No Impact
f) Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?	No Impact

CEQA Significance Determinations for Geology and Soils

A geologic, seismic, and palaeontologic analysis report was completed for this Project (Caltrans 2022d). This section summarizes the findings of this report.

The Project site is on SR 12 from 0.5 mile east of Walter Road/Lawler Rach Parkway to 0.5 mile east of Shiloh/Lambie Road in Solano County. Geologic mapping of the Project alignment indicates that the Project site is underlain by engineered fill (roadway embankment) overlaying Quaternary fan and basin deposits. The U.S. Geological Survey Quaternary Faults and Folds Database (2006) indicates that the historically active Green Valley fault lies approximately 9.3 miles west of the site (Caltrans 2022d).

a, b, c, d, e) No Impact

The Project would not expose the public to significant geologic or seismic hazards. While strong ground shaking may occur at the site, proposed Project elements pose no additional impacts to the public. The Project would not expose the public to fault rupture or seismically induced slope instability or liquefaction. There are no hazards due to collapsible or expansive soils, erodible soils or landslides. Septic tanks or alternative wastewater disposal systems are not proposed for this Project. There would be no impact.

f) No Impact

Native Quaternary deposits throughout the Project site may contain fossils below 5 feet, however Project elements would be confined to the roadway prism and not impact native soils (Caltrans 2022d). There would be no impact on a unique paleontological resource or site, or unique geologic feature.

2.3.8 Greenhouse Gas Emissions

Would the Project:

Question	CEQA Determination
a) Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?	Less Than Significant Impact
b) Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases?	No Impact

CEQA SIGNIFICANCE DETERMINATIONS FOR GREENHOUSE GAS EMISSIONS

A construction GHG emissions analysis memorandum (Caltrans 2022e) was completed for the Project. This section summarizes the findings of this review.

a) Less Than Significant Impact

Construction-generated GHG includes emissions resulting from material processing by onsite construction equipment, workers commuting to and from the Project site, and traffic delays due to construction. These GHG emissions would be produced at different rates throughout the Project depending on the activities involved at various phases of construction.

Based on available Project information, the construction-related GHG emissions were calculated using the Road Construction Emissions Model, version 9.0.0, provided by the Sacramento Metropolitan Air Quality Management District. The analysis was focused on vehicle-emitted GHG. CO_2 is the single most important GHG pollutant due to its abundance when compared with other vehicle-emitted GHGs, including methane (CH_4), nitrous oxide (N_2O), hydrofluorocarbons (HFCs), and black carbon.

For a construction duration of 16 months, the total amount of CO2 produced as a result of construction was estimated to be 698.94 tons. Table 2-3 summarizes the construction-related emissions, including the total carbon dioxide equivalent (CO_2e) emissions.

Table 2-4. Construction-related GHG Emissions

CO_2 (tons)	CH_4 (tons)	N_2O (tons)	Total CO_2e (metric tons) [a]
698.94	0.13	0.03	645.12

[a] CO_2e presents the total emissions from all GHG parameters (i.e., CO_2, CH_4, and N_2O). Gases are converted to CO_2e by multiplying by their global-warming potential. Specifically, global-warming potential is a measure of how much energy the emissions of 1 ton of a gas will absorb over a given period of time, relative to the emissions of 1 ton of CO_2.

Implementation of PF-AQ-2, PF-AQ-3, PF-Energy-1, and PF-GHG-1 would reduce GHG emissions from construction activities. In addition, because of innovations such as longer pavement lives, improvement in traffic management, and changes in materials, construction-related GHG emissions produced during construction can be offset to some degree by longer intervals between maintenance and rehabilitation activities during operation; therefore, the impact would be less than significant.

b) 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 not increase roadway capacity or contribute to a long-term increase in GHG emissions. Therefore, there would be no impact.

2.3.9 Hazards and Hazardous Materials

Would the Project:

Question	CEQA Determination
a) Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?	Less Than Significant Impact
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?	Less Than Significant Impact
c) Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?	No Impact
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?	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
f) Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?	Less Than Significant Impact
g) Expose people or structures, either directly or indirectly, to a significant risk of loss, injury or death involving wildland fires?	Less Than Significant Impact

CEQA Significance Determinations for Hazards and Hazardous Materials

a, b) Less Than Significant Impact

The proposed widening of the Union Creek and Denverton Creek bridges would necessitate a bridge survey that ascertains the presence or absence of asbestos-containing material in the bridge concrete to be disturbed. In addition, the proposed roadway shoulder widening would require a site investigation that helps determine what regulatory requirements, if any, would be applied to the excavated soil if it is to be reused as fill material within the Project limits or disposed of at a landfill. The bridge survey and site investigation would be planned and conducted during the Project's design phase. Depending upon the findings of the bridge survey and site investigation, appropriate hazard mitigation and waste management special provisions would be prepared and included in the Project specifications. With

implementation of PF-HAZ-1 and PF-HAZ-2, the impact would be less than significant.

c, d) No Impact

There are no schools located within a 0.25-mile radius of the Project site. In addition, the Project area is not listed on any hazards or hazardous waste sites compiled pursuant to Government Code Section 65962.5; therefore, there would be no impact.

e) Less Than Significant Impact

The Project is located approximately 1.25 air-miles from Travis Air Force Base (AFB). Due to the length of the Project, multiple noise contours established by the Travis AFB *Air Installation Compatible Use Zone Study* are within the Project area and range from 60 to 79 decibels (Travis AFB 2009). Noise levels associated with the use of construction equipment with occasional air traffic going to and from Travis AFB and vehicle traffic along SR 12 would be considered excessive at times. There are no people residing within the area subject to these noise levels, and construction workers would use earplugs or other sound-dampening devices in accordance with Occupational Safety and Health Administration guidelines. The impact would be less than significant.

f, g) Less Than Significant Impact

Construction and operation of the Project would not significantly interfere with an emergency evacuation or response plan. During construction, the Project would implement a TMP (PF-TRA-1) ensuring that one-way traffic controls would be used during construction to maintain access for police, fire, medical services, and the traveling motorist. Emergency response would receive priority through the Project area in the event of a medical emergency, wildfire, earthquake, or other evacuation effort. The impact would be less than significant.

2.3.10 Hydrology and Water Quality

Would the Project:

Question	CEQA Determination
a) Violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or groundwater quality?	Less Than Significant Impact
b) Substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the basin?	No Impact
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:	No Impact
i) result in substantial erosion or siltation on- or off-site;	No Impact
ii) substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site;	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
iv) impede or redirect flood flows?	No Impact
d) In flood hazard, tsunami, or seiche zones, risk release of pollutants due to project inundation?	No Impact
e) Conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan?	No Impact

CEQA Significance Determinations for Hydrology and Water Quality

A water quality study was completed by Caltrans (Caltrans 2021a) for the Project in March 2021, with another in February 2022 (Caltrans 2022f). A summary of the findings of this analysis is presented here.

The Project is located within the San Francisco Bay Region Water Quality Control Board. The Project is located within the Union Creek Frontal Suisun Bay Estuaries subwatershed of the Wooden Valley Creek Frontal Suisun Bay Estuaries watershed, which is part of the hydrologic sub-area named Suisun Slough (207.23) of the Suisun Hydrologic Unit (Caltrans 2021a). This subwatershed is part of a hydrologic sub-area that encompasses approximately 100,894 acres (Caltrans 2021a). Zoning uses in this watershed include agricultural preserve and marsh protection (Solano County

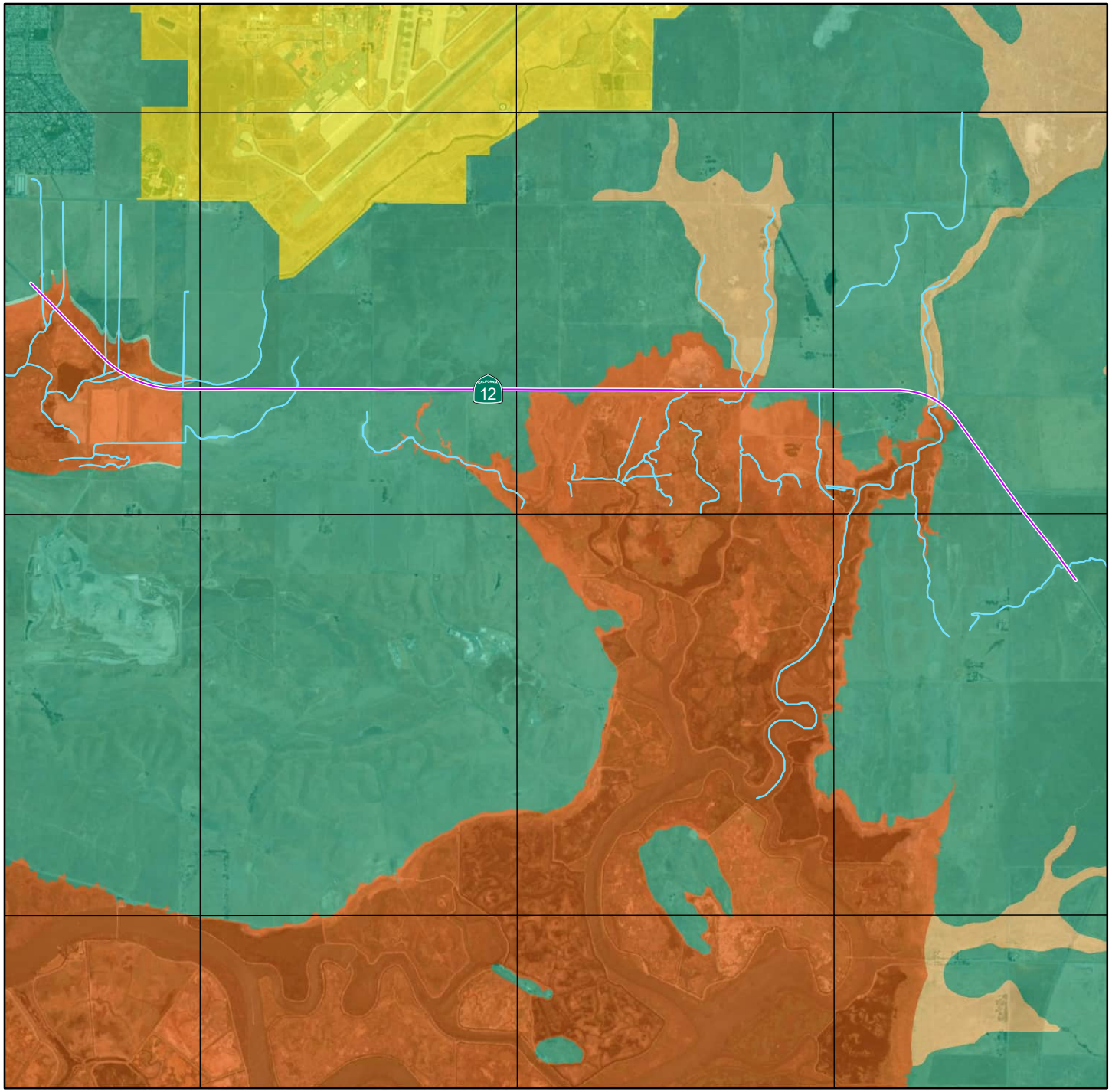
n.d., 2017). Receiving waters of the watershed are Union Creek, Denverton Creek, Suisun Slough, and Montezuma Slough. All of these receiving waters ultimately discharge to Suisun Bay, which is located approximately 7 miles south of the Project (Caltrans 2021a). According to the Calwater Watershed information, the Project is located within a high-risk receiving watershed area (Caltrans 2021a).

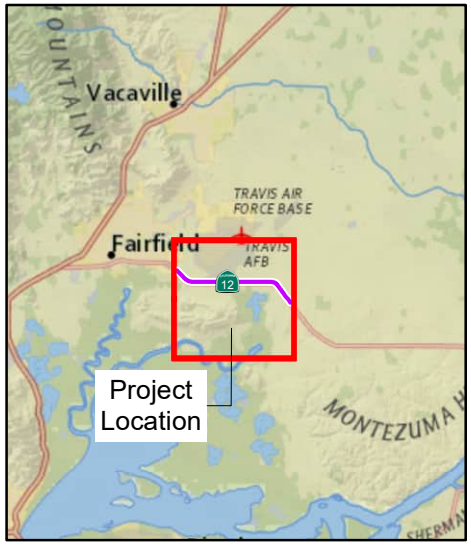
Per Federal Emergency Management Agency Flood Insurance Rate Maps (06095C0476E, effective May 4, 2009; 06095C0477F, effective August 3, 2016; 06095C0482F, effective August 3, 2016; 06095C0484F, effective August 3, 2016; and 06095C0481F, August 3, 2016) the Project is located within a Zone A, Zone AE, and Zone X floodplain. This Zone AE floodplain has a base flood elevation of 10 feet above mean sea level (FEMA 2021). Figure 2-2 shows the floodplain in the Project area. Zone AE floodplains indicate areas inundated with a 1 percent annual chance of flooding (100-year flood).

a) Less Than Significant Impact

The Project would not violate water quality standards or waste discharge requirements or otherwise substantially degrade surface or ground water quality. Multiple water bodies are located within and around the Project vicinity, of which Suisun Bay and Suisun Slough are on the 303(d) list of impaired water bodies for California.

The State Water Resources Control Board issued a statewide CGP for construction activities (2009-0009-DWQ, CAS000002, as amended by 2010-0014-DWQ and 2012-0006-DWQ). The CGP applies to stormwater discharges from land where clearing, grading, and excavation result in a disturbed soil area of 1 acre or greater. Projects subject to the CGP require a SWPPP per Caltrans Standard Specification 13, Water Pollution Control. The disturbed soil area for the Project would be approximately 2.6 acres, and the post-construction treatment area (new net impervious area) would be approximately 0.42 acre (Caltrans 2022f). The Project would result in a disturbed soil area of approximately 2.6 acre; therefore, an SWPPP would be required as described in PF-WQ-1.





LEGEND

- Project Site
- National Hydrography Dataset
- Flood Insurance Rate Map Panels

Flood Zone

- A - 1% Annual Chance Flood Hazard
- AE - 1% Annual Chance Flood Hazard
- D - Undetermined Flood Hazard
- X - 0.2% Annual Chance Flood Hazard
- X - Area of Minimal Flood Hazard

Data Sources:
FEMA National Flood Hazard Layer
USGS National Hydrography Dataset
Service Layer Credits: Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community
National Geographic, Esri, Garmin, HERE, UNEP-WCMC, USGS, NASA, ESA, METI, NRCAN, GEBCO, NOAA, increment P Corp.

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Feet

Caltrans

Figure 2-2
FEMA Flood Zones
State Route 12
Major Pavement Rehabilitation Project
EA 04-2Q550, SOL-12-PM 7.9/14.1
Solano County, California

Potential temporary impacts to existing water quality would result from active construction areas, which could lead to the release of fluids, concrete material, construction debris, sediment, and litter beyond the perimeter of the site. Implementation of PF-WQ-2, temporary construction site BMPs, would be used for sediment control and material management. A stream diversion system and dewatering area would be needed as a result of the proposed culvert work and work for wingwall construction at Union Creek bridge and Denverton Creek bridge.

A 401 and 404 permit is expected to be required for this Project because of work and fill in waters of the United States. This Project would need to consider permanent water quality treatment BMPs, as discussed in PF-WQ-3. The net new impervious surface is calculated to be approximately 0.42 acre. It is anticipated that the RWQCB 401 certification would include requirements for post-construction stormwater treatment for the 0.42 acre of new impervious surface resulting from construction of the Project. A potential area for bioretention basin was identified near PM 14.03 and would be confirmed in a later Project phase. It would treat approximately 0.48 acre of impervious surface area.

With implementation of PF-WQ-1 through PF-WQ-3, the Project would not substantially degrade surface water quality and the impact would be less than significant.

b) No Impact

The Project would have no effect to groundwater supplies or groundwater recharge areas in the Project vicinity. There would be no impact.

c(i), (ii), (iii), (iv)) No Impact

The Project would not substantially alter the existing drainage pattern of the Project site and would not result in substantial erosion or siltation. The Project would not result in an increase of surface runoff, create runoff that would exceed existing storm drain systems, or create substantial additional sources of polluted runoff. The Project would not impede or redirect flood flows. There would be no impact.

d) No Impact

The Project limits are covered under the Federal Emergency Management Agency 100-year floodplain in several locations, as defined by the agency's Flood Insurance Rates Maps (numbers 06095C0476E, 06095C0477F, 06095C0481F, 06095C0482F, and 06095C0484F). Impacts to the flood system in the vicinity occur under existing conditions because of the existing roadway grades and drainage system of dikes, overside drains, cross-culverts, unlined ditches and swales. The Project proposes to rehabilitate the pavement surface by overlaying the existing pavement. The existing

inlets would also be adjusted to the new pavement elevation and the existing AC dikes and overside drains would be removed and replaced in-kind. The Project would not impact natural and beneficial floodplain values or support incompatible floodplain development. Potential impacts to existing roadway drainage facilities would be determined during a later phase of the Project, when more detailed information is provided. Therefore, the paving would have no impact on the floodplain.

The proposed Project is not in seiche or tsunami zones. There would be no impact.

e) No Impact

The Project would not conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan. There would be no impact.

2.3.11 Land Use and Planning

Would the Project:

Question	CEQA Determination
a) Physically divide an established community?	No Impact
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?	Less Than Significant Impact

CEQA Significance Determinations for Land Use and Planning

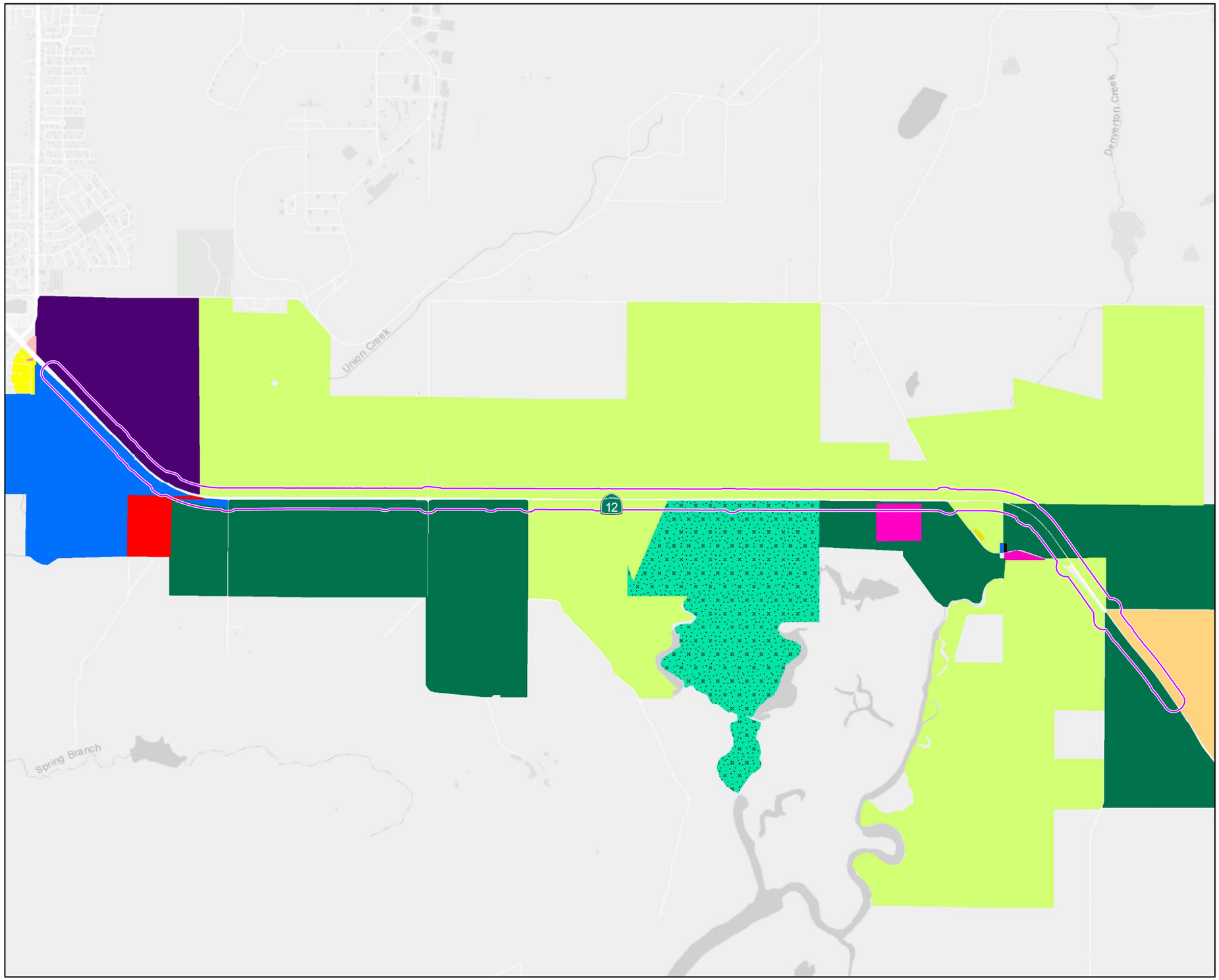
The Project site is on SR 12 from 0.5 mile east of Walter Road/Lawler Ranch Parkway to 0.5 mile east of Shiloh/Lambie Road in Solano County. The Solano County Zoning Map shows that the north side of the Project limits is zoned as Exclusive Agriculture 160 acres (A-160) and the south side of the Project limits is zoned as Marsh Preservation, Suisun Marsh Agriculture 160 acres (ASM-160), and Exclusive Agriculture 160 acres (A-160) (Solano County n.d.). Designated land uses within the Project limits are depicted in Figure 2-3, Land Use Map.

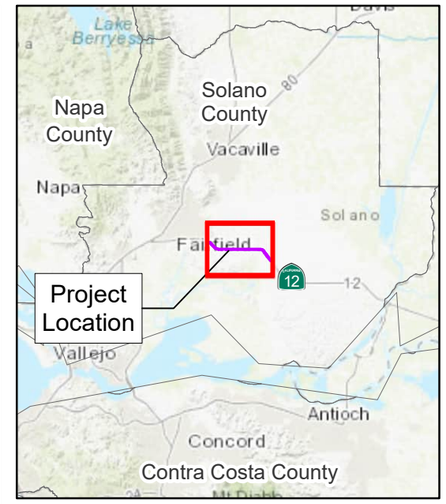
Portions of the proposed Project are within San Francisco Bay Conservation and Development Commission jurisdiction, as defined by the McAteer-Petris Act, the San Francisco Bay Plan, the Suisun Marsh Preservation Act of 1977, and the Suisun Marsh Protection Plan of 1976, which provide policies for protection in the Suisun Marsh Protection Plan Management Areas. The Primary Management Area consists of marsh and the Secondary Management Area consists of upland areas (Figure 2-4).

Per the McAteer-Petris Act, the Bay Conservation and Development Commission is responsible for granting or denying permits for any proposed fill; extraction of materials; or substantial changes in use of any water, land, or structure within the Commission's jurisdiction (California Government Code Section 66632). As defined in Section 66632, "fill" means earth or any other substance or material, including pilings or structures placed on pilings, and structures floating at some or all times and moored for extended periods, such as houseboats and floating docks. Fill also includes structures cantilevered over San Francisco Bay.

Relevant areas of Bay Conservation and Development Commission jurisdiction for the Project may include the following:

- Section 66602 of the McAteer-Petris Act states, in part, "that maximum feasible public access, consistent with a proposed project, should be provided."





LEGEND

- Project Site
- Commercial Sales and Service
- Dry Farming Land
- Governmental and Miscellaneous
- Marsh Land
- Prop 19 - Intergeneration Trns
- Range and Watershed Land
- Range Land
- Rural Single Family Residential > 1 AC
- Single Family Residential
- Taxable Below Minimum Value
- Transitional Land
- Vacant Commercial Land
- Vacant Residential Land

Data Source:
Solano County Parcels July 2022

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Caltrans

Figure 2-3
Land Use Map
State Route 12
Major Pavement Rehabilitation Project
EA 04-2Q550, SOL-12-PM 7.7/14.1
Solano County, California

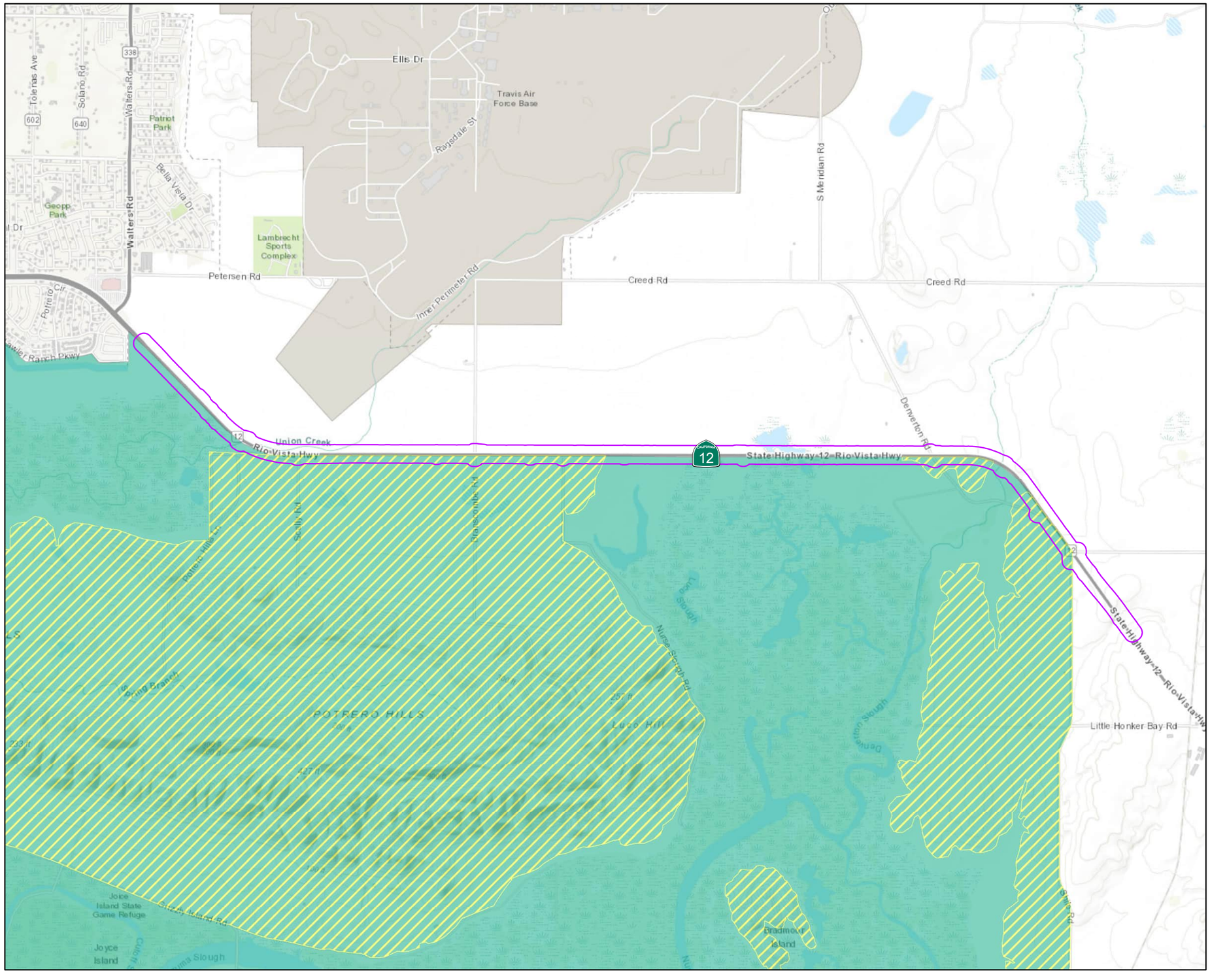

Figure 2-4
Suisun Marsh Protection Plan Management Areas
State Route 12
Major Pavement Rehabilitation Project
EA 04-2Q550, SOL-12-PM 7.7/14.1
Solano County, California

- The Suisun Marsh Protection Plan Management Areas. The proposed Project includes work (bridge widening) that would cantilever over portions of the Suisun Marsh.

BCDC's programmatic maintenance permit, Permit No. M1987.042.06, authorizes the maintenance of existing state highways including resurfacing, repair, and replacement of pavement surfaces on existing roads so long as the areas of the paved surfaces are not increased.

a) No Impact

The proposed Project involves rehabilitating the existing roadway and associated features to prevent future roadway damage and improve the safety of the traveling public. No changes in land use would occur from the proposed Project.

The Project would not physically divide an established community. Therefore, there would be no impact.

b) Less Than Significant Impact

Construction activities may occur within Bay Conservation and Development Commission jurisdiction (temporary impacts that could qualify under the existing Caltrans maintenance permit), as would bridge widening (permanent impacts) to accommodate standard lane and shoulder width, as well as new, wider bridge railings that would cantilever over the Suisun Marsh, which would constitute fill. Temporary creek diversions would be used at Union Creek and Denverton Creek to provide dry work areas during bridge abutment wingwall construction. All activities would be temporary and construction materials would be staged in nearby staging areas outside of Bay Conservation and Development Commission jurisdiction. All materials would be removed following construction and the Project area would be returned to its previous condition. Portions of the Project may require an individual Bay Conservation and Development Commission permit that would include conditions to meet the policies of the McAteer-Petris Act and the San Francisco Bay Plan, such as public access, and the Suisun Marsh Protection Plan. There would be a less than significant impact.

The Project would comply with Solano County land use, transportation, and circulation goals as stated in the Solano General Plan (Solano County 2008). The Project would not cause a significant environmental impact because of conflict with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect. Therefore, there would be no impact.

AVOIDANCE AND MINIMIZATION MEASURES

Because there would be no Project-related temporary or permanent impacts to land use in the proposed Project limits, no avoidance, minimization, and/or mitigation measures are proposed. The Project would require a Bay Conservation and Development Commission individual permit, and such approval would include conditions for the Project to be consistent with policies of the San Francisco Bay Plan, the Suisun Marsh Protection Plan, and the McAteer-Petris Act.

2.3.12 Mineral Resources

Would the Project:

Question	CEQA Determination
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?	No Impact
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?	No Impact

CEQA Significance Determinations for Mineral Resources

Mineral resources mined or produced in Solano County include mercury, sand and gravel, clay, stone products, calcium, and sulfur (Solano County 2008). The western portion of the Project near Travis AFB falls within Mineral Resource Zones described in the California Surface Mining and Reclamation Act mineral land classification reports for Special Report 156 (California Department of Conservation 2022b). Near the east end of the Project by Shiloh/Lambie Road, the Project area falls in a mineral resource area zoned as MRZ-3; these are areas that contain mineral deposits of which the significance cannot be evaluated from current available data. Approximately 1 mile from the Project site, one quarry has been identified by the California Department of Conservation, Office of Mine Reclamation, as follows: Potrero Hills Quarry (91-48-0004) (California Department of Conservation 2022c).

a, b) No Impact

The Project would not result in the loss of availability of a known mineral resource that would be of value or result in the loss of availability of a locally important mineral resource recovery site. Therefore, no impacts on mineral resources would result from the Project.

2.3.13 Noise

Would the Project result in:

Question	CEQA Determination
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?	Less Than Significant Impact
b) Generation of excessive groundborne vibration or groundborne noise levels?	Less Than Significant Impact
c) For a project located within the vicinity of a private airstrip or an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?	Less Than Significant Impact

CEQA Significance Determinations for Noise

The Project does not qualify as either a Type I or Type II project under 23 CFR 772. Therefore, noise abatement does not need to be considered, and a noise study report is not required (Caltrans 2022b).

a) Less Than Significant Impact

During construction, noise generated from construction activities should not exceed 86 decibels (maximum) at 50 feet from the job site between the hours of 9 p.m. and 6 a.m. as required by Caltrans Standard Specification 14-8.

The Project would implement PF-NOI-1 through PF-NOI-4 to ensure further reduction of temporary construction noise levels. The Project would not modify the existing number of travel lanes on SR 12, so traffic noise levels on SR 12 would not increase. There are no nearby residences; therefore, the Project would not expose residences near the Project area to excessive noise levels during construction or operation of the Project.

The Project would not cause a permanent, substantial increase in ambient noise level above existing conditions and noise generated from construction activities would be temporary, resulting in a less than significant impact.

b) Less Than Significant Impact

The Project would not create excessive groundborne vibration or groundborne noise levels. Increases in noise levels from construction activities would be temporary. Following construction, noise levels would not change from existing levels; therefore, impacts would be less than significant.

c) Less Than Significant Impact

Refer to Section 2.1.9, Hazards and Hazardous Materials, CEQA analysis question e), for information regarding excessive noise levels.

2.3.14 Population and Housing

Would the Project:

Question	CEQA Determination
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)?	No Impact
b) Displace substantial numbers of existing people or housing, necessitating the construction of replacement housing elsewhere?	No Impact

CEQA Significance Determinations for Population and Housing

The proposed Project would improve existing transportation infrastructure and does not have elements that would directly or indirectly induce substantial unplanned population growth. Widening of the existing SR 12 shoulders and the Union Creek bridge and Denverton Creek bridge would comply with current Caltrans standards and improve safety for highway users. The Project would not increase the capacity of SR 12.

The proposed Project is consistent with the Solano County General Plan (Solano County 2008), the Regional Transportation Plan (MTC 2021), and the Solano County Comprehensive Transportation Plan 2040 (Solano Transportation Authority 2020), as well as regional policies and forecasts. The Project would improve transportation mobility and safety along the SR 12 highway corridor.

a, b) No Impact

The proposed roadway safety improvements would not induce population growth directly or indirectly, displace existing housing, or displace people, necessitating the construction of additional or replacement housing elsewhere. The proposed Project would rehabilitate the pavement and shoulders of the mainline roadway, the Union Creek bridge, and the Denverton Creek bridge to increase safety, extend the life of the existing pavement, and improve ride quality. There would be no impact.

2.3.15 Public Services

Question	CEQA Determination
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, theconstruction of which could cause significantenvironmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for any of the public services:	N/A
Fire protection?	Less Than Significant Impact
Police protection?	Less Than Significant Impact
Schools?	No Impact
Parks?	No Impact
Other public facilities?	No Impact

CEQA SIGNIFICANCE DETERMINATIONS FOR PUBLIC SERVICES

The Project is located on SR 12 from 0.5 mile east of Walter Road/Lawler Ranch Parkway to 0.5 mile east of Shiloh/Lambie Road in Solano County, California. The closest fire station is the Suisun City Fire Department located at 621 Pintail Drive, Suisun City, California 94585, approximately 1.8 miles northwest of the westernmost end of the Project site.

The closest police department is the City of Suisun Police Department located at 701 Civic Center Boulevard, Suisun City, California, 94585, approximately 3.5 miles west of the westernmost end of the Project site.

The Lawler Falls Park and Lawler Ranch Park are approximately 0.8 mile and 1.3 miles west of the westernmost end of the Project site, respectively. The Montebello Vista Park is approximately 1 mile north of the westernmost end of the Project site.

Crescent Elementary School and Suisun Elementary School are approximately 1.8 miles and 1.9 miles west of the westernmost end of the Project site, respectively. Dan O. Root II Health and Wellness Academy is approximately 1.1 miles northwest of the westernmost end of the Project site.

Other public facilities in the Project area are the Solano County Veteran's Service (approximately 4 miles west), the Macedonia Church of God in Christ (approximately 0.5 mile north), and the Irving H. Lambrecht Sports Complex

(approximately 1.6 miles northeast), all around the westernmost end of the Project site.

Public services and facilities are provided and maintained by local and county entities, including fire, police, emergency response, and public works.

a) Less Than Significant Impact and No Impact

The Project would not result in a use that would directly or indirectly induce population and employment growth in Solano County. Therefore, the Project would have no impact on schools, parks, or other public facilities. During construction, the Project would implement a TMP (PF-TRA-1), ensuring that one-way traffic controls would be used during construction to maintain access for police, fire, medical services, and traveling motorists. Emergency response would receive priority through the Project area in the event of a medical emergency, wildfire, earthquake, or other evacuation effort. Impacts on fire and police protection services would be less than significant.

2.3.16 Recreation

Question	CEQA Determination
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
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

CEQA Significance Determinations for Recreation

The following recreational facilities are located in the Project vicinity:

San Francisco Bay National Estuarine Research Reserve

The Rush Ranch Open Space is approximately 2 miles southwest of the Project site in the northeast edge of the Suisun Marsh, a vital component of the San Francisco Bay-Delta Estuary. The Rush Ranch Open Space provides 2,070 acres of open space and recreational and educational opportunities to thousands of visitors each year. Recreational opportunities include self-guided trails for hiking and bird and wildlife viewing. Rush Ranch is a working ranch and also contains a visitor center, blacksmith shop, and historical ranching equipment for its visitors to explore. The Solano Land Trust purchased the Rush Ranch in 1988 with a grant from the Coastal Conservancy, and in 2003, Rush Ranch was designated as part of the San Francisco Bay National Estuarine Research Reserve (Solano Land Trust 2021).

The San Francisco Bay National Estuarine Research Reserve comprises Rush Ranch and China Camp State Park, which is located in San Rafael. It protects over 3,700 acres of tidal marshes and undeveloped uplands that serve as research sites, outdoor classrooms, and recreational opportunities. The primary intent of the Reserve is to support tidal marsh restoration through research, water quality monitoring, education, and coastal stewardship (SFSU 2022).

Hill Slough Wildlife Area

Hill Slough Wildlife Area is located approximately 2 miles southwest of the Project site and contains approximately 1,700 acres of salt tidal marsh, sloughs, and upland grasslands. Hill Slough Wildlife Area provides recreational opportunities such as bird and wildlife viewing and fishing (CDFW 2022b).

GRIZZLY ISLAND WILDLIFE AREA

Grizzly Island Wildlife Area is located south of the Project site near Suisun Bay and Grizzly Bay. Grizzly Island Wildlife Area is approximately 12,900 acres and provides recreational opportunities such as bird and wildlife viewing, hiking, fishing, and hunting opportunities for waterfowl, dove, pheasant, tule elk, and rabbit (CDFW 2022c).

a, b) No Impact

There are no existing neighborhood or recreational parks nor other recreational facilities in the Project area (Solano County 2022). The Project would not impact the recreational facilities described here, nor would it require the construction or expansion of recreational facilities; therefore, there would be no impact.

2.3.17 Transportation

Would the Project:

Question	CEQA Determination
a) Conflict with a program, plan, ordinance or policy addressing the circulation system, including transit, roadway, bicycle and pedestrian facilities?	Less Than Significant Impact
b) Would the project conflict or be inconsistent with CEQA Guidelines section 15064.3, subdivision (b)?	Less Than Significant Impact
c) 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
d) Result in inadequate emergency access?	Less Than Significant Impact

CEQA SIGNIFICANCE DETERMINATIONS FOR TRANSPORTATION

SR 12 is an east-west route that connects Napa, Solano, Sacramento, San Joaquin and Calaveras counties and is used for local and interregional travel. Within Caltrans District 4, the corridor begins at the intersection of SR 29 and SR 12 at James Canyon in Napa County, and ends at the Rio Vista Bridge at the Solano/Sacramento County line. The corridor is approximately 30 miles long, intersecting SR 29, I-80, SR 113, SR 84, and SR 160, and is considered a major route for the eastern part of the state to access Napa and Sonoma counties. SR 12 connects the Bay Area and Central Valley and allows for the movement of a significant amount of goods while providing access to the Delta.

The Project extends from 0.5 mile east of Walter Road/Lawler Ranch Parkway to 0.5 mile east of Shiloh/Lambie Road from PM 7.7 to PM 14.1 in Solano County. Within the Project limits, SR 12 is a conventional highway with two lanes of travel, one in each direction. There are no high occupancy vehicle lanes along the route and no pedestrian facilities within the Project limits. Bicyclists are permitted on SR 12 and can ride on the shoulders. Existing shoulders are 8 feet wide within the Project area except at PM 10.3 where the shoulders are narrow down to 3 feet wide for approximately 1,400 fee and from PM 9.0 to PM 12.5, where an existing dike is placed within the paved shoulder width and the shoulders are narrowed to 7 feet wide.

a) Less Than Significant Impact

The Project would not conflict with a program, plan, ordinance or policy addressing the circulation system, including transit roadway or pedestrian facilities, but would conflict with bicycle facilities as directed in Caltrans Director's Policy 37, Complete Streets (Caltrans 2021d). The Project would rehabilitate the pavement along SR 12

and upgrade the Union Creek and Denverton Creek bridges and would support the goals outlined in the Transportation and Circulation element of the Solano County General Plan (Solano County 2008).

The Project would conflict with Director's Policy 37, Complete Streets (Caltrans 2021d). This policy requires that the Project, which is a maintenance project, provide "complete streets" facilities for pedestrians walking and bicyclists biking within the Project footprint. Where existing shoulders are incompatible with complete streets and Caltrans design standards, the Project proposes to widen the shoulder widths to a minimum of 8 feet to adhere to current standards and allow for use by bicyclists. However, the Project would not provide complete street facilities for bicyclists and justification would need to be documented with final approval by the Caltrans District 4 Director.

Implementation of PF-TRA-1 would ensure minimal effects from construction activities to highway users. Therefore, impacts would be less than significant.

b) Less Than Significant Impact

During the construction phase, equipment hauling vehicles and construction workers would be traveling to and from the Project site and would generate a temporary increase in localized traffic until construction is completed. Construction would require lane and shoulder closures during non-peak hours and at night as per the lane closure windows provided by Caltrans District 4 Highway Operations. The Project would not increase vehicular capacity. Therefore, the Project would not result in any changes to VMT as the traffic capacity of SR 12 would not increase. Under CEQA Guidelines Section 15064.3, subdivision b, transportation projects that have no impact on VMT have a less than significant impact.

c) No Impact

The Project would not increase hazards because of a geometric design feature. The proposed Project does not include any design features or construction elements (such as sharp curves or dangerous intersections) that would substantially increase hazards. There would be no impact.

d) Less Than Significant Impact

The Project would not result in inadequate emergency access. The Project could generate short-term traffic congestion and delays, resulting from temporary lane closures of one lane along SR 12 throughout construction. One-way traffic control would be required during construction and detours are not anticipated.

In addition, the TMP (PF-TRA-1) would ensure continued access to emergency service providers along SR 12 during construction. Flaggers would give priority to emergency vehicles on SR 12 while construction activities occur. Therefore, the impact would be less than significant.

2.3.18 Tribal Cultural Resources

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:

Question	CEQA Determination
a) Listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources as defined in Public Resources Code section 5020.1(k), or	No Impact
b) 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.	No Impact

CEQA Significance Determinations for Tribal Cultural Resources

Caltrans contacted the Native American Heritage Commission electronically on December 2, 2020, and the Commission responded on December 12, 2020. Their letter concluded no sacred sites were identified and included a contact list of eight interested individuals or tribes. Native American consultation letters per Section 106 and Assembly Bill 52 guidance were sent electronically to the following contacts on February 24, 2021 (Caltrans 2022g):

- Daniel Gomez (Chairman) and Clifford Mota (Tribal Preservation Liaison), Cachil Dehe Band of Wintun Indians of the Colusa Indian Community
- Donald Duncan (Chairperson), Guidiville Indian Rancheria
- Leland Kinter (Tribal Historic Preservation Officer), Yocha Dehe Wintun Nation

Charlie Wright (Chairperson), Cortina Rancheria-Kletsel Dehe Band of Wintun Indians, was sent a letter by mail as no email was provided.

Follow-up phone calls were made on June 21, 2021, and messages left for all individuals describing additional bridge work that was added to the Project. No responses have been received.

a, b) <u>No Impact</u>

The Project would not cause a substantial adverse change in the significance of tribal cultural resources. No tribal cultural resources were reported in record searches; no response have been received from Native American groups or individuals regarding the presence of tribal cultural resources. Based on this report, there would be no impact.

PF-CULT-1 and PF-CULT-2, would be implemented if cultural resources or human remains are discovered during Project construction.

2.3.19 Utilities and Service Systems

Would the Project:

Question	CEQA Determination
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?	No Impact
b) Have sufficient water supplies available to serve the project and reasonably foreseeable future development during normal, dry and multiple dry years?	No Impact
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?	No Impact
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?	No Impact
e) Comply with federal, state, and local management and reduction statutes and regulations related to solid waste?	No Impact

CEQA Significance Determinations for Utilities and Service Systems

The Project area is located on an established highway in Solano County where existing infrastructure is already in place. As described in Section 1.6.1, overhead utility wires are visible at PM 9.02, PM 9.90, and PM 13.56. Relocation of utilities is not anticipated.

a, b, c) No Impact

Construction of the Build Alternative would generate minor amounts of wastewater but would not exceed wastewater treatment requirements of the RWQCB due to requirements set forth in waste discharge requirements and in the Section 401 Water Quality Certification Permit. Utilities would not be relocated, and Caltrans would notify utility owners of the Project construction schedule (PF-UTIL-3). The Project would not increase the number of residents in the area because residential land uses are not proposed. The Project would not increase the demand for additional water supplies or wastewater treatment facilities. Therefore, no new or expanded water entitlements would be needed to serve the local community near the Project. There would be no impact.

d, e) No Impact

The proposed Project would not generate excessive demand for potable water supplies or services of a wastewater treatment provider. Further, solid waste created from the Project would be removed from the construction work areas and recycled or properly disposed of offsite. Where possible, materials from the site would be reused on the Project site or elsewhere. The Project would comply with local management and reduction statutes and regulations related to solid waste. The Project would not result in any substantial demands for solid waste disposal and would comply with federal, state, and local statutes regarding the disposal of solid waste. Implementation of PF-UTIL-1 and PF-UTIL-2 would require the proper disposal of construction trash. Therefore, there would be no impact.

2.3.20 Wildfire

If located in or near state responsibility areas or lands classified as very high fire hazard severity zones, would the Project:

Question	CEQA Determination
a) Substantially impair an adopted emergency response plan or emergency evacuation plan?	Less Than Significant
b) Due to slope, prevailing winds, and other factors, exacerbate wildfire risks, and thereby expose project occupants to, pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire?	No Impact
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?	No Impact
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?	No Impact

CEQA Significance Determinations for Wildfire

The Project area and surrounding land uses are not located within a very high fire hazard severity zone or local or state responsibility area (CAL FIRE 2021).

a) Less Than Significant Impact

The Project would not substantially impair an adopted emergency response plan or emergency evacuation plan. As stated in Section 2.1.17, Transportation, a TMP would be developed during the design phase and would ensure priority for emergency responders traveling along SR 12 during construction activities and times of one-way traffic control. The TMP would also provide instructions for response and evacuation in case of an emergency. Therefore, the impact would be less than significant.

b, c, d) No Impact

The construction and operation of the proposed Project would not exacerbate wildfire risks, require the installation or maintenance of infrastructure that may exacerbate wildfire risk, or expose people or structures to significant risks as a result of runoff, post-fire slope instability, or drainage changes. The Project proposes to rehabilitate existing pavement and roadway shoulders along SR 12 and upgrade two bridges to be consistent with current Caltrans standards. The Project does not involve the occupation of habitable structures and does not include the installation of associated infrastructure that would exacerbate wildfire risk.

2.3.21 Mandatory Findings of Significance

Question	CEQA Determination
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
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
c) Does the project have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly?	No Impact

CEQA SIGNIFICANCE DETERMINATIONS FOR MANDATORY FINDINGS OF SIGNIFICANCE

a) Less Than Significant Impact with Mitigation Incorporated

As discussed in Section 2.1.4, the Project would have the potential to result in significant impacts to biological resources that would be made less than significant with the proposed mitigation measures. The Project would implement AMMs and project features to reduce potential impacts on biological resources (Appendix A). In addition, MM-BIO-1 proposes compensatory mitigation to offset unavoidable Project impacts. Further, implementation of MM-BIO-2 would ensure mitigation requirements are met through the monitoring period of onsite vegetation at temporarily impacted wetland habitats and where any additional wetland enhancement or restoration is implemented as compensatory mitigation. The impact would be less than significant with mitigation incorporated.

b) Less Than Significant Impact

The Project would not increase roadway capacity, induce growth, or change land use patterns. All potential impacts would be minimized through the implementation of project features, AMMs, and mitigation measures. Table 2-4 provides a list and description of past, current and foreseeable projects in the proposed Project vicinity. Other highway improvement projects near SR 84, such as the Miner Slough Replacement Bridge Project, are anticipated to occur within a similar timeframe;

therefore, cumulative effects may occur (such as traffic detours and temporary community impacts). However, Caltrans routinely coordinates with regional transportation managers and local agencies to minimize impacts in the region resulting from construction of multiple planned projects. The short duration and limited scope of this Project would not contribute considerably to cumulative environmental impacts, and Project-related impacts to resources would be reduced with the proper implementation of project features, AMMs, and mitigation measures. Therefore, the Project would have less than significant impacts.

Past, current, and reasonably foreseeable future projects along the SR 12 corridor or adjacent to the Suisun Marsh would all undergo (or have undergone) separate environmental review and require separate environmental permitting from regulatory agencies. Although these and similar projects could result in impacts to habitat for protected special-status species, most current and future projects that affect species and their habitats are expected to be required to mitigate these impacts through the CEQA, California Fish and Game Code Section 1600, or Sections 401/404 Clean Water Act permitting processes. As a result, most projects in the region would mitigate their impacts, minimizing cumulative impacts to protected special-status species. With implementation of project features, AMMs, and mitigation measures, the Project would not make a considerable contribution to cumulative effects on federal- or state-listed species, and the impact would be less than significant.

Table 2-5 lists current and foreseeable projects in Solano County (Caltrans 2022i). These projects are considered along with past projects, the Build Alternatives, and the No-Build Alternative in the cumulative impact analysis.

Table 2-5. Past, Current and Foreseeable Projects

Name	Location	Project Proponent	Proposed Uses	Status
SHOPP ID: 20885 EA 0K100	Solano County SR 12 – PM 2.21/25.78	Caltrans	Enhance pedestrian safety by installing accessible pedestrian signal systems and countdown timers and upgrading crosswalk markings	Design
SHOPP ID: 23043	Solano County SR 12 – PM 0/7.9	Caltrans	Address 30.6 lane miles of pavement, asphalt pavement rehab, Class II Buffered bike lanes	Conceptual
SHOPP ID: 20648	Solano County SR 12 – PM 14.1/20.68	Caltrans	Address 16.1 lane miles of pavement, asphalt pavement rehab, Class I bike lane, crossing islands, new/modify crosswalks	Conceptual

Name	Location	Project Proponent	Proposed Uses	Status
SHOPP ID: 22189 EA 0W110	In Fairfield and Suisun from Beck Avenue to Lawler Ranch Parkway/Walters Road SR 12 – R3.206/7.474	Caltrans	Install flashing beacons, signal ahead warning signs and pavement markings, guard rails, and pedestrian access/sidewalks	Design
State Route 12 Roadway Resurfacing, Restoration and Rehabilitation Project EA 0J630	Currie Road to Sacramento County Line in Solano County – PM 20.57/26.41	Caltrans	Repair roadway pavement cracking, upgrade shoulders, travel lanes, vertical sight distances, cross slopes, and drainage systems to current standards Address existing flooding problems and upgrade to facilities for Americans with Disabilities Act compliance	Design
Paving and Widening Project EA 04-0T10U4	Solano County PM 7.9/20.6	Caltrans	Replaced AC surfacing at various locations while placing 0.1-foot AC overlay on the existing pavement	Completed 2011
Median Barrier Project EA 04-3A6304	Solano County PM 7.9/20.6	Caltrans	Installed K-rails along the centerline of the highway with crash cushions and channelizers Project scope did not include pavement resurfacing	Completed 2007
AC Digouts Project EA 04-0P7504	Solano County PM 7.5/13.6 and 20.5/25.0	Caltrans	Performed cold-planing of AC pavement and placement of hot mix asphalt	Completed October 2021

ID = identification

c) No Impact

Construction activities would temporarily increase criteria pollutant emissions and traffic. The Project would incorporate project features and AMMs throughout construction to minimize potential impacts to the human environment resulting from the construction of the Project. The Project would not have a substantial direct or indirect impact on the human environment; therefore, there would be no impact.

2.4 Climate Change

Climate change refers to long-term changes in temperature, precipitation, wind patterns, and other elements of the Earth's climate system. The Intergovernmental Panel on Climate Change, established by the United Nations and World Meteorological Organization in 1988, is devoted to GHG emissions reduction and climate change research and policy. Climate change in the past has generally occurred gradually over millennia, or more suddenly in response to cataclysmic natural disruptions. The research of the Intergovernmental Panel on Climate Change and other scientists over recent decades, however, has unequivocally attributed an accelerated rate of climatological changes over the past 150 years to GHG emissions generated from the production and use of fossil fuels.

Human activities generate GHGs consisting primarily of carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), tetrafluoromethane, hexafluoroethane, sulfur hexafluoride (SF_6), and various hydrofluorocarbons (HFCs). CO_2 is the most abundant GHG; while it is a naturally occurring and necessary component of Earth's atmosphere, fossil-fuel combustion is the main source of additional, human-generated CO_2 that is the main driver of climate change. In the U.S. and in California, transportation is the largest source of GHG emissions, mostly CO_2.

The impacts of climate change are already being observed in the form of sea level rise, drought, extended and severe fire seasons, and historic flooding from changing storm patterns. The most important strategy to address climate change is to reduce GHG emissions. Additional strategies are necessary to mitigate and adapt to these impacts. In the context of climate change, "mitigation" involves actions to reduce GHG emissions to lessen adverse impacts that are likely to occur. "Adaptation" is planning for and responding to impacts to reduce vulnerability to harm, such as by adjusting transportation design standards to withstand more intense storms, heat, and higher sea levels. This analysis will include a discussion of both in the context of this transportation Project.

2.4.1 Regulatory Setting

This section outlines federal and state efforts to comprehensively reduce GHG emissions from transportation sources.

FEDERAL

To date, no national standards have been established for nationwide mobile-source GHG reduction targets, nor have any regulations or legislation been enacted specifically to address climate change and GHG emissions reduction at the Project level.

The National Environmental Policy Act (NEPA) (42 United States Code Part 4332) requires federal agencies to assess the environmental effects of their proposed actions prior to making a decision on the action or project.

The Federal Highway Administration (FHWA) recognizes the threats that extreme weather, sea level change, and other changes in environmental conditions pose to valuable transportation infrastructure and those who depend on it. FHWA therefore supports a sustainability approach that assesses vulnerability to climate risks and incorporates resilience into planning, asset management, project development and design, and operations and maintenance practices (FHWA 2019). This approach encourages planning for sustainable highways by addressing climate risks while balancing environmental, economic, and social values— “the triple bottom line of sustainability” (FHWA n.d.). Program and project elements that foster sustainability and resilience also support economic vitality and global efficiency, increase safety and mobility, enhance the environment, promote energy conservation, and improve the quality of life.

The federal government has taken steps to improve fuel economy and energy efficiency to address climate change and its associated effects. The most important of these was the Energy Policy and Conservation Act of 1975 (42 United States Code Section 6201) as amended by the Energy Independence and Security Act of 2007, and the Corporate Average Fuel Economy (CAFE) Standards. This act established fuel economy standards for on-road motor vehicles sold in the United States. The U.S. Department of Transportation’s (USDOT) National Highway Traffic and Safety Administration sets and enforces the CAFE standards based on each manufacturer’s average fuel economy for the portion of its vehicles produced for sale in the United States. USEPA calculates average fuel economy levels for manufacturers and also sets related GHG emissions standards under the Clean Air Act. Raising CAFE standards leads automakers to create a more fuel-efficient fleet, which improves our nation’s energy security, saves consumers money at the pump, and reduces GHG emissions (USDOT 2014).

USEPA published a final rulemaking on December 30, 2021, that raised federal GHG emissions standards for passenger cars and light trucks for model years 2023 through 2026, increasing in stringency each year. This rulemaking revised lower emissions standards that had been previously established for model years 2021 through 2026 in the Safer Affordable Fuel-Efficient (SAFE) Vehicles Rule Part Two in June 2020. The updated standards will result in avoiding more than 3 billion tons of GHG emissions through 2050 (USEPA 2021a).

STATE

California has been innovative and proactive in addressing GHG emissions and climate change by passing multiple Senate and Assembly bills and executive orders (EOs) including, but not limited to, the following:

EO S-3-05 (June 1, 2005): The goal of this EO is to reduce California's GHG emissions to the following levels:

- Year 2000 levels by 2010
- Year 1990 levels by 2020
- 80 percent below year 1990 levels by 2050

This goal was further reinforced with the passage of Assembly Bill (AB) 32 in 2006 and Senate Bill (SB) 32 in 2016.

Assembly Bill (AB) 32, Chapter 488, 2006, Núñez and Pavley, The Global Warming Solutions Act of 2006: AB 32 codified the 2020 GHG emissions reduction goals outlined in EO S-3-05, while further mandating that the California Air Resources Board (CARB) create a scoping plan and implement rules to achieve "real, quantifiable, cost-effective reductions of greenhouse gases." The Legislature also intended that the statewide GHG emissions limit continue in existence and be used to maintain and continue reductions in emissions of GHGs beyond 2020 (Health and Safety Code Section 38551(b)). The law requires CARB to adopt rules and regulations in an open public process to achieve the maximum technologically feasible and cost-effective GHG reductions.

EO S-01-07 (January 18, 2007): This order sets forth the low-carbon fuel standard for California. Under this EO, the carbon intensity of California's transportation fuels is to be reduced by at least 10 percent by the year 2020. CARB re-adopted the low-carbon fuel standard regulation in September 2015, and the changes went into effect on January 1, 2016. The program establishes a strong framework to promote the low-carbon fuel adoption necessary to achieve the governor's 2030 and 2050 GHG reduction goals.

SB 375, Chapter 728, 2008, Sustainable Communities and Climate Protection: This bill requires CARB to set regional emissions reduction targets for passenger vehicles. The metropolitan planning organization (MPO) for each region must then develop a Sustainable Communities Strategy (SCS) that integrates transportation, land use, and housing policies to plan how it will achieve the emissions target for its region.

SB 391, Chapter 585, 2009, California Transportation Plan: This bill requires the State's long-range transportation plan to identify strategies to address California's climate change goals under AB 32.

EO B-16-12 (March 2012): This EO orders state entities under the direction of the Governor, including CARB, the California Energy Commission, and the Public Utilities Commission, to support the rapid commercialization of zero-emission vehicles. It directs these entities to achieve various benchmarks related to zero-emission vehicles.

EO B-30-15 (April 2015): This EO establishes an interim statewide GHG emission reduction target of 40 percent below 1990 levels by 2030 to ensure California meets its target of reducing GHG emissions to 80 percent below 1990 levels by 2050. It further orders all state agencies with jurisdiction over sources of GHG emissions to implement measures, pursuant to statutory authority, to achieve reductions of GHG emissions to meet the 2030 and 2050 GHG emissions reductions targets. It also directs CARB to update the Climate Change Scoping Plan to express the 2030 target in terms of million metric tons of carbon dioxide equivalent ($MMTCO_2e$). [1] Finally, it requires the Natural Resources Agency to update the state's climate adaptation strategy, *Safeguarding California*, every 3 years, and to ensure that its provisions are fully implemented.

SB 32, Chapter 249, 2016: This SB codifies the GHG reduction targets established in EO B-30-15 to achieve a mid-range goal of 40 percent below 1990 levels by 2030.

SB 1386, Chapter 545, 2016: This SB declared "it to be the policy of the state that the protection and management of natural and working lands … is an important strategy in meeting the state's greenhouse gas reduction goals, and would require all state agencies, departments, boards, and commissions to consider this policy when revising, adopting, or establishing policies, regulations, expenditures, or grant criteria relating to the protection and management of natural and working lands."

SB 743, Chapter 386 (September 2013): This bill changes the metric of consideration for transportation impacts pursuant to CEQA from a focus on automobile delay to alternative methods focused on VMT, to promote the state's goals of reducing GHG emissions and traffic related air pollution and promoting

[1] GHGs differ in how much heat each traps in the atmosphere, called global-warming potential. CO_2 is the most important GHG, so amounts of other gases are expressed relative to CO_2, using a metric called carbon dioxide equivalent (CO_2e). The global-warming potential of CO_2 is assigned a value of 1, and that of other gases is assessed as multiples of CO_2.

multimodal transportation while balancing the needs of congestion management and safety.

SB 150, Chapter 150, 2017, Regional Transportation Plans: This bill requires CARB to prepare a report that assesses progress made by each MPO in meeting their established regional GHG emission reduction targets.

EO B-55-18 (September 2018): This EO sets a new statewide goal to achieve and maintain carbon neutrality no later than 2045. This goal is in addition to existing statewide targets of reducing GHG emissions.

EO N-19-19 (September 2019): This EO advances California's climate goals in part by directing the California State Transportation Agency to leverage annual transportation spending to reverse the trend of increased fuel consumption and reduce GHG emissions from the transportation sector. It orders a focus on transportation investments near housing, managing congestion, and encouraging alternatives to driving. This EO also directs CARB to encourage automakers to produce more clean vehicles, formulate ways to help Californians purchase them, and propose strategies to increase demand for zero-emission vehicles.

2.4.2 Environmental Setting

The proposed Project is in a rural area, surrounded by lands zoned as Exclusive Agriculture, Marsh Preservation, and Suisun Marsh Agriculture. SR 12 is considered a major route for the eastern part of the state to access Napa, Solano, and Sonoma counties. Within the Project limits, SR 12 is a conventional highway with two lanes of travel, one in each direction. The Project would not increase vehicular capacity, and there are no high occupancy vehicle lanes along the route. The Transportation and Circulation element of the Solano County General Plan guides transportation development and addresses GHGs in the Project area. The Project would not conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of GHGs.

GHG INVENTORIES

A GHG emissions inventory estimates the amount of GHGs discharged into the atmosphere by specific sources over a period of time, such as a calendar year. Tracking annual GHG emissions allows countries, states, and smaller jurisdictions to understand how emissions are changing and what actions may be needed to attain emission reduction goals. USEPA is responsible for documenting GHG emissions nationwide, and CARB does so for the state, as required by Health and Safety Code Section 39607.4. Cities and other local jurisdictions may also conduct local GHG inventories to inform their GHG reduction or climate action plans.

NATIONAL GHG INVENTORY

The annual GHG inventory submitted by USEPA to the United Nations provides a comprehensive accounting of all human-produced sources of GHGs in the United States. The 1990-2019 inventory found that overall GHG emissions were 6,558 million metric tons in 2019, down 1.7 percent from 2018 but up 1.8 percent from 1990 levels. Of these, 80 percent were CO_2, 10 percent were CH_4, and 7 percent were N_2O; the balance consisted of fluorinated gases. CO_2 emissions in 2019 were 2.2 percent less than in 2018 but 2.8 percent more than in 1990. As shown in Figure 2-4, the transportation sector accounted for 29 percent of U.S. GHG emissions in 2019 (USEPA 2021b, 2021c).

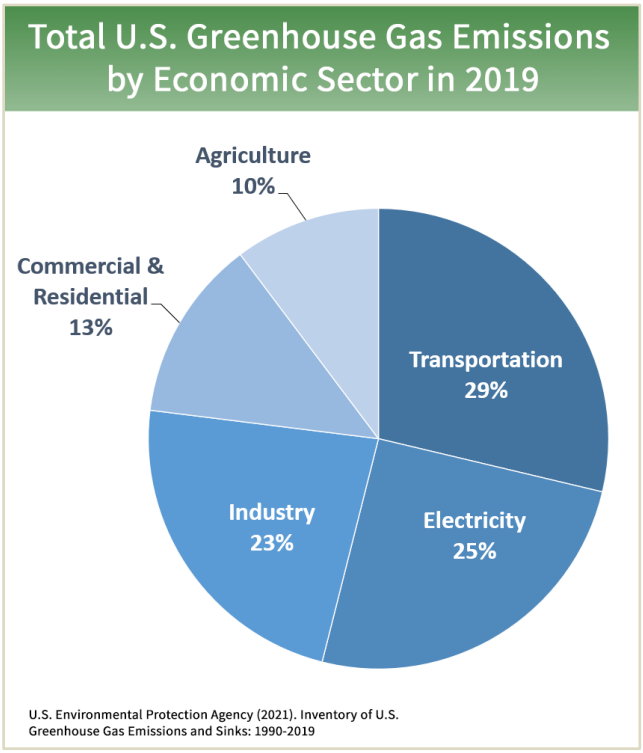

Figure 2-5. U.S. 2019 Greenhouse Gas Emissions

Source: USEPA 2021d

STATE GHG INVENTORY

CARB collects GHG emissions data for transportation, electricity, commercial/residential, industrial, agricultural, and waste management sectors each year. It then summarizes and highlights major annual changes and trends to demonstrate the state's progress in meeting its GHG reduction goals. The 2021 edition of the GHG emissions inventory reported emissions trends from 2000 to 2019. It found total California emissions were 418.2 $MMTCO_2e$ in 2019, a reduction of 7.2 $MMTCO_2e$ since 2018 and almost 13 $MMTCO_2e$ below the statewide 2020 limit of 431 $MMTCO_2e$. The transportation sector (including intrastate aviation and off

road sources) was responsible for about 40 percent of direct GHG emissions, a 3.5 $MMTCO_2e$ decrease from 2018 (Figure 2-6). Overall statewide GHG emissions declined from 2000 to 2019 despite growth in population and state economic output (Figure 2-7) (CARB 2021a).

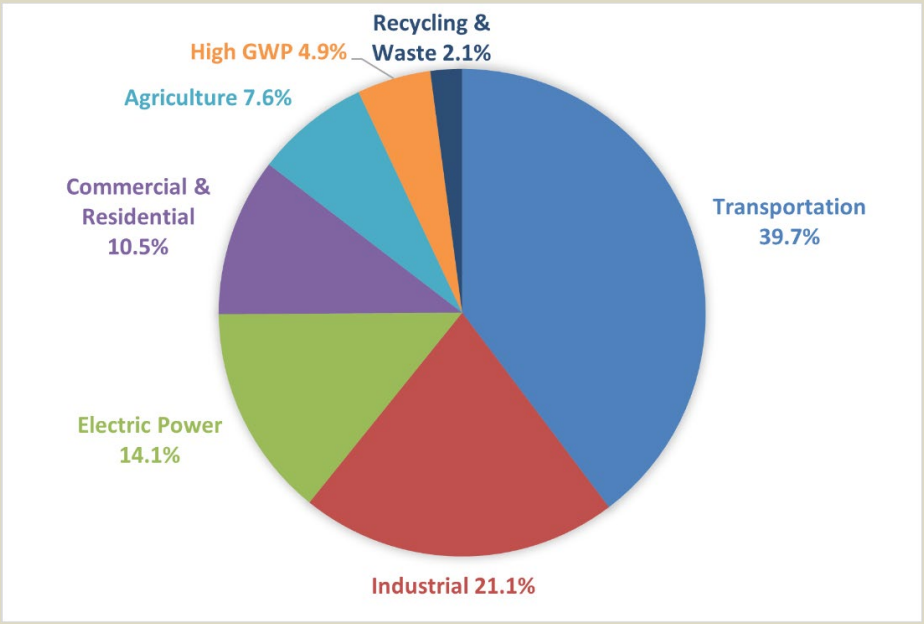

Figure 2-6. California 2019 Greenhouse Gas Emissions by Economic Sector

Source: CARB 2021a

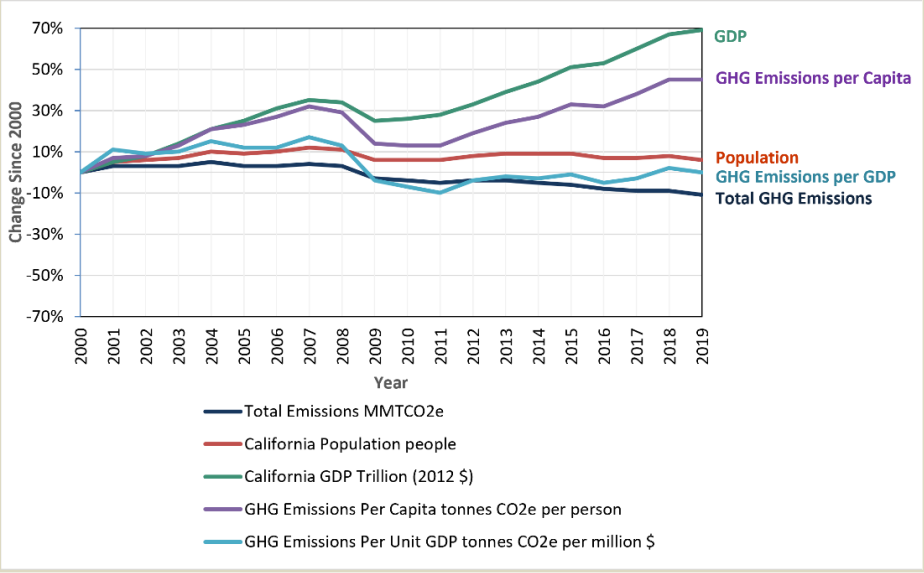

Figure 2-7. Change in California Gross Domestic Product, Population, and GHG Emissions since 2000

Source: CARB 2021a

AB 32 required CARB to develop a scoping plan that describes the approach California will take to achieve the goal of reducing GHG emissions to 1990 levels by 2020, and to update it every 5 years. CARB adopted the first Scoping Plan in 2008. The second updated plan, *California's 2017 Climate Change Scoping Plan*, adopted on December 14, 2017, reflects the 2030 target established in EO B-30-15 and SB 32. The AB 32 Scoping Plan and the subsequent updates contain the main strategies California will use to reduce GHG emissions.

REGIONAL PLANS

CARB sets regional GHG reduction targets for California's 18 MPOs to achieve through planning future projects that will cumulatively achieve those goals, and reporting how they will be met in the Regional Transportation Plan (RTP)/SCS. The Project is captured in the Plan Bay Area 2050 Transportation Project List (RTPID 21-TO1-004 and RTPID 21-TO1-006), the RTP/SCS for the Association of Bay Area Governments and Metropolitan Transportation Commission (ABAG and MTC); this program includes funding to operate and maintain the Bay Area's local bridges and highways. Improvements include bridge rehabilitation, replacement or retrofitting with no new capacity, and state highway resurfacing and/or rehabilitation with no new capacity, preventive maintenance, and emergency repair (ABAG/MTC 2021). Targets are set at a percent reduction of passenger vehicle GHG emissions per person from 2005 levels. The regional reduction target for ABAG/MTC is 19 percent by 2035 (CARB 2021b). The RTP/SCS aims to reduce per-capita delay and CO_2 emissions.

In 2011, Solano County adopted a Climate Action Plan to address climate change, with the following objectives:

- Reduce total GHG emissions within the County to 20 percent below 2005 levels by 2020 (20 percent below state law requirements)
- Create adaptation strategies to address impacts of climate change on the county

The Climate Action Plan recommends 31 measures and 94 implementing actions the community can take to reduce emissions and countywide contributions to global climate change (Solano County 2011).

2.4.3 Project Analysis

GHG emissions from transportation projects can be divided into those produced during operation of the State Highway System (operational emissions) and those produced during construction. The primary GHGs produced by the transportation sector are CO_2, CH_4, N_2O, and HFCs. CO_2 emissions are a product of burning gasoline or diesel fuel in internal combustion engines, along with relatively small

amounts of CH_4 and N_2O. A small amount of HFC emissions related to refrigeration is also included in the transportation sector.

The CEQA Guidelines generally address GHG emissions as a cumulative impact due to the global nature of climate change (Public Resources Code Section 21083(b)(2)). As the California Supreme Court explained, “because of the global scale of climate change, any one project's contribution is unlikely to be significant by itself.” (Cleveland National Forest Foundation *v.* San Diego Assn. of Governments [2017] 3 Cal.5th 497, 512). In assessing cumulative impacts, it must be determined if a project’s incremental effect is “cumulatively considerable” (CEQA Guidelines Sections 15064(h)(1) and 15130).

To make this determination, the incremental impacts of the Project must be compared with the effects of past, current, and probable future projects. Although climate change is ultimately a cumulative impact, not every individual project that emits GHGs must necessarily be found to contribute to a significant cumulative impact on the environment.

OPERATIONAL EMISSIONS

This Project proposes to resurface the existing pavement on both mainline traveled ways and shoulders. There are also two bridges within the Project area, Union Creek bridge and Denverton Creek bridge, that would be upgraded to be consistent with Caltrans current standards. The Project would not increase the vehicular capacity of the roadway. This type of project generally causes minimal or no increase in operational GHG emissions. Because the Project would not increase the number of travel lanes on SR 12, no increase in VMT would occur. While some GHG emissions during the construction period would be unavoidable, no increase in operational GHG emissions is expected.

CONSTRUCTION EMISSIONS

Construction GHG emissions would result from material processing and transportation, onsite construction equipment, and traffic delays due to construction. These emissions will be produced at different levels throughout the construction phase; their frequency and occurrence can be reduced through innovations in plans and specifications and by implementing better traffic management during construction phases.

Use of long-life pavement, improved traffic management plans, and changes in materials, can also help offset emissions produced during construction by allowing longer intervals between maintenance and rehabilitation activities.

Construction-related GHG emissions were calculated using the Road Construction Emissions Model, version 9.0, provided by the Sacramento Metropolitan Air Quality Management District. It was estimated that for the construction duration of 16 months, the total amount of CO_2, CH_4, and N_2O produced due to construction would be 698.94 tons, 0.13 ton, and 0.03 ton, respectively.

The following project features would be implemented to reduce or eliminate construction-related GHG emissions where practicable:

- **PF-AQ-2: Idling and Access Points**. Idling times would be minimized either by shutting off equipment when not in use or reducing the maximum idling time to 5 minutes (as required by the California airborne toxics control measure [Title 13, Section 2485 of California Code of Regulations]). Clear signage would be provided for construction workers at all access points. Construction activities involving the extended idling of diesel equipment or vehicles would be prohibited, to the extent feasible.

- **PF-AQ-3: Maintaining Construction Equipment and Vehicles.** All construction equipment and vehicles would be maintained and properly tuned in accordance with manufacturer's specifications. All equipment would be checked by a certified mechanic and determined to be running in proper condition prior to operation.

- **PF-Energy-1: Minimize Energy Consumption from Construction Activities.** Energy consumption from construction activities would be minimized by the use of construction BMPs, including, but not limited to the following:

  - Limit idling of vehicles and equipment.
  - Use solar power as a power source, if feasible.
  - Ensure regular maintenance of construction vehicles and equipment.
  - If feasible, recycle nonhazardous waste and excess materials to reduce disposal offsite.

- **PF-GHG-1: Energy Reduction**. Solar energy would be used to reduce the use of non-renewable energy during construction.

All construction contracts include Caltrans Standard Specifications Section 7-1.02A and 7-1.02C, Emissions Reduction, which require contractors to comply with all laws applicable to the Project and to certify they are aware of and will comply with all CARB emission reduction regulations, and Section 14-9.02, Air Pollution Control, which requires contractors to comply with all air-pollution-control rules, regulations, ordinances, and statutes. Certain common regulations, such as equipment idling

restrictions, that reduce construction vehicle emissions also help reduce GHG emissions.

2.4.4 CEQA Conclusion

While the proposed Project will result in GHG emissions during construction, it is anticipated that the Project will not result in any increase in operational GHG emissions. The proposed Project does not conflict with any applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of greenhouse gases. With implementation of construction GHG reduction measures, the impact would be less than significant. Caltrans is firmly committed to implementing measures to help reduce GHG emissions. These measures are outlined in Section 2.2.5.

2.4.5 Greenhouse Gas Reduction Strategies

STATEWIDE EFFORTS

In response to AB 32, California is implementing measures to achieve emission reductions of GHGs that cause climate change. Climate change programs in California are effectively reducing GHG emissions from all sectors of the economy. These programs include regulations, market programs, and incentives that will transform transportation, industry, fuels, and other sectors, to take California into a sustainable, low-carbon and cleaner future, while maintaining a robust economy (CARB 2022).

Major sectors of the California economy, including transportation, will need to reduce emissions to meet 2030 and 2050 GHG emissions targets. The Governor's Office of Planning and Research identified five sustainability pillars in a 2015 report (OPR 2015):

(1) Increasing the share of renewable energy in the state's energy mix to at least 50 percent by 2030

(2) Reducing petroleum use by up to 50 percent by 2030

(3) Increasing the energy efficiency of existing buildings by 50 percent by 2030

(4) Reducing emissions of short-lived climate pollutants

(5) Stewarding natural resources, including forests, working lands, and wetlands, to ensure that they store carbon, are resilient, and enhance other environmental benefits

The transportation sector is integral to the people and economy of California. To achieve GHG emission reduction goals, it is vital that the state build on past

successes in reducing criteria and toxic air pollutants from transportation and goods movement. GHG emission reductions will come from cleaner vehicle technologies, lower-carbon fuels, and reduction of VMT. Reducing today's petroleum use in cars and trucks is a key state goal for reducing GHG emissions by 2030 (California Environmental Protection Agency 2015).

In addition, SB 1386 (Wolk 2016) established as state policy the protection and management of natural and working lands and requires state agencies to consider that policy in their own decision making. Trees and vegetation on forests, rangelands, farms, and wetlands remove carbon dioxide from the atmosphere through biological processes and sequester the carbon in above- and below-ground matter.

Subsequently, Governor Gavin Newsom issued EO N-82-20 to combat the crises in climate change and biodiversity. It instructs state agencies to use existing authorities and resources to identify and implement near- and long-term actions to accelerate natural removal of carbon and build climate resilience in our forests, wetlands, urban greenspaces, agricultural soils, and land conservation activities in ways that serve all communities and in particular low-income, disadvantaged, and vulnerable communities. To support this order, the California Natural Resources Agency released the draft *Natural and Working Lands Climate Smart Strategy* for public comment in October 2021 (California Natural Resources Agency 2021b).

CALTRANS ACTIVITIES

Caltrans continues to be involved on the Governor's Climate Action Team as CARB works to implement EOs S-3-05 and S-01-07 and help achieve the targets set forth in AB 32. EO B-30-15, issued in April 2015, and SB 32 (2016), set an interim target to cut GHG emissions to 40 percent below 1990 levels by 2030. The following major initiatives are underway at Caltrans to help meet these targets.

CLIMATE ACTION PLAN FOR TRANSPORTATION INVESTMENTS

The *Climate Action Plan for Transportation Infrastructure* (CAPTI) builds on EOs signed by Governor Newsom in 2019 and 2020 targeted at reducing GHG emissions in transportation, which account for more than 40 percent of all polluting emissions, to reach the state's climate goals. Under the action plan, where feasible and within existing funding program structures, the state will invest discretionary transportation funds in sustainable infrastructure projects that align with its climate, health, and social equity goals (California State Transportation Agency 2021).

CALIFORNIA TRANSPORTATION PLAN

The *California Transportation Plan 2050 (CTP 2050)* is a statewide, long-range transportation plan to meet our future mobility needs and reduce GHG emissions. It serves as an umbrella document for all the other statewide transportation planning documents. The Plan presents a vision of a safe, resilient, and universally accessible transportation system that supports vibrant communities, advances racial and economic justice, and improves public and environmental health. The plan's climate goal is to achieve statewide GHG emissions reduction targets and increase resilience to climate change. It demonstrates how GHG emissions from the transportation sector can be reduced through advancements in clean fuel technologies; continued shifts toward active travel, transit, and shared mobility; more efficient land use and development practices; and continued shifts to telework (Caltrans 2021b).

CALTRANS STRATEGIC PLAN

The *Caltrans 2020–2024 Strategic Plan* includes goals of stewardship, climate action, and equity. Climate action strategies include developing and implementing a Caltrans Climate Action Plan; a robust program of climate action education, training, and outreach; partnership and collaboration; a VMT monitoring and reduction program; and engaging with the most vulnerable communities in developing and implementing Caltrans climate action activities (Caltrans 2021c).

CALTRANS POLICY DIRECTIVES AND OTHER INITIATIVES

Caltrans Director's Policy 30 (DP-30) Climate Change (June 22, 2012) established a Caltrans policy to ensure coordinated efforts to incorporate climate change into Caltrans decisions and activities. *Caltrans Greenhouse Gas Emissions and Mitigation Report* (Caltrans 2020b) provides a comprehensive overview of Caltrans' emissions. The report documents and evaluates current Caltrans procedures and activities that track and reduce GHG emissions and identifies additional opportunities for further reducing GHG emissions from Caltrans-controlled emission sources, in support of Caltrans and state goals.

PROJECT-LEVEL GHG REDUCTION STRATEGIES

The following measures would also be implemented in the Project to reduce GHG emissions and potential climate change impacts from this Project:

- **PF-AES-1: Vegetation Protection.** Existing trees and vegetation would be preserved to the extent feasible. Trees and vegetation outside of the clearing and grubbing limits would be protected from the contractor's operations, equipment, and materials storage. Tree trimming and pruning, where required, would be under the direction of a certified arborist.

- **PF-Energy-1: Minimize Energy Consumption from Construction Activities.** Energy consumption from construction activities would be minimized by the use of construction BMPs, including, but not limited to the following:
  - Limit idling of vehicles and equipment.
  - Use solar power as a power source, if feasible.
  - Ensure regular maintenance of construction vehicles and equipment.
  - If feasible, recycle nonhazardous waste and excess materials to reduce disposal offsite.
- **PF-GHG-1: Energy Reduction**. Solar energy would be used to reduce the use of non-renewable energy during construction.
- **PF-TRA-1: Traffic Management Plan.** A Traffic Management Plan (TMP) would be developed by Caltrans during the design phase. The TMP would include public information, motorist information, incident management, construction, and alternate routes. In addition, one-way traffic control, lane closures, flaggers and phasing, portable changeable message signs, flaggers and the California Highway Patrol's Construction Zone Enhanced Enforcement Program would be incorporated into the TMP to minimize delays to local residents and highway users, as feasible. The TMP would also provide access for police and emergency service providers. Lane closures would be planned in coordination with Caltrans and Solano County and would include notices to emergency services providers, and the public in advance.

2.4.6 Adaptation

Reducing GHG emissions is only one part of an approach to addressing climate change. Caltrans must plan for the effects of climate change on the state's transportation infrastructure and strengthen or protect the facilities from damage. Climate change is expected to produce increased variability in precipitation, rising temperatures, rising sea levels, variability in storm surges and their intensity, and in the frequency and intensity of wildfires. Flooding and erosion can damage or wash out roads; longer periods of intense heat can buckle pavement and railroad tracks; storm surges combined with a rising sea level can inundate highways. Wildfire can directly burn facilities and indirectly cause damage when rain falls on denuded slopes that landslide after a fire. Effects will vary by location and may, in the most extreme cases, require that a facility be relocated or redesigned. Accordingly, Caltrans must consider these types of climate stressors in how highways are planned, designed, built, operated, and maintained.

FEDERAL EFFORTS

Under NEPA assignment, Caltrans is obligated to comply with all applicable federal environmental laws and FHWA NEPA regulations, policies, and guidance.

The *Fourth National Climate Assessment*, published in 2018, presents the foundational science and the "human welfare, societal, and environmental elements of climate change and variability for 10 regions and 18 national topics, with particular attention paid to observed and projected risks, impacts, consideration of risk reduction, and implications under different mitigation pathways" (USGCRP 2018).

The USDOT *Policy Statement on Climate Adaptation* in June 2011 committed the federal Department of Transportation to "integrate consideration of climate change impacts and adaptation into the planning, operations, policies, and programs of DOT in order to ensure that taxpayer resources are invested wisely, and that transportation infrastructure, services and operations remain effective in current and future climate conditions" (USDOT 2011).

In 2014, FHWA Order 5520, *Transportation System Preparedness and Resilience to Climate Change and Extreme Weather Events,* established FHWA policy to strive to identify the risks of climate change and extreme weather events to current and planned transportation systems. FHWA has developed guidance and tools for transportation planning that foster resilience to climate effects and sustainability at the federal, state, and local levels (FHWA 2019).

STATE EFFORTS

Climate change adaptation for transportation infrastructure involves long-term planning and risk management to address vulnerabilities in the transportation system. A number of state policies and tools have been developed to guide adaptation efforts.

California's Fourth Climate Change Assessment (Fourth Assessment) (State of California 2018) is the state's effort to "translate the state of climate science into useful information for action." It provides information that will help decision makers across sectors and at state, regional, and local scales protect and build the resilience of the state's people, infrastructure, natural systems, working lands, and waters. The State's approach recognizes that the consequences of climate change occur at the intersections of people, nature, and infrastructure. The Fourth Assessment reports that if no measures are taken to reduce GHG emissions by 2021 or sooner, the state is projected to experience a 2.7- to 8.8-degree-Fahrenheit increase in average annual maximum daily temperatures, with impacts on agriculture, energy demand, natural systems, and public health; a two-thirds decline in water supply from

snowpack and water shortages that will impact agricultural production; a 77 percent increase in average area burned by wildfire, with consequences for forest health and communities; and large-scale erosion of up to 67 percent of Southern California beaches and inundation of billions of dollars' worth of residential and commercial buildings due to sea level rise (State of California 2018).

Sea level rise is a particular concern for transportation infrastructure in the coastal zone. Major urban airports will be at risk of flooding from sea level rise combined with storm surge as early as 2040; San Francisco airport is already at risk. Miles of coastal highways vulnerable to flooding in a 100-year storm event will triple to 370 by 2100, and 3,750 miles will be exposed to temporary flooding. The Fourth Assessment's findings highlight the need for proactive action to address these current and future impacts of climate change.

In 2008, then-governor Arnold Schwarzenegger recognized the need when he issued EO S-13-08, focused on sea level rise. Technical reports on the latest sea level rise science were first published in 2010 and updated in 2013 and 2017. The 2017 projections of sea level rise and new understanding of processes and potential impacts in California were incorporated into the *State of California Sea-Level Rise Guidance Update* in 2018. This EO also gave rise to the *California Climate Adaptation Strategy* (2009), updated in 2014 as *Safeguarding California: Reducing Climate Risk* (Safeguarding California Plan), which addressed the full range of climate change impacts and recommended adaptation strategies. The Safeguarding California Plan was updated in 2018 and again in 2021 as the *California Climate Adaptation Strategy* (California Natural Resources Agency 2021a), incorporating key elements of the latest sector-specific plans such as the *Natural and Working Lands Climate Smart Strategy* (California Natural Resources Agency 2021b), *Wildfire and Forest Resilience Action Plan* (State of California 2021), Water Resilience Portfolio (State of California 2020), and the CAPTI (California State Transportation Agency 2021). Priorities in the 2021 California Climate Adaptation Strategy include acting in partnership with California Native American tribes, strengthening protections for climate-vulnerable communities that lack capacity and resources, nature-based climate solutions, use of best available climate science, and partnering and collaboration to best leverage resources (California Natural Resources Agency 2021a).

EO B-30-15, signed in April 2015, requires state agencies to factor climate change into all planning and investment decisions. This EO recognizes that effects of climate change in addition to sea level rise also threaten California's infrastructure. At the direction of EO B-30-15, the California Governor's Office of Planning and Research

(OPR) published *Planning and Investing for a Resilient California: A Guidebook for State Agencies* in 2018 to encourage a uniform and systematic approach.

AB 2800 (Quirk 2016) created the multidisciplinary Climate-Safe Infrastructure Working Group to help actors throughout the state address the findings of California's Fourth Climate Change Assessment. It released its report, *Paying it Forward: The Path Toward Climate-Safe Infrastructure in California*, in 2018. The report provides guidance to agencies on how to address the challenges of assessing risk in the face of inherent uncertainties still posed by the best available science on climate change. It also examines how state agencies can use infrastructure planning, design, and implementation processes to address the observed and anticipated climate change impacts (Climate Change Infrastructure Working Group 2018).

CALTRANS ADAPTATION EFFORTS

Caltrans Vulnerability Assessments

Caltrans completed climate change vulnerability assessments to identify segments of the State Highway System vulnerable to climate change effects of precipitation, temperature, wildfire, storm surge, and sea level rise.

The climate change data in the assessments were developed in coordination with climate change scientists and experts at federal, state, and regional organizations at the forefront of climate science. The findings of the vulnerability assessments guide analysis of at-risk assets and development of Adaptation Priority Reports as a method to make capital programming decisions to address identified risks.

PROJECT ADAPTATION ANALYSIS

Sea Level Rise

The proposed Project is outside the coastal zone and not in an area subject to sea level rise. Accordingly, direct impacts to transportation facilities due to projected sea level rise are not expected.

Precipitation and Flooding

As noted in Section 2.1.10, the Project site is within Zone A, Zone AE, and Zone X floodplains. Zone AE floodplains indicate areas inundated with a 1 percent annual chance of flooding (100-year flood). The Caltrans District 4 Climate Change Vulnerability Assessment indicates the potential for a 0.6 to 4.9 percent increase in 100-year storm precipitation depth in the Project vicinity by 2025 and a 5.0 to 9.9 percent increase by 2085 on the northwestern portion of the Project vicinity, whereas the southeastern portion of the Project vicinity remains at a 0.6 to 4.9 percent increase by 2085 (Caltrans 2017b, 2020c). A number of local geomorphic variables affect how a given precipitation event would affect streamflow, making it difficult to

assess potential impacts at a particular location. However, as discussed in Section 2.1.10, the Project would not change the 100-year water surface elevation within the Project area. Stormwater runoff from the roadway would continue to sheet flow off the pavement similar to existing conditions. The Project would also implement temporary construction site BMPs to reduce the amount of pollutants being discharged into the receiving waterbodies and avoid storing hazardous and nonhazardous materials within the Zone AE floodplain.

Wildfire

The Project is not surrounded by areas identified as high fire hazard severity zones, and the Project itself is not within a high fire hazard severity zone area (CAL FIRE 2008). The Caltrans Climate Change Vulnerability Assessment for District 4 evaluated roads at risk for future wildfire and determined that the Project is not in an area of wildfire risk nor characterized as within or along exposed roadway (Caltrans 2017b). The Project would serve the same use and vehicular capacity as the existing facility and would not increase wildfire risks. Caltrans would implement AMM-WF-1 to reduce the potential wildfire risks during construction. The Project is not likely to be subject to effects of wildfire that could occur under climate change.

AMM-WF-1: Implement Fire Prevention Practices During Construction. Caltrans would implement the following fire prevention practices to reduce the potential for wildfire:

- Internal combustion engines, stationary and mobile, would be equipped with spark arrestors. Spark arrestors would be in good working order.
- Contractor would keep all construction sites and staging areas free of grass, brush, and other flammable materials.
- Personnel would be trained in the practices of the fire safety plan relevant to their duties.
- Construction and maintenance personnel would be trained and equipped to extinguish small fires.
- Work crews would have fire extinguishing equipment on hand, as well as emergency numbers and cell phone or other means of contacting the fire department.
- Smoking would be prohibited while operating equipment and would be limited to paved or graveled areas or areas cleared of all vegetation. Smoking would be prohibited within 30 feet of any combustible material storage area (including

fuels, gases, and solvents). Smoking would be prohibited in any location during a Red Flag Warning issued by the National Weather Service for the Project area.

Chapter 3 List of Preparers

The primary persons responsible for contributing to, preparing, and reviewing this report are listed in Table 3-1.

Table 3-1. List of Preparers and Reviewers

Organization	Name	Role
Caltrans	Jason Mac	Project Manager
Caltrans	Yenha Nguyen	Project Engineer
Caltrans	Khon Tram	Utilities
Caltrans	Leia Torrejon	Utilities
Caltrans	Karen Mai	Water Quality
Caltrans	Chris Else	Landscape Architecture
Caltrans	Mostafa Faghihi	Water Quality
Caltrans	Maxwell Lammert	Senior Planner, Solano and Napa, Environmental Analysis
Caltrans	Scott M. Williams	Acting Office Chief, Office of Environmental Analysis
Caltrans	Joey Aquion	Construction
Caltrans	Siria Che Wu	Air Quality/Noise
Caltrans	Lindsay Busse	Archaeology (Cultural)
Caltrans	Alicia Sanhueza	Architectural Historian
Caltrans	Khai Leong	Structure Hydraulics
Caltrans	Jinpei Feng	Structure Hydraulics
Caltrans	Jessica Chan	Landscape Architect
Caltrans	Robin Amatya	Senior Transportation Engineer (Hydraulics)
Caltrans	Chris Risden	Senior Transportation Engineer (Geotech)
Caltrans	Gregory Currey	Senior Transportation Planner (Bike/Ped)
Caltrans	Alicia Sanhueza	Architectural Historian
Caltrans	Joe Downing	Structure Design
Caltrans	Shella Orson	Right of Way Project Coordinator
Caltrans	Chris Wilson	Hazardous Waste
Caltrans	Rosa Maria Candiotti	Structure Design

Organization	Name	Role
Caltrans	Rick Donofrio	Materials
Caltrans	Mostafa Mo Faghihi	Water Quality
Caltrans	Martin Mercado	Senior Construction Engineer
Caltrans	Mohammad Zabolzadeh	Material Design Branch Chief
Caltrans	Atif Abrar	Senior Transportation Engineer
Caltrans	Youseff Yazbek Karam	Transportation Engineer
Caltrans	John Seal	Environmental Scientist
Caltrans	Matthew Rechs	Senior Biologist/Branch Chief
Jacobs	Morgan Angulo	Environmental Planner
Jacobs	Holly Barbare	Biologist
Jacobs	David Carlson	Project Manager
Jacobs	Clarice Ericsson	Publications Technician
Jacobs	Erin Kraft	Environmental Planner
Jacobs	Erik Lauritzen	Environmental Planner
Jacobs	Scott Lindeman	Biologist
Jacobs	Loretta Meyer	Senior Environmental Planner
Jacobs	Hannah Minderhout	Environmental Planner
Jacobs	Leslie O'Connor	Technical Editor
Jacobs	Yassaman Sarvian	Environmental Planner
Kleinfelder	Bob Solotar	Permitting Specialist

Chapter 4 Distribution List

The IS/MND will be circulated on October 7, 2022, to the following agencies and government officials:

Agencies

Federal Agencies

Environmental Protection Agency, Region IX Federal Activities Office, CMD-2
75 Hathorne Street
San Francisco, CA 94105-3901

National Marine Fisheries Services
777 Sonoma Avenue Room 325
Santa Rosa, CA 95404

U.S. Fish and Wildlife Service
2800 Cottage Way W-2605
Sacramento, CA 95825

U.S. Army Corps of Engineers
Sacramento District
ATTN: Regulatory Branch
1325 J Street, Room 1480
Sacramento, CA 95825

State Agencies

Bay Area Air Quality Management District
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California Air Resources Board
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California Department of Fish and Wildlife
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California Native American Heritage Commission
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West Sacramento, CA 95691

San Francisco Bay Regional Water Quality Control Board
1515 Clay Street, Suite 1400
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San Francisco Bay Conservation and Development Commission
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Solano County Water Agency
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Elected Officials

Federal Officials

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The Honorable Dianne Feinstein
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Appendix A Project Features, Avoidance and Minimization Measures, and Mitigation Measures

Appendix A. Project Features, Avoidance and Minimization Measures, and Mitigation Measures

Resource Area	Project Feature Reference	Project Feature Title and Description
Aesthetics	**PF-AES-1**	**Vegetation Protection.** Existing trees and vegetation would be preserved to the extent feasible. Trees and vegetation outside of the clearing and grubbing limits would be protected from the contractor's operations, equipment, and materials storage. Tree trimming and pruning, where required, would be under the direction of a certified arborist.
Aesthetics	**PF-AES-2**	**Erosion Control.** After construction, all areas cleared within the Project limits for uses such as contractor access, staging, and trenching operations would be treated with appropriate erosion control measures where required.
Aesthetics	**PF-AES-3**	**Construction Staging.** Except as detailed in the Contract Plans, staging areas would not affect existing landscaped areas resulting in death and/or removal of trees and shrubs, or disruption and destruction of existing irrigation facilities.
Aesthetics	**PF-AES-4**	**Construction Waste.** During construction operations, unsightly material and equipment in staging areas would be placed where they are less visible and/or covered where possible.
Aesthetics	**PF-AES-5**	**Construction Lighting.** Construction lighting would be directed toward the immediate vicinity of active work and would avoid light trespass through directional lighting, shielding, and other measures as needed.
Air Quality	**PF-AQ-1**	**Dust Control.** Dust control measures would be included in the SWPPP and implemented to minimize construction impacts to existing communities. The plan would incorporate measures such as sprinkling, speed limits, covering transported material loads, and timely revegetation of disturbed areas as needed, as well as posting a publicly visible sign with the telephone number and person to contact at the lead agency regarding dust complaints and at BAAQMD regarding compliance with applicable regulations. Water trucks or dust palliatives would be applied to the site, including unvegetated areas, and equipment as often as necessary to control fugitive dust emissions. Fugitive emissions generally must meet a "no visible dust" criterion either at the point of emissions or at the ROW line, depending on air pollution control district and air quality management district regulations and local ordinances.

Resource Area	Project Feature Reference	Project Feature Title and Description
Air Quality	**PF-AQ-2**	**Idling and Access Points**. Idling times would be minimized either by shutting off equipment when not in use or reducing the maximum idling time to 5 minutes (as required by the California airborne toxics control measure [Title 13, Section 2485 of California Code of Regulations]). Clear signage would be provided for construction workers at all access points. Construction activities involving the extended idling of diesel equipment or vehicles would be prohibited, to the extent feasible.
Air Quality	**PF-AQ-3**	**Maintaining Construction Equipment and Vehicles.** All construction equipment and vehicles would be maintained and properly tuned in accordance with manufacturer's specifications. All equipment would be checked by a certified mechanic and determined to be running in proper condition prior to operation.
Biology	**PF-BIO-1**	**Documentation at Project Site.** A Permit Compliance Binder would be maintained at the construction site at all times and presented to resource agency (USACE, USFWS, CDFW, BCDC and/or RWQCB) personnel upon request. The Permit Compliance Binder would include a copy of all original permits and agreements, and any extensions and amendments to the permits and agreements.
Biology	**PF-BIO-2**	**Work According to Documents.** Except as they are contradicted by measures within the permits and agreements, all work would be conducted in conformance with the Project description in the permits and agreements, and the AMMs provided in the permits and agreements.
Biology	**PF-BIO-3**	**Agency-Approved Biologist(s).** Prior to construction, the qualifications of the biological monitor(s) would be submitted to USFWS and CDFW for review and approval.
Biology	**PF-BIO-4**	**Designation of Environmentally Sensitive Areas and Construction and Storage Areas.** Caltrans will delineate construction areas and ESAs (defined as areas containing sensitive habitats adjacent to or within construction work areas for which physical disturbance is not allowed) on the final construction plans. The approved biological monitor will be onsite to direct the installation of high-visibility, orange ESA fencing to prevent encroachment of construction personnel and equipment onto sensitive areas during construction activities, as needed. Staging, storage, and parking areas will be located on paved or graveled surfaces within the ROW and away from any designated ESAs, as specified by the Project biologist, to avoid construction impacts to natural communities. Equipment and materials storage sites will be located as far away from residential and park uses as practicable. At the discretion of the Caltrans biologist, ESA fencing may be removed at times when construction is no longer active in the area.

Resource Area	Project Feature Reference	Project Feature Title and Description
Biology	**PF-BIO-5**	**Wildlife Exclusion Fencing.** Before ground-disturbing activities commence, high-visibility wildlife exclusion fencing (WEF) (suitable for amphibian and small mammal exclusion) would be installed along ESA/ground-disturbance boundaries to protect sensitive wildlife and to keep them from entering the work site. The final Project plans and specifications in the bid solicitation package would depict the locations WEF would be installed and specify acceptable fencing material and installation methods and prohibited construction-related activities in ESA. The WEF would be maintained until ground-disturbing activities near the ESA is complete: • Supports for the WEF would be placed on the inside of the work area to prevent wildlife from using them to climbing into the work area. • The fence fabric would be at least 36 inches high. • The fencing would be made of a heavy plastic sheeting material that is too smooth for salt marsh harvest mouse to climb. • The toe of the fence fabric would be buried approximately 6 inches in the ground to prevent wildlife from crawling or burrowing underneath it.
Biology	**PF-BIO-6**	**Fence and Signpost Caps.** Fence or signposts would have the top of the post capped and/or the top three post holes covered or filled with screws or bolts to prevent the entrapment of wildlife, specifically birds of prey.
Biology	**PF-BIO-7**	**Restore Disturbed Areas.** Temporarily disturbed areas, including staging areas, would be restored to the maximum extent practicable. Construction-related materials would be removed. Exposed slopes and bare ground would be reseeded with native species to stabilize and prevent erosion.
Biology	**PF-BIO-8**	**Invasive Weed Control.** To reduce the spread of non-native, invasive plants, these species would be controlled within the Project footprint to the maximum extent practicable, in accordance with Caltrans' Highway Design Manual Topic 110.5, Control of Noxious Weeds – Exotic and Invasive Species, and Executive Order 13112, Invasive Species, and by methods approved by a Caltrans' landscape architect or vegetation control specialist. Vehicles and equipment would be thoroughly cleaned before arriving on the site to prevent the spread of noxious weeds from other locations. In work areas where California Department of Food and Agriculture listed noxious weeds or California Invasive Plant Council (Cal-IPC) Moderate- or High-rated weed species occur in fruit or flower and may be disturbed during construction-related activities, the contractor would be required to clear vegetation at the beginning of location disturbance, and contain the plant material associated with these noxious weeds, and dispose of them in a manner that will not promote the spread of the species. Areas subject to noxious weed removal or disturbance will be replanted with fast growing native grasses or a native erosion control seed mixture.

Resource Area	Project Feature Reference	Project Feature Title and Description
Biology	**PF-BIO-9**	**Construction Site Best Management Practices.** The following site restrictions would be implemented to avoid or minimize potential effects on listed species and their habitats: • Speed Limit. Vehicles would not exceed 15 miles per hour in unpaved areas of the Project footprint, to reduce dust and excessive soil disturbance. • Trash Control. Food and food-related trash items would be secured in sealed trash containers and removed from the site at the end of each day. • Pets. Pets would be prohibited from entering the Project limits during construction. • Firearms. Firearms would be prohibited within the Project limits, except for those carried by authorized security personnel or local, state, or federal law enforcement officials.
Biology	**PF-BIO-10**	**Vegetation Removal.** Native vegetation would be cleared only when necessary and would be cut above soil level except in areas that would be excavated. Pre-construction and bird nesting surveys would be conducted prior to removal of vegetation. If active nests are found, then an appropriate buffer would be established, and the nest would be monitored for compliance with the Migratory Bird Treaty Act and Fish and Game Code Section 3503. During vegetation removal in potential salt marsh harvest mouse habitat, the agency-approved biologist would inspect areas to be cleared immediately prior to vegetation removal and would monitor the vegetation removal process. Herbaceous vegetation would be removed from impact areas to eliminate cover for salt marsh harvest mice, thereby discouraging them from entering impact areas. Vegetation removal would start at the road shoulder and proceed away from the work area and toward contiguous areas of suitable habitat to allow any salt marsh harvest mice in the exclusion area to passively relocate into adjacent habitat. Vegetation would not be removed during a flooding event that inundates the marsh because these are the conditions in which salt marsh harvest mice are most likely to be present in the biological study area (BSA). Initial removal of pickleweed, salt-grass, and other vegetation in the marked areas would be done using hand tools exclusively. This would allow any small mammals, including salt marsh harvest mice, to escape the BSA under the cover of vegetation, and would encourage movement of such small mammals toward available vegetated habitat outside the BSA. All herbaceous vegetation that could potentially conceal a salt marsh harvest mouse within the BSA would be removed. All vegetation that is removed would be hauled offsite the day it is removed and would not be left on the site to provide potential cover for small mammal species.
Biology	**PF-BIO-11**	**Construction Lighting and Signage.** Construction area lighting would be used only where necessary for safety and signage. Downcast lighting and shielding to minimize artificial lighting of natural areas would be used throughout the Project footprint.

Resource Area	Project Feature Reference	Project Feature Title and Description
Biology	**PF-BIO-12**	**Cover Staged Materials.** Culverts, pipes, hoses, and similar structures less than 12 inches in diameter would be closed, covered or capped to prevent animal entry upon arrival to the Project site. Culverts, pipes, hoses, and similar structures would be inspected for wildlife before it is buried, capped, used, or moved.
Biology	**PF-BIO-13**	**Nesting Bird Protection.** During the bird nesting season (February 1 to September 30), an agency-approved biologist would conduct pre-construction surveys for active bird nests no more than 3 days before the start of ground or vegetation disturbance events and every 14 days during Project activities. Tree and/or shrub trimming would be conducted outside of bird nesting season unless monitoring results show no active nesting is taking place as discussed for the following buffer zones: If an active nest is identified during construction that may be impacted by Project activities, a no-disturbance buffer of 300 feet for raptors and 50 feet for non-raptors would be established immediately and the agency-approved biologist would be notified so that the nest can be monitored. A reduced or enlarged buffer, and other protection measures would be implemented as needed and in consultation with the appropriate wildlife agency.
Biology	**PF-BIO-14**	**Worker Environmental Awareness Training.** Before the onset of construction, an agency-approved biologist would conduct training for all construction personnel. At a minimum, the training would include the following: • A description of all special-status species and their habitats • The potential occurrence of these species in the job sites • An explanation of the status of these species and protection under the federal Endangered Species Act, California Endangered Species Act, and all other federal, state, and local regulatory requirements • The measures to be implemented to conserve listed species and their habitats as they relate to the work site • Boundaries within which construction may occur A fact sheet conveying this information would be prepared and distributed to all construction crews and project personnel entering the project footprint. Upon completion of the program, personnel would sign a form stating that they attended the program and understand all AMMs and implications of the federal Endangered Species Act, California Endangered Species Act, and all other federal, state, and local regulatory requirements.
Biology	**PF-BIO-15**	**Prohibition of Monofilament Netting.** Erosion control materials (i.e., wattles, matting, and blankets) will not contain plastic monofilament netting that could entrap or harm wildlife. Acceptable substitutes would include coconut coir matting or tackifying hydroseeding compounds.
Biology	**PF-BIO-16**	**Discovery of Injured or Dead Special-Status Species.** Immediately upon discovery of any dead, or injured, or species

Resource Area	Project Feature Reference	Project Feature Title and Description
		regulated by USFWS, NMFS, or CDFW, Caltrans would provide appropriate notifications to the agency(s) with jurisdiction. Storage and transport to the nearest wildlife care facility may be necessary in direct coordination with agencies.
Biology	**PF-BIO-17**	**Wildlife Species Relocation.** If wildlife is encountered during construction, all work in the vicinity that could result in the injury or death of the wildlife would be stopped immediately and it would be allowed to leave the job site unharmed. If it is determined that they could be injured or killed by construction activities, the agency-approved biologist, in coordination with Caltrans and the appropriate state and federal wildlife agencies, would do the following: • Conduct, monitor, and supervise all capture, handling, exclusion, and relocation activities • Ensure that sufficient personnel are available for safe and efficient collection of the wildlife • Ensure that proper training and any required permitting or licensing is current for personnel identifying, handling, and conducting safe capture of listed species Where listed species cannot be captured, handled, excluded, or relocated, actions that could injure or kill individuals would be avoided or delayed until the species leaves the affected area.
Biology	**PF-BIO-18**	**Aquatic Species Relocation.** Aquatic species relocation will occur within Union Creek prior to and during dewatering efforts. An aquatic species relocation plan will be developed and submitted to the agencies for approval prior to dewatering occurring.
Cultural	**PF-CULT-1**	**Discovery of Cultural Resources.** If previously unidentified cultural resources are unearthed during construction, work would be halted in that area until a qualified archaeologist can assess the significance of the discovery.
Cultural	**PF-CULT-2**	**Discovery of Human Remains.** If remains are discovered during dredging activities, all work within 60 feet of the discovery would halt and the Caltrans Cultural Studies Office would be called. Caltrans Cultural Resources Studies Office Staff would assess the remains and, if they are determined to be human, would contact the County Coroner, per Public Resources Code, Sections 5097.98, 5097.99, and 7050.5 of the California Health and Safety Code. If the coroner determines the remains to be Native American, then the coroner would contact the Native American Heritage Commission, which would assign a Most Likely Descendant. Caltrans would consult with the Most Likely Descendant on treatment and reburial of the remains. Further provisions of Public Resources Code, Section 5097.98 would be followed as applicable.

Resource Area	Project Feature Reference	Project Feature Title and Description
Energy	**PF-ENERGY-1**	**Minimize Energy Consumption from Construction Activities.** Energy consumption from construction activities would be minimized by the use of construction BMPs, including, but not limited to the following: • Limit idling of vehicles and equipment. • Use solar power as a power source, if feasible. • Ensure regular maintenance of construction vehicles and equipment. • If feasible, recycle nonhazardous waste and excess materials to reduce disposal offsite.
Greenhouse Gas Emissions	**PF-GHG-1**	**Energy Reduction.** Solar energy would be used to reduce the use of non-renewable energy during construction.
Hazards and Hazardous Materials	**PF-HAZ-1**	**Caltrans Standard Specifications and Hazardous Waste Regulations.** The current Caltrans Standard Specifications Section 13-4, Job Site Management, would be implemented to prevent and control spills or leaks from construction equipment and storage of fuels, paints, cleaners, solvents, and lubricants. All aspects of the project associated with transport, storage, use, and disposal of hazardous materials would be done in accordance with the California Health and Safety Code and the appropriate local, state, and federal hazardous waste regulations. Handling and management of hazardous materials would comply with the current Caltrans Standard Specification Section 14-11, Hazardous Waste and Contamination, which outlines handling, storing, and disposing of hazardous waste.
Hazards and Hazardous Materials	**PF-HAZ-2**	**Soil and Groundwater Investigation.** A soil and groundwater investigation for metals (primarily lead) and other contaminants of concern (e.g., petroleum hydrocarbons and volatile organic compounds) would be completed during the Project's design phase to characterize and profile the soil and groundwater to be encountered by the construction of the proposed build alternatives. Depending upon the findings of the site investigation, appropriate hazardous waste management special provisions would be prepared and included in the project specifications**.**
Water Quality	**PF-WQ-1**	**Stormwater Pollution Prevention Plan.** To comply with the CGP, the Project contractor is required to implement a SWPPP containing BMPs for stormwater pollution control. The SWPPP would be prepared by the contractor and approved by Caltrans and would detail the implementation of temporary construction site BMPs during all phases of construction to avoid or minimize stormwater and effects to surface water, groundwater, or domestic water supplies. The SWPPP would include erosion control BMPs implemented to minimize wind- or water-related erosion. These prevention measures would also fulfill the requirements of the San Francisco Regional Water Quality Control Board (RWQCB). The Caltrans BMP Guidance Handbook would provide the design staff with guidance for including appropriate provisions in the construction contract that would prevent or minimize stormwater and non-

Resource Area	Project Feature Reference	Project Feature Title and Description
		stormwater discharges and protect sensitive areas. At a minimum, protective measures would include the following: • Any discharging of pollutants from vehicle and equipment cleaning into any storm drains or watercourses would be disallowed. • Vehicle and equipment fueling and maintenance operations would be kept at least 50 feet away from watercourses, except at established commercial gas stations or an established vehicle maintenance facility. • All grindings and asphaltic-concrete waste would be stored within previously disturbed areas absent of habitat and at a minimum of 50 feet from any downstream riparian habitat, aquatic habitat, culvert, or drainage feature. • Dedicated fueling and refueling practices would be designated as part of the approved SWPPP. Dedicated fueling areas would be protected from stormwater runoff and be located at least 50 feet from downslope drainage facilities and water courses. • Fueling must be performed on level-grade areas. Onsite fueling would only be used when and where sending vehicles and equipment offsite for fueling is impractical. When fueling must occur onsite, the contractor would designate an area to be used subject to the approval of the resident engineer representing Caltrans. Drip pans or absorbent pads would be used during onsite vehicle and equipment fueling. • Spill containment kits would be maintained onsite at all times during construction operations and/or staging or fueling of equipment. • Dust control measures would be implemented. These would consist of regular truck watering of construction access areas and disturbed soil areas, including the use of organic soil stabilizers, if required, to minimize airborne dust and soil particles generated from graded areas. For disturbed soil areas, the use of tackifier to control dust emissions blowing off of the ROW or out of the construction area during construction would be included in the construction contract. Watering guidelines would be established to avoid any excessive runoff that may flow into contiguous areas. Any material stockpiles would be watered, sprayed with tackifier, or covered to minimize dust production and wind erosion. All of these efforts would be consistent with the RWQCB or approved SWPPP. Dust control would be addressed during the environmental education session. • Coir rolls or straw wattles would be installed along or at the base of slopes during construction to capture sediment. • Graded areas would be protected from erosion using a combination of silt fences, fiber rolls along toes of slopes or along edges of designated staging areas, and erosion control netting (such as jute or coir) as appropriate on sloped areas.

Resource Area	Project Feature Reference	Project Feature Title and Description
Water Quality	**PF-WQ-2**	**Construction Site BMPs.** To prevent or reduce impacts to water quality during construction, construction site BMPs would be deployed for sediment control and material management. These include: • Job Site Management: This non-stormwater discharge and waste management practice includes considerations for operations, illicit discharge detention and reporting, vehicle and equipment cleaning, vehicle and equipment fueling, and material use. • Temporary Fiber Rolls: A fiber roll consists of straw or other similar materials placed on the face of the slopes at regular intervals to intercept runoff, reduce its flow velocity, release the runoff as sheet flow, and provide removal of sediment from the runoff. • Silt Fence: A silt fence is a temporary linear sediment barrier of permeable fabric designed to intercept and slow the flow of sediment-laden sheet flow runoff. Silt fences allow sediment to settle from runoff before water leaves the construction site. Silt fences are placed below the toe of exposed and erodible slopes, downslope of exposed soil areas, around temporary stockpiles and along streams and channels. Silt fences should not be used to divert flow or in streams, channels, or anywhere flow is concentrated. • Drainage Inlet Protection: Drainage inlet protection is a practice to reduce sediment from stormwater runoff discharging from the construction site prior to entering the storm drainage system. Effective drainage inlet protection allows sediment to settle out of stormwater or filters sediment from the stormwater before it enters the drain inlet. Drainage inlet protection is the last line of sediment control defense prior to stormwater leaving the construction site. • Portable Concrete Washout: This waste management BMP contains procedures and practices that would minimize or eliminate the discharge of concrete waste materials to the storm drain systems or watercourses. • Temporary Cover: This BMP involves the placement of geosynthetic fabrics (geotextiles), plastic covers, or erosion control blankets/mats to stabilize DSA and protect soil from erosion by wind or water. • Stockpile Management: This BMP consists of procedures and practices to eliminate pollution of stormwater from stockpiles of soil and paving materials (such as concrete rubble, aggregate, and asphalt concrete). These procedures include locating stockpiles away from drainages, and providing perimeter sediment barriers, soil stabilization, and wind erosion control measures. • Solid Waste Management: This BMP consists of procedures and practices to minimize or eliminate the discharge of pollutants to storm drain systems or watercourses as a result of creation, stockpiling, or removal of construction site wastes. Measures

Resource Area	Project Feature Reference	Project Feature Title and Description
		include education as well as collection, storage, and disposal practices (such as, plywood and tarp directly on streambed). • Stream Diversion System: The system consists of upstream and downstream berms, with a pipe conveying runoff to create a dry working environment for temporary access. The system would be required at specific culvert locations and used during the summer months for one or both summers of the construction period. Each stream diversion system would be removed immediately after in-stream work is completed at the location, and would not be left in place during the wet season (typically beginning October 15). A risk analysis would be done to determine the design flow for the stream diversion system.
Water Quality	**WQ-3**	**Permanent Treatment BMPs.** Permanent treatment BMPs are as follows: • Design Pollution Prevention BMP Strategy: The goal of an effective erosion control strategy is to maintain the natural pre-construction conditions. Existing vegetation would be preserved to the maximum extent practicable, and areas disturbed by construction activities would be minimized using construction site BMPs. Preservation involves the identification and protection of desirable vegetation to provide erosion and sediment control benefits. No slopes would be steeper than a 2:1 ratio. When slopes steeper than 2:1 are required, a geotechnical recommendation would be required to support the steeper slope. Disturbed soil areas created by construction activities would receive erosion control treatments sufficient to address the erosion potential of the slope. Permanent Design Pollution Prevention measures would be identified during later Project phases and may include decompaction, compost mulch, fiber rolls, coir netting, and hydroseed/hydromulch. • Treatment BMP Strategy: Treatment BMPs would address the post-construction water quality impacts and remove pollutants from stormwater runoff before discharging to receiving waters. The Project currently proposes the use of biofiltration strips as the stormwater treatment devices to meet Project requirements. The locations for the biofiltration strips would be determined during later Project phases.
Noise	**PF-NOI-1**	**Idling of Internal Combustion Engines.** Unnecessary idling of internal combustion engines would be avoided within 100 feet of sensitive receptors.
Noise	**PF-NOI-2**	**Maintaining Internal Combustion Engines.** All internal combustion engines would be maintained properly to minimize noise generation. Internal combustion engine driven equipment must be equipped with manufacturer recommended intake and exhaust mufflers that are in good condition and appropriate for the equipment.
Noise	**PF-NOI-3**	**Quiet Air Compressors.** The Project would utilize “quiet” air compressors and other “quiet” equipment where such technology exists.

Resource Area	Project Feature Reference	Project Feature Title and Description
Noise	**PF-NOI-4**	**Construction Schedule.** Construction activities would mostly occur during the day, between 6 a.m. and 9 p.m. Noisy operations would be scheduled to occur within the same time period to the greatest extent possible. The total noise level would not be significantly greater than the level produced if operations are performed separately. Some nighttime construction would occur and would adhere to Caltrans Standard Specification 14-8.02.
Transportation and Traffic	**PF-TRA-1**	**Traffic Management Plan.** A Traffic Management Plan (TMP) would be developed by Caltrans during the design phase. The TMP would include public information, motorist information, incident management, construction, and alternate routes. In addition, one-way traffic control, lane closures, flaggers and phasing, portable changeable message signs, flaggers and the California Highway Patrol's Construction Zone Enhanced Enforcement Program would be incorporated into the TMP to minimize delays to local residents and highway users, as feasible. The TMP would also provide access for police and emergency service providers. Lane closures would be planned in coordination with Caltrans and Solano County and would include notices to emergency services providers, and the public in advance.
Utilities and Service Systems	**PF-UTIL-1**	**Trash Management.** All food-related trash items, such as wrappers, cans, bottles, and food scraps, would be disposed of in closed containers and removed by the contractor at least once daily from the Project limits. A trash reduction system would also be developed by the contractor, approved by Caltrans, and implemented per Caltrans Statewide National Pollution Discharge Elimination System Permit and San Francisco Regional Water Quality Control Board Cease and Desist Order.
Utilities and Service Systems	**PF-UTIL-2**	**Treated Wood Waste.** Wood removed from metal beam guardrails would be considered treated wood waste and disposed of by the contractor pursuant to Caltrans Standard Specifications.
Utilities and Service Systems	**PF-UTIL-3**	**Notify Utility Owners of Construction Schedule to Protect Utilities.** Caltrans would notify utility companies of construction schedules for proposed Project work to minimize potential disruption of utility service.

Resource Area	AMM Reference	AMM Title and Description
Aesthetics	**AMM-AES-1**	**Minimize Construction Appearance.** During construction, Caltrans would minimize the appearance of construction equipment and staging areas on SR 12 and would locate construction equipment and materials in a screened staging area beyond direct view of the motoring public and residential properties to the extent feasible.
Aesthetics	**AMM-AES-2**	**Rail Design:** During the design phase, Caltrans would design the bridge rails and guardrails along SR 12 to be see-through, which would allow views of the surrounding environment, as directed by Caltrans Landscape Architecture staff.
Aesthetics	**AMM-AES-3**	**Glare Effects:** Glare Effects. During the design phase, Caltrans would reduce glare by ensuring the design would be treated with a combination of roughening surface texture and coloring concrete to reduce glare, as directed by the Caltrans Office of Landscape Architecture.
Aesthetics	**AMM-AES-4**	**Post-Construction Site Grading and Contours:** Prior to completion of construction activities, Caltrans would use contour grading and slope rounding to produce smooth, flowing contours consistent with site topography, to increase context sensitivity and reduce engineered appearance of slopes.
Biology	**AMM-BIO-1**	**Biological Monitoring.** The agency-approved biologist(s) would be onsite during vegetation clearing, installation of wildlife exclusion (WEF), initial ground-disturbing activities in previously undisturbed areas, installation of temporary creek diversion systems and dewatering, work that occurs in wetlands or in waters below Mean Higher High Water elevation in tidally influenced areas, and operation of loud equipment within 300 feet of brackish marsh areas, and thereafter when construction activities occur that could result in take of sensitive wildlife. The agency-approved biologist(s) would keep copies of applicable permits in their possession when onsite.
Biology	**AMM-BIO-2**	**Pre-construction Surveys.** Before initial ground-disturbing activities, the agency-approved biologist(s) would conduct work area surveys, including for special-status wildlife species. Focused surveys would be conducted 48 hours before construction and daily as needed.
Biology	**AMM-BIO-3**	**Work Windows.** The following measures would be implemented in and adjacent to delineated wetland areas in the Project area: • Work within upland habitat for California tiger salamander would occur between March 1 and November 30. • Work within 250 feet of vernal pools would occur between May 1 and November 1. • Work in wetlands or other waters of the United States would be scheduled between June 1 and October 31. • Work in estuarine and marine wetlands, would not occur within 2 hours before or after extreme high tide events (6.5 feet above Mean Lower Low Water elevation or greater as determined from the nearest National Oceanic and Atmospheric Administration [NOAA] tidal gage station to the activity) when the marsh plain is inundated.

Resource Area	AMM Reference	AMM Title and Description
Biology	**AMM-BIO-4**	**California Clapper Rail and California Black Rail Pre-Construction Survey.** Where California black rail habitat is present within 300 feet of the BSA or California clapper rail habitat is present within 700 feet of the BSA, or as determined by CDFW, a pre-construction survey to determine if the species are present would be conducted for work occurring between February 1 and August 31. Specific survey requirements and timing would be determined in consultation with USFWS and CDFW. If breeding California clapper rail or California black rail are determined to be present, Caltrans will immediately consult with USFWS and/or CDFW and establish an appropriate buffer for construction activities that could cause harassment during the rail nesting season. Caltrans would also implement California clapper rail or California black rail protection measures resulting from the consultation.
Biology	**AMM-BIO-5**	**Listed Plant Surveys.** Botanical surveys would be conducted in areas of suitable habitat for rare plant species during the appropriate blooming season(s). If a listed plant species is discovered in an area where there would be ground-disturbing activities, the location would be marked or fenced for avoidance. Ground-disturbing work near special-status plant species would proceed under supervision of an agency-approved biologist.
Biology	**AMM-BIO-6**	**Swainson's Hawk Pre-Construction Surveys.** If construction activities occur during the Swainson's hawk nesting season (March 15 to September 15), Caltrans would conduct focused Swainson's hawk surveys during the spring prior to construction, using guidelines such as the one set forth in the *Recommended Timing And Methodology for Swainson's Hawk Nesting Surveys in California's Central Valley* document (Swainson's Hawk Technical Advisory Committee 2000).If an active nest is discovered within 0.25 mile of the Project area, Caltrans would immediately stop any work that has potential to result in take of Swainson's hawk and coordinate with CDFW for further guidance.
Biology	**AMM-BIO-7**	**Western Burrowing Owl Pre-Construction Surveys.** An agency-approved biologist(s) would conduct pre-construction surveys for western burrowing owls prior to the breeding season (February 1 through August 31), including inspecting the job sites and adjacent areas, within 500 feet, for burrows with typical characteristics such as owl pellets, feathers, or white markings. If burrowing owl activity is observed in locations planned for excavation and an adequate buffer cannot be established during the non-breeding season (September 1 through January 31), resident and migrant wintering burrowing owls may be evicted from the construction area using passive relocation techniques, including potentially providing suitable alternative burrows located within 330 feet of the occupied burrows that can be protected during Project construction. Prior to construction, Caltrans would prepare an Exclusion Plan for review and approval by CDFW.

Resource Area	AMM Reference	AMM Title and Description
Biology	**AMM-BIO-8**	**Pre-Construction Bat Surveys and Avoidance Measures.** The agency-approved biologist would conduct a visual inspection and habitat assessment for potentially suitable bat roosting habitat on existing structures or before tree trimming. Assessments of bridges would inspect all open crevices. The pre-construction bat survey must be conducted during one of the following two time periods: • March 1 to April 15 • August 31 to October 15 If the habitat assessment reveals suitable roosting habitat for bats, then the appropriate exclusionary measures would be implemented prior to construction during an agency-approved period. If the habitat assessment reveals suitable bat habitat in trees and tree trimming is scheduled from April 16 through August 30 and/or October 16 through February 28, then presence/absence surveys would be conducted 2 to 3 days before tree trimming. If the presence/absence surveys do not find bats, then tree trimming may be conducted. If the presence/absence surveys indicate bat occupancy, the occupied trees would be trimmed during an agency-approved period.
Biology	**AMM-BIO-9**	**Culvert Design.** Prior to construction, Caltrans would coordinate with USFWS and CDFW to determine which culvert replacement location(s) would be designed to facilitate passage for California tiger salamander and other similar wildlife.
Wildfire	**AMM-WF-1**	**Implement Fire Prevention Practices During Construction.** Caltrans would implement the following fire prevention practices to reduce the potential for wildfire: • Internal combustion engines, stationary and mobile, would be equipped with spark arrestors. Spark arrestors would be in good working order. • Contractor would keep all construction sites and staging areas free of grass, brush, and other flammable materials. • Personnel would be trained in the practices of the fire safety plan relevant to their duties. • Construction and maintenance personnel would be trained and equipped to extinguish small fires. • Work crews would have fire extinguishing equipment on hand, as well as emergency numbers and cell phone or other means of contacting the fire department. Smoking would be prohibited while operating equipment and would be limited to paved or graveled areas or areas cleared of all vegetation. Smoking would be prohibited within 30 feet of any combustible material storage area (including fuels, gases, and solvents). Smoking would be prohibited in any location during a Red Flag Warning issued by the National Weather Service for the Project area.

Resource Area	Mitigation Measure Reference	Mitigation Measure Title and Description
Biology	**MM-BIO-1**	**Compensation to Offset Project Permanent Impacts.** To offset permanent impacts from the Project, Caltrans will implement a compensation package based on the estimated impacts on protected natural resources, including wetlands, waters, and suitable habitat in the range of the listed species. Compensation will be determined in coordination with USFWS, USACE, RWQCB, CDFW, and/or Bay Conservation and Development Commission (BCDC) during the design phase. At a minimum, the compensation will be a 1:1 ratio and will be accomplished through a combination of onsite mitigation and/or purchase of mitigation credits. Compensation will include any one or a combination of the following approaches: • Offsite mitigation through the purchase of credits at an approved conservation bank(s) • Development of a compensation plan that will provide in-lieu funding to a nearby restoration program or restoration project that would create, restore, preserve, or enhance resources similar to those adversely affected by the Project • Onsite restoration within the Caltrans ROW The Mitigation and Monitoring Plan will be developed and tailored for the proposed mitigation site before construction. Compensation for temporary impacts on protected natural resources will be achieved through onsite in-kind habitat restoration to return the site to pre-construction conditions or better. Caltrans will provide a Funding Assurance Letter to the appropriate regulatory resource agencies stating that sufficient funds for California tiger salamander habitat compensation have been budgeted**.**
Biology	**MM-BIO -2**	**Wetland Mitigation Monitoring**. After construction, Caltrans will monitor onsite vegetation at temporarily impacted wetland habitats and where any additional wetland enhancement or restoration is implemented as compensatory mitigation. Reports to environmental regulatory agencies on the status of monitoring following Project completion will be submitted as determined in Project permits and authorization. The Caltrans mitigation requirement will be considered satisfied once the target acreage of wetland habitat to be restored is successful, as determined and approved by the regulatory agencies requiring compensatory mitigation.

Appendix B Title VI Policy Statement

DEPARTMENT OF TRANSPORTATION
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September 2021

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To obtain this information in an alternate format such as Braille or in a language other than English, please contact the California Department of Transportation, Office of Civil Rights, at 1823 14th Street, MS-79, Sacramento, CA 95811; PO Box 942874, MS-79, Sacramento, CA 94274-0001; (916) 324-8379 (TTY 711); or at Title.VI@dot.ca.gov.

Toks Omishakin
Director

Appendix C List of Abbreviations

Acronyms	Description
AB	Assembly Bill
ABAG	Association of Bay Area Governments
AC	Asphalt concrete
AFB	Air Force Base
AMM	avoidance and minimization measure
ASM-160	Agriculture 160 acres
AT&T	American Telephone and Telegraph
BSA	biological study area
BMP	best management practice
CA	California
CAFE	Corporate Average Fuel Economy
CAL FIRE	California Department of Forestry and Fire
Caltrans	California Department of Transportation
CARB	California Air Resources Board
CDFW	California Department of Fish and Wildlife
CEQA	California Environmental Quality Act
CFR	*Code of Federal Regulations*
CGP	Construction General Permit
CH_4	methane
CO_2	carbon dioxide
CO_2e	carbon dioxide equivalent
DOT	[U.S.] Department of Transportation
EA	Expenditure Authorization
EO	executive order
ESA	environmentally sensitive area
FEMA	Federal Emergency Management Agency

Acronyms	Description
FHWA	Federal Highway Administration
GHG	greenhouse gas
HFC	hydrofluorocarbon
IS	Initial Study
MBGR	metal beam guardrail
MGS	Midwest guardrail system
MND	Mitigated Negative Declaration
MPO	metropolitan planning organization
MTC	Metropolitan Transportation Commission
N_2O	nitrous oxide
NCCP	Natural Community Conservation Plan
NEPA	National Environmental Policy Act
NMFS	National Marine Fisheries Service
NOAA	National Oceanic and Atmospheric Administration
OPR	Office of Planning and Research
PF	project feature
PG&E	Pacific Gas & Electric
PM	post mile
Project	State Route 12 Major Pavement Rehabilitation (2R) Project
ROW	right of way
RTP	Regional Transportation Plan
RWQCB	Regional Water Quality Control Board
SAFE	Safer Affordable Fuel-Efficient
SB	Senate Bill
SCS	Sustainable Communities Strategy
SF_6	sulfur hexafluoride
SFSU	San Francisco State University
SHOPP	State Highway Operation and Protection Program

Acronyms	Description
SMARA	Surface Mining and Reclamation Act
SR	State Route
SWPPP	Stormwater Pollution Prevention Plan
TBD	to be determined
TCE	temporary construction easement
TMP	Traffic Management Plan
USDOT	U.S. Department of Transportation
USEPA	U.S. Environmental Protection Agency
USFWS	U.S. Fish and Wildlife Service
USGCRP	U.S. Global Change Research Program
VMT	vehicle miles traveled
WEF	wildlife exclusion fencing

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Appendix E Species Lists

Selected Elements by Scientific Name

California Department of Fish and Wildlife

California Natural Diversity Database

Query Criteria: Quad IS (Denverton (3812128) OR Fairfield North (3812231) OR Elmira (3812138) OR Dozier (3812137) OR Fairfield South (3812221) OR Birds Landing (3812127) OR Vine Hill (3812211) OR Honker Bay (3812118) OR Antioch North (3812117))

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Agelaius tricolor tricolored blackbird	ABPBXB0020	None	Threatened	G1G2	S1S2	SSC
Ambystoma californiense California tiger salamander	AAAAA01180	Threatened	Threatened	G2G3	S2S3	WL
Ammodramus savannarum grasshopper sparrow	ABPBXA0020	None	None	G5	S3	SSC
Andrena blennospermatis Blennosperma vernal pool andrenid bee	IIHYM35030	None	None	G2	S2	
Anniella pulchra Northern California legless lizard	ARACC01020	None	None	G3	S3	SSC
Anthicus antiochensis Antioch Dunes anthicid beetle	IICOL49020	None	None	G1	S1	
Apodemia mormo langei Lange's metalmark butterfly	IILEPH7012	Endangered	None	G5T1	S1	
Aquila chrysaetos golden eagle	ABNKC22010	None	None	G5	S3	FP
Archoplites interruptus Sacramento perch	AFCQB07010	None	None	G2G3	S1	SSC
Ardea alba great egret	ABNGA04040	None	None	G5	S4	
Arizona elegans occidentalis California glossy snake	ARADB01017	None	None	G5T2	S2	SSC
Asio flammeus short-eared owl	ABNSB13040	None	None	G5	S3	SSC
Astragalus tener var. ferrisiae Ferris' milk-vetch	PDFAB0F8R3	None	None	G2T1	S1	1B.1
Astragalus tener var. tener alkali milk-vetch	PDFAB0F8R1	None	None	G2T1	S1	1B.2
Athene cunicularia burrowing owl	ABNSB10010	None	None	G4	S3	SSC
Atriplex cordulata var. cordulata heartscale	PDCHE040B0	None	None	G3T2	S2	1B.2
Atriplex depressa brittlescale	PDCHE042L0	None	None	G2	S2	1B.2
Atriplex persistens vernal pool smallscale	PDCHE042P0	None	None	G2	S2	1B.2
Blepharizonia plumosa big tarplant	PDAST1C011	None	None	G1G2	S1S2	1B.1

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Bombus crotchii Crotch bumble bee	IIHYM24480	None	Candidate Endangered	G3G4	S1S2	
Bombus occidentalis western bumble bee	IIHYM24250	None	Candidate Endangered	G2G3	S1	
Branchinecta conservatio Conservancy fairy shrimp	ICBRA03010	Endangered	None	G2	S2	
Branchinecta lynchi vernal pool fairy shrimp	ICBRA03030	Threatened	None	G3	S3	
Branchinecta mesovallensis midvalley fairy shrimp	ICBRA03150	None	None	G2	S2S3	
Buteo regalis ferruginous hawk	ABNKC19120	None	None	G4	S3S4	WL
Buteo swainsoni Swainson's hawk	ABNKC19070	None	Threatened	G5	S3	
Centromadia parryi ssp. congdonii Congdon's tarplant	PDAST4R0P1	None	None	G3T1T2	S1S2	1B.1
Centromadia parryi ssp. parryi pappose tarplant	PDAST4R0P2	None	None	G3T2	S2	1B.2
Charadrius montanus mountain plover	ABNNB03100	None	None	G3	S2S3	SSC
Chloropyron molle ssp. hispidum hispid salty bird's-beak	PDSCR0J0D1	None	None	G2T1	S1	1B.1
Chloropyron molle ssp. molle soft salty bird's-beak	PDSCR0J0D2	Endangered	Rare	G2T1	S1	1B.2
Cicuta maculata var. bolanderi Bolander's water-hemlock	PDAPI0M051	None	None	G5T4T5	S2?	2B.1
Circus hudsonius northern harrier	ABNKC11011	None	None	G5	S3	SSC
Cirsium hydrophilum var. hydrophilum Suisun thistle	PDAST2E1G1	Endangered	None	G2T1	S1	1B.1
Coastal and Valley Freshwater Marsh Coastal and Valley Freshwater Marsh	CTT52410CA	None	None	G3	S2.1	
Coastal Brackish Marsh Coastal Brackish Marsh	CTT52200CA	None	None	G2	S2.1	
Coelus gracilis San Joaquin dune beetle	IICOL4A020	None	None	G1	S1	
Corynorhinus townsendii Townsend's big-eared bat	AMACC08010	None	None	G4	S2	SSC
Coturnicops noveboracensis yellow rail	ABNME01010	None	None	G4	S1S2	SSC
Cryptantha hooveri Hoover's cryptantha	PDBOR0A190	None	None	GH	SH	1A

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Danaus plexippus pop. 1 monarch - California overwintering population	IILEPP2012	None	None	G4T2T3	S2S3	
Delphinium recurvatum recurved larkspur	PDRAN0B1J0	None	None	G2?	S2?	1B.2
Desmocerus californicus dimorphus valley elderberry longhorn beetle	IICOL48011	Threatened	None	G3T2	S3	
Downingia pusilla dwarf downingia	PDCAM060C0	None	None	GU	S2	2B.2
Dumontia oregonensis hairy water flea	ICBRA23010	None	None	G1G3	S1	
Efferia antiochi Antioch efferian robberfly	IIDIP07010	None	None	G1G2	S1S2	
Egretta thula snowy egret	ABNGA06030	None	None	G5	S4	
Elanus leucurus white-tailed kite	ABNKC06010	None	None	G5	S3S4	FP
Elaphrus viridis Delta green ground beetle	IICOL36010	Threatened	None	G1	S1	
Emys marmorata western pond turtle	ARAAD02030	None	None	G3G4	S3	SSC
Eriogonum nudum var. psychicola Antioch Dunes buckwheat	PDPGN0849Q	None	None	G5T1	S1	1B.1
Eriogonum truncatum Mt. Diablo buckwheat	PDPGN085Z0	None	None	G1	S1	1B.1
Eryngium jepsonii Jepson's coyote-thistle	PDAPI0Z130	None	None	G2	S2	1B.2
Erysimum capitatum var. angustatum Contra Costa wallflower	PDBRA16052	Endangered	Endangered	G5T1	S1	1B.1
Eschscholzia rhombipetala diamond-petaled California poppy	PDPAP0A0D0	None	None	G1	S1	1B.1
Eucerceris ruficeps redheaded sphecid wasp	IIHYM18010	None	None	G1G3	S1S2	
Extriplex joaquinana San Joaquin spearscale	PDCHE041F3	None	None	G2	S2	1B.2
Fritillaria liliacea fragrant fritillary	PMLIL0V0C0	None	None	G2	S2	1B.2
Fritillaria pluriflora adobe-lily	PMLIL0V0F0	None	None	G2G3	S2S3	1B.2
Geothlypis trichas sinuosa saltmarsh common yellowthroat	ABPBX1201A	None	None	G5T3	S3	SSC
Gonidea angulata western ridged mussel	IMBIV19010	None	None	G3	S1S2	

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Gratiola heterosepala Boggs Lake hedge-hyssop	PDSCR0R060	None	Endangered	G2	S2	1B.2
Helminthoglypta nickliniana bridgesi Bridges' coast range shoulderband	IMGASC2362	None	None	G3T1	S1S2	
Hesperolinon breweri Brewer's western flax	PDLIN01030	None	None	G2	S2	1B.2
Hibiscus lasiocarpos var. occidentalis woolly rose-mallow	PDMAL0H0R3	None	None	G5T3	S3	1B.2
Hydrochara rickseckeri Ricksecker's water scavenger beetle	IICOL5V010	None	None	G2?	S2?	
Hypomesus transpacificus Delta smelt	AFCHB01040	Threatened	Endangered	G1	S1	
Idiostatus middlekauffi Middlekauff's shieldback katydid	IIORT31010	None	None	G1G2	S1	
Isocoma arguta Carquinez goldenbush	PDAST57050	None	None	G1	S1	1B.1
Lasiurus blossevillii western red bat	AMACC05060	None	None	G4	S3	SSC
Lasiurus cinereus hoary bat	AMACC05030	None	None	G3G4	S4	
Lasthenia chrysantha alkali-sink goldfields	PDAST5L030	None	None	G2	S2	1B.1
Lasthenia conjugens Contra Costa goldfields	PDAST5L040	Endangered	None	G1	S1	1B.1
Lasthenia glabrata ssp. coulteri Coulter's goldfields	PDAST5L0A1	None	None	G4T2	S2	1B.1
Laterallus jamaicensis coturniculus California black rail	ABNME03041	None	Threatened	G3G4T1	S1	FP
Lathyrus jepsonii var. jepsonii Delta tule pea	PDFAB250D2	None	None	G5T2	S2	1B.2
Legenere limosa legenere	PDCAM0C010	None	None	G2	S2	1B.1
Lepidium latipes var. heckardii Heckard's pepper-grass	PDBRA1M0K1	None	None	G4T1	S1	1B.2
Lepidurus packardi vernal pool tadpole shrimp	ICBRA10010	Endangered	None	G4	S3S4	
Lilaeopsis masonii Mason's lilaeopsis	PDAPI19030	None	Rare	G2	S2	1B.1
Limosella australis Delta mudwort	PDSCR10030	None	None	G4G5	S2	2B.1
Linderiella occidentalis California linderiella	ICBRA06010	None	None	G2G3	S2S3	

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Melospiza melodia song sparrow ("Modesto" population)	ABPBXA3010	None	None	G5	S3?	SSC
Melospiza melodia maxillaris Suisun song sparrow	ABPBXA301K	None	None	G5T3	S3	SSC
Metapogon hurdi Hurd's metapogon robberfly	IIDIP08010	None	None	G1G2	S1S2	
Microseris paludosa marsh microseris	PDAST6E0D0	None	None	G2	S2	1B.2
Myrmosula pacifica Antioch multilid wasp	IIHYM15010	None	None	GH	SH	
Navarretia leucocephala ssp. bakeri Baker's navarretia	PDPLM0C0E1	None	None	G4T2	S2	1B.1
Neostapfia colusana Colusa grass	PMPOA4C010	Threatened	Endangered	G1	S1	1B.1
Northern Claypan Vernal Pool Northern Claypan Vernal Pool	CTT44120CA	None	None	G1	S1.1	
Nycticorax nycticorax black-crowned night heron	ABNGA11010	None	None	G5	S4	
Nyctinomops macrotis big free-tailed bat	AMACD04020	None	None	G5	S3	SSC
Oenothera deltoides ssp. howellii Antioch Dunes evening-primrose	PDONA0C0B4	Endangered	Endangered	G5T1	S1	1B.1
Oncorhynchus mykiss irideus pop. 11 steelhead - Central Valley DPS	AFCHA0209K	Threatened	None	G5T2Q	S2	
Orcuttia inaequalis San Joaquin Valley Orcutt grass	PMPOA4G060	Threatened	Endangered	G1	S1	1B.1
Perdita scitula antiochensis Antioch andrenid bee	IIHYM01031	None	None	G1T1	S1	
Perognathus inornatus San Joaquin pocket mouse	AMAFD01060	None	None	G2G3	S2S3	
Phalacrocorax auritus double-crested cormorant	ABNFD01020	None	None	G5	S4	WL
Philanthus nasalis Antioch specid wasp	IIHYM20010	None	None	G1	S1	
Plagiobothrys hystriculus bearded popcornflower	PDBOR0V0H0	None	None	G2	S2	1B.1
Pogonichthys macrolepidotus Sacramento splittail	AFCJB34020	None	None	GNR	S3	SSC
Puccinellia simplex California alkali grass	PMPOA53110	None	None	G3	S2	1B.2
Rallus obsoletus obsoletus California Ridgway's rail	ABNME05011	Endangered	Endangered	G3T1	S1	FP

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Rana boylii foothill yellow-legged frog	AAABH01050	None	Endangered	G3	S3	SSC
Rana draytonii California red-legged frog	AAABH01022	Threatened	None	G2G3	S2S3	SSC
Reithrodontomys raviventris salt-marsh harvest mouse	AMAFF02040	Endangered	Endangered	G1G2	S1S2	FP
Saldula usingeri Wilbur Springs shorebug	IIHEM07010	None	None	G1	S1	
Sidalcea keckii Keck's checkerbloom	PDMAL110D0	Endangered	None	G2	S2	1B.1
Sorex ornatus sinuosus Suisun shrew	AMABA01103	None	None	G5T1T2Q	S1S2	SSC
Spergularia macrotheca var. longistyla long-styled sand-spurrey	PDCAR0W062	None	None	G5T2	S2	1B.2
Speyeria callippe callippe callippe silverspot butterfly	IILEPJ6091	Endangered	None	G5T1	S1	
Sphecodogastra antiochensis Antioch Dunes halcitid bee	IIHYM78010	None	None	G1	S1	
Spirinchus thaleichthys longfin smelt	AFCHB03010	Candidate	Threatened	G5	S1	
Stabilized Interior Dunes Stabilized Interior Dunes	CTT23100CA	None	None	G1	S1.1	
Sternula antillarum browni California least tern	ABNNM08103	Endangered	Endangered	G4T2T3Q	S2	FP
Stuckenia filiformis ssp. alpina slender-leaved pondweed	PMPOT03091	None	None	G5T5	S2S3	2B.2
Symphyotrichum lentum Suisun Marsh aster	PDASTE8470	None	None	G2	S2	1B.2
Taxidea taxus American badger	AMAJF04010	None	None	G5	S3	SSC
Thamnophis gigas giant gartersnake	ARADB36150	Threatened	Threatened	G2	S2	
Trifolium amoenum two-fork clover	PDFAB40040	Endangered	None	G1	S1	1B.1
Trifolium hydrophilum saline clover	PDFAB400R5	None	None	G2	S2	1B.2
Tuctoria mucronata Crampton's tuctoria or Solano grass	PMPOA6N020	Endangered	Endangered	G1	S1	1B.1
Valley Needlegrass Grassland Valley Needlegrass Grassland	CTT42110CA	None	None	G3	S3.1	
Viburnum ellipticum oval-leaved viburnum	PDCPR07080	None	None	G4G5	S3?	2B.3

Record Count: 124

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: October 03, 2022
Project Code: 2023-0000510
Project Name: SOL-12 2R (2Q550) Major Pavement Rehab

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: 2023-0000510
Project Name: SOL-12 2R (2Q550) Major Pavement Rehab
Project Type: Road/Hwy - Maintenance/Modification
Project Description: The Proposed Project is location on State Route (SR) 12 from 0.5 mile east of Walter Road/Lawler Ranch Pkwy to 0.54 mile east of Shiloh/ Lambie Road in Solano County. The Project proposes to rehabilitate the existing mainline traveled ways and shoulders.
Project Location:

Approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/@38.22471145,-121.89282294750451,14z

Counties: Solano County, California

Endangered Species Act Species

There is a total of 15 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
Salt Marsh Harvest Mouse *Reithrodontomys raviventris* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/613	Endangered

Birds

NAME	STATUS
California Clapper Rail *Rallus longirostris obsoletus* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/4240	Endangered
California Least Tern *Sterna antillarum browni* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/8104	Endangered

Amphibians

NAME	STATUS
California Red-legged Frog *Rana draytonii* There is **final** critical habitat for this species. Your location does not overlap the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/2891	Threatened
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* 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	Threatened

Insects

NAME	STATUS
Delta Green Ground Beetle *Elaphrus viridis* There is **final** critical habitat for this species. Your location does not overlap the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/2319	Threatened
Monarch Butterfly *Danaus plexippus* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/9743	Candidate

Crustaceans

NAME	STATUS
Conservancy Fairy Shrimp *Branchinecta conservatio* There is **final** critical habitat for this species. Your location overlaps the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/8246	Endangered
Vernal Pool Fairy Shrimp *Branchinecta lynchi* There is **final** critical habitat for this species. Your location overlaps the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/498	Threatened
Vernal Pool Tadpole Shrimp *Lepidurus packardi* There is **final** critical habitat for this species. Your location overlaps the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/2246	Endangered

Flowering Plants

NAME	STATUS
Contra Costa Goldfields *Lasthenia conjugens* There is **final** critical habitat for this species. Your location overlaps the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/7058	Endangered
Keck's Checker-mallow *Sidalcea keckii* There is **final** critical habitat for this species. Your location does not overlap the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/5704	Endangered
Soft Bird's-beak *Cordylanthus mollis ssp. mollis* There is **final** critical habitat for this species. Your location does not overlap the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/8541	Endangered
Suisun Thistle *Cirsium hydrophilum var. hydrophilum* There is **final** critical habitat for this species. Your location does not overlap the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/2369	Endangered

Critical habitats

There are 4 critical habitats wholly or partially within your project area under this office's jurisdiction.

NAME	STATUS
Conservancy Fairy Shrimp *Branchinecta conservatio* https://ecos.fws.gov/ecp/species/8246#crithab	Final
Contra Costa Goldfields *Lasthenia conjugens* https://ecos.fws.gov/ecp/species/7058#crithab	Final
Vernal Pool Fairy Shrimp *Branchinecta lynchi* https://ecos.fws.gov/ecp/species/498#crithab	Final
Vernal Pool Tadpole Shrimp *Lepidurus packardi* https://ecos.fws.gov/ecp/species/2246#crithab	Final

IPaC User Contact Information

Agency: California Department of Transportation District 4
Name: Hannah Minderhout
Address: 111 Grand Ave.
City: Oakland
State: CA
Zip: 94612
Email [redacted]
Phone: [redacted]

CNPS Inventory of Rare and Endangered Plants

Scientific Name	Common Name	CRPR	CESA	FESA	Blooming Period	Habitat and Microhabitat	Elev. ft (Low)	Elev. ft. (High)
Astragalus tener var. ferrisiae	Ferris' milk-vetch	1B.1	None	None	Apr-May	Meadows and seeps, Valley and foothill grassland	5	245
Astragalus tener var. tener	alkali milk-vetch	1B.2	None	None	Mar-Jun	Playas, Valley and foothill grassland, Vernal pools (Alkaline)	5	195
Atriplex cordulata var. cordulata	heartscale	1B.2	None	None	Apr-Oct	Chenopod scrub, Meadows and seeps, Valley and foothill grassland. Alkaline (sometimes)	0	1835
Atriplex coronata var. coronata	crownscale	4.2	None	None	Mar-Oct	Chenopod scrub, Valley and foothill grassland, Vernal pools. Alkaline, Clay (often)	5	1935
Atriplex depressa	brittlescale	1B.2	None	None	Apr-Oct	Chenopod scrub, Meadows and seeps, Playas, Valley and foothill grassland, Vernal pools. Alkaline, Clay	5	1050
Atriplex persistens	vernal pool smallscale	1B.2	None	None	Jun-Oct	Vernal pools	35	375
Blepharizonia plumosa	big tarplant	1B.1	None	None	Jul-Oct	Valley and foothill grassland. Clay (usually)	100	1655
Carex lyngbyei	Lyngbye's sedge	2B.2	None	None	Apr-Aug	Marshes and swamps	0	35
Castilleja ambigua var. ambigua	johnny-nip	4.2	None	None	Mar-Aug	Coastal bluff scrub, Coastal prairie, Coastal scrub, Marshes and swamps, Valley and foothill grassland, Vernal pools	0	1425
Centromadia parryi ssp. congdonii	Congdon's tarplant	1B.1	None	None	May-Oct(Nov)	Valley and foothill grassland	0	755
Centromadia parryi ssp. parryi	pappose tarplant	1B.2	None	None	May-Nov	Chaparral, Coastal prairie, Marshes and swamps, Meadows and seeps, Valley and foothill grassland. Alkaline (often)	0	1380
Centromadia parryi ssp. rudis	Parry's rough tarplant	4.2	None	None	May-Oct	Valley and foothill grassland, Vernal pools. Alkaline, Roadsides (sometimes), Seeps, Vernally Mesic	0	330
Chloropyron molle ssp. hispidum	hispid salty bird's-beak	1B.1	None	None	Jun-Sep	Meadows and seeps, Playas, Valley and foothill grassland. Alkaline	5	510
Chloropyron molle ssp. molle	soft salty bird's-beak	1B.2	CR	FE	Jun-Nov	Marshes and swamps	0	10
Cicuta maculata var. bolanderi	Bolander's water-hemlock	2B.1	None	None	Jul-Sep	Marshes and swamps	0	655
Cirsium hydrophilum var. hydrophilum	Suisun thistle	1B.1	None	FE	Jun-Sep	Marshes and swamps	0	5
Convolvulus simulans	small-flowered morning-glory	4.2	None	None	Mar-Jul	Chaparral, Coastal scrub, Valley and foothill grassland	100	2430
Cryptantha hooveri	Hoover's cryptantha	1A	None	None	Apr-May	Inland dunes, Valley and foothill grassland	30	490
Delphinium recurvatum	recurved larkspur	1B.2	None	None	Mar-Jun	Chenopod scrub, Cismontane woodland, Valley and foothill grassland. Alkaline	10	2590
Downingia pusilla	dwarf downingia	2B.2	None	None	Mar-May	Valley and foothill grassland, Vernal pools	5	1460
Eleocharis parvula	small spikerush	4.3	None	None	(Apr)Jun-Aug(Sep)	Marshes and swamps	5	9910

CNPS Inventory of Rare and Endangered Plants

Scientific Name	Common Name	CRPR	CESA	FESA	Blooming Period	Habitat and Microhabitat	Elev. ft (Low)	Elev. ft. (High)
Erigeron biolettii	streamside daisy	3	None	None	Jun-Oct	Broadleafed upland forest, Cismontane woodland, North Coast coniferous forest	100	3610
Eriogonum nudum var. psychicola	Antioch Dunes buckwheat	1B.1	None	None	Jul-Oct	Inland dunes	0	65
Eriogonum truncatum	Mt. Diablo buckwheat	1B.1	None	None	Apr-Sep(Nov-Dec)	Chaparral, Coastal scrub, Valley and foothill grassland	10	1150
Eryngium jepsonii	Jepson's coyote-thistle	1B.2	None	None	Apr-Aug	Valley and foothill grassland, Vernal pools	10	985
Erysimum capitatum var. angustatum	Contra Costa wallflower	1B.1	CE	FE	Mar-Jul	Inland dunes	10	65
Eschscholzia rhombipetala	diamond-petaled California poppy	1B.1	None	None	Mar-Apr	Valley and foothill grassland	0	3200
Extriplex joaquinana	San Joaquin spearscale	1B.2	None	None	Apr-Oct	Chenopod scrub, Meadows and seeps, Playas, Valley and foothill grassland	5	2740
Fritillaria agrestis	stinkbells	4.2	None	None	Mar-Jun	Chaparral, Cismontane woodland, Pinyon and juniper woodland, Valley and foothill grassland	35	5100
Fritillaria liliacea	fragrant fritillary	1B.2	None	None	Feb-Apr	Cismontane woodland, Coastal prairie, Coastal scrub, Valley and foothill grassland	10	1345
Fritillaria pluriflora	adobe-lily	1B.2	None	None	Feb-Apr	Chaparral, Cismontane woodland, Valley and foothill grassland	195	2315
Gratiola heterosepala	Boggs Lake hedge-hyssop	1B.2	CE	None	Apr-Aug	Marshes and swamps, Vernal pools	35	7790
Hesperevax caulescens	hogwallow starfish	4.2	None	None	Mar-Jun	Valley and foothill grassland, Vernal pools	0	1655
Hesperolinon breweri	Brewer's western flax	1B.2	None	None	May-Jul	Chaparral, Cismontane woodland, Valley and foothill grassland	100	3100
Hibiscus lasiocarpos var. occidentalis	woolly rose-mallow	1B.2	None	None	Jun-Sep	Marshes and swamps	0	395
Iris longipetala	coast iris	4.2	None	None	Mar-May(Jun)	Coastal prairie, Lower montane coniferous forest, Meadows and seeps	0	1970
Isocoma arguta	Carquinez goldenbush	1B.1	None	None	Aug-Dec	Valley and foothill grassland	5	65
Lasthenia chrysantha	alkali-sink goldfields	1B.1	None	None	Feb-Apr	Vernal pools. Alkaline	0	655
Lasthenia conjugens	Contra Costa goldfields	1B.1	None	FE	Mar-Jun	Cismontane woodland, Playas, Valley and foothill grassland, Vernal pools	0	1540
Lasthenia ferrisiae	Ferris' goldfields	4.2	None	None	Feb-May	Vernal pools	65	2295
Lasthenia glabrata ssp. coulteri	Coulter's goldfields	1B.1	None	None	Feb-Jun	Marshes and swamps, Playas, Vernal pools	5	4005
Lathyrus jepsonii var. jepsonii	Delta tule pea	1B.2	None	None	May-Jul(Aug-Sep)	Marshes and swamps	0	15
Legenere limosa	legenere	1B.1	None	None	Apr-Jun	Vernal pools	5	2885
Lepidium latipes var. heckardii	Heckard's pepper-grass	1B.2	None	None	Mar-May	Valley and foothill grassland	5	655

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Lessingia hololeuca	woolly-headed lessingia	3	None	None	Jun-Oct	Broadleafed upland forest, Coastal scrub, Lower montane coniferous forest, Valley and foothill grassland	50	1000
Lilaeopsis masonii	Mason's lilaeopsis	1B.1	CR	None	Apr-Nov	Marshes and swamps, Riparian scrub	0	35
Lilium rubescens	redwood lily	4.2	None	None	Apr-Aug(Sep)	Broadleafed upland forest, Chaparral, Lower montane coniferous forest, North Coast coniferous forest, Upper montane coniferous forest	100	6265
Limosella australis	Delta mudwort	2B.1	None	None	May-Aug	Marshes and swamps, Riparian scrub	0	10
Lupinus albifrons var. abramsii	Abrams' lupine	3.2	None	None	Apr-Jun	Broadleafed upland forest, Chaparral, Coastal scrub, Lower montane coniferous forest, Valley and foothill grassland	410	6560
Meesia triquetra	three-ranked hump moss	4.2	None	None	Jul	Bogs and fens, Meadows and seeps, Subalpine coniferous forest, Upper montane coniferous forest	4265	9690
Microseris paludosa	marsh microseris	1B.2	None	None	Apr-Jun(Jul)	Cismontane woodland, Closed-cone coniferous forest, Coastal scrub, Valley and foothill grassland	15	1165
Myosurus minimus ssp. apus	little mousetail	3.1	None	None	Mar-Jun	Valley and foothill grassland, Vernal pools	65	2100
Navarretia leucocephala ssp. bakeri	Baker's navarretia	1B.1	None	None	Apr-Jul	Cismontane woodland, Lower montane coniferous forest, Meadows and seeps, Valley and foothill grassland, Vernal pools	15	5710
Neostapfia colusana	Colusa grass	1B.1	CE	FT	May-Aug	Vernal pools	15	655
Oenothera deltoides ssp. howellii	Antioch Dunes evening-primrose	1B.1	CE	FE	Mar-Sep	Inland dunes	0	100
Orcuttia inaequalis	San Joaquin Valley Orcutt grass	1B.1	CE	FT	Apr-Sep	Vernal pools	35	2475
Perideridia gairdneri ssp. gairdneri	Gairdner's yampah	4.2	None	None	Jun-Oct	Broadleafed upland forest, Chaparral, Coastal prairie, Valley and foothill grassland, Vernal pools	0	2000
Plagiobothrys hystriculus	bearded popcornflower	1B.1	None	None	Apr-May	Valley and foothill grassland, Vernal pools	0	900
Puccinellia simplex	California alkali grass	1B.2	None	None	Mar-May	Chenopod scrub, Meadows and seeps, Valley and foothill grassland, Vernal pools	5	3050
Senecio hydrophiloides	sweet marsh ragwort	4.2	None	None	May-Aug	Lower montane coniferous forest, Meadows and seeps	0	9185
Sidalcea keckii	Keck's checkerbloom	1B.1	None	FE	Apr-May(Jun)	Cismontane woodland, Valley and foothill grassland	245	2135
Spergularia macrotheca var. longistyla	long-styled sand-spurrey	1B.2	None	None	Feb-May	Marshes and swamps, Meadows and seeps	0	835
Stuckenia filiformis ssp. alpina	northern slender pondweed	2B.2	None	None	May-Jul	Marshes and swamps	985	7055

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Symphyotrichum lentum	Suisun Marsh aster	1B.2	None	None	(Apr)May-Nov	Marshes and swamps	0	10
Trifolium amoenum	two-fork clover	1B.1	None	FE	Apr-Jun	Coastal bluff scrub, Valley and foothill grassland	15	1360
Trifolium hydrophilum	saline clover	1B.2	None	None	Apr-Jun	Marshes and swamps, Valley and foothill grassland, Vernal pools	0	985
Tuctoria mucronata	Crampton's tuctoria or Solano grass	1B.1	CE	FE	Apr-Aug	Valley and foothill grassland, Vernal pools	15	35
Viburnum ellipticum	oval-leaved viburnum	2B.3	None	None	May-Jun	Chaparral, Cismontane woodland, Lower montane coniferous forest	705	4595