Draft Environmental Impact Report

Cache Creek Channel and Levee Rehabilitation Project

State Clearinghouse Number 2023080108

Prepared for:

California Department of Water Resources

Prepared by:

GEI Consultants

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Acronyms and Abbreviations

AB	Assembly Bill
AFV	alternative fuel vehicle
BCE	before common era
BERD	Built Environment Resource Directory
bgs	below ground surface
BMP	best management practice
CAAQS	California ambient air quality standards
CalEEMod	California Emissions Estimator Model
CalEPA	California Environmental Protection Agency
CalNAGPRA	California Native American Graves Protection and Repatriation Act
CalPRR	California Pacific Railroad
Caltrans	California Department of Transportation
CARB	California Air Resources Board
CAS	Climate Adaptation Strategy
CBSC	California Building Standards Code
CCAP	Cache Creek Area Plan
CCIP	Cache Creek Improvement Plan
CCR	California Code of Regulations
CCRMP	Cache Creek Resource Management Plan
CCSB	Cache Creek Settling Basin
CDFW	California Department of Fish and Wildlife
CE	common era
CESA	California Endangered Species Act
CEQA	California Environmental Quality Act
CFGC	California Fish and Game Code
CFR	Code of Federal Regulations
cfs	cubic feet per second

CH_4	methane
CHRIS	California Historical Resources Information System
CHSC	California Health and Safety Code
CNDDB	California Natural Diversity Database
CNPS	California Native Plant Society
CO	carbon monoxide
CO_2	carbon dioxide
CO_2e	CO_2-equivalents
COC	constituent of concern
Commission	California Debris Commission
Conservancy	Yolo Habitat Conservancy
CPRR	Central Pacific Railroad
CR	County Road
CRHR	California Register of Historical Resources
CRPR	California Rare Plant Rank
CRQA	California Environmental Quality Act
CTR	California Toxics Rule
CVFPB	Central Valley Flood Protection Board
CVFPP	Central Valley Flood Protection Plan
CVRWQCB	Central Valley Regional Water Quality Control Board
CWA	Clean Water Act
CWC	California Water Code
cy	cubic yard
dB	decibels
dBA	weighted decibels
DOC	California Department of Conservation
DOT	U.S. Department of Transportation
DTSC	California Department of Toxic Substances Control
DWR	California Department of Water Resources
EIR	Environmental Impact Report
EO	Executive Order

EPA	United States Environmental Protection Agency
EPAct	The Energy Policy Act
EPOM	Environmental Permitting for Operation and Maintenance
ESA	Federal Endangered Species Act
FEMA	Federal Emergency Management Agency
FMMP	Farmland Mapping and Monitoring Program
FMO	Flood Maintenance and Operations Branch
FTA	Federal Transit Administration
GGERP	Greenhouse Gas Emissions Reduction Plan
GHG	greenhouse gas emissions
GIS	Geographic Information System
GSA	Groundwater Sustainability Agency
GSP	Groundwater Sustainability Plan
GWP	global warming potential
HCP	Habitat Conservation Plan
HFCs	hydrofluorocarbons
I-5	Interstate
IPaC	Information for Planning and Conservation
IPCC	Intergovernmental Panel on Climate Change
LEBLS	Lower Elkhorn Basin Levee Setback
MBTA	Federal Migratory Bird Treaty Act
MLD	Most Likely Descendant
MMRP	Mitigation Monitoring and Reporting Program
MPDES	National Pollution Discharge Elimination System
MRZ	Mineral Resource Zone
MTIP	Metropolitan Transportation Improvement Program
MTP	metropolitan transportation plan
NAAQS	national ambient air quality standards
NAHC	Native American Heritage Commission
NCCP	Natural Communities Conservation Plan
NHTSA	National Highway Traffic Safety Administration

NMFS	National Marine Fisheries Service
N_2O	nitrous oxide
NO^2	nitrogen dioxide
NO_x	nitrogen oxides
NOP	Notice of Preparation
NPDES	National Pollution Discharge Elimination System
NRCS	Natural Resources Conservation Service
NRHP	National Register of Historic Places
NTR	National Toxics Rule
NWIC	Northwest Information Center
O&M	operation and maintenance
OCMP	Off-Channel Mining Plan
OES	Office of Emergency Services
OHWM	Ordinary High Water Mark
OPR	Governor's Office of Planning and Research
OS	open space
PFCs	perfluorocarbons
PM	particulate matter
POS	public open space
PPV	peak particle velocity
PRC	California Public Resources Code
Preserve	Cache Creek Nature Preserve
Proposed project	Cache Creek Channel and Levee Rehabilitation Project
PRPA	Paleontological Resources Preservation Act
Qha	Holocene alluvium
Qhb	Holocene basin deposits
Qhc	Holocene stream channel deposits
RCNM	Roadway Construction Noise Model
RIDA	River Improvement and Drainage Association
ROG	reactive organic gases
RWQCB	Regional Water Quality Control Board

SACOG	Sacramento Area Coalition of Governments
SB	Senate Bill
SCH #	State Clearinghouse Number
SCOTUS	Supreme Court of the U.S.
SF_6	sulfur hexafluoride
SFHA	Special Flood Hazard Area
SGMA	Sustainable Groundwater Management Act
SGRO	Sand and Gravel Reserve Overlay,
SHPO	State Office of Historical Preservation
SLF	Sacred Lands File
SMAQMD	Sacramento Metropolitan Air Quality Management District
SO2	sulfur dioxide
SPCCP	Spill Prevention, Control, and Countermeasure Plan
SRFCP	Sacramento River Flood Control Project
SPRR	Southern Pacific Railroad
SR	State Route
SRFCP	Sacramento River Flood Control Project
SVAB	Sacramento Valley Air Basin
SVP	Society of Vertebrate Paleontology
SWP	State Water Project
SWPPP	Storm Water Pollution Prevention Plan
SWRCB	California's State Water Resources Control Board
ROG	reactive organic gases
TAC	toxic air contaminant
TCRs	Tribal Cultural Resources
TMDL	Total Maximum Daily Load
TDS	total dissolved solids
UAIC	United Auburn Indian Community of the Auburn Rancheria
UPRR	Union Pacific Railroad
USACE	U.S. Army Corps of Engineers
USFWS	U.S. Fish and Wildlife Service

USGS	U.S. Geological Survey
VdB	vibration decibels
VELB	Valley elderberry longhorn beetle
VMT	vehicle miles traveled
VOC	volatile organic compounds
WEAP	Worker Environmental Awareness Program
YBCS	Yolo Bypass Cache Slough
YBWA	Yolo Bypass Wildlife Area Habitat
YCTD	Yolo County Transportation District
YSAPCD	Yolo-Solano Air Pollution Control District
YSAQMD	Yolo-Solano Air Quality Management District

Executive Summary

ES.1. Introduction

The California Environmental Quality Act (CEQA) specifies that a public agency must prepare an environmental impact report (EIR) on any project that it proposes to carry out or approve that may result in a significant effect on the physical environment (California Public Resources Code, Section 21080[d]). Serving as the CEQA lead agency, the California Department of Water Resources (DWR) has prepared this project-level EIR in accordance with CEQA and the State CEQA Guidelines (California Code of Regulations, Title 14, Division 6, Chapter 3, Section 15000 et seq.) to evaluate the potential environmental impacts associated with implementing the Cache Creek Rehabilitation Project (project). This EIR is an informational document which will inform public agency decision makers and the public of the significant environmental effects of a project, identify possible ways to minimize the significant effects, and describe reasonable alternatives to the project (State CEQA Guidelines, Section 15121[a]).

ES.2. Project Purpose and Objectives

The purpose of the project is to meet DWR's public safety and maintenance responsibilities with the following objectives:

- restore the capacity of the Cache Creek channel along the project reach to provide three feet of freeboard during the original design flow of 30,000 cubic feet per second (cfs);
- implement the goals of the Central Valley Flood Protection Plan by reducing flood risk to local urban and rural areas;
- implement a combination of actions such as sediment removal along with vegetation removal, and raising levees to efficiently and cost effectively restore channel capacity;
- improve levees to not exceed the original design parameters to the extent possible; and,
- conduct project activities in a manner that minimizes impacts to riparian habitat and other sensitive biological resources.

ES.3. Proposed Project

The project is located in the town of Yolo, two miles north of the City of Woodland and about 4.5 miles west of the Sacramento River, in Yolo County, California (**Figure ES 1)**. The project site includes an approximately nine-mile-long reach of Cache Creek and its levees. The left bank[1] (north) levee begins 240 ft east of County Road 96B and continues to the entrance of the Cache Creek Settling Basin (CCSB). The right bank (south) levee begins 0.5-mile upstream of

[1] Reference to the banks of the creek is based on the view of the channel looking downstream.

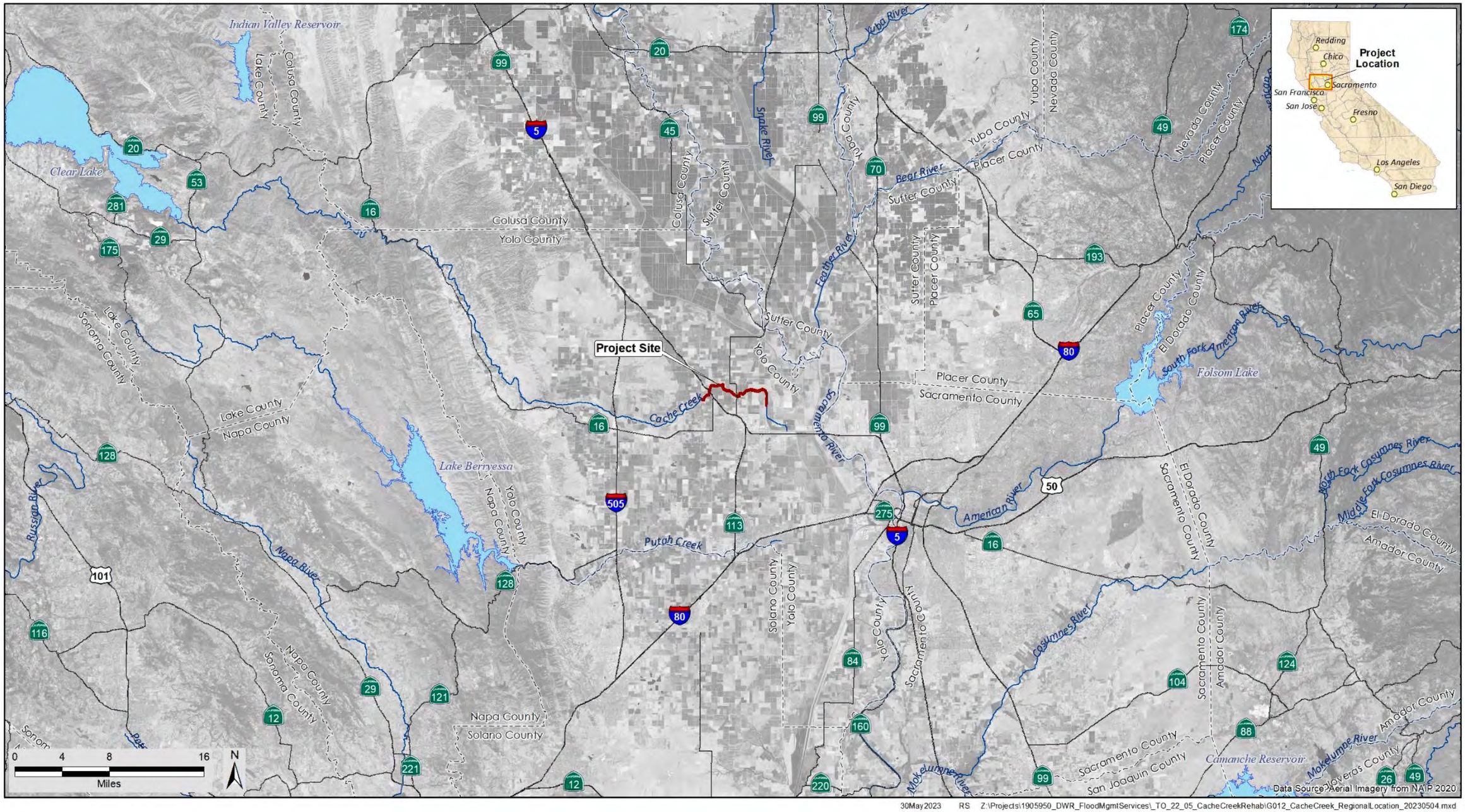

Figure ES 1. Regional Project Location

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of Interstate (I)-5 (also known as Huff's Corner) and becomes the west levee of the Cache Creek Settling Basin. DWR is proposing a combination of sediment removal from within the Cache Creek channel and raising levees to provide 3 feet of freeboard at 30,000 cfs in the areas shown within the project site boundary to meet the original design criteria. Vegetation would be removed where in-channel sediment removal occurs, to provide at least 1 foot of freeboard throughout Cache Creek. Raising levees along the project reach would provide the additional elevation required to create the required 3 feet of freeboard.

ES.4. Project Alternatives

CEQA requires that an EIR describe and evaluate a range of reasonable alternatives to a project or to the location of a project that would feasibly attain most of the basic project objectives and avoid or substantially lessen significant project impacts (State CEQA Guidelines, Section 15126.6). In addition to evaluating the required No-Project Alternative, the alternatives to the proposed project considered in this Draft EIR were developed based on information gathered during preliminary project development and are summarized below.

No-Project Alternative

The No-Project Alternative would avoid the construction-related adverse impacts of the proposed project because no construction would occur, and the landscape of the project site would be unchanged. However, the benefits of the proposed project would not be realized. Therefore, the No-Project Alternative would have greater impacts than the proposed project on environmental resources related to on-going flooding such as significant impacts on soils, hydrology, and water quality. Although the No-Project Alternative would have none of the impacts of the proposed project, and existing conditions would remain unchanged, the substantial beneficial effects of the proposed project would not occur, and flooding would continue to occur.

Alternative 1: Avoidance of Noise Sensitive Receptors Near Levee Raise Areas

Alternative 1 would slightly decrease the construction footprint and construction equipment use because the segments of levees within 450 feet of sensitive noise receptors would not be raised. This would slightly decrease most impacts as compared to the proposed project. Although impacts from noise would be reduced to less than significant under this alternative reducing the impact conclusion under the proposed project from significant and unavoidable. Nearly all other impacts under this alternative would generally be slightly reduced under this alternative, and all impact conclusions identified in Chapter 3 for the proposed project would remain the same, and no significant or significant impacts, except for noise during construction, would be reduced to less than significant. However, this alternative does not meet the project objective of raising all sections of levees to an elevation that meets the freeboard and channel conveyance capacity of the original design which could result in overtopping where segments of levees are not raised and continued flood risk in those areas without levee raises.

ES.5. Areas of Controversy and Issues to Be Resolved

Pursuant to CEQA Guidelines Sections 15123(b)(2) and (3), the EIR Executive Summary is required to include areas of controversy, including those raised by agencies and the public, and issues to be resolved. Based on comments made during the 30-day public review period in response to information published in the Notice of Preparation (NOP) and in public comments made during the public scoping period, areas of controversy were identified for the project regarding: scope of the project to address future maintenance of the channel vegetation management, addressing potential flooding conditions, disposal of excavated sediment, and location of staging areas.

Issues to be resolved include the choice among alternatives, and how to mitigate the project's significant environmental impacts.

ES.6. Public Review and Final EIR

On August 7, 2023, DWR issued a notice of preparation (NOP) for this EIR (State Clearinghouse No. 2023080108). The NOP concluded that the project may have significant impacts on the environment, and informed agencies and the general public that an EIR was being prepared. The NOP invited comments on the scope and content of the EIR and participation at an in-person public scoping meeting. The NOP was circulated for 30 days, as mandated by CEQA.

A notice of completion for this Draft EIR has been filed with the State Clearinghouse, in accordance with the State CEQA Guidelines (Section 15085), and a notice of availability of this Draft EIR has been posted in accordance with State CEQA Guidelines Section 15087. The Notice of Availability, Draft EIR and selected appendices are available at the following website: https://water.ca.gov/News/Public-Notices/Cache-Creek-DEIR. The public review period for providing comments on this Draft EIR is from March 7, 2025, to close of business at 5 p.m. on April 21, 2025.

DWR will conduct a public meeting on the Draft EIR March 26, 2025. The meeting will allow for an opportunity to submit oral or written comments, which will be included in the administrative record.

Meeting location: CA Agriculture Museum, 1958 Hays Lane, Woodland, CA 95776

The Draft EIR and all appendices are also available for review at the following locations:

California Department of Water Resources,
Flood Maintenance and Operations Branch (FMO)
3310 El Camino Avenue
Sacramento, CA 95821
Phone (916) 820-7693

Woodland Public Library
250 1st Street
Woodland, CA 95695

Phone (530) 661-5980
The Draft EIR can be reviewed during walk-in business hours at:

California Department of Water Resources
Flood Maintenance and Operations Branch (FMO)
3310 El Camino Avenue
Sacramento, CA 95821

This Draft EIR is being distributed for a 45-day public review period that will end on April 21, 2025. Written comments must be received by the close of business (5 p.m.) on April 21, 2025. Written comments may be mailed, faxed, or e-mailed to:

Mr. Jeff Schuette
Senior Environmental Scientist
California Department of Water Resources,
Flood Maintenance and Operations Branch (FMO)
3310 El Camino Avenue
Sacramento, CA 95821
Phone (916) 820-7693
Email: jeff.schuette@water.ca.gov
Subject line: Cache Creek Channel and Levee Rehabilitation Project Draft EIR Comments

If comments are provided via e-mail, please include the project title in the subject line and include the commenter's U.S. Postal Service mailing address in the e-mail. All written comments received on the adequacy of this Draft EIR during the public review period will be addressed in a "response-to-comments" chapter in the Final EIR, which, together with the Draft EIR, will constitute the entirety of the Final EIR. The Final EIR will also present any changes to the Draft EIR resulting from public and agency comments, and DWR staff-initiated changes.

Prior to any decision on the project, DWR will review the Final EIR and consider certifying the document at a regularly scheduled Board meeting. Upon EIR certification, DWR may proceed with project approval actions. Approval of the project would be preceded by written findings for each significant environmental effect identified in the EIR (CEQA Guidelines Section 15091), and if necessary, a statement of overriding considerations (CEQA Guidelines Section 15093). At the time that CEQA findings are adopted, DWR would also adopt a mitigation monitoring and reporting program for adopted mitigation measures.

ES.7. Summary of Environmental Impacts and Mitigation Measures

CEQA requires that the environmental analysis contained in the Draft EIR also include a summary of the proposed project and its consequences, including identification of each potentially significant effect of the proposed project, the level of effect the proposed project may have, and proposed mitigation measures for all potentially significant or significant environmental effects. A full description of each of the proposed impacts and mitigation measures is found in Chapter 3.0, "Environmental Setting, Impacts, and Mitigation Measures," and a summary is provided in **Table ES 1**.

Table ES 1. Summary of Impacts and Mitigation Measures

Impact	Significance Before Mitigation	Mitigation Measure	Significance After Mitigation
3.2 Aesthetics			
3.2.1 Adverse Effects on Scenic Vistas or Visual Character and Quality. The project would not substantially or permanently degrade the existing visual character of the project site, nor would it impact scenic vista. In addition, the appearance of the project site after project construction would be similar to current conditions and would remain coherent with the overall rural character of the project site and its surroundings. Therefore, this impact would be **less than significant**.	Less than significant	No mitigation is required.	Less than significant
3.3 Agriculture and Forestry			
3.3.1 Conflict with agricultural zoning or Williamson Act contract. The project site is not designated under Williamson Act contracts and is zoned as open space. Construction activities would occur adjacent to many Williamson Act lands; however, the construction impacts would be temporary and short term. Therefore, this impact would be **less than significant**.	Less than significant	No mitigation required.	Less than significant
3.3.2 Involve other changes in the existing environment that could result in conversion of Farmland to non-agricultural use. Construction activities would occur adjacent to these Farmlands and could potentially impact the existing environment from noise and dust; however, these impacts would be temporary and would not result in the conversion of Farmland to nonagricultural use. Therefore, this impact would be **less than significant**.	Less than significant	No mitigation required.	Less than significant
3.4 Air Quality			

Impact	Significance Before Mitigation	Mitigation Measure	Significance After Mitigation
3.4.1 Conflicts with Air Quality Plans from Construction Activities. The proposed project would generate construction-related exhaust emissions below the thresholds of significance; however, PM10 emissions would exceed thresholds and conflict with implementation of the Federal and State Air Quality Plans. Feasible mitigation measures would not reduce dust emissions to below the significance threshold and impacts would remain **significant and unavoidable.**	Significant and unavoidable	**3.4.1: Implement Construction Dust Mitigation and Best Management Practices.** DWR and its construction contractors will implement the following measures consistent with established YSAQMD Construction Dust Mitigation: ▪ Water all active construction sites at least twice daily. Frequency should be based on the type of operation, soil, and wind exposure. ▪ Haul trucks shall maintain at least 2 feet of freeboard. ▪ Cover all trucks hauling dirt, sand, or loose materials. ▪ Plant vegetative ground cover in disturbed areas as soon as possible. ▪ Cover inactive storage piles. ▪ Sweep streets if visible soil material is carried out from the construction site. ▪ Treat accesses to a distance of 100 feet from the paved road with a 6 to 12-inch layer of wood chips or mulch. ▪ Treat accesses a distance of 100 feet from the paved road with a 6- inch layer of gravel. ▪ Limit vehicle speeds on unpaved roads to 15 miles per hour (mph). ▪ All roadways, driveways, sidewalks, parking lots to be paved should be completed as soon as possible. In addition, building pads should be laid as soon as possible after grading unless seeding or soil binders are used.	Significant and unavoidable

Impact	Significance Before Mitigation	Mitigation Measure	Significance After Mitigation
3.4.1 Conflicts with Air Quality Plans from Construction Activities (continued)	Significant and unavoidable	▪ Minimize idling time either by shutting equipment off when not in use or reducing the time of idling to 5 minutes [California Code of Regulations, Title 13, sections 2449(d)(3) and 2485]. Provide clear signage that posts this requirement for workers at the entrances to the site. ▪ Provide current certificate(s) of compliance for CARB's In-Use Off-Road Diesel-Fueled Fleets Regulation [California Code of Regulations, Title 13, sections 2449 and 2449.1]. For more information contact CARB at 877-593-6677, doors@arb.ca.gov, or www.arb.ca.gov/doors/compliance_cert1.html ▪ Maintain all construction equipment in proper working condition according to manufacturer's specifications. The equipment must be checked by a certified mechanic and determine to be running in proper condition before it is operated.	Significant and unavoidable
3.4.2 Result in Cumulatively Considerable Net Increase of Any Criteria Pollutant from Construction Activities. The proposed project would generate construction-related exhaust emissions below the thresholds of significance; however, dust emissions would exceed thresholds and result in conflict with the air quality plan implementation. After implementing mitigation measures dust emissions would remain above thresholds, resulting in a cumulative net increase in dust emissions and impacts would remain **significant and unavoidable**.	Significant and unavoidable	**3.4.2: Implement Mitigation Measure 3.4.1, "Implement Construction Dust Mitigation and Best Management Practices"**	Significant and unavoidable

Impact	Significance Before Mitigation	Mitigation Measure	Significance After Mitigation
3.4.3 Expose Sensitive Receptors to Substantial Pollutant Concentrations. The project would generate construction-related exhaust emissions and dust. Because of the temporary and localized emissions, and the distance from sensitive receptors to the primary work areas, this would result in a **less-than-significant impact.**	Less than significant	No mitigation required.	Less than significant
3.4.4 Other Emissions (Such as Those Leading to Odors) Adversely Affecting a Substantial Number of People. The proposed project would not generate a considerable amount of other emissions near receptors and impacts would be **less than significant.**	Less than significant	No mitigation required	Less than significant
3.5 Biological Resources			
3.5.1 Impacts on Riparian Habitat. Vegetation disturbance/removal associated with sediment removal and levee raises would result in permanent impacts to riparian habitat, which would be a **significant impact**	Significant	**3.5.1a: Implement Best Management Practices to Avoid and Minimize Impacts to Sensitive Biological Resources** DWR will implement the following measures to avoid and minimize impacts on sensitive biological resources in the project area: **Confine and Delineate Work Area**. DWR shall clearly identify boundaries of work areas using temporary fencing or equivalent and shall identify areas designated as environmentally sensitive prior to beginning construction activities. Land clearing shall be confined to the minimum area necessary to facilitate construction activities. Workers shall restrict movement of heavy equipment to and from the project site to established roadways to minimize natural community and covered species habitat disturbance.	Less than significant

	Impact	Significance Before Mitigation	Mitigation Measure	Significance After Mitigation
3.5.1	**Impacts on Riparian Habitat.** (continued)	Significant	▪ All construction vehicles, other equipment, and personnel shall avoid these designated areas. ▪ **Control Fugitive Dust**. Workers shall minimize the spread of dust from work sites to natural communities on adjacent lands. ▪ **Conduct Worker Training**. All construction personnel shall participate in a worker environmental training program (approved/authorized by the Conservancy if using the Yolo HCP/NCCP permitting process) and administered by a qualified biologist. A "qualified biologist" typically has appropriate academic qualifications, work experience with the species of focus for the project, and/or has been authorized by USFWS, CDFW, or another regulatory body to manage protected biological resources on the project site. The training shall provide education regarding sensitive habitats and special-status species and their habitats, the need to avoid adverse effects, state and federal protection, and the legal implications of violating the federal ESA (and Natural Community Conservation Planning Act, if applicable).	Less than significant

	Impact	Significance Before Mitigation	Mitigation Measure	Significance After Mitigation
3.5.1	**Impacts on Riparian Habitat.** (continued)	Significant	▪ The training shall include, at a minimum, a discussion of all special-status species that have the potential to occur in the study area, their conservation status, an overview of their habitats, measures to be implemented for their protection, and possible penalties for non-compliance. A pre-recorded video presentation by a qualified biologist shown to construction personnel may fulfill the training requirement. ▪ **Restoration of Construction Staging Areas and Temporary Work Areas**. Within 1 year following completion of project activities, DWR shall restore temporary work and staging areas to a condition equal to or greater than the habitat function of the affected habitat. Restoration of vegetation in temporary work and staging areas shall use clean, native seed mixes (approved by the Conservancy only if using the Yolo HCP/NCCP permitting process) that are free of noxious plant species seeds.	Less than significant

	Impact	Significance Before Mitigation	Mitigation Measure	Significance After Mitigation
3.5.1	**Impacts on Riparian Habitat.** (continued).	Significant	**3.5.1b Avoid and Minimize Loss of Riparian Habitats.** DWR will implement the following measures to avoid and minimize impacts on riparian habitats (e.g., Fremont cottonwood forest and woodland, Goodding's willow riparian woodland and forest, Hind's walnut, sandbar willow thickets, and valley oak riparian woodland and forest): ▪ **Limit Ground-Disturbance to Construction Areas and Avoid and Limit Disturbance to Riparian Habitats When Feasible.** Ground-disturbance will be limited to construction areas, including necessary access routes and staging areas. The number of access routes, size of staging areas, and total area of the project activity will be limited to the minimum necessary. When possible, existing access routes and points will be used. All roads, staging areas, and other facilities will be placed to avoid and limit disturbance to riparian habitats when feasible.	Less than significant

	Impact	Significance Before Mitigation	Mitigation Measure	Significance After Mitigation
3.5.1	**Impacts on Riparian Habitat.** (continued)	Significant	▪ **Establish Buffers Around Avoided Riparian Habitats.** For riparian habitats that will be avoided, a buffer of 100 feet from the canopy dripline shall be applied where feasible. If a 100-foot buffer is infeasible, a lesser buffer shall be applied. ▪ **Erect and Maintain High-visibility Fencing during Construction to Protect Sensitive Biological Resource Areas**. Before project activities adjacent to riparian habitat begin, fencing, stakes, and/or flagging shall be placed to clearly delineate the extent of material excavation and other construction and restoration activities. To the maximum extent feasible, a minimum 20-foot buffer shall be established and maintained around riparian vegetation to prevent accidental damage during project activities. If work must occur closer to riparian vegetation, fencing or other means of minimizing potential for accidental damage shall be installed and maintained when work is occurring in adjacent areas.	Less than significant

3.5.1	**Impacts on Riparian Habitat.** (continued)	Significant	**3.5.1c: Compensate for Loss of Riparian Habitats (Fremont Cottonwood Forest and Woodland, Goodding's Willow Riparian Woodland and Forest, Hind's Walnut, Sandbar Willow Thickets, and Valley Oak Riparian Woodland and Forest)** DWR will implement the measures described below to minimize, and, if necessary, compensate for loss of riparian habitat. ▪ **Compensate for Permanent Impacts to Riparian Habitats.** Unavoidable impacts on riparian habitat shall be compensated at up to a 3:1 replacement ratio for each acre removed to ensure no net permanent loss of riparian habitat. Appropriate replacement ratios for the proposed project will be determined in consultation with CDFW and in accordance with a Lake and Streambed Alteration Agreement, pursuant to Section 1600 of the California Fish and Game Code, which will be obtained from CDFW prior to project construction. ▪ **Prepare and Implement a Mitigation Plan.** A mitigation plan shall be prepared, reviewed by appropriate agencies, and implemented addressing how the loss of riparian habitat that cannot be avoided will be compensated. The mitigation plan shall identify compensation ratios for acres lost and mitigation sites, if applicable. The plan will include using a riparian habitat mitigation bank, offsite mitigation, and/or may incorporate the requirements defined in the Yolo HCP/NCCP guidelines, including compensation through the use of the HCP through consultation with USFWS.

Impact	Significance Before Mitigation	Mitigation Measure	Significance After Mitigation
3.5.2 Impacts on Aquatic Resources. Permanent impacts to aquatic resources would occur from sediment removal, but no adverse effects or loss of waters of the United States or State would occur. Temporary impacts during construction could result in impairment of water quality in aquatic resources, which would be a **significant impact**.	Significant	**Mitigation Measure 3.5.1a: "Implement Best Management Practices to Avoid and Minimize Impacts to Sensitive Biological Resources."** Please refer to Mitigation Measure 3.5.1a under Impact 3.5.1 in this section for the full text of this mitigation measure. **Mitigation Measure 3.7.1: "Acquire Appropriate Regulatory Permits and Prepare and Implement a Storm Water Pollution Prevention Plan, Spill Prevention Control and Countermeasures Plan, and Associated Best Management Practices."** Please refer to Section 3.7, "Hazards and Hazardous Materials," Impact 3.7.1 for the full text of this mitigation measure.	Less than significant
3.5.3 Impacts to Valley Elderberry Longhorn Beetle. Vegetation removal and/or trimming of any individual elderberry shrubs within or outside of the 4.56 acres of elderberry savanna identified in the project study area, either by mechanized or hand alteration of habitat, would result in **significant** impacts to VELB through habitat destruction, direct loss of individual beetles, and loss of reproductive potential due to habitat loss	Significant	**Mitigation Measure 3.5.1a: "Implement Best Management Practices to Avoid and Minimize Impacts to Sensitive Biological Resources."** Please refer to Mitigation Measure 3.5.1a under Impact 3.5.1 in this section for the full text of this mitigation measure. **Mitigation Measure 3.5.3a: Avoid Take and Adverse Effects on Habitat of the VELB.** DWR will implement the following measures to avoid take and adverse effects on VELB: **Temporarily Fence All Elderberry Shrubs Adjacent to Construction Areas and Establish Avoidance Buffers.** Before project activities begin near elderberry shrubs that can be avoided, fencing, stakes, and/or flagging shall be placed to clearly delineate the extent of material excavation and other construction and restoration activities.	Less than significant

Impact	Significance Before Mitigation	Mitigation Measure	Significance After Mitigation
3.5.3 Impacts to Valley Elderberry Longhorn Beetle (continued).	Significant	▪ **Temporarily Fence All Elderberry Shrubs Adjacent to Construction Areas and Establish Avoidance Buffers cont..** To the maximum extent feasible, a 100-foot buffer shall be established and maintained around elderberry shrubs/clusters to prevent accidental damage during project activities. If work must occur closer to elderberry shrubs, fencing or other means of minimizing potential for accidental damage shall be installed and maintained when work is occurring in adjacent areas. ▪ **Prohibit Use of Pesticides or Chemicals within Established Buffers around Elderberry Shrubs**. No insecticides, herbicides, or other chemicals that might harm the beetle or its host plant will be used by DWR within established buffers (20 feet) around elderberry shrubs. ▪ **Monitor Construction Activities in Sensitive Biological Resource Areas and Stop Work if Unauthorized Project Impacts Occur.** A qualified biological monitor shall supervise buffer establishment and conduct periodic inspections during project construction and restoration activities to ensure that impact avoidance and minimization measures are properly implemented.	Less than significant

3.5.3 Impacts to Valley Elderberry Longhorn Beetle. (continued)	Significant	**3.5.3b: Minimize and Compensate for Adverse Effects on Habitat of the VELB** DWR will implement the following measures to minimize and compensate for impacts on VELB. ▪ **Time Vegetation Trimming to Minimize Impacts to VELB.** To the maximum extent feasible, trimming of elderberry shrub branches and stems shall occur between November and February and will avoid removal of those greater than 1 inch in diameter, where feasible. Other project activities involving heavy equipment use within 165 feet of an elderberry shrub will be conducted outside of the VELB flight season (March through July) to the extent feasible. ▪ **Transplant for Elderberry Shrubs That Cannot be Avoided.** Elderberry shrubs that cannot be avoided and require removal will be transplanted by DWR at an appropriate mitigation bank or site, approved by USFWS. Transplant activities will be conducted in accordance with USFWS guidelines (USFWS 2017). ▪ **Compensate for Unavoidable Impacts to VELB.** If elderberry shrubs are trimmed and if ground-disturbing activities are to occur within 20 feet of the dripline of an elderberry shrub, DWR will provide compensation consistent with the USFWS conservation guidelines (USFWS 2017) and through consultation with USFWS. These measures include possible need to transplant elderberry shrubs and to compensate for the impact as agreed to based on discussions with USFWS.	Less than significant

Impact	Significance Before Mitigation	Mitigation Measure	Significance After Mitigation
3.5.3 Impacts to Valley Elderberry Longhorn Beetle. (continued)	Significant	▪ **Prepare and Implement a Mitigation Plan.** The mitigation plan will specify the number of elderberry transplants, the transplant location(s), and identify the mitigation ratios associated with the specific impacts. The plan will include using a VELB mitigation bank or may incorporate the requirements defined in the Yolo HCP/NCCP guidelines including compensation through the use of the HCP through consultation with USFWS.	Less than significant
3.5.4 Impacts on Habitat of Northwestern Pond Turtle. Vegetation removal and site disturbance associated with the project construction could result in **significant impacts** to northwestern pond turtle through direct removal of habitat and potential nesting sites, as well as subsequent loss of reproductive potential.	Significant	**Mitigation Measure 3.5.1a: "Implement Best Management Practices to Avoid and Minimize Impacts to Sensitive Biological."** Please refer to Mitigation Measure 3.5.1a under Impact 3.5.1 in this section for the full text of this mitigation measure. **Mitigation Measure 3.5.4: Minimize Take and Adverse Effects on Northwestern Pond Turtle** DWR will implement the following measures to minimize take and adverse effects on Northwestern pond turtle: ▪ **Conduct Preconstruction Surveys and Inspections.** A qualified biologist shall conduct surveys for northwestern pond turtles in suitable habitat where construction activities will occur.	Less than significant

3.5.4 Impacts on Habitat of Northwestern Pond Turtle.(continued).	Significant	▪ Surveys shall be conducted within 48 hours before construction activities (including vegetation removal) begin in or adjacent to suitable habitat. Before construction activities begin each workday, construction areas shall be inspected for pond turtles by project personnel that has been trained by a qualified biologist. ▪ **Establish Buffers Around Suitable Nesting Habitat, Where Feasible, and Monitor Construction Activities**. DWR shall avoid ground disturbance (e.g., grading, disking, road construction or similar activities that could disturb or crush northwestern pond turtles and their nests), where feasible. Suitable nesting habitat for northwestern pond turtle generally occurs within 200 feet of aquatic habitat that includes suitable basking sites (such as logs, rocks, mats of floating vegetation, or open mud banks) and underwater refugia (such as rocks or submerged vegetation). When feasible, DWR shall observe a 200-foot buffer during northwestern pond turtle breeding periods (May 1 to November 1), when nests and hatchlings may be present. This 200-foot buffer, or another buffer approved in consultation with CDFW, shall be marked in the field by a qualified biologist using temporary fencing, high-visibility flagging, or other means that are equally effective in clearly delineating the buffers. Project activities that could result in ground disturbance shall not occur within the buffer to the extent feasible.	Less than significant

Impact	Significance Before Mitigation	Mitigation Measure	Significance After Mitigation
3.5.4 Impacts on Habitat of Northwestern Pond Turtle (continued)	Significant	▪ Otherwise, all ground-disturbing maintenance activities occurring within the buffer distance shall be monitored by a qualified biologist who would be either on-call or on-site, as appropriate to reduce impacts ▪ Stop Work if a Pond Turtle is Observed in Construction Area and Allow Turtles to Leave the Construction Area on Their Own or Have CDFW-qualified Biologist Capture and Relocate Pond Turtle. If northwestern pond turtles are observed in a project area, DWR shall stop work within approximately 200 feet of the turtle, and a qualified biologist shall be notified immediately. If possible, the turtle shall be allowed to leave on its own and the qualified biologist shall remain in the area until the biologist deems his or her presence no longer necessary to ensure that the turtle is not harmed. Alternatively, the qualified biologist may capture and relocate the turtle, unharmed and with prior CDFW approval, to suitable alternative habitat (see below). ▪ **Monitor Dewatering Activities and Relocate Turtles, As Necessary**. Any dewatering attempt of isolated ponds in the Cache Creek channel shall be monitored by a CDFW-qualified biologist, who shall use a seine or net to collect any turtles. The qualified biologist may capture and relocate the turtle, unharmed and with prior CDFW approval, to suitable alternative habitat.	Less than significant

Impact	Significance Before Mitigation	Mitigation Measure	Significance After Mitigation
3.5.4 Impacts on Habitat of Northwestern Pond Turtle (continued)	Significant	▪ **Any captured turtles shall be moved to suitable habitat that would not be affected by project construction**. Habitat to which pond turtles are moved shall be located as close as possible to the area from which they are removed and, to the extent feasible, shall be of a similar habitat type and quality (i.e., turtles removed from riparian habitat will be relocated to riparian habitat).	Less than significant
3.5.5 Impacts on Common and Special-Status Nesting Birds. Vegetation removal and site disturbance associated with project construction could result in **significant impacts** to common and special-status nesting birds through direct removal of habitat and nesting trees, as well as subsequent loss of reproductive potential.	Significant	**Mitigation Measure 3.5.1a: "Implement Best Management Practices to Avoid and Minimize Impacts to Sensitive Biological Resources."** Please refer to Mitigation Measure 3.5.1a under Impact 3.5.1 for the full text of the mitigation measure. **Mitigation Measure 3.5.5a: Conduct Pre-construction Surveys for Active Nests of Special-status Birds and Common Raptor Species in Areas of Suitable Habitat before Starting Construction** DWR shall retain a qualified biologist to conduct pre-construction surveys for nesting birds (including raptor and passerines, as well as and heron and egret rookeries). Surveys of all potential nesting trees and habitat in the area will be conducted by a qualified biologist during the nesting season (generally February 15 – September 15 but may be adjusted for individual species).	Less than significant

Impact	Significance Before Mitigation	Mitigation Measure	Significance After Mitigation
3.5.5 Impacts on Common and Special-Status Nesting Birds. (continued).	Significant	Surveys will be conducted within suitable nesting habitat that could be affected by construction activities and will include a 500-foot buffer area (or larger area if required by established survey protocol) surrounding these areas. The results of the survey shall be submitted to the CDFW (or the Conservancy and CDFW if the Yolo HCP/NCCP permitting process is used). DWR will implement the following measures to avoid and minimize impacts on nesting birds. **Conduct Vegetation Removal between September 16 and January 31 to the Extent Feasible.** Vegetation removal, particularly tree removal, will be conducted between September 16 and January 31, to the extent feasible, to minimize potential loss of active bird nests. If no established survey protocol exists, the qualified biologist will complete surveys within 1 week of the start of the activity, or within 2 weeks of restart of the activity after the activity has lapsed. If no nesting birds are detected during pre-activity surveys, no additional mitigation measures are required. **Mitigation Measure 3.5.5b: Avoid and Minimize Impacts on Nesting Birds** Where appropriate, pre-activity surveys will follow established survey protocols or guidelines. These protocols include the following: ▪ Staff Guidance Regarding Avoidance of Impacts to Tricolored Blackbird Breeding Colonies on Agricultural Fields in 2015 (CDFW 2015)	Less than significant

Impact	Significance Before Mitigation	Mitigation Measure	Significance After Mitigation
3.5.5 Impacts on Common and Special-Status Nesting Birds. (continued).	Significant	▪ Results of Tricolored Blackbird 2008 Census (Kelsey 2008) ▪ Recommended Timing and Methodology for Swainson's Hawk ▪ Nesting Surveys in California's Central Valley (Swainson's Hawk Technical Advisory Committee 2000) ▪ Least Bell's Vireo Survey Guidelines (USFWS 2001) ▪ **Establish and Maintain Buffers Around Active Nest Sites to Avoid Nest Failure and Monitor Nest Sites to Confirm that Project Activities Are Not Adversely Affecting the Nesting Birds or Their Young.** If any active nests, or behaviors indicating active nests are present, are observed, DWR will establish appropriate-sized avoidance buffers around the nest sites, as determined by a qualified biologist in coordination with CDFW to avoid nest failure resulting from project activities. If required, buffers will be marked in the field by a qualified biologist using temporary fencing, high-visibility flagging, or other means that are equally effective in clearly delineating. The size and shape of the buffer will depend on the species, nest location, nest stage, and specific construction activities to be performed while the nest is active. However, the recommended buffer distances for specific nesting birds that have potential to nest within the project site are as follows:	Less than significant

Impact	Significance Before Mitigation	Mitigation Measure	Significance After Mitigation
3.5.5 Impacts on Common and Special-Status Nesting Birds. (continued)	Significant	○ Swainson's hawk: 0.5 mile ○ common nesting raptors: 300 feet ○ tricolored blackbird: 300 feet (or 1,300 if the Yolo HCP/NCCP permitting process is used) ○ common nesting passerines: 100 feet ○ heron or egret rookeries: 200 feet ▪ Monitoring will be conducted by a qualified biologist, either continuously or periodically during work, to confirm that project activity is not resulting in detectable adverse impacts on nesting birds or their young. The qualified biologist will be empowered to stop construction activities that, in the biologist's opinion, threaten to cause unanticipated and/or unpermitted adverse effects on special-status wildlife (e.g., nest abandonment, reduced care of eggs or young, or premature fledging). ▪ No project activity will commence within the buffer areas until a qualified biologist has determined that the young have fledged, or the nest site is otherwise no longer in use. ▪ If the project would result in take of Swainson's hawk in accordance with California Fish and Game Code Section 2081, an incidental take permit will be obtained from CDFW before take occurs.	Less than significant

	Impact	Significance Before Mitigation	Mitigation Measure	Significance After Mitigation
3.5.6	**Impacts on Swainson's Hawk**	Significant	**Mitigation Measure 3.5.1a: "Implement Best Management Practices to Avoid and Minimize Impacts to Sensitive Biological Resources."** Please refer to Mitigation Measure 3.5.1a under Impact 3.5.1 for the full text of the mitigation measure.	Less than significant
3.5.6	**Impacts on Swainson's Hawk.** (continued)	Significant	**Mitigation Measure 3.5.5a: Conduct Pre-construction Surveys for Active Nests of Special-status Birds and Common Raptor Species in Areas of Suitable Habitat before Starting Construction** Please refer to Mitigation Measure 3.5.5a under Impact 3.5.5 for the full text of the mitigation measure. **Mitigation Measure 3.5.5b Avoid and Minimize Impacts on Nesting Birds** Please refer to Mitigation Measure 3.5.5b under Impact 3.5.5 for the full text of the mitigation measure. **Mitigation Measure 3.5.6: Obtain Take Coverage for Impacts on Active Swainson's Hawks Nests** If active nest trees are proposed to be removed and the project would result in take of Swainson's hawk in accordance with the California Fish and Game Code Section 2081, an incidental take permit will be obtained from CDFW or the Yolo HCP/NCCP permitting process will be used before take occurs. DWR will be required to abide by all avoidance/minimization measures and numbers for take determined in consultation with CDFW.	Less than significant

Impact	Significance Before Mitigation	Mitigation Measure	Significance After Mitigation
3.5.7 Impacts on Burrowing Owl. Vegetation removal and site disturbance associated with project construction could result in **significant** impacts on the burrowing owl through direct habitat loss or general loss of reproductive potential due to habitat loss.	Significant	**Mitigation Measure 3.5.1a "Implement Best Management Practices to Avoid and Minimize Impacts to Sensitive Biological Resources."** Please refer to Mitigation Measure 3.5.1a under Impact 3.5.1 in this section for the full text of this mitigation measure. **3.5.7: Conduct a Habitat Assessment and Focused Surveys for Burrowing Owls and Avoid Impacts.** DWR will implement the following measures to avoid impacts to Burrowing Owls. ▪ **Conduct an Assessment of Burrowing Owl Habitat Suitability in Areas Subject to Project-Related Disturbance and Conduct a Focused Survey for Burrowing Owl.** DWR shall retain a qualified biologist to conduct planning-level surveys and identify western burrowing owl habitat within or adjacent to (i.e., within 500 feet of) construction activities prior to any construction activities. If habitat for this species is present, additional focused surveys for the species by a qualified biologist are required, consistent with guidelines provided in Appendix D of the *Staff Report on Burrowing Owl Mitigation* (CDFW 2012).	Less than significant

	Impact	Significance Before Mitigation	Mitigation Measure	Significance After Mitigation
3.5.7	**Impacts on Burrowing Owl.** (continued)	Significant	▪ **Establish Avoidance Buffers around Active Burrows and Monitor.** If burrowing owls or active burrows are observed, DWR will establish a buffer based on the activity dates and the level of disturbance in accordance with the *Staff Report on Burrowing Owl Mitigation* (CDFW 2012; see **Table 3.5-4**). Buffers will be marked in the field by a qualified biologist using temporary fencing, high-visibility flagging, or other means that are equally effective in clearly delineating the buffers. Construction activities will not occur within the established buffer and workers will avoid entering the area. Occupied habitat is considered fully avoided if the project footprint does not impinge on a non-disturbance buffer around the suitable burrow. DWR may qualify for a reduced buffer size, based on existing vegetation, human development, and land use, if agreed upon by CDFW and USFWS (CDFW 2012).	Less than significant

	Impact	Significance Before Mitigation	Mitigation Measure	Significance After Mitigation
3.5.7	**Impacts on Burrowing Owl.** (continued)	Significant	▪ **Minimization Plan for Work within Burrows.** DWR shall retain a qualified biologist to conduct pre-construction surveys and document the presence or absence of western burrowing owls that could be affected by the covered activity. If the project does not fully avoid direct and indirect effects on nesting sites (i.e., if the project cannot adhere to the buffers described above), then DWR shall consult with CDFW to determine an acceptable methodology to proceed with work. If active nests would be removed and the project would result in take of burrowing owl, in accordance with California Fish and Game Code Section 2081 an incidental take permit shall be obtained from CDFW or the Yolo HCP/NCCP permitting process before take occurs. DWR shall be required to abide by all avoidance/minimization measures and limits of take determined in consultation with CDFW.	Less than significant

Impact	Significance Before Mitigation	Mitigation Measure	Significance After Mitigation
3.5.8 Impacts on Tricolored Blackbird. Vegetation removal and site disturbance associated with project construction could result in **significant impacts** on the tricolored blackbird through direct habitat removal or general loss of reproductive potential due to habitat loss.	Significant	**Mitigation Measure 3.5.1a: "Implement Best Management Practices to Avoid and Minimize Impacts to Sensitive Biological Resources."** Please refer to Mitigation Measure 3.5.1a under Impact 3.5.1 in this section for the full text of this mitigation measure. **Mitigation Measure 3.5.5a: "Conduct Pre-construction Surveys for Active Nests of Special-status Birds and Common Raptor Species in Areas of Suitable Habitat before Starting Construction."** Please refer to Mitigation Measure 3.5.5a under Impact 3.5.5 in this section for the full text of this mitigation measure. **Mitigation Measure 3.5.5b: "Avoid and Minimize Impacts on Nesting Birds."** Please refer to Mitigation Measure 3.5.5b under Impact 3.5.5 in this section for the full text of this mitigation measure. **3.5.7: Conduct Tricolored Backbird Habitat Suitability Analysis and Avoid and Minimize Impacts** DWR shall retain a qualified biologist to identify and quantify (in acres) tricolored blackbird nesting and foraging habitat (as defined in Appendix A of the Yolo HCP/NCCP [ICF 2018], Covered Species Accounts) within 1,300 feet of the footprint of the project study area. The qualified biologist will also check records maintained by the Conservancy (which will include CNDDB data, and data from the tricolored blackbird portal) to determine if tricolored blackbird nesting colonies have been active in or within 1,300 feet of the project study area during the previous five years.	Less than significant

	Impact	Significance Before Mitigation	Mitigation Measure	Significance After Mitigation
3.5.8	**Impacts on Tricolored Blackbird.** (continued)	Significant	Based on the results of this habitat suitability analysis as well as nesting bird surveys (see Mitigation Measure 3.5.5a), DWR will establish an avoidance buffer (see Mitigation Measure 3.5.5b) to avoid adverse effects within 300 feet (or, if using the Yolo HCP/NCCP permitting process, 1,300 feet) of the colony site(s), unless a shorter distance is approved by the Conservancy, USFWS, and CDFW.	Less than significant
3.5.9	**Impacts on Special-status Roosting Bats** Planned project activities including vegetation removal, sediment removal, and levee rehabilitation could result in **significant impacts** on special-status roosting bats through direct habitat removal or general loss of reproduction potential due to habitat loss.	Significant	**Mitigation Measure 3.5.1a: Implement Best Management Practices to Avoid and Minimize Impacts to Sensitive Biological Resources** Please refer to Mitigation Measure 3.5.1a under Impact 3.5.1 in this section for the full text of this mitigation measure. **Mitigation Measure 3.5.9a: Avoid Disturbance and Loss of Roosting Special-status Bats** DWR will implement the following measures to avoid loss of roosting special-status bats: ▪ **Conduct Vegetation Removal Between September 16 and January 31 to the Extent Feasible.** Vegetation removal, particularly tree removal, shall be conducted between September 16 and January 31, to the extent feasible, to minimize potential loss of bat maternity roosts.	Less than significant

Impact	Significance Before Mitigation	Mitigation Measure	Significance After Mitigation
3.5.9 Impacts on Special-status Roosting Bats (continued)	Significant	▪ **Conduct Bat Surveys for Active Maternity Roosts for Trees with Suitable Roost Cavities or Dense Cover Designated for Removal.** If removal of trees with suitable roost cavities and/or dense cover must occur during the bat pupping season (April 1 through July 31), surveys for active maternity roosts in trees designated for removal shall be conducted by a qualified biologist. The surveys would include both a roosting habitat evaluation and an emergence survey (conducted from dusk until dark). ▪ **Establish Appropriate Buffers Around Roosts Sites to Avoid Destruction or Abandonment and Prohibit all Construction Activity Until the End of the Pupping Season.** If a special-status bat maternity roost is located, appropriate buffers around the roost sites shall be determined by a qualified biologist and implemented to avoid destruction or abandonment of the roost resulting from tree removal or other project activities. The size of the buffer shall depend on the species, roost location, and specific construction activities to be performed in the vicinity. No project activity shall commence within the buffer areas until the end of the pupping season (August 1) or until a qualified biologist confirms the maternity roost is no longer active.	Less than significant

	Impact	Significance Before Mitigation	Mitigation Measure	Significance After Mitigation
3.5.9	**Impacts on Special-status Roosting Bats** (continued)	Significant	**3.5.9b: Minimize Disturbance and Loss of Roosting Special-status Bats** Outside the pupping season, bats may still use trees to roost. If trees within the project study area that are slated for removal have suitable bat roosting habitat (such as a tree larger than 24 inches in diameter at breast height), all trimming and tree removal shall be conducted in the presence of a biological monitor. Trees that are indicated to contain roosting habitat shall be trimmed or removed in a two-phase process outside the pupping season. The first day, under the supervision of the biological monitor, remove limbs and branches that do not contain cavities, cracks, crevices, or deep bark fissures that can provide roosting habitat. On the second day, remove the remainder of tree by gently lowering the tree to the ground, under the supervision of the biological monitor and leave material undisturbed for 48-hours. If it is not feasible to remove a tree using the two-phased approach, limbs containing habitat features shall be removed and gently lowered to the ground in a location where they are not likely to be crushed or disturbed by the felling of the tree and left undisturbed for the next 48-hours. Standing dead trees or snags with habitat features shall be removed over a single day by gently lowering the tree or snag to the ground. The tree or snag shall be left undisturbed on the site for the next 48-hours, as feasible.	Less than significant

Impact	Significance Before Mitigation	Mitigation Measure	Significance After Mitigation
3.5.10 Impacts on Breeding, Migrating, and Larval Monarch Butterflies. Project activities including vegetation removal, sediment removal, and levee rehabilitation could result in **significant impacts** on breeding, migrating, and larval monarch butterflies through direct habitat loss and loss of reproduction potential due to habitat loss.	Significant	**Mitigation Measure 3.5.1a: Implement Best Management Practices to Avoid and Minimize Impacts to Sensitive Biological Resources** Please refer to Mitigation Measure 3.5.1a under Impact 3.5.1 in this section for the full text of this mitigation measure. **Mitigation Measure 3.5.10: Protection of Breeding, Migrating, and Larval Monarch Butterflies** DWR will implement the following measures based on the USFWS *Western Monarch Butterfly Conservation Recommendations* (USFWS 2023c) and *Managing for Monarchs in the West* (Xerces 2018) to avoid and minimize project impacts on monarch butterflies: ▪ **Conduct Vegetation Removal Outside of Monarch Season.** Where feasible, DWR shall conduct vegetation removal between November 15 to March 15, outside of the estimated timeframe when monarchs are likely present. ▪ **Conduct Milkweed and Nectar Plant Survey in Advance of Vegetation Removal and Flag for Avoidance or Plant Replacements.** A qualified biologist shall survey any area to have vegetation removed or be otherwise disturbed (staging, heavy vibration, noise, etc.) for the presence of monarch milkweed (larval host plants) and adult nectar plants.	Less-than-significant

Impact	Significance Before Mitigation	Mitigation Measure	Significance After Mitigation
3.5.10 Impacts on Breeding, Migrating, and Larval Monarch Butterflies. (continued)	Significant	▪ If there is milkweed or adult nectar plants within the project study area to be disturbed, they shall be flagged and avoided to the extent possible. If vegetation removal must occur between March 15 and November 15 or if milkweed or adult nectar plants cannot be avoided, the following measure apply: ○ Any plants with eggs present or larvae actively feeding shall not be impacted until larvae have completed metamorphosis and migrated outside the project site, as documented by a qualified biologist. ○ If eggs/larvae are not present, but avoidance of host and nectar plants is not possible, DWR shall attempt to replace any plants lost in post-construction efforts through reseeding. Plants shall be replaced at a 1:1 ratio, with the goal of no net loss of monarch habitat within the project site. Replacement plants shall be from insecticide-free nurseries and any plants grown via contract shall use specifications that limit harmful pesticide residue. ▪ **Prohibit Herbicide Use.** Prohibit herbicide use within the project site.	Less than significant

Impact	Significance Before Mitigation	Mitigation Measure	Significance After Mitigation
3.5.11 Potential Interference with Terrestrial Wildlife Movement, Migration Corridors, and Wildlife Nursery Sites. Project activities, including vegetation removal, sediment removal, and levee rehabilitation could affect terrestrial wildlife movement, migration corridors, and wildlife nursery sites directly through removal of habitat or disturbance during construction (e.g., noise, vibration, human presence). This impact would be **potentially significant**.	Potentially significant	**Mitigation Measure 3.5.1a: "Implement Best Management Practices to Avoid and Minimize Impacts to Sensitive Biological Resources."** Please refer to Mitigation Measure 3.5.1a under Impact 3.5.1 in this section for the full text of this mitigation measure. **Mitigation Measure 3.5.1b: "Avoid and Minimize Loss of Riparian Habitats."** Please refer to Mitigation Measure 3.5.1b under Impact 3.5.1 in this section for the full text of this mitigation measure. **Mitigation Measure 3.5.1c: "Obtain and Comply with Necessary State Permits / Authorizations and Compensate for Loss of Riparian Habitats (Fremont Cottonwood Forest and Woodland, Goodding's Willow Riparian Woodland and Forest, Hind's Walnut, Sandbar Willow Thickets, and Valley Oak Riparian Woodland and Forest)"** Please refer to Mitigation Measure 3.5.1c under Impact 3.5.1 in this section for the full text of this mitigation measure. **Mitigation Measure 3.5.3a: "Avoid Take and Adverse Effects on Habitat of the VELB."** Please refer to Mitigation Measure 3.5.3a under Impact 3.5.3 in this section for the full text of this mitigation measure. **Mitigation Measure 3.5.3b Minimize and Compensate for Adverse Effects on Habitat of the VELB** Please refer to Mitigation Measure 3.5.3b under Impact 3.5.3 in this section for the full text of this mitigation measure.	Less than significant

Impact	Significance Before Mitigation	Mitigation Measure	Significance After Mitigation
3.5.11 Potential Interference with Terrestrial Wildlife Movement, Migration Corridors, and Wildlife Nursery Sites. (continued)	Potentially significant	**Mitigation Measure 3.5.4: "Minimize Take and Adverse Effects on Northwestern Pond Turtle"** Please refer to Mitigation Measure 3.5.4 under Impact 3.5.4 in this section for the full text of this mitigation measure. **Mitigation Measure 3.5.5b: "Avoid and Minimize Impacts on Nesting Birds."** Please refer to Mitigation Measure 3.5.5b under Impact 3.5.5 in this section for the full text of this mitigation measure. **Mitigation Measure 3.5.6: "Obtain Take Coverage for Impacts on Active Swainsons Hawk Nests."** Please refer to Mitigation Measure 3.5.6a under Impact 3.5.6 in this section for the full text of this mitigation measure **Mitigation Measure 3.5.7: "Conduct Habitat Assessment and Focused Surveys for Burrowing Owls and Avoid Impacts."** Please refer to Mitigation Measure 3.5.7 under Impact 3.5.7 in this section for the full text of this mitigation measure. **Mitigation Measure 3.5.8 Conduct Tricolored Blackbird Habitat Suitability Analysis and Avoid and Minimize Impacts** Please refer to Mitigation Measure 3.5.8 under Impact 3.5.8 in this section for the full text of this mitigation measure. **Mitigation Measure 3.5.9a: "Avoid Disturbance and Loss of Roosting Special-status Bats."** Please refer to Mitigation Measure 3.5.9a under Impact 3.5.9 in this section for the full text of this mitigation measure.	Less than significant

Impact	Significance Before Mitigation	Mitigation Measure	Significance After Mitigation
3.5.11 Potential Interference with Terrestrial Wildlife Movement, Migration Corridors, and Wildlife Nursery Sites. (continued)	Potentially significant	**Mitigation Measure 3.5.9b Minimize Disturbance and Loss of Roosting Special-status Bats** Please refer to Mitigation Measure 3.5.9b under Impact 3.5.9 in this section for the full text of this mitigation measure. **Mitigation Measure 3.5.10: "Protection of Breeding, Migrating, and Larval Monarch Butterflies"** Please refer to Mitigation Measure 3.5.10 under Impact 3.5.10 in this section for the full text of this mitigation measure.	Less than significant
3.5.12 Conflict with Any Local Plans or Policies Aimed at Protection of Biological Resources. Project activities would have a **potentially significant impact** on local plans or policies aimed at protecting biological resources.	Potentially significant	**Mitigation Measure 3.5.1b: Avoid and Minimize Loss of Riparian Habitats** Please refer to Mitigation Measure 3.5.1b under Impact 3.5.1 in this section for the full text of this mitigation measure. **Mitigation Measure 3.5.1c: Obtain and Comply with Necessary State Permits / Authorizations and Compensate for Loss of Riparian Habitats (Fremont Cottonwood Forest and Woodland, Goodding's Willow Riparian Woodland and Forest, Hind's Walnut, Sandbar Willow Thickets, and Valley Oak Riparian Woodland and Forest)** Please refer to Mitigation Measure 3.5.1c under Impact 3.5.1 in this section for the full text of this mitigation measure.	Less than significant
3.5.13 Conflict with Provisions of an Adopted HCP or NCPP. Project activities would have a **less-than-significant** impact on local plans or policies aimed at protecting biological resources.	Less-than-significant	No Mitigation required.	Less-than-significant
3.6 Cultural Resources and Tribal Cultural Resources			

Impact	Significance Before Mitigation	Mitigation Measure	Significance After Mitigation
3.6.1 Substantial Adverse Change in the Significance of a Built Environmental Historical Resource Pursuant to CCR Section 15064.5. Eleven built environmental cultural resources are within or near the project site; however, these built resources are recommended as ineligible for the CRHR. Therefore, the project would have **no impact** on built environmental historical resources.	No impact	No mitigation required.	No impact
3.6.2 Substantial Adverse Change in the Significance of an Archaeological Historical Resource Pursuant to CCR Section 15064.5. or a Unique Archaeological Resource as Defined in PCR Section 21080.1. Though unlikely, it is possible buried historical or archaeological resources are present on the project site. If encountered during project-related, ground-disturbing activities, these resources could be substantially impacted resulting in a **significant impact**.	Significant impact	**3.6.2a: Worker Environmental Awareness Program (WEAP) Training for Cultural and Tribal Resources** Cultural resources awareness training, as part of an overall Workers Environmental Awareness Program, should be conducted for all construction personnel and field workers by a cultural resources specialist who meets the SOI's Professional Qualifications Standards (36 CFR Part 61; 48 Federal Register 44716) in coordination with consulting California Native American Tribes prior to starting work each construction season. The training should be conducted before any stages of physical project implementation and construction. Consulting California Native American Tribes will be provided an opportunity to present the Tribal perspective and potential to encounter resources of cultural importance at each training session. The WEAP training should include information on the potential kinds of pre-contact Native American and historic-era cultural materials that could be encountered, how to identify buried faunal and human remains, and how to identify anthropogenic soils (e.g., midden soils).	Less than significant

3.6.2 Substantial Adverse Change in the Significance of an Archaeological Historical Resource Pursuant to CCR Section 15064.5. or a Unique Archaeological Resource as Defined in PCR Section 21080.1. (continued).	Significant impact	The WEAP training should also include a summary of the relevant laws concerning cultural resources and human remains, along with a summary of the following protocols to follow if workers encounter cultural resources or human remains. **3.6.2b: Cultural Monitoring Plan.** A Cultural Monitoring and Communication Plan shall be developed for the entire project site, with particular attention to the locations of the known archaeological sites in the project site, including the archaeological sites that were not relocated, that could be affected in areas that require excavation below ground surface. This plan shall be developed through consultation between DWR and participating Tribe(s), and with the involvement of a project archaeologist(s) who meets SOI qualifications. The Cultural Monitoring and Communication Plan shall specify process and procedures in the event human remains are discovered, including notification to the County Coroner and coordination with the Native American Heritage Commission (NAHC) in the event human remains are identified as Native American in origin consistent with CA Health and Safety Code Section 7050.5 and PRC 5097.5. The Cultural Monitoring Plan shall include details for invitations to tribes to participate in determining impact avoidance including site monitoring. This may include dedicated fulltime archaeological and/or Tribal monitoring at and near identified resource locations including P-57-000110/CA-YOL-135H, which is eligible for listing in the CRHR under Criterion 4, to ensure that if an intact archaeological deposit is encountered during project-related ground-disturbing activities then appropriate treatment measures can be quickly developed and implemented.	Less than significant

Impact	Significance Before Mitigation	Mitigation Measure	Significance After Mitigation
3.6.2 Substantial Adverse Change in the Significance of an Archaeological Historical Resource Pursuant to CCR Section 15064.5. or a Unique Archaeological Resource as Defined in PCR Section 21080.1. (continued)	Significant impact	Monitoring should as well be conducted at and near the previously mapped locations of P-57-000040, -00076, -000652 –001415, and -001421. No subsurface testing or data collection is recommended at this time because of the following constraints: most of the five sites are partially located on private property and cannot be accessed; other portions of the sites are in and under the levee; and the exposed toe road within the DWR right-of-way is too narrow to allow for archaeological excavation. Due to the moderate to high archaeological sensitivity of the project site, the Cultural Monitoring Plan shall include the entire project site. However, less dedicated monitoring efforts (e.g., an archaeologist and/or Tribal monitor visiting multiple locations instead of intensively monitoring one location) may be possible outside of the known archaeological sites if reasonable levels of monitoring efforts in the non-site areas are agreed upon through consultation between DWR and the affiliated Tribe(s) prior to construction activities that require excavation below ground surface, and are also considered reasonable by the project archaeologist(s). Any discovery of historical or archeological resources during construction within the project site will be addressed according to the procedures in Mitigation Measure 3.6.2c.	Less than significant

Impact	Significance Before Mitigation	Mitigation Measure	Significance After Mitigation
3.6.2 Substantial Adverse Change in the Significance of an Archaeological Historical Resource Pursuant to CCR Section 15064.5. or a Unique Archaeological Resource as Defined in PCR Section 21080.1. (continued)	Significant impact	**3.6.2c: In the Event that Archaeological or Tribal Cultural Resources are Discovered During Construction, Implement Procedures to Evaluate, Avoid, and Minimize Effects.** It is unknown but possible that an intact component of P-57-000110/CA-YOL-135H could be identified during project activities. Likewise, it is unlikely but possible that intact components of P-57-000040, -00076, -000652 –001415, and -001421 may also be identified during project activities as well as undiscovered resources that have never been previously recorded. Therefore, a Resource Treatment Plan shall be developed in consultation with participating Native American Tribes prior to the initiation of project construction. The Resource Treatment Plan shall address the methods to identify and document previously recorded resources. The Resource Treatment Plan shall also include methods for addressing the inadvertent discovery of potential archaeological and Tribal cultural resources, including issuance of a stop work order and establishment of a no work zone in the immediate vicinity of the find. The area of the discovery shall be flagged to delineate the boundary of the sensitive zone. If either an archaeological or Tribal monitor are not present at the time of the discovery, representatives from participating Native American Tribes will be notified and a qualified archaeologist, who meets the U.S. Secretary of the Interior's Professional Qualifications Standards for Archaeology, shall visit the discovery site as soon as practicable for identification and evaluation pursuant to CEQA Guidelines Section 15064.5.	Less than significant

Impact	Significance Before Mitigation	Mitigation Measure	Significance After Mitigation
3.6.2 Substantial Adverse Change in the Significance of an Archaeological Historical Resource Pursuant to CCR Section 15064.5. or a Unique Archaeological Resource as Defined in PCR Section 21080.1. (continued)	Significant impact	If the archaeologist determines that the archaeological find is not a "historical" or "unique archaeological" resource and if participating Tribes determine that the find is not a resource of cultural importance, and thus not significant as a potential Tribal cultural resource, construction may resume. If the archaeologist or representative from a participating Native American Tribe determines that the find is significant or potentially significant, the Tribal representative will work in concert with the archaeologist to determine if the find can be avoided and, if so, shall detail avoidance procedures. If the find cannot be avoided, the archaeologist will coordinate with the lead agency to facilitate consultation with participating Tribes to develop an Action Plan within 48 hours which shall include provisions to minimize impacts. The preferred treatment for impacts to archaeological sites, including those identified as Tribal Cultural Resources, is avoidance, as directed under CEQA Guidelines 15126.4(b)93)(b)(1). Not all archaeological sites that may be encountered may be able to be avoided. The Resource Treatment Plan will be developed consistent with requirements in the CEQA Guidelines Section 15126.4(b). If archaeological data recovery is included in the Treatment Plan, the Plan shall include a research design to identify research questions as the focus of data recovery efforts and detail the field and laboratory methods to address the questions.	Less than significant

Impact	Significance Before Mitigation	Mitigation Measure	Significance After Mitigation
3.6.2 Substantial Adverse Change in the Significance of an Archaeological Historical Resource Pursuant to CCR Section 15064.5. or a Unique Archaeological Resource as Defined in PCR Section 21080.1. (continued)	Significant impact	The Treatment Plan shall also include a specific discussion of the methods and level of effort at each site for data recovery excavation, which are an acceptable form of mitigation under Section 15126.4(b)(3)(c) of the CEQA Guidelines. Specific plans for Tribal Cultural Resources shall be prepared in consultation with participating Native American Tribes. The Data Recovery and Treatment Plan protocols shall also be used for addressing accidental discoveries as discussed in Mitigation Measure 3.6.2b.	Less than significant
3.6.3 Substantial Impacts to Unknown Human Burials Pursuant to the Provisions of California Health and Safety Code (HSC) Section 7050.5-7055. There are no known human burials within the project site but encountering unanticipated human burials or remains is possible during any construction project. Therefore, the project could result in a **significant impact** to unknown human burials or remains	Significant impact	**Mitigation Measure 3.6.1: Worker Environmental Awareness Program (WEAP) Training for Cultural and Tribal Resources.** **Mitigation Measure 3.6.2b: Archaeological and Tribal Monitoring Plan.** **3.6.3 Implement Mitigation Measure 3.6.2c: Additional Mitigation Measures if Human Remains are Encountered.** If human remains are found, the California Health and Safety Code (CHSC) requires that excavation be halted in the immediate area and that the Yolo County Coroner be notified to determine the nature of the remains. The coroner is required to examine all discoveries of human remains within 48 hours of receiving notice of a discovery on private or state lands (CHSC Section 7050.5[b]). If the coroner determines that the remains are those of a Native American, he or she must contact the Native American Heritage Commission (NAHC) by telephone within 24 hours of making that determination (CHSC Section 7050.5[c]).	Less than significant

Impact	Significance Before Mitigation	Mitigation Measure	Significance After Mitigation
3.6.3 Substantial Impacts to Unknown Human Burials Pursuant to the Provisions of California Health and Safety Code (HSC) Section 7050.5-7055. (continued)	Significant impact	Once notified by the coroner, the NAHC shall identify the person it believes is the Most Likely Descendant (MLD) of the Native American remains. With permission of the legal landowner(s), the MLD may visit the site and make recommendations regarding the treatment and disposition of the human remains and any associated grave goods. This visit should be conducted within 24 hours of the MLD's notification by the NAHC (California Public Resources Code [PRC], Section 5097.98[a]). If a satisfactory agreement for treatment of the remains cannot be reached, any of the parties may request mediation by the NAHC (PRC, Section 5097.94[k]). Should mediation fail, the landowner or the landowner's representative must reinter the remains and associated items with appropriate dignity on the property in a location not subject to further subsurface disturbance (PRC, Section 5097.98[b]).	Less than significant
3.7 Geology, Soils, and Paleontology			
3.7.1 Potential Temporary, Short-term Construction-related Erosion. The project includes construction activities in and near Cache Creek. Soil materials exposed during construction would potentially be subject to wind and water erosion hazards. Therefore, this impact would be **significant**.	Significant	**3.7.1: Acquire Appropriate Regulatory Permits and Prepare and Implement a Storm Water Pollution Prevention Plan, Spill Prevention Control and Countermeasures Plan, and Associated Best Management Practices.** Prior to the start of earthmoving activities, the DWR's construction contractor shall obtain coverage under the SWRCB NPDES stormwater permit for general construction activity (Order 2009-0009-DWQ), including preparation and submittal of a project-specific SWPPP at the time the Notice of Intent to discharge is filed. The SWPPP shall identify and specify the following:	Less than significant

Impact	Significance Before Mitigation	Mitigation Measure	Significance After Mitigation
3.7.1 Potential Temporary, Short-term Construction-related Erosion. (continued)	Significant	▪ The use of an effective combination of robust erosion and sediment control BMPs and construction techniques that shall reduce the potential for runoff and the release, mobilization, and exposure of pollutants, including legacy sources of mercury from project-related construction sites. These may include but would not be limited to temporary erosion control and soil stabilization measures, sedimentation ponds, inlet protection, perforated riser pipes, check dams, and silt fences; ▪ The implementation of approved local plans, non-stormwater management controls, permanent post-construction BMPs, and inspection and maintenance responsibilities; ▪ The pollutants that are likely to be used during construction that could be present in stormwater drainage and non-stormwater discharges, including fuels, lubricants, and other types of materials used for equipment operation; ▪ The means of waste disposal; ▪ Spill prevention and contingency measures, including measures to prevent or clean up spills of hazardous waste and of hazardous materials used for equipment operation, and emergency procedures for responding to spills;	Less than significant

3.7.1 Potential Temporary, Short-term Construction-related Erosion. (continued)	Significant	▪ Personnel training requirements and procedures that shall be used to ensure that workers are aware of permit requirements and proper installation methods for BMPs specified in the SWPPP; and ▪ The appropriate personnel responsible for supervisory duties related to implementation of the SWPPP. Where applicable, BMPs identified in the SWPPP will be in place throughout all site work, construction/demolition activities, and will be used in all subsequent site development activities. BMPs may include, but are not limited to, such measures as those listed below: ▪ Work window - conduct earthwork during low flow periods; ▪ To the extent possible, stage construction equipment and materials on the landside of the levee in areas that have already been disturbed; ▪ Minimize ground and vegetation disturbance during project construction by establishing designated equipment staging areas, ingress and egress corridors, spoils disposal and soil stockpile areas, and equipment exclusion zones prior to the commencement of any grading operations; ▪ Stockpile soil on the landside of the levee reaches, and install sediment barriers (e.g., silt fences, fiber rolls, and straw bales) around the base of stockpiles to intercept runoff and sediment during storm events. If necessary, cover stockpiles with geotextile fabric to provide further protection against wind and water erosion;	Less than significant

Impact	Significance Before Mitigation	Mitigation Measure	Significance After Mitigation
3.7.1 Potential Temporary, Short-term Construction-related Erosion. (continued)	Significant	▪ Install sediment barriers on graded or otherwise disturbed slopes as needed to prevent sediment from leaving the project site and entering nearby surface waters; ▪ Install plant materials to stabilize cut and fill slopes and other disturbed areas once construction is complete. Plant materials will include an erosion control seed mixture or shrub and tree container stock. Temporary structural BMPs, such as sediment barriers, erosion control blankets, mulch, and mulch tackifier, will be installed as needed to stabilize disturbed areas until vegetation becomes established; ▪ Water (e.g., trucks, portable pumps with hoses) shall be used to control fugitive dust during construction activities that could cause substantial wind erosion. ▪ Conduct water quality tests specifically for increases in turbidity and sedimentation caused by construction activities; ▪ A copy of the approved SWPPP shall be maintained and available at all times on the construction site.	Less than significant

Impact	Significance Before Mitigation	Mitigation Measure	Significance After Mitigation
3.7.1 Potential Temporary, Short-term Construction-related Erosion. (continued)	Significant	▪ DWR's construction contractor shall also prepare a Spill Prevention, Control, and Countermeasure Plan (SPCCP). A SPCCP is intended to prevent any discharge of oil into navigable water or adjoining shorelines. The contractor shall develop and implement a SPCCP to minimize the potential for adverse effects from spills of hazardous, toxic, or petroleum substances during construction and operation activities. The SPCCP shall be completed before any construction activities begin. Implementation of this measure will comply with state and Federal water quality regulations. The SPCCP shall describe spill sources and spill pathways in addition to the actions that would be taken in the event of a spill (e.g., an oil spill from engine refueling would be immediately cleaned up with oil absorbents). The SPCCP shall outline descriptions of containments facilities and practices such as doubled-walled tanks, containment berms, emergency shut-offs, drip pans, fueling procedures, and spill response kits. It shall also describe how and when employees are trained in proper handling procedures and spill prevention and response procedures.	Less than significant
3.7.2 Potential Damage to or Destruction of Unique Paleontological Resources. The project site is underlain by recent sedimentary deposits that do not represent fossil-bearing geologic formations. This impact would be **less than significant.**	Less than significant	No mitigation required.	Less than significant

Impact	Significance Before Mitigation	Mitigation Measure	Significance After Mitigation
3.7.3 Location of the Project on Unstable Soil or Result in Subsidence. The proposed project is located within an area that has experienced ground subsidence over decades, however the project is designed to offset the effects of that subsidence by raising the levee and impacts would be **less than significant**.	Less than significant	No mitigation required.	Less than significant
3.8 Greenhouse Gas Emissions			
3.8.1 Direct Emission of Greenhouse Gases. Project construction activities would directly emit GHGs, but these emissions would be below the threshold of significance. This impact would be **less than significant**. In addition, DWR would implement project-level BMPs to reduce GHG emissions.	Less than significant	No mitigation required.	Less than significant
3.8.2 Conflict with and Applicable Plan, Policy, or Regulation Adopted for the Purposes of Reducing Greenhouse Gas Emissions. Project construction activities would directly emit GHGs, but these emissions would be below the DWR GGERP threshold of significance. This impact would be **less than significant**.	Less than significant	No mitigation required.	Less than significant
3.9 Hazards and Hazardous Materials			
3.9.1 Possible Accidental Spills of Hazardous Materials used during Construction Activities. Project construction activities would include use of hazardous materials. Construction contractors would be required to use, store, and transport hazardous materials in compliance with federal, State, and local regulations. However, an accidental spill of hazardous materials could occur during project construction. This impact would be **significant**.	Significant	**3.9.1: Implement a Spill Prevention Control and Countermeasures Plan and Other Measures to Reduce the Potential for Environmental Contamination during Construction Activities.** In addition to compliance with all applicable federal, State, and local regulations, DWR shall implement through contractual obligations, prescribed in project plans and specifications with its contractors, the measures described below to further reduce the risk of accidental spills and protect the environment.	Less than significant

Impact	Significance Before Mitigation	Mitigation Measure	Significance After Mitigation
3.9.1 Possible Accidental Spills of Hazardous Materials used during Construction Activities. (continued).	Significant	▪ **Prepare and Implement a Spill Prevention Control and Countermeasures Plan**. A written SPCCP shall be prepared and implemented by the DWR contractor prior to any construction activities. The SPCCP and all material necessary for its implementation shall be accessible onsite prior to initiation of project construction and throughout the construction period. The SPCCP shall include a plan for the emergency cleanup of any spills of fuel or other material. Construction personnel shall be provided the necessary information from the SPCCP to prevent or reduce the discharge of pollutants from construction activities, contact information for the appropriate response agencies, and to use the appropriate measures should a spill occur. In the event of a spill in the channel, work shall stop immediately, and the Central Valley Regional Water Quality Control Board shall be notified within 24 hours. ▪ **Dispose of All Construction-related Debris and Materials at an Approved Disposal Site.** All debris, litter, unused materials, sediment, rubbish, vegetation, or other material removed from the construction areas that cannot reasonably be secured shall be removed daily from the project work area and deposited at an appropriate disposal or storage site.	Less than significant

Impact	Significance Before Mitigation	Mitigation Measure	Significance After Mitigation
3.9.1 Possible Accidental Spills of Hazardous Materials used during Construction Activities. (continued)	Significant	▪ **Use Safer Alternative Products to Protect Waters.** Every reasonable precaution shall be exercised to protect waters from pollution with fuels, oils, and other harmful materials. Safer alternative products (such as biodegradable hydraulic fluids) shall be used where feasible. ▪ **Prevent Any Contaminated Construction By-products from Entering Flowing Waters; Collect and Transport Such By-products to an Authorized Disposal Area.** Petroleum products, chemicals, fresh cement, and construction by-products containing, or water contaminated by, any such materials shall not be allowed to enter flowing waters and shall be collected and transported to an authorized upland disposal area. ▪ **Prevent Hazardous Petroleum or Other Substances Hazardous to Aquatic Life from Contaminating the Soil or Entering Waters.** Gas, oil, other petroleum products, or any other substances that could be hazardous to aquatic life and resulting from project-related activities, shall be prevented from contaminating the soil and/or entering waters.	Less than significant

Impact	Significance Before Mitigation	Mitigation Measure	Significance After Mitigation
3.9.1 Possible Accidental Spills of Hazardous Materials used during Construction Activities. (continued)	Significant	▪ **Properly Maintain All Construction Vehicles and Equipment and Inspect Daily for Leaks; Remove and Repair Equipment/Vehicles with Leaks.** Construction vehicles and equipment shall be properly maintained to prevent contamination of soil or water from external grease and oil or from leaking hydraulic fluid, fuel, oil, and grease. Vehicles and equipment shall be checked daily for leaks. If leaks are found, the equipment shall be removed from the site and shall not be used until the leaks are repaired. ▪ **Refuel and Service Equipment at Designated Refueling and Staging Areas. Equipment shall be refueled and serviced at designated refueling and staging sites.** All refueling, maintenance, and staging of equipment and vehicles shall be conducted in a location where a spill shall not drain directly toward aquatic habitat. Appropriate containment materials shall be installed to collect any discharge, and adequate materials for spill cleanup shall be maintained onsite throughout the construction period. ▪ **Store Heavy Equipment, Vehicles, and Supplies at Designated Staging Areas.** All heavy equipment, vehicles, and supplies shall be stored at the designated staging areas at the end of each work period.	Less than significant

Impact	Significance Before Mitigation	Mitigation Measure	Significance After Mitigation
3.9.1 Possible Accidental Spills of Hazardous Materials used during Construction Activities. (continued)	Significant	▪ **Install an Impermeable Membrane between the Ground and Any Hazardous Material in Construction Storage Areas.** Storage areas for construction materials that contains hazardous or potentially toxic materials shall have an impermeable membrane between the ground and the hazardous material and shall be bermed as necessary to prevent the discharge of pollutants to groundwater and runoff water. **Use Water Trucks to Control Fugitive Dust during Construction.** Water (e.g., trucks, portable pumps with hoses) shall be used to control fugitive dust during temporary access road construction. ▪ **Use Only Nontoxic Materials and Materials with No Coatings or Treatments Deleterious to Aquatic Organisms for Placement in Any Waters.** All materials placed in the channel or other waters shall be nontoxic and shall not contain coatings or treatments or consist of substances deleterious to aquatic organisms that may leach into the surrounding environment in amounts harmful to aquatic organisms.	Less than significant
3.9.2 Handling of Hazardous Materials within 0.25 Mile of a School. Project construction activities would require small quantities of hazardous materials within 0.25 mile from a school. Project activities in the area closest to the high school could result in accidental release of hazardous materials that could expose people at the nearby school. This impact would be **significant**.	Significant	**Mitigation Measure 3.9.1: Implement a Spill Prevention Control and Countermeasures Plan and Other Measures to Reduce the Potential for Environmental Contamination during Construction Activities.**	Less than significant

Impact	Significance Before Mitigation	Mitigation Measure	Significance After Mitigation
3.9.3 Interfere with an Adopted Emergency Response Plan or Emergency Evacuation Plan. Project construction would not require road closures during the 2-year construction phase. Although project construction would include some heavy truck traffic, this would not interfere with an emergency response or evacuation plan. This impact would be **less than significant**.	Less than significant	No mitigation required.	Less than significant
3.10 Hydrology and Water Quality			
3.10.1 Impacts on Water Quality or Implementation of a Water Quality Control Plan. The project includes activities and soil disturbance that could cause storm runoff of sediment and pollutants into a tributary of the Sacramento River and could therefore result in a **significant** impact on water quality.	Significant	**3.10.1: Implement Mitigation Measure 3.7.1, "Acquire Appropriate Regulatory Permits and Prepare and Implement a Storm Water Pollution Prevention Plan, Spill Prevention Control and Countermeasures Plan, and Associated Best Management Practices"**	Less than significant
3.10.2 Impacts on Groundwater Supplies, Recharge, and Management. The project includes construction within a high priority groundwater basin. However, construction activities are unlikely to affect groundwater supplies, recharge, or sustainability in the project vicinity. This impact would be **less than significant.**	Less than significant	No mitigation required.	Less than significant
3.10.3 Alteration of the Drainage Pattern Resulting in Changes in Stormwater Conveyance and Flood Flows. The proposed project would result in construction within Cache Creek, a tributary to the Sacramento River. However, the proposed project would improve on-site drainage patterns and flood conveyance within Cache Creek and reduce likelihood of levee failure during a flood event. These impacts would be **beneficial**.	Beneficial	No mitigation required.	Beneficial

Impact	Significance Before Mitigation	Mitigation Measure	Significance After Mitigation
3.10.4 Alteration of the Drainage Pattern Resulting in Erosion and Sedimentation. The proposed project would result in the excavation of sediment and vegetation within the Cache Creek channel, a tributary to the Sacramento River. The proposed project would increase the capacity of the channel and decrease restriction on flows passing through to the CCSB. An increase in flows within the Cache Creek channel would not result in a significant increase in erodibility of areas of excavation and would not result in a significant long-term increase in sediment transport into the CCSB and into downstream areas and impacts would be **less than significant**.	Less than significant	No mitigation required.	Less than significant
3.11 Land Use and Planning			
3.11.1 Conflict with Relevant Plans, Policies, and Zoning. The project would be consistent with the Yolo County General Plan, the CCRMP, and Yolo County zoning codes. Therefore, this impact would be **less than significant**.	Less than significant	No mitigation required.	Less than significant
3.12 Noise			
3.12.1 Substantial Increase in Ambient Noise Levels from Construction Activities. Project construction would result in the 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 applicable standards of other agencies. Therefore, this impact would be **significant**.	Significant	**3.12.1a: Implement Measures to Reduce Construction Noise and Vibration Effects.** DWR shall require construction contractors to implement measures during construction activities to avoid and minimize construction noise and vibration effects on sensitive receptors. Prior to the start of construction, DWR with its construction contractor, and a qualified acoustical professional, shall prepare a noise control plan to identify feasible measures to reduce construction noise, when necessary.	Less than significant

Impact	Significance Before Mitigation	Mitigation Measure	Significance After Mitigation
3.12.1 Substantial Increase in Ambient Noise Levels from Construction Activities. Project construction would result in the 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 applicable standards of other agencies. Therefore, this impact would be **significant**.	Significant	The measures in the plan would apply to construction activities within 450 feet of a sensitive receptor, including, but not limited to, residences. The noise control plan shall be consistent with the Yolo County General Plan. These measures may include, but are not limited to, the following: ▪ Provide written notice to residents within 450 feet of the construction zone, advising them of the estimated construction schedule. This written notice would be provided within 1 week to 1 month of the start of construction activities within 450 ft of the location. ▪ Display notices with information including, but not limited to, contractor contact telephone number(s) and proposed construction dates and times in a conspicuous manner, such as on construction site fences. ▪ Schedule the loudest and most intrusive construction activities during daytime hours (7:00 a.m. to 7:00 p.m.) Monday through Friday, when feasible. ▪ Ensure that construction activities are phased such that no one location/receptor is exposed to construction noise for more than 12 months.	Significant and unavoidable

3.12.1 Substantial Increase in Ambient Noise Levels from Construction Activities. (continued).	Significant	▪ If the construction zone is within 450 feet of a sensitive receptor, place temporary barriers between stationary noise equipment and noise sensitive receptors to block noise transmission, when feasible, or take advantage of existing barrier features, such as existing terrain or structures, when and where feasible. ▪ Require that construction equipment be equipped with factory-installed muffling devices, and that all equipment be operated and maintained in good working order to minimize noise generation. ▪ Locate stationary noise-generating equipment as far as practicable from sensitive receptors. ▪ Limit unnecessary engine idling (i.e., more than 5 minutes) as required by State air quality regulations. ▪ Employ equipment that is specifically designed for low noise emission levels, when feasible. ▪ Employ equipment that is powered by electric or natural gas engines, as opposed to those powered by gasoline fuel or diesel, when feasible ▪ If the construction zone is within 450 feet of a sensitive receptor, place temporary barriers between stationary noise equipment and noise sensitive receptors to block noise transmission, when feasible, or take advantage of existing barrier features, such as existing terrain or structures, where possible. ▪ Locate construction staging areas as far as practicable from sensitive receptors.	Significant and unavoidable

Impact	Significance Before Mitigation	Mitigation Measure	Significance After Mitigation
3.12.1 Substantial Increase in Ambient Noise Levels from Construction Activities. (continued).	Significant	▪ Design haul routes to avoid sensitive receptors, to the extent practical **Mitigation Measure 3.12.1b: Implement Measures to Reduce Construction Vibration Effects.** DWR shall require construction contractors to implement measures during construction activities to avoid and minimize construction vibration effects on sensitive receptors. ▪ To the extent feasible and practicable, the primary construction contractors shall employ vibration-reducing construction practices such that vibration from construction complies with applicable noise-level rules and regulations that apply to the work, including the vibration standards established for construction vibration-sources by the applicable agencies (Yolo County), depending on the jurisdictional location of the affected receptor(s), and the Caltrans Transportation and Construction Vibration Guidance Manual, which identifies maximum vibration levels of 0.2 to 0.5-inch per second PPV for minimizing damage to structures. Project construction specifications would require the contractor to limit vibrations to less than 0.2-inch per second PPV, and less than 72 vibration velocity level in decibel scale (VdB) within 50 feet at any building.	Significant and unavoidable

Impact	Significance Before Mitigation	Mitigation Measure	Significance After Mitigation
3.12.1 Substantial Increase in Ambient Noise Levels from Construction Activities. (continued)	Significant	▪ If construction would occur within 50 feet of any occupied building, the contractor shall prepare a vibration control plan prior to construction. The plan shall include measures to limit vibration, including but not limited to the following: ▪ Numerical thresholds above which the contractor shall be required to document vibration sources and implement measures to reduce vibration, and above which work would be required to stop for consideration of alternative construction methods. ▪ Avoid vibratory rollers and packers near sensitive areas to the maximum extent practicable. ▪ Route heavily loaded trucks away from residential streets, if possible. If no alternatives are available, select streets with the fewest homes. ▪ A voluntary pre- and post-construction survey shall be conducted to assess the existing condition of structures prior to construction and potential architectural/structural damage induced by levee construction vibration at each structure within 100 feet of construction activities, including staging areas. The survey shall include visual inspection of the structures that could be affected and documentation of structures by means of photographs and video. This documentation shall be reviewed with the individual owners prior to any construction activities. Post-construction monitoring of structures would be performed to identify (and repair, if necessary) damage, if any, from construction activities.	Significant and unavoidable

Impact	Significance Before Mitigation	Mitigation Measure	Significance After Mitigation
3.12.1 Substantial Increase in Ambient Noise Levels from Construction Activities. (continued)	Significant	▪ Any construction-related damage would be documented with photographs and video. This documentation would be reviewed with the individual property owners. ▪ Place vibration monitoring equipment between work areas and buildings or sensitive receptors. Vibration monitors shall be operational at all times during the performance of construction activities. The contractor shall monitor and record vibrations continuously.	Significant and unavoidable
3.12.2 Generation of Excessive Groundborne Vibration or Groundborne Noise Levels. Project construction would result in the generation of an increase in groundborne vibration that could exceed established thresholds. Therefore, this impact would be **significant**.	Significant	**Mitigation Measure 3.12.1a to Reduce Construction Noise and Vibration Effects**	Significant and unavoidable
3.13 Recreation			
3.13.1 Temporary Impacts on Existing Recreation Activities. The project site is designated as open space and supports various recreational uses. The proposed project would result in short-term and temporary limits to access to the creek and adjacent areas during the construction period and impacts would be **less than significant**.	Less than significant	No mitigation required.	Less than significant
3.14 Transportation			
3.14.1 Temporary Increase in Vehicle Miles Traveled During Construction. Construction traffic impacts would be temporary, and traffic would return to pre-project conditions following completion of construction activities. Therefore, this impact would be less than significant.	Less than significant	No mitigation required.	Less than significant

Impact	Significance Before Mitigation	Mitigation Measure	Significance After Mitigation
3.14.2 Result in Inadequate Emergency Access During Construction. Construction-related vehicle trips would slightly increase traffic on local roadways, but this temporary increase would not affect emergency access and response times. These impacts would be **less than significant**.	Less than significant	No mitigation required	Less than significant
3.15 Tribal Cultural Resources			
3.15.1 Substantial Adverse Change in the Significance of a Tribal Cultural Resource, as Defined in PCR Section 21074. Though unlikely, it is possible Tribal Cultural Resources are present on the project site. If encountered during project-related, ground-disturbing activities, these resources could be substantially impacted. This would be a **significant impact** to Tribal Cultural Resources.	Significant	**3.15.1a: Implement Mitigation Measure 3.6.2a, "Worker Environmental Awareness Program (WEAP) Training for Cultural and Tribal Resources."** **3.15.1b: Implement Mitigation Measure 3.6.2b, "Cultural Monitoring Plan."** **3.15.1c: Implement Mitigation Measure 3.6.2c, "In the Event that Archaeological or Tribal Cultural Resources are Discovered during Construction, Implement Procedures to Evaluate, Avoid, and Minimize Effects."**	Less than significant
3.15.2 Substantial Impacts to Unknown Human Burials Pursuant to the Provisions of California Health and Safety Code (HSC) Section 7050.5-7055. There are no known human burials within the project site but encountering unanticipated human burials or remains is possible during any construction project. Therefore, the project could result in a **significant impact** to unknown human burials or remains.	Significant	**3.15.2a: Implement Mitigation Measure 3.6.2a, "Worker Environmental Awareness Program (WEAP) Training for Cultural and Tribal Resources."** **3.15.2b: Implement Mitigation Measure 3.6.2b, "Cultural Monitoring Plan."** **3.15.2c: Implement Mitigation Measure 3.6.3c, "Additional Mitigation Measures if Human Remains are Encountered."**	Less than significant

Notes: ALUCP = Airport Land Use Compatibility Plan; BMPs = best management practices; CARB = California Air Resources Board; CVRWQCB = Central Valley Regional Water Quality Control Board; DFW = California Department of Fish and Wildlife; DWR = California Department of Water Resources; FGC = California Fish and Game Code; MLD = Most Likely Descendant; NAHC = Native American Heritage Commission; NOx = nitrogen oxides; NPDES = National Pollution Discharge Elimination System; O&M = operations and maintenance; PM10 = particulate matter equal to or less than 10 micrometers in aerodynamic diameter; SJRRP = San Joaquin River Restoration Program; SJVAPCD = San Joaquin Valley Air Pollution Control District; SLC = California State Lands Conservancy; SPCCP = Spill Prevention Control and Countermeasures Plan; SSJVIC = Southern San Joaquin Valley Information Center; SWPPP = Storm Water Pollution Prevention Plan;, TCR = Tribal Cultural Resource.

Chapter 1. Introduction

1.1 Project Overview

The California Department of Water Resources (DWR) is proposing the Cache Creek Channel and Levee Rehabilitation Project (proposed project). The proposed project would restore the design flood conveyance capacity along an approximately nine-mile-long reach of Cache Creek (referred to as the project reach) by removing sediment along with vegetation and slightly raising levee elevations at selected locations. The project reach is in unincorporated Yolo County adjacent to the Town of Yolo, within two miles north of the City of Woodland and about 4.5 miles west of the Sacramento River.

1.2 Project Background

Cache Creek drains an area of approximately 1,139 square miles in Lake, Colusa, and Yolo Counties. Cache Creek is a component of the Sacramento River Flood Control Project (SRFCP), serving as the sole discharge of the Cache Creek drainage basin into the Yolo Bypass. Cache Creek levees provide flood protection to the Town of Yolo, the City of Woodland, and the adjacent agricultural lands. The portion of Cache Creek within the SRFCP includes levees on both banks in the lower reach of the creek and the Cache Creek Settling Basin (CCSB), which was constructed to prevent the discharge of sediment into the Yolo Bypass downstream. Cache Creek's levees were constructed by the United States Army Corps of Engineers (USACE) in the 1960s to provide three feet of freeboard during a design flow of 30,000 cubic feet per second (cfs), a flow approximately equivalent to a 10-year storm event. Following their construction, USACE transferred ownership/jurisdiction of the levees to the State of California. Typical levee design along the main reach of the creek consists of a three horizontal to one vertical (3H:1V) slope on the waterside and a 2H:1V slope on the landside, with a 12-feet-wide gravel-topped crown. There are roads along the landside and waterside toes of the levees to provide access for maintenance vehicles and activities.

In 1993, the channel of Cache Creek was modified when the USACE expanded the CCSB. The Cache Creek training channel and levees were realigned when the western perimeter of the CCSB was moved approximately 0.45-mile west. USACE also removed sediment and reshaped the low-flow channel starting at County Road 102, continuing to the new centerline of the training channel. Since then, vertical ground displacement has caused significant changes to Cache Creek levee elevations compared to conditions after they were constructed in the 1960s. Upstream of County Road 102, levees are up to 7 feet lower than the as-built levee crown elevations. Survey data reveals pronounced undulations in the levee profiles on both banks, adding to freeboard concerns at localized reaches. Similarly, the lowest point within the creek channel is up to 18 feet lower than the design invert, indicating continual incision. Other erosion is occurring in addition to ground displacement. The existing channel profile is markedly less steep than what is depicted on the original design profile.

Sediment deposits and thick vegetation in Cache Creek, combined with the effects of vertical ground displacement, have reduced the overall flow capacity of the channel. Intermittent floods over several decades have continued to deposit new sediment throughout the channel. Modeling indicates there is a high likelihood that continued vertical displacement in the region contributes to deposition by decreasing the channel slope, which in turn decreases flood flow velocities. Constrictions due to sediment deposition, compounded by woody vegetation prevalent along the main channel, further reduce capacity to pass the design flood flow specifications.

The reduced capacity in Cache Creek caused water to overtop both levees on February 27, 2019, despite flood flow measuring less than the conditions the levees were designed to contain. There are severe freeboard deficiencies on both levees along the project reach, and the channel cannot safely contain the original design flows. The flood carrying capacity of Cache Creek must be restored to contain flood flows and protect adjacent communities. In 2019 and 2020, DWR performed routine maintenance to repair the damaged levees and improve channel capacity by elevating and resurfacing the levee crown at the overtopped sections, degrading "spur" levees to increase capacity along setback areas and removing some non-native vegetation in the main channel and channel banks. The Cache Creek hydraulic model was updated in January 2021, and although minor reductions to water surface elevations demonstrated an improvement in overall conveyance after these latest routine maintenance activities, the model shows that overtopping and freeboard issues remain for the original design flow of 30,000 cfs.

1.3 Purpose of the EIR

The California Environmental Quality Act (CEQA) specifies that a public agency must prepare an environmental impact report (EIR) on any project that it proposes to carry out or approve that may result in a significant effect on the environment (California Public Resources Code [PRC], Section 21080[d]). Serving as the CEQA lead agency, DWR has prepared this EIR in accordance with CEQA and the State CEQA Guidelines (California Code of Regulations [CCR], Title 14, Division 6, Chapter 3, Section 15000 et seq.) to evaluate the potential environmental impacts associated with implementing the proposed project. An EIR is an informational document used to inform public agency decision makers and the general public of the significant environmental impacts of a project, identify feasible ways to avoid or minimize the significant impacts, and evaluate a reasonable range of alternatives to the project that could feasibly attain most of the basic project objectives while substantially lessening or avoiding any of the significant environmental impacts (State CEQA Guidelines, Section 15121[a]).

1.4 Agency Roles and Responsibilities

According to the State CEQA Guidelines (Section 15064[f][1]), an EIR must be prepared whenever a project may result in a significant environmental impact. The State CEQA Guidelines (Section 15367) identify the lead agency as the public agency that is responsible for approving and implementing a project. As both the lead agency and the project proponent, DWR intends to use this EIR as a key document to fulfill major CEQA requirements.

CEQA requires that State, regional, and local government agencies consider the environmental impacts of projects over which they have discretionary authority before taking action on those projects (PRC Section 21000 et seq.). CEQA also requires that each public agency avoid or

reduce to less than significant levels, wherever feasible, the significant environmental impacts of projects it approves or implements. If a project would result in significant and unavoidable environmental impacts that cannot be feasibly reduced to less than significant levels, the adverse environmental effects may be considered "acceptable" if the specific economic, legal, social, technological, or other benefits, including region-wide or Statewide environmental benefits, of the project outweigh the significant and unavoidable adverse environmental impacts. In this case, the project can be approved if the lead agency makes a written "statement of overriding considerations" explaining the specific reasons to support its action.

The EIR also can be used as an informational document by responsible and trustee agencies that may have permitting or approval authority over aspects of the project. A CEQA responsible agency is a State agency, board, or commission or any local or regional agency other than the lead agency that has a legal responsibility for reviewing, carrying out, approving, or permitting aspects of a project. Responsible agencies must actively participate in the lead agency's CEQA process and review its CEQA document. This EIR will be used by responsible agencies as a substantial basis in deciding whether to approve or permit project elements over which they have authority. The Central Valley Regional Water Quality Control Board (CVRWQCB) is a responsible agency for the project because it has jurisdiction over water quality in the Central Valley. A CEQA trustee agency is a State agency that has jurisdiction by law over natural resources that are held in trust for the people of the State of California. The California Department of Fish and Wildlife (CDFW) is a trustee and responsible agency for the project, because the project could have an effect on fish and wildlife resources.

Federal agencies are not responsible agencies under CEQA. However, Federal agencies are required to comply with the National Environmental Policy Act in making determinations, and they may use the CEQA document as a basis for their analyses, if needed.

1.4.1 Lead Agency

DWR is responsible for providing documentation and implementing steps necessary to satisfy CEQA requirements for the proposed project. As the lead agency, DWR has prepared this Draft EIR, will be responsible for preparation of the Final EIR, and is responsible for ensuring that the EIR is available for review by the public and interested agencies and parties. DWR also will be responsible for EIR certification and project approval.

1.4.2 Responsible and Trustee Agencies

The following responsible and trustee agencies are anticipated to have jurisdiction over some aspects of the proposed project:

- CDFW,
- CVRWQCB,
- Yolo-Solano Air Pollution Control District (YSAPCD),
- Native American Heritage Commission (NAHC),
- State Office of Historic Preservation (SHPO),

- Yolo County Conservancy, and
- Yolo County.

1.4.3 Federal Agencies with Permitting/Approval Authority

The following Federal agencies are anticipated to have permit or approval authority over some aspects of the proposed projects:

- USACE, and
- United States Fish and Wildlife Service (USFWS).

1.5 EIR Scoping, Preparation, and Review Process

On August 7, 2023, DWR issued a notice of preparation (NOP) for this EIR. The NOP concluded that the project may have significant impacts on the environment, and informed agencies and the general public that an EIR was being prepared. The NOP invited comments on the scope and content of the EIR and participation at an in-person public scoping meeting. The NOP was electronically filed with the State Clearinghouse of the Governor's Office of Planning and Research (OPR) and was sent electronically to agencies and members of the public. It was also posted on DWR's website and OPR's CEQAnet Portal (State Clearinghouse [SCH #] No. 2023080108). The NOP was circulated for 30 days, as mandated by CEQA. The public comment period for the NOP closed on September 5, 2023.

DWR conducted a public scoping meeting to solicit input from the community and public agencies to be considered in the selection and design of project alternatives and on the scope and content of the EIR. The meeting was held on August 24, 2023 at 5 p.m. Notice of the scoping meeting was provided in the NOP and in a newspaper legal notice published in the Sacramento Bee on August 7, 2023. The NOP was distributed in accordance with the State CEQA Guidelines (Section 15082[c]). Appendix A of this Draft EIR contains the NOP and comments that were received during the scoping meeting and during the public scoping comment period.

A notice of completion for this Draft EIR has been filed with the State Clearinghouse, in accordance with the State CEQA Guidelines (Section 15085), and a notice of availability of this Draft EIR has been posted in accordance with State CEQA Guidelines (Section 15087). The public review period for providing comments on this Draft EIR is from March 7, 2025 to close of business at 5 p.m. on April 21, 2025. DWR will conduct a public meeting on the Draft EIR March 26, 2025. The meeting will allow for an opportunity to submit oral or written comments, which will be included in the administrative record. Meeting location: CA Agriculture Museum, 1958 Hays Lane, Woodland, CA 95776

This Draft EIR is being distributed to responsible and other potentially interested agencies, stakeholder organizations, and individuals. This distribution ensures that interested parties have an opportunity to express their views regarding the contents of the Draft EIR and ensures that information pertinent to permits and approvals is provided to decision makers and CEQA responsible and trustee agencies by the lead agency. This document is available online at https://water.ca.gov/News/Public-Notices/Cache-Creek-DEIR. A copy of this Draft EIR is available during walk-in business hours at:

California Department of Water Resources
Flood Maintenance and Operations Branch (FMO)
3310 El Camino Avenue
Sacramento, CA 95821

This Draft EIR is being distributed for a 45-day public review period that will end on April 21, 2025. Written comments must be received by the close of business (5 p.m.) on April 21, 2025. Written comments may be mailed, faxed, or e-mailed to:

Mr. Jeff Schuette
California Department of Water Resources
Flood Maintenance and Operations Branch (FMO)
3310 El Camino Avenue
Sacramento, CA 95821
Phone (916) 914-0184
Email: jeff.schuette@water.ca.gov

If comments are provided via e-mail, please include the project title in the subject line and include the commenter's U.S. Postal Service mailing address in the e-mail. For comments by agencies and organizations, please include the name of a contact person for the agency or organization. All comments received, including names and addresses of commenters, will become part of the official administrative record and may be available to the public.

1.6 Final EIR and EIR Certification

Upon completion of the public review period, DWR will review the comments received, prepare written responses to significant environmental points raised in the comments (State CEQA Guidelines, Section 15132), and, if necessary, revise the Draft EIR. Comments received, the responses to comments, and any necessary text revisions to the Draft EIR will be compiled into the Final EIR for DWR consideration certification of the EIR and approval of the proposed project. Responses to comments on the Draft EIR will be made available for review by the commenting trustee and responsible agencies at least 10 days before certification of the complete EIR and project approval are considered.

If the project is approved, DWR will adopt findings describing how each of the significant impacts identified in the EIR will be mitigated or describing why one or more significant impacts cannot be mitigated and adopting a statement of overriding considerations. The findings also will describe the reasons why project alternatives that were analyzed in the EIR have not been adopted, if DWR chooses not to adopt a project alternative.

Finally, DWR will adopt a Mitigation Monitoring and Reporting Program (MMRP) that describes how it will ensure the required mitigation measures are implemented. CEQA (PRC Section 21081.6(a)(1)) requires public agencies to prepare and approve an MMRP as part of EIR certification. Throughout this Draft EIR, mitigation measures are clearly identified and presented in language that will facilitate development of the MMRP. A complete list of these mitigation measures is provided in Table ES-1 in the Executive Summary of this EIR. The MMRP will

identify the specific timing, roles, and responsibilities for implementation of the mitigation measures.

1.7 Scope and Focus of the EIR

Operation and maintenance (O&M) of the Cache Creek channel and flood infrastructure are covered under the existing Environmental Permitting for Operations and Maintenance Project EIR (SCH # 2023080108) that was approved and certified on January 5, 2018. Therefore, O&M will not be included in the analysis of impacts of the proposed project in this Draft EIR.

This Draft EIR evaluates 13 environmental issue areas and other CEQA-mandated issues (e.g., cumulative impacts, growth-inducing impacts) for the proposed project. The 13 environmental issue areas are:

- Aesthetics
- Agriculture and Forestry Resources
- Air Quality
- Biological Resources
- Cultural Resources and Tribal Cultural Resources
- Geology, Soils, and Paleontological Resources
- Greenhouse Gas Emissions
- Hazards and Hazardous Materials
- Hydrology and Water Quality
- Land Use and Planning
- Noise
- Recreation
- Transportation

1.8 Document Organization and Terminology

This Draft EIR is organized as follows:

- **"Executive Summary"** summarizes the findings and conclusions of this Draft EIR.
- **Chapter 1, "Introduction,"** describes the purpose of this Draft EIR and associated agency roles and responsibilities, provides an overview of the CEQA and Draft EIR review processes, outlines the scope and focus of this Draft EIR, and describes its organization and terminology.
- **Chapter 2, "Project Description,"** describes the project location, background, and context; discusses the project purpose and objectives; and describes the project components, including specific features, construction sequencing and methods, haul routes, and labor force.

- **Chapter 3, "Environmental Setting, Impacts, and Mitigation Measures,"** includes the 13 environmental issue area sections pertinent to the project listed previously, each of which presents a discussion of the environmental setting; regulatory background; thresholds of significance, issues not discussed further in this EIR, and analysis methodology; environmental impact analysis (identifying beneficial impacts, less-than-significant impacts, potentially significant impacts, and significant impacts); mitigation for potentially significant and significant impacts; and impacts remaining significant after implementing mitigation.
- **Chapter 4, "Other CEQA-Required Sections,"** describes the project's potential for growth-inducement, summarizes significant and unavoidable impacts and irreversible environmental changes, and describes impacts of implementing the prescribed mitigation measures.
- **Chapter 5, "Cumulative Impacts,"** describes the impacts of implementing the project in combination with impacts of related past, present, and reasonably foreseeable future projects.
- **Chapter 6, "Alternatives to the Proposed Project,"** describes CEQA requirements to consider alternatives to the proposed project, summarizes alternatives that were considered but rejected from detailed analysis, analyzes, and compares impacts of alternatives evaluated in detail, and identifies the "environmentally superior alternative."
- **Chapter 7, "Report Preparers and Reviewers,"** names the individuals who have contributed to preparation or review of this Draft EIR.
- **Chapter 8, "References,"** lists the sources of information cited throughout this Draft EIR.
- **"Appendices"** provide background and technical information.

This Draft EIR uses the following defined standard terms:

"Construction footprint" refers to the specific area in which construction activities would occur and generally relates to the area of direct project impact.

"Project site" refers to the whole of the disjunct portions of the construction footprint and the intervening areas.

"Project area" refers to areas in and adjacent to the project site.

"Project vicinity" generally refers to an area that is broader than the project area but shares similar characteristics.

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Chapter 2. Project Description

2.1 Project Location

The Cache Creek Channel and Levee Rehabilitation Project (proposed project) would remove vegetation and sediment and raise levee elevations to restore the designed flood conveyance capacity to accommodate flood flows along an approximately nine-mile-long reach of Cache Creek (referred to as the project reach). The project reach is in the town of Yolo, two miles north of the City of Woodland and about 4.5 miles west of the Sacramento River, in Yolo County, as shown in **Figure 2-1**.

The following transportation bridges cross Cache Creek (in order from upstream to downstream): Interstate 5 (I-5) southbound and northbound, County Road 99W, Union Pacific Railroad, State Route (SR) 113, and County Road 102. The upstream end of the project reach is approximately 1.6 miles west of the I-5 bridge. The downstream end of the project reach is on the western levee of the CCSB where the channel extends into the basin by approximately 1.3 miles, as shown in **Figure 2-2**.

The left bank[1] (north) levee begins 240 feet east of County Road 96B and continues to the entrance of the CCSB. The right bank (south) levee begins 0.5-mile upstream of I-5 (also known as Huff's Corner) and becomes the west levee of CCSB. The width of the channel from levee to levee varies from approximately 250 to 650 feet between I-5 and County Road 102. The channel widens to approximately 950 feet in the upstream reach near County Road 96B and the stream bed width varies from 20 to 100 feet. Overbank widths vary from approximately 20 to over 100 feet on either side and exceed 500 feet at the upstream end of the project reach. The difference in elevation between the channel bottom and the overbanks is as much as 35 feet in places.

[1] Reference to the banks of the creek is based on the view of the channel looking downstream.

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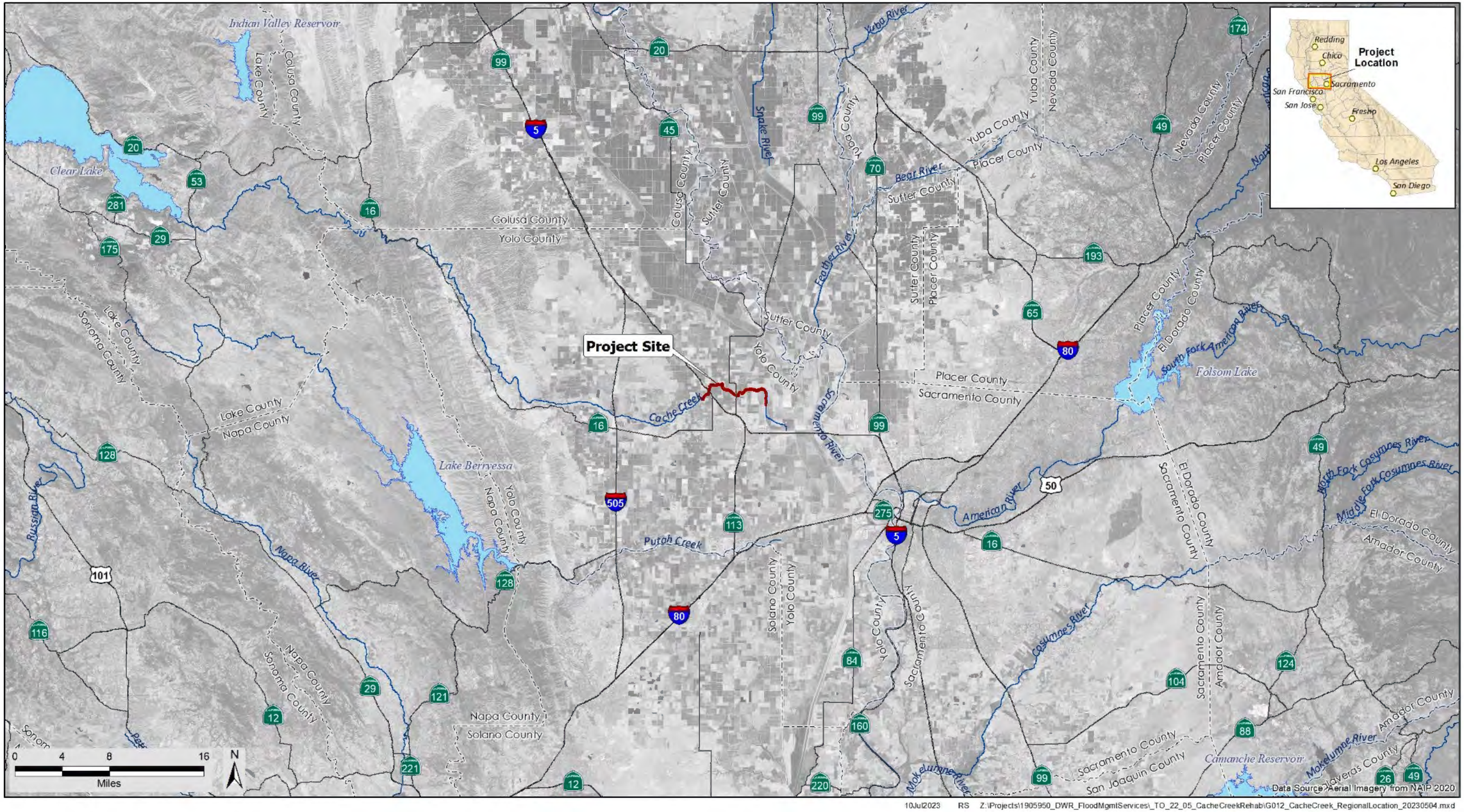

Figure 2-1. Regional Project Location

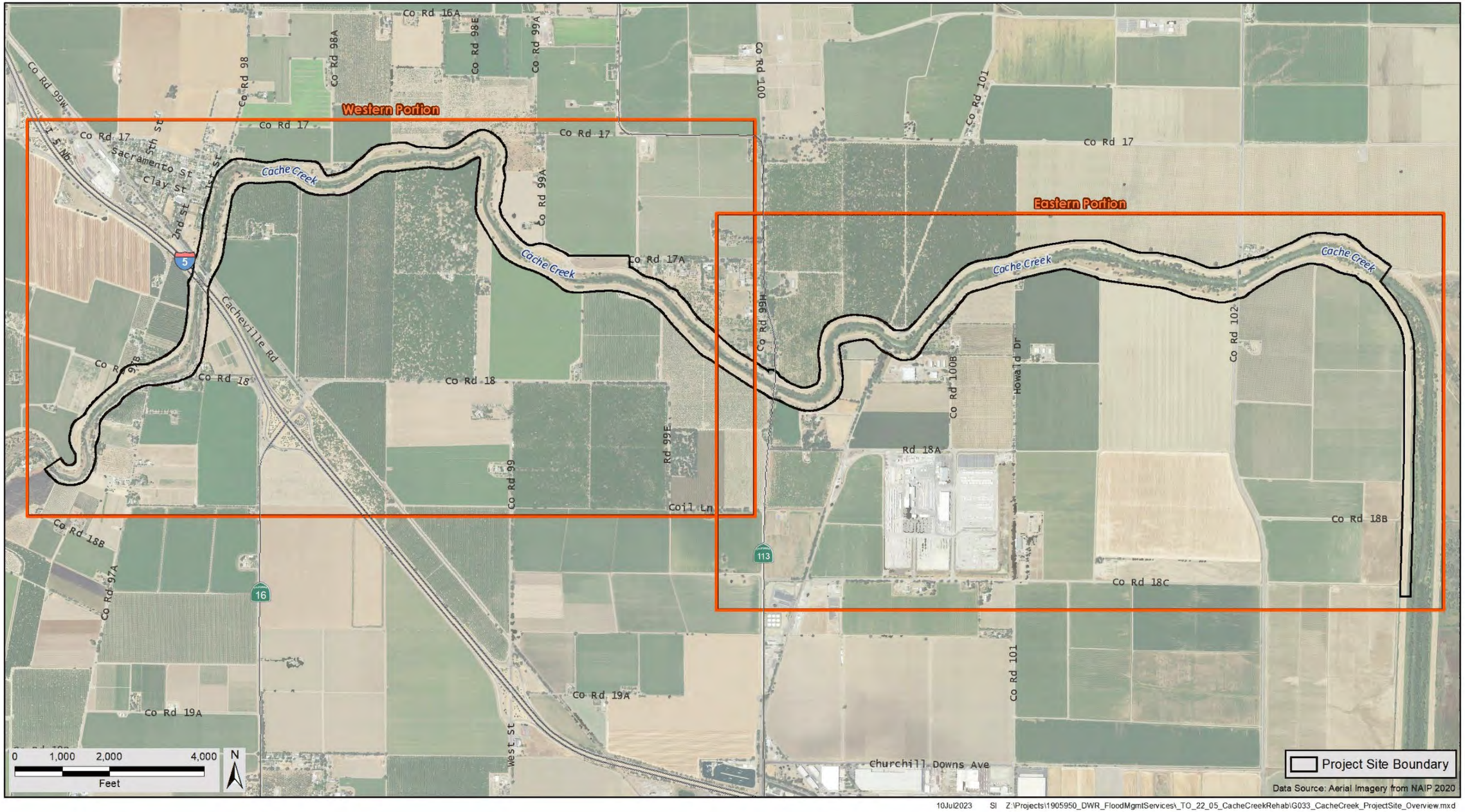

Figure 2-2. Project Site

2.2 Project Objectives

The proposed project would be developed to meet DWR's public safety and maintenance responsibilities with the following objectives:

- restore the capacity of the Cache Creek channel along the project reach to provide 3 feet of freeboard during the original design flow of 30,000 cfs;
- implement the goals of the Central Valley Flood Protection Plan by reducing flood risk to local rural and urban areas;
- implement a combination of actions such as sediment removal along with vegetation removal, and raising levees to efficiently and cost effectively restore channel capacity;
- improve levees to not exceed the original design parameters to the extent possible; and,
- conduct project activities in a manner that minimizes impacts to riparian habitat and other sensitive biological resources.

2.3 Project Design and Components

DWR is proposing a combination of sediment removal from within the Cache Creek channel and raising levees to provide 3 feet of freeboard at 30,000 cfs in the areas shown within the project site boundary in Figure 2-2 with the project components shown in more detail for the western and eastern portions of the project reaches shown on **Figures 2-3** and **2-4**, respectively. Vegetation would be removed where in-channel sediment removal occurs, to provide at least 1 foot of freeboard throughout Cache Creek. Raising levees along the project reach would provide the additional elevation required to create the required 3 feet of freeboard. The design and implementation of each component is discussed in this section. Construction of these components is discussed in the next section.

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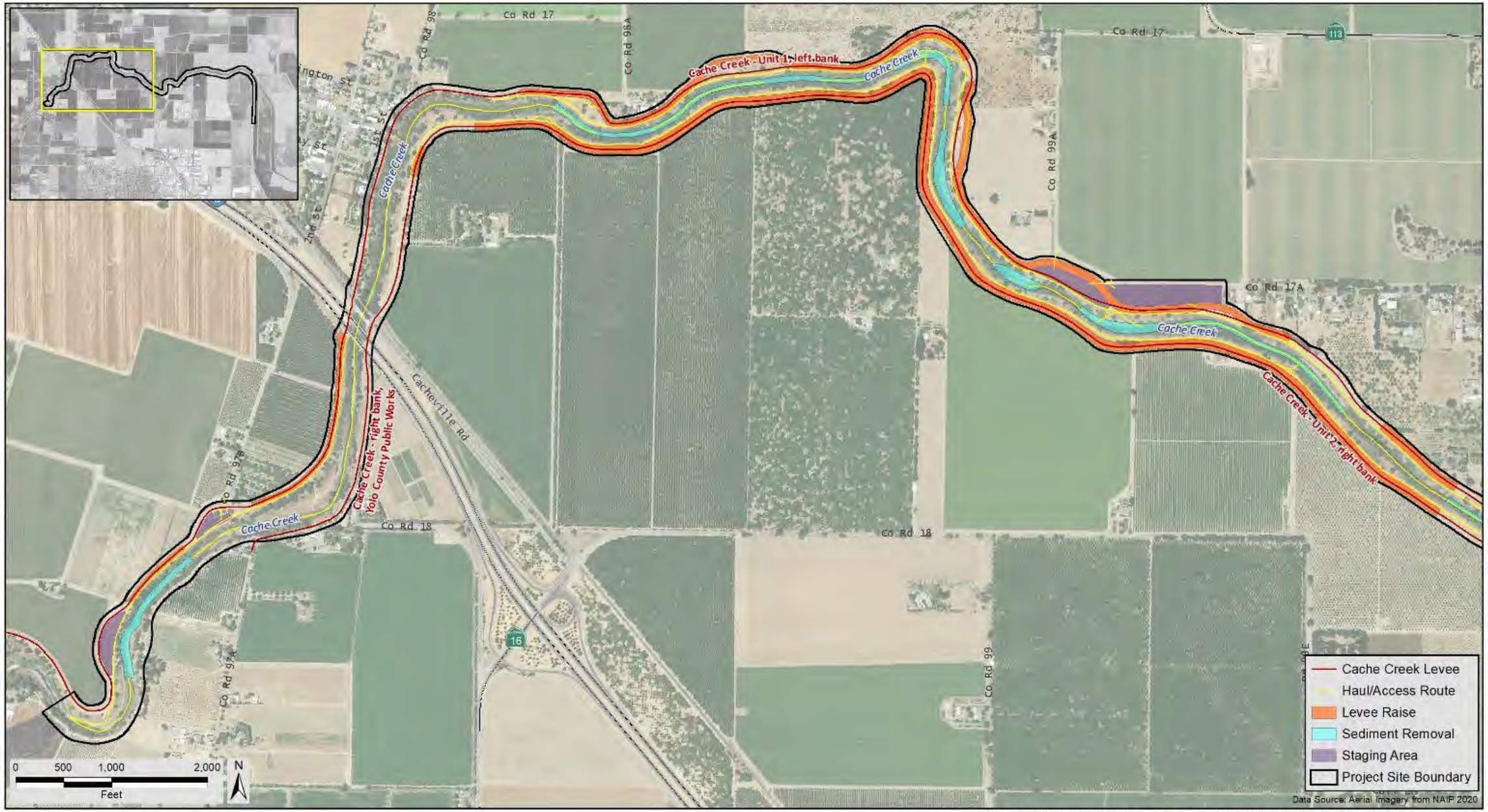

Figure 2-3. Western Portion of Project Site

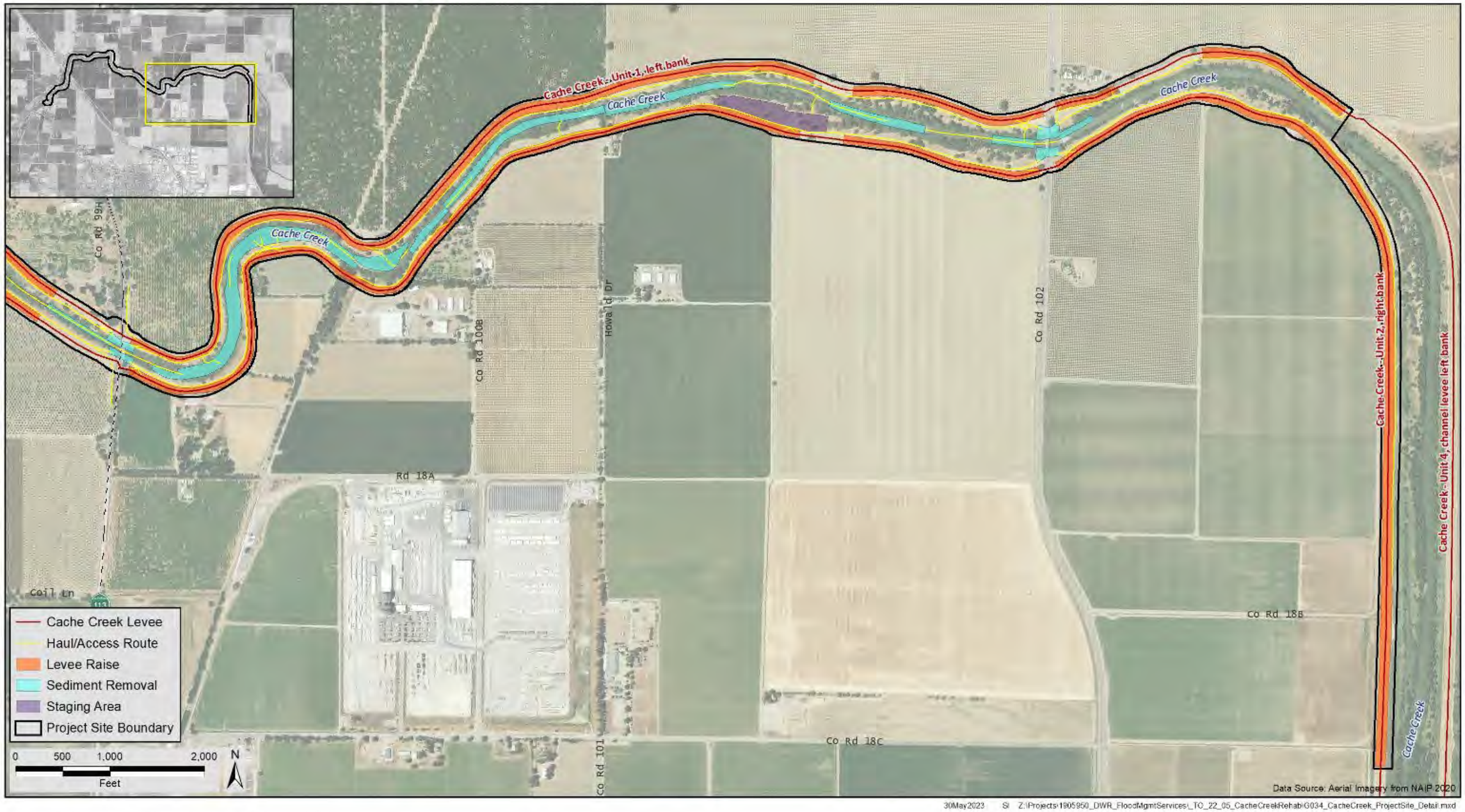

Figure 2-4. Eastern Portion of Project Site

2.3.1 Sediment Removal

Approximately 210,000 cubic yards (cy) of sediment would be excavated from Cache Creek to help restore the channel's capacity. No fill would be added to the main channel as part of the project. Areas where channel excavation would occur are shown in **Figures 2-3** and **2-4** and approximately 22.5 acres of vegetation would be removed where in-channel sediment removal is proposed. Vegetation in areas adjacent to project construction would be preserved in place with avoidance buffers and best management practices to maintain the health of vegetation to remain. **Figures 2-5** and **2-6** show typical cross sections of proposed limited and substantial sediment removal activities, respectively. The typical depth of cuts would range from 1 to 2 feet for limited removal and between 5 and 30 feet for sections of substantial removal. Typical side slopes where excavations occur would vary, with 2H:1V slopes as the target. The proposed project would excavate soil at elevations between approximately 1 and 6 feet below current conditions in several reaches and excavate up to approximately 70 lateral feet of soil of overbank materials to specific design criteria slopes from the main creek channel.

2.3.2 Levee Raise

The proposed project would raise levees up to approximately 2.5 feet at select locations on both the north and south levees along the project reach to restore channel capacity and levee freeboard required after excavations. **Figures 2-7** and **2-8** show typical cross sections of raising the levees that would occur where necessary to restore 3 feet of freeboard. **Figure 2-7** shows a typical levee raise cross section in areas where the proposed project design would result in a shift of the levee prism towards both the water side and land side toe roads by widening the levee base as needed to meet the required bank slopes as shown. This would result in a shift of the water and land side toe roads with minor grading to accommodate the shift in the road alignment to be the same width under current conditions (12-ft-wide). The range in the span of raised levees between the water and land side toes would be between approximately 80 to 100 feet wider based on height of raising the levee. **Figure 2-8** shows a typical levee raise cross section in areas where the proposed project design would result in no change to the alignment of the levee or toe roads. A typical levee raise cross section shows possible combinations of features and are not implying exclusivity to left or right bank.

The amount of imported fill would total approximately 100,000 cy and prior to importation would be tested to meet State water quality criteria (e.g., not contain contaminants of concern) for use in the channel. Typical levee side slopes would be approximately 2H:1V on the landside and 3H:1V on the waterside. Some adjacent land would be acquired through flood maintenance and right-of-way easements wherever the landside levee toe must expand to meet the new height at those locations.

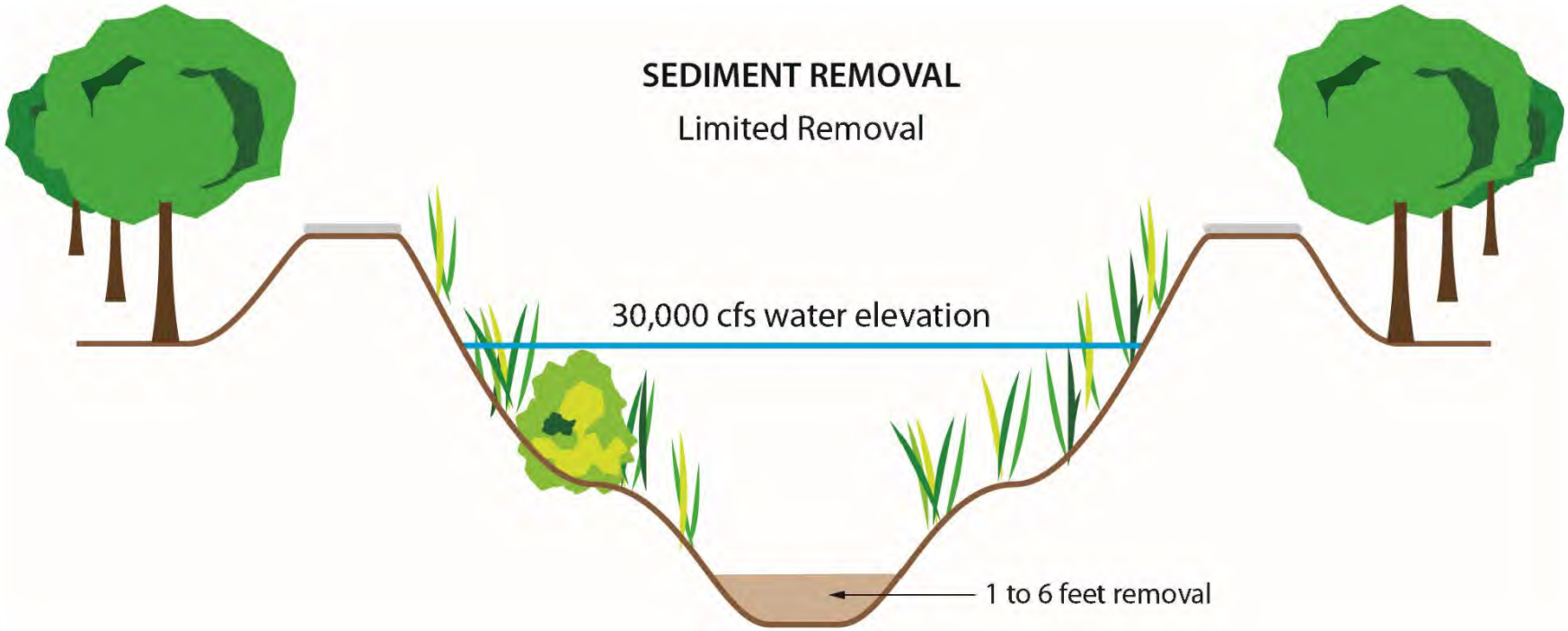

Figure 2-5. Typical Limited Sediment Removal Cross-section

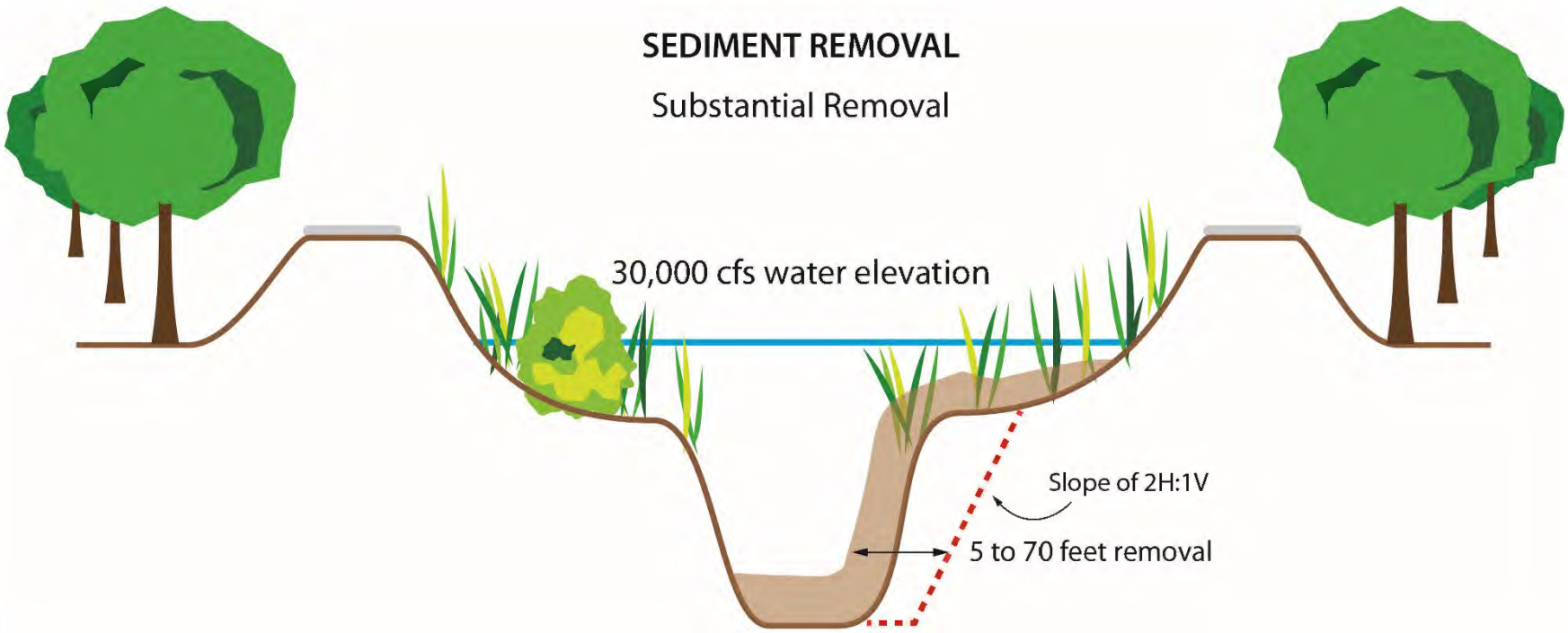

Figure 2-6. Typical Substantial Sediment Removal Cross-section

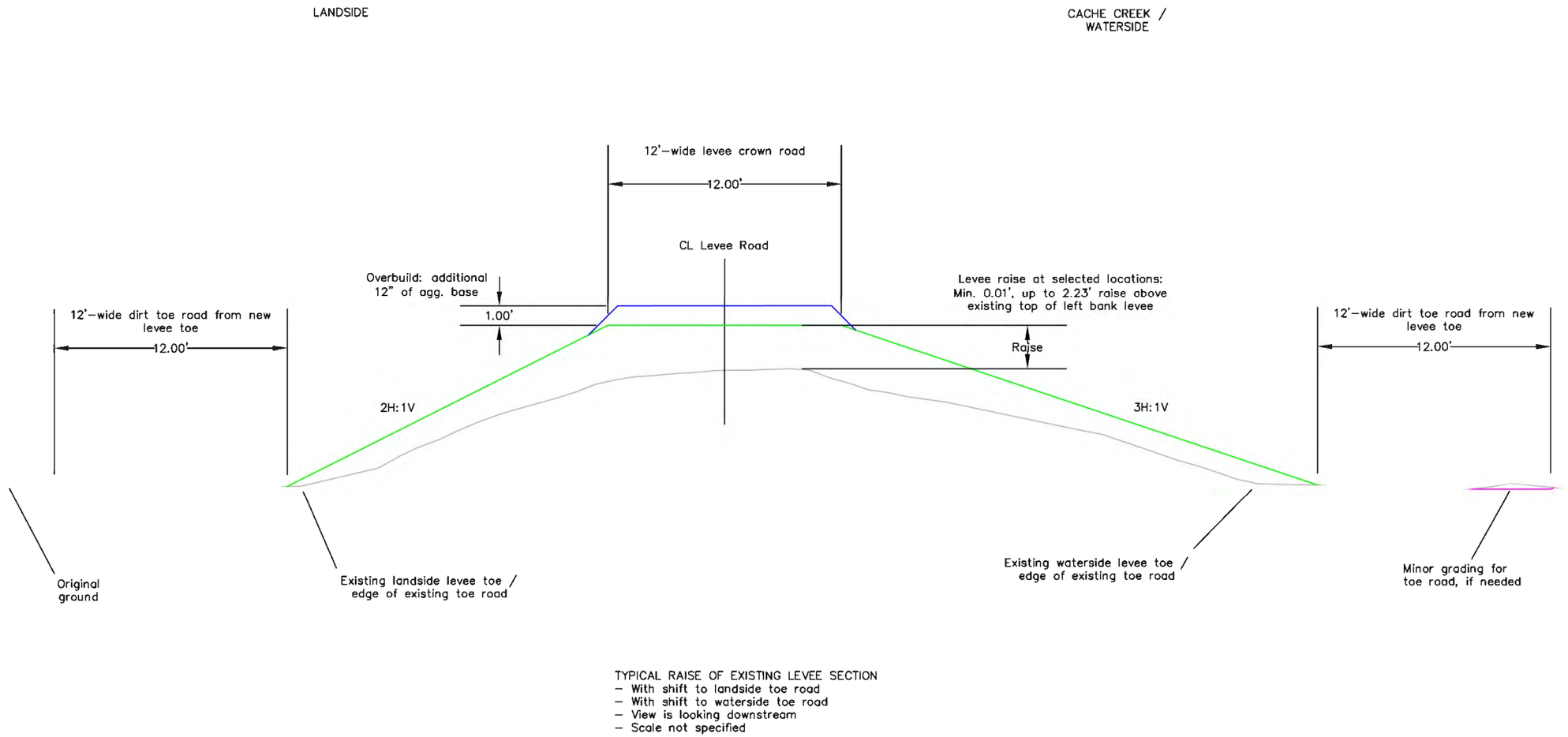

Figure 2-7. Typical Cross-section of Levee Raise with Shift of Land and Water Side Toe and Toe Roads

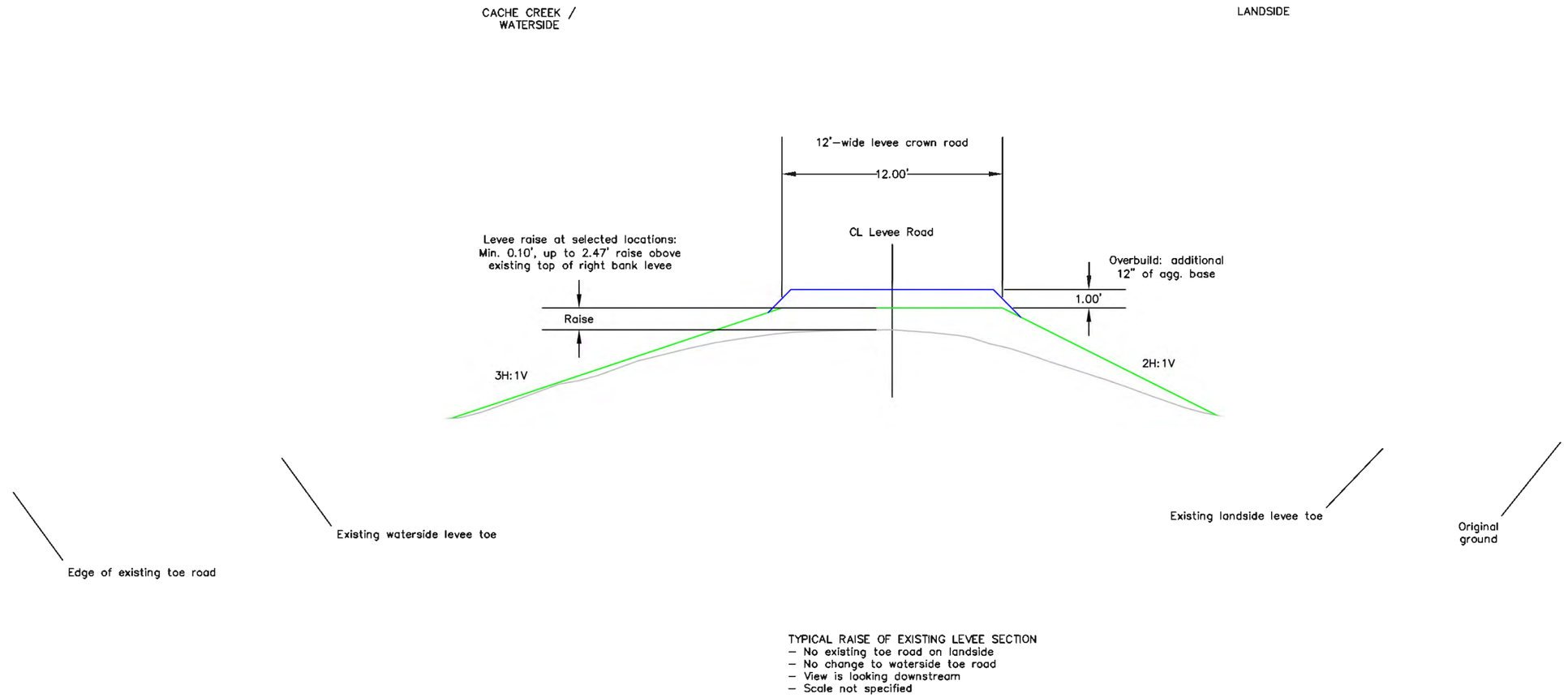

Figure 2-8. Typical Cross-section of Levee Raise without Shift of Land and Water Side Toe and Toe Roads

2.4 Project Construction

2.4.1 Construction Schedule

Construction is planned to occur between approximately April 16 and October 31, beginning in 2026 at the earliest, and extending over the course of two construction seasons/years. Construction would only occur during the dry season and when no water is within the bottom of the channel to prevent the need for dewatering activities. However, should isolated areas of ponded/perched water exist within the channel or along the haul routes in the creek bed, those areas may need to be drained and leveled prior to sediment removal work. For shallow ponded area(s), pumps would be used to empty the ponded water out or a shallow trench would be carved into the creek bed to drain the water downstream. The water would likely drain quickly through the sandy soil and dissipate. If shallow enough, the pond will be seined/netted for aquatic wildlife, and any wildlife will be moved to another pond outside of the action area within the Cache Creek or taken to a Yolo Bypass canal containing water. For deeper ponds, water would be pumped out first to a level where seining is possible, then to follow the same steps for shallow ponded area(s). DWR would not drain large areas to conduct sediment removal and would focus on other areas while any significant areas of ponded water dry up over the summer, or DWR will wait for the following season to do work at these locations. Work would be conducted 6 days per week and in 8-hour work shifts, with an average number of 10 workers on site per day. Construction activities would occur along the project reach including the levees and channel with equipment staging areas located inside the north levee setback area at the corner of County Road 17A and County Road 99A, and outside levee areas as shown in **Figures 2-3** and **2-4**.

Beginning approximately April 16, the contractor would be able to mobilize equipment to the project site. Staging areas would be cleared of vegetation and/or other debris, and graded, before equipment is mobilized to the project site. In addition, haul roads within the project site would be improved where needed before construction activities begin. Temporary earthen ramps would be constructed over the north and south levees to allow access within the channel, where necessary. Following the construction of the earthen ramps, contractors would begin clearing and grubbing vegetation in the active construction zones within the channel. All trees and shrubs would be removed from areas where sediment would be excavated, and biomass generated from the clearing process would be removed to the nearest landfill or staging area and/or burned onsite.

Rubber-tired scrapers would remove excavated sediment up the earthen ramps and deliver to staging areas to be loaded onto end-dump haul trucks for hauling to the nearest landfill permitted to accept the excavated soil. Some sediment material may be placed and graded within the staging areas. Sediment would be tested to identify regulatory requirements prior to disposal and identification of an appropriate landfill. Landfills within a 100-mile radius could be used for disposal of soil. Imported fill material would be trucked to locations along both north and south levees where levees would be raised from sources within a 100-mile radius of the project site. In some locations, only the levee crown would be raised, while in other locations fill material would be placed and compacted to expand the levee height and width.

In addition, water trucks would be used to minimize dust generated by construction vehicles and from the hauling and disposal of sediment. Water may be pumped from available sources within

the vicinity or bought and hauled in for storage at staging areas at the discretion of and cost to the contractor.

When construction activities are completed, the temporary ramps over the levees would be removed and ramp locations would be restored to pre-project conditions and all disturbed areas would be seeded with native plant species.

2.4.2 Equipment and Hauling

The following equipment is expected to be utilized for the proposed project:

- Dozer
- Excavator
- Haul truck
- Hydroseed truck
- Mower
- Water Truck
- Sheepfoot compactor
- Drum compactor
- Motor grader
- Pothole vacuum
- Service truck

Haul routes within the project site that would be used for in channel work and raising levees are shown on **Figures 2-3** and **2-4**. Primary haul roads outside of the creek channel would be surveyed and improved with aggregate base, if needed, prior to mobilizing equipment to the project site. Construction activities within the project site would use the haul roads as indicated in **Figures 2-3** and **2-4**. Primary roadways outside the project site used for import or export hauling of materials for the proposed project would be I-5, Cacheville Road, County Roads 17A, 97B, 99A, 102 and 113, East Kentucky Avenue, and North East Street. The proposed project would use 14 cy haul trucks that would result in approximately 17,860 truck trips for export of excavated soil and importation of material for raising levees. All roads would be surveyed prior to and after completion of project construction for roadway surface conditions. Where needed, DWR would repair roadway surfaces to the pre-project conditions documented by surveys.

Operations and Maintenance

As stated previously in Section 1.6, “Scope and Focus of the EIR,” O&M activities conducted by DWR along the Cache Creek channel and flood infrastructure are covered under the existing Environmental Permitting for Operations and Maintenance Project EIR (State Clearinghouse Number (SCH #) 2023080108) that was approved and certified on January 5, 2018, and covered under separate permits. Therefore, O&M is not a part of the proposed project and will not be included in the analysis of impacts of the proposed project described in this EIR.

Regulatory Permits and Approvals

The permits and approvals potentially required for the proposed project are shown in **Table 2-1**.

Table 2-1. Potential Project Regulatory Permits and Approvals

Permit	Permitting Authority	Affected Elements
Federal Agencies		
Clean Water Act (CWA) Section 404/Rivers and Harbor Act Section 10 Dredge and Fill Permit	USACE	Permitted activities on facilities that would be constructed in Waters of the United States
Federal Endangered Species Act Compliance	National Marine Fisheries Service and United States Fish and Wildlife Service	Permitted activities on facilities affecting Federal listed special-status species
Temporary Use of Railroad Property	Union Pacific Railroad	Permitted activities for projects involving temporary use of railroad property
State Agencies		
CWA Section 401 Water Quality Certification	Central Valley Regional Water Quality Control Board (RWQCB)	Activities within jurisdictional waters of the United States required to obtain a Section 404 permit
National Pollutant Discharge Elimination System General Construction Activity Permit	Central Valley RWQCB	Permitted activities on facilities where runoff would potentially discharge into surface water
Lake and Streambed Alteration Agreement	California Department of Fish and Wildlife	Permitted activities on facilities that would impact the bed or bank of a stream channel
National Historic Preservation Act Section 106 Compliance	State Historic Preservation Office	Permitted activities on facilities that would affect cultural and historic resources listed or eligible for inclusion in the National Register of Historic Places
Encroachment Permit	California Department of Transportation	Permitted activities for activities encroaching within, under, or over the State highway rights of way
Local Agencies		
Encroachment Permit	Yolo County	Permitted activities on facilities located within rights-of-way or easements managed by Yolo County

Chapter 3. Environmental Setting, Impacts, and Mitigation Measures

3.1 Approach to the Environmental Analysis

This chapter describes the approach to identifying relevant environmental and regulatory setting information, evaluating environmental impacts, and identifying feasible mitigation measures for the proposed project.

3.1.1 Scope of the Analysis

California environmental law is governed by the California Environmental Quality Act (CEQA), found in Public Resources Code (PRC) Section 21000 et seq. and the State CEQA Guidelines (Section 15000 et seq.). CEQA requires that an Environmental Impact Report (EIR) evaluate potentially significant effects on the physical environment associated with implementing a proposed project and identify feasible mitigation for those effects. A "[s]ignificant effect on the environment" means a substantial, or potentially substantial, adverse change in any of the physical conditions within the area affected by the project (State CEQA Guidelines, Section 15382). All phases of construction of the proposed project are evaluated in the analysis. Operation and maintenance (O&M) of the Cache Creek channel and flood infrastructure are covered under the existing Environmental Permitting for Operations and Maintenance Project EIR (State Clearinghouse Number (SCH #) 2023080108) that was approved and certified on January 5, 2018. Therefore, O&M will not be included in the analysis of impacts of the proposed project described in this EIR. State CEQA Guidelines Section 15126.2 states that:

"An EIR shall identify and focus on the significant environmental effects of the proposed project. In assessing the impact of a proposed project on the environment, the lead agency should normally limit its examination to changes in the existing physical conditions in the affected area as they exist at the time the notice of preparation is published, or where no notice of preparation is published, at the time environmental analysis commences. Direct and indirect significant effects of the project on the environment shall be clearly identified and described, giving due consideration to both the short-term and long-term effects. The discussion should include relevant specifics of the area, the resources involved, physical changes, alterations to ecological systems, and changes induced in population distribution, population concentration, and human use of the land (including commercial and residential development), health and safety problems caused by the physical changes, and other aspects of the resource base such as water, historical resources, scenic quality, and public services. The EIR shall also analyze any significant environmental effects the project might cause by bringing development and people into the area affected."

An EIR must also discuss inconsistencies between the proposed project and adopted applicable general plans and regional plans (State CEQA Guidelines, Section 15125[d]). Furthermore, according to State CEQA Guidelines Section 15126.4, an EIR must describe potentially feasible measures that could avoid or minimize significant adverse impacts (State CEQA Guidelines, Section 15126.4[a][1]) and feasible and practicable measures that are fully enforceable through permit conditions, agreements, or other legally binding processes (State CEQA Guidelines, Section 15126.4[a][2]). Mitigation measures are not required for impacts that are found to be less than significant.

State CEQA Guidelines Section 15126.4(a)(1)(d) specifies that if a mitigation measure itself would cause a significant impact, the effects of the mitigation measure will be discussed. Each mitigation measure included in this EIR was considered as to whether it would cause a significant impact upon implementation. It was determined that none of the mitigation measures for the proposed project or any of the alternatives would cause a significant impact of its own upon implementation. Therefore, impacts generated by mitigation measures themselves are not further evaluated or addressed in this EIR.

Before beginning preparation of this Draft EIR, the potential for significant impacts to environmental resource topic areas contained in Appendix G of the State CEQA Guidelines was evaluated. This Draft EIR focused on those environmental resources that were determined to have a potential to be significantly affected by project implementation. The following environmental topics have been eliminated from detailed consideration, were presented as such in the NOP, and are not discussed further in this Draft EIR because they have no potential to cause a significant impact for the reasons described in Section 1.6, "Scope and Focus of the EIR:" Energy, Mineral Resources, Population and Housing, Public Services, and Utilities and Service Systems.

The remaining environmental resource topic areas contained in Appendix G of the State CEQA Guidelines are addressed in this chapter of the Draft EIR because the project could have significant direct, indirect, and/or cumulative environmental effects on them.

3.1.2 Format of the Analysis

This chapter is organized by topic area, generally corresponding (with some minor deviation) to those in the CEQA Environmental Checklist (State CEQA Guidelines Appendix G, as amended). Each section follows the format described below.

Environmental Setting

The "Environmental Setting" subsection provides an overview of the baseline physical environmental conditions (i.e., the environmental baseline) on the project site, and in surrounding areas as appropriate, in accordance with 14 CCR Section 15125, at the time the NOP was published on August 7, 2023.

Regulatory Setting

The "Regulatory Setting" subsection identifies formally adopted plans, policies, laws, regulations, and ordinances potentially relevant to each topic area and describes required

authorizations, permits, permissions, and other approvals necessary to implement the proposed project. The EIR must address possible conflicts between the proposed project and the objectives of applicable Federal, State, regional, and local adopted land use plans, policies, or controls for the area. DWR is not subject to local regulation unless expressly authorized by the Legislature, but local regulations are addressed for informational purposes because they may be relevant to responsible agencies.

According to State CEQA Guidelines 14 CCR Section 15125(d), an EIR "shall discuss any inconsistencies between the proposed project and applicable general plans and regional plans." Although the EIR discusses potential inconsistencies with applicable plans and policies for several jurisdictions, the final authority for interpreting policy statements and determining the proposed project's consistency with adopted policies rests with the governing body of the jurisdiction in question, either the City Council or the County Board of Supervisors. Where inconsistencies do occur, they are addressed as topical impacts within each applicable issue area in this chapter. For some issue areas, there may not be any applicable policies of a particular jurisdiction's general plan based on the type of improvements or changes proposed within that jurisdiction. Where this is the case, the "Regulatory Setting" subsection includes a note that there are no applicable policies from this jurisdiction's general plan.

Environmental Impacts and Mitigation Measures

The "Environmental Impacts and Mitigation Measures" subsection identifies the impacts of the proposed project on the existing human and natural environment, in accordance with the State CEQA Guidelines (14 CCR Sections 15125 and 15143). The following discussions are included in the "Environmental Impacts and Mitigation Measures" subsection.

Thresholds of Significance

This subsection identifies the criteria established by the lead agency to define the level at which an impact would be considered significant in accordance with CEQA. Thresholds may be quantitative or qualitative and may be based on examples found in CEQA regulations or the State CEQA Guidelines; scientific and factual data relative to the lead agency's jurisdiction; legislative or regulatory performance standards of Federal, State, regional, or local agencies relevant to the impact analysis; City or County goals, objectives, and policies (e.g., City or County General Plan); views of the public in the affected areas; the policy/regulatory environment of affected jurisdictions; or other factors. Generally, however, the thresholds of significance used are derived from Appendix G of the State CEQA Guidelines, as amended.

Issues Not Discussed Further

This subsection describes specific issues related to a given topic area's thresholds of significance for which there would be no impact and no further impact discussion is required. No impact indicates that the construction activities, including specific project elements, would not have any direct or indirect effects on the environment. It means no change from existing conditions would occur.

Analysis Methodology

This subsection describes the methods, process, procedures, and/or assumptions used to formulate and conduct the impact analysis. This subsection also summarizes any comments received on the NOP and how the comment was considered in the impact analysis.

Impact Analysis and Mitigation Measures

This subsection identifies the impacts of the proposed project on the existing human and natural environment, in accordance with the State CEQA Guidelines Sections 15125 and 15143, and mitigation measures identified to avoid, minimize, rectify, reduce, or compensate for significant and potentially significant impacts of the proposed project, in accordance with the State CEQA Guidelines Sections 15370, 15002[a][3], 15021[a][2], and 15091[a][1].

The impact analysis assesses potential impacts of the proposed project (including off-site components, such as staging and borrow areas, haul routes, access roads, and mitigation sites) on the physical environment. This assessment also specifies why impacts are found to be significant and unavoidable, significant or potentially significant, or less than significant. Some of the potential impacts that may result from implementation of the proposed project would be temporary and short-term impacts resulting from construction activities, while other impacts would be permanent.

Project impacts can be direct or indirect. Direct impacts are those that would be caused by the project and would occur at the same time and place as the project. Indirect effects are reasonably foreseeable consequences that may occur at a later time, or at a distance that is removed from the project site. Examples of indirect impacts include growth-inducing impacts and other impacts related to changes in land use patterns and resulting effects on the physical environment.

Impacts are listed numerically and sequentially throughout each section. For example, impacts in Section 3.4 are identified as 3.4.1, 3.4.2, and so on. An impact statement precedes the discussion of each impact and provides a summary of the impact. The discussion that follows the impact statement includes the evidence on which a conclusion is based regarding the level of impact.

The level of impact is determined by comparing anticipated impacts with baseline conditions. Under CEQA, the environmental setting as it exists at the time the NOP is published (as defined above and as described in the "Environmental Setting" sections of Chapter 3) normally represents baseline physical conditions. The levels of impact are defined as follows:

- A **beneficial impact** is an impact that is considered to cause a positive change or improvement in the environment and for which no mitigation measures (which may include measures to avoid, minimize, rectify, reduce, or compensate for effects) are required.
- A **less-than-significant** impact conclusion indicates that a substantial or potentially substantial adverse change in the physical environment would not occur. This impact level does not require mitigation under CEQA.
- A **significant** impact is defined by State CEQA Guidelines Section 21068 as "a substantial, or potentially substantial, adverse change in the environment." Levels of significance can vary by project element, based on the change in the existing physical condition. Under

CEQA, mitigation measures must be identified, where feasible, to reduce the magnitude of significant impacts.

Mitigation measures to avoid, minimize, rectify, reduce, or compensate for significant and potentially significant impacts of the proposed project, in accordance with the State CEQA Guidelines Sections 15370, 15002[a][3], 15021[a][2], and 15091[a][1], where feasible, are identified for each potentially significant or significant impact. Each mitigation measure is identified numerically to correspond with the number of the impact being reduced by the measure. For example, Impact 3.3.1 would be mitigated by Mitigation Measure 3.3.1. Where no mitigation is required because the impact conclusion is "less than significant," then the statement "no mitigation is required" is provided.

In accordance with PRC Section 21081.6(a), the lead agency, if it approves the project, must adopt an MMRP when it certifies the EIR. The lead agency also must adopt findings identifying each significant effect of the project and the extent to which feasible mitigation measures have been adopted.

Residual Significant Impacts

The "Residual Significant Impacts" section identifies all significant impacts that would remain significant after implementation of the mitigation measures. Where no feasible mitigation is available to reduce impacts to a less than significant level, the impacts are identified as remaining "significant and unavoidable" and the statement "no feasible mitigation measures are available" is provided with an explanation. In some cases, all feasible and available mitigation measures are not sufficient to reduce an impact to a "less than significant" level. When this occurs, the impacts are described as remaining "significant and unavoidable." Significant and unavoidable impacts are also summarized in Chapter 4, "Other CEQA-required Sections," under the subsection "Significant and Unavoidable Environmental Impacts.

3.1.3 Resources Eliminated from Further Analysis

Pursuant to CEQA Guidelines, the discussion of the potential impacts on the physical environment can be focused on those impacts that may be significant or potentially significant. The CEQA Guidelines Sections 15126.2(a) and 15128 allow a lead agency to limit the details of discussion of the environmental effects (impacts) that are not considered significant. The resource sections that would not result in a significant impact due to project implementation and have been eliminated from further analysis in this Draft EIR include: energy, mineral resources, population and housing, public services, and wildfire. The discussion that follows includes the rationale for eliminating these resource topics from further evaluation in this Draft EIR because there is no potential that these resources would be significantly impacted by the proposed project:

- **Energy –** Project implementation would not include wasteful or unnecessary consumption of energy resources, because it would be required to meet air quality and greenhouse gas criteria that require the use of efficient equipment during construction. The proposed project would be constructed within two field seasons using efficient equipment. The project would be constructed using efficient equipment and, therefore, would cause no long-term impacts to

energy resources and would not conflict with renewable energy or energy efficiency plans. Consequently, the proposed project would not have the potential to cause a potentially significant impact on energy resources.

- **Mineral Resources –** The project site is designated Mineral Resource Zone (MRZ)-1 in the Yolo County General Plan; an MRZ-1 designation means that adequate information indicates that no significant mineral deposits are present on the project site. Therefore, the proposed project would not result in the long-term loss of access to regionally or locally important deposits of mineral resources and would not preclude future mineral resource extraction.
- **Population and Housing –** The proposed project does not include housing or commercial development that would directly or indirectly induce population growth. Project construction would occur in an undeveloped area, would not displace people or housing, and would be completed by local construction workers that would not need temporary housing. Consequently, the proposed project would have no impact on population and housing.
- **Public Services –** The proposed project would not require any new or increased public services. Moreover, the proposed project would not affect existing public services. The proposed project would be constructed within flood control easements and undeveloped land that does not have public services that could be adversely affected. Consequently, the proposed project would not have the potential to cause a potentially significant impact on public services.
- **Wildfire –** The proposed project site is not located within an area designated by the State as very high fire severity zone or a State Responsibility Area. Therefore, the proposed project does not meet the CEQA criteria for analysis of impacts related to wildfires and there would be no impact.

3.2 Aesthetics

This section describes the existing visual character, viewer sensitivity, and overall visual quality of the project area. Representative photographs showing the existing visual character at the project site are also included. The impact analysis discusses the potential impacts on aesthetics that could result from construction and long-term effects of the project on the visual character and quality of existing scenic resources.

3.2.1 Environmental Setting

The proposed project is located in eastern Yolo County in the northern Central Valley of California. The County is predominantly rural in nature, relatively flat, sparsely populated, and visual resources are mostly associated with local agricultural activities, including expansive views of open farmland, nut and fruit orchards, and vineyards. Portions of the lower Cache Creek watershed include areas evident of past and present gravel mining. On occasion, good weather and low air pollution levels provide conditions for views of the surrounding mountains of the Coast Range to the west and Sierra Range to the east. The Town of Yolo is located adjacent to and north of the I-5 bridge crossing over Cache Creek, the City of Woodland is located less than 1.5 miles south of the project site, the Sacramento River is situated roughly 5 miles to the east, and the City of West Sacramento is approximately 11 miles to the southeast.

Visual Character and Quality

Aesthetics is a broad term used to identify and describe the particular scenic qualities that define a place or landscape. Both natural and cultural features contribute to a landscape's perceived visual character and quality. More specifically, landscapes can be described through a combination of four visual elements: water, landforms, vegetation, and human-made structures.

The project site consists of a portion of lower Cache Creek that begins upstream about a mile west of I-5 and extends nine miles to its downstream terminus where the channel enters the CCSB just south of County Road 18C. Representative photographs of the project site are provided in **Figures 3.2-1** through **3.2-4**.

The visual character and quality of the project site is primarily formed by Cache Creek, the riparian vegetation along its levees, and the expansive agricultural fields flanking the creek. In addition to farming and associated agricultural infrastructure, such as barns, warehouses, and equipment storage areas, land use adjacent to the project site is also residential in nature, exhibiting disbursed mobile homes and rural residences. Riparian woodland habitat communities are the dominant vegetation along the creek within the project site, and trees like valley oak, Oregon ash, Goodding's black willow, and Fremont cottonwood are common, along with a variety of non-native and native forbs, grasses, and shrubs. The small unincorporated Town of Yolo represents the only residential, commercial, and industrial area adjacent to the Creek. I-5 serves as the major thoroughfare running north-south through the western portion of the project site. In addition, transportation arteries with bridges that cross Cache Creek in the project site include (from west to east) County Road 99W, the Union Pacific Railroad, State Route 113, and County Road 102. Further, numerous rural County roads directly adjacent to the project site and surrounding vicinity mainly serve as thoroughfares for local residents or motorists traveling through the County.

Viewer Sensitivity

The visual character and quality of a landscape are only important to the degree to which they are witnessed and assessed by observers. Therefore, it is imperative that viewer sensitivity also be considered in assessing the effects of visual change. Viewer sensitivity is based on several factors including, the visibility of resources in the landscape, nearness of viewers to the visual resources, elevation of the viewers relative to the visual resources, frequency and duration of views, number and type of observers, and expectations of individuals and viewer groups. Landscape elements are considered higher or lower in visual importance based on their proximity to the viewer, and the closer a resource is to the viewer, the more dominant, and thus the more visually important. The main viewer groups in the project area include residents living and recreating on or near the Cache Creek levees, travelers along local roadways and levee bank roads, and recreational users.

Individuals living in the Town of Yolo, specifically residents in homes along 1st, 2nd, and Jackson Streets, back up to the north levee and have direct views of the project site. Likewise, the occupants of the scattered residences directly adjacent to the 9 mile project site also have views of the project site. Public views of the project site would primarily be from local roadways, levee bank roads, and recreationalists using the top of the levee. The Cache Creek channel is partially obscured by trees and overgrown riparian vegetation and is well below grade of surrounding roads and agricultural lands and visibility is limited of the channel even for viewers in proximity. The sensitivity of travelers, including bicyclists and motorists, passing through the project vicinity would be considered moderate, as their views would be very limited spatially and temporally. Individuals driving for pleasure or engaging in recreation activities such as biking, walking, cycling, fishing, or bird watching near the project site would have higher viewer sensitivity. Access to the levee system has been limited by gates and fences, preventing recreationalists access using vehicles on the levee; however, scenic views of Cache Creek are present within areas immediately adjacent to the levee system. Sensitivity would be lower for people commuting on highways and county roads through the vicinity or performing work activities near the project site.

Source: GEI Consultants, drone photograph taken June 28, 2022.

Figure 3.2-1. Overview of agricultural fields typical of the visual character of the project area. Taken in the western portion of the project site with views to the north.

Source: GEI Consultants, drone photograph taken June 28, 2022.

Figure 3.2-2. Residences at the intersection of County Road 102 and Cache Creek with immediate views of the project area with views to the northwest.

Source: GEI Consultants, drone photograph taken June 28, 2022.

Figure 3.2-3. Overview of south levee and Cache Creek drainage in the eastern portion of the project area with views to the north.

Source: GEI Consultants, photograph taken April 27, 2022

Figure 3.2-4. Typical visual character of levee roads in project site with views to the north and down north levee road near Town of Yolo.

Scenic Vistas, Corridors, and Highways

A scenic vista is considered a viewpoint that provides expansive views of a highly valued landscape for the general public's benefit. Some scenic vistas are officially designated by public agencies, or informally designated by local residents and recreationists. Typical scenic vistas in the region include locations where views of winding creeks, stands of native trees and vegetation, and vast agricultural spaces can be viewed with the mountains to the west and east of the Central Valley in the distance. Yolo County has not identified any official scenic vistas in the project site, though according to the *Yolo County 2030 Countywide General Plan* Draft EIR, the sight of and along Cache Creek from the Town of Yolo is a viewshed where a "significant number of viewers would have major concerns for (its) scenic qualities" (LSA 2009: 744).

Scenic corridors are defined as enclosed areas of landscape (i.e., roadways, rivers), viewed as a single entity that includes the total field of vision from a specific point, or series of points, along a linear route. A review of the current California Department of Transportation (Caltrans) *Map of Designated Scenic Routes* indicates that there is one roadway eligible for listing as a State scenic highway within Yolo County (Caltrans 2023). This scenic corridor consists of about 25 miles of State Route 16 between State Route 20 to the community of Capay, about 12 miles west of the project site. In addition, Yolo County has designated five locally significant scenic highways, two of which are located less than five miles from the project site: County Roads 116 and 116B (Knights Landing to the eastern terminus of County Road 16; approximately 3 miles to the northeast of the project area), County Roads 16 and 117, and Old River Road (County Road 107 to West Sacramento), roughly 5 miles to the southeast of the project area.

3.2.2 Regulatory Setting

Federal Plans, Policies, Regulations, and Laws

No Federal plans, policies, regulations, or laws concerning aesthetics relate to the project.

State Plans, Policies, Regulations, Laws

No State plans, policies, regulations, or laws related to aesthetics are applicable to the project.

Regional and Local Plans, Policies, Regulations, and Ordinances

DWR is not subject to local regulations unless expressly authorized by the Legislature. Local plans, policies, regulations, and ordinances potentially relevant to the proposed project are addressed in this section for informational purposes because they may be relevant to certain responsible agencies.

Yolo County General Plan

There are no regulations in the Yolo County General Plan (Yolo County 2009; 2018) that pertain specifically to visual resources within the project site, however there are several general goals and policies that guide the County in ensuring the preservation and enhancement of their valued rural and open spaces:

Goal CC-1: Preservation of Rural Character. Ensure that the rural character of the County is protected and enhanced, including the unique and distinct character of the unincorporated communities.

Policy CC-1.2: Preserve and enhance the rural landscape as an important scenic feature of the Country.

Goal CO-1: Natural Open Space. Provide a diverse, connected, and accessible network of open space to enhance natural resources and their appropriate use.

Policy CO-1.1: Expand and enhance an integrated network of open space to support recreation, natural resources, historic and tribal resources, habitat, water management, aesthetics, and other beneficial uses.

Policy CO-1.21: Emphasize the use of native grasses, shrubs, and trees as the primary focus of restoration within resource parks and other open spaces.

Cache Creek Area Plan

The Cache Creek Area Plan (CCAP) is a rivershed management plan that has been adopted as part of Yolo County's General Plan and includes the Off-Channel Mining Plan (OCMP) and Cache Creek Resource Management Plan (CCRMP). The CCAP study area consists of 14.5 miles of lower Cache Creek between Capay Dam and the Town of Yolo that includes approximately the first 0.75 mile of the project site.

There are no goals, objectives, or actions in the CCAP that apply directly to the proposed project, though the following goal from the CCRMP relates to visual resources in the entirety of the study area (Yolo County 2019):

Goal 5.2-1: Improve scenic resources within the Cache Creek channel.

3.2.3 Environmental Impacts and Mitigation Measures

Thresholds of Significance

The thresholds for determining the significance of impacts for this analysis are based on the environmental checklist in Appendix G of the State CEQA Guidelines, as amended. Implementing the project would have a significant impact on aesthetics if it would:

- have a substantial adverse effect on a scenic vista;
- substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings, within a State scenic highway;
- substantially degrade the existing visual character or quality of the site and its surroundings; or
- create a new source of substantial light or glare that would adversely affect day or nighttime views in the area.

Issues Not Discussed Further

State Scenic Highways. There are no officially designated State scenic highways or eligible State scenic highways located in the project vicinity. The nearest highway eligible for designation is SR16, approximately 12 miles west of the project site. Additionally, Yolo County has five designated locally significant scenic highways which are between 3 to 5 miles from the project site. Given the distance of State and local designated scenic highways from the project site, no impact to scenic resources within a State or local scenic highway would occur, and it is not necessary to discuss this issue in more detail.

New Sources of Light or Glare. The project would not create any new sources of light or glare. No project features would include new lighting, nor would they include any reflective materials that could create new sources of glare. Further, project construction would occur during daylight hours only. Therefore, no further analysis of this topic is warranted.

Analysis Methodology

The following analysis of visual resources uses a qualitative approach for characterizing and evaluating the visual resources of the area that could be affected by project implementation. Potential impacts on aesthetics were evaluated based on the following three steps:

- an objective inventory of the visual features or visual resources that comprise the landscape,
- an assessment of the character and quality of the visual resources in the context of the overall character of the regional visual landscape, and
- a determination of the importance to viewers (i.e., sensitivity of the viewers) and the potential viewer response, to the identified visual resources in the landscape.

The aesthetic value of an area is a measure of the variety and contrast of the area's visual features, the character and quality of those features, and the scope and scale of the scene, combined with the anticipated viewer response. The above factors were considered in combination with the project components and the type and duration of anticipated construction activities.

Impact Analysis and Mitigation Measures

Impact 3.2.1: ***Adverse Effects on Scenic Vistas or Visual Character and Quality.*** *The project would not substantially or permanently degrade the existing visual character of the project site, nor would it impact scenic vistas. In addition, the appearance of the project site after project construction would be similar to current conditions and would remain coherent with the overall rural character of the project site and its surroundings. Therefore, this impact would be* ***less than significant****.*

The existing visual character of the project site is dominated by Cache Creek and vegetation along the levees at the stream's edges, in addition to the expansive adjacent agricultural fields. Although there are no officially designated scenic vistas located in the project site or its vicinity, views of Cache Creek from the community of Yolo constitute a significant local vista. This landscape's visual character and quality would be temporarily degraded by heavy equipment during project construction, but this impact would be short-term (i.e., 14 months in duration, over two years) and occur along individual reaches of the Creek at different times (i.e., not all reaches would undergo construction at the same time). Furthermore, construction work in the vicinity of the Town of Yolo would only include raising a less than a 500-foot portion of the right bank levee which would have no permanent effect on the scenic qualities of Cache Creek from this community because the height (no more than 2.5 feet) of the proposed levee raise would not substantially affect the limited views of the Creek compared to current conditions.

Public views near the project site used by recreationists and motorists on levee and local roads, and on bridge crossings over the Creek would experience similar sights of construction-related activities throughout the project. Heavy equipment and vehicles, water storage tanks, and piles of excavated soils would be visible within the project site, on the haul routes (both within the project site and on local roadways including I-5, Cacheville Road, County Roads 17A, 97B, 99A, 102, and 113, East Kentucky Avenue, and North East Street), and at designated staging areas within the project site. Most construction activities (i.e., vegetation removal, sediment excavation) would be concentrated within the Cache Creek channel which would only be viewable from the levee bank roads. Construction on the levees would be slightly more conspicuous, and local viewers and motorists may notice the heavy equipment activity and workers around the top of the levees, as these would not be a normal part of the visual character of the project site. Nevertheless, visual impacts from construction would be temporary in nature.

Discernable, permanent changes in the visual character and quality to the project site and its surrounding visual landscape after completion of the project would be limited to vegetation removal and sediment excavation within the channel, and levee raising. However, these activities would not alter the general composition of the viewshed, nor would they substantially change the character and quality of the local or regional landscape. Most of the vegetation and sediment removal would occur in the stream channel and not within direct public views, and the aesthetic effect would be limited, and difficult to see even from the levee bank roads. The proposed 19 acres of vegetation removal would also be spread out in distance within the nine-mile-long project reach in the channel. The raising of the levees by no more than 2.5 feet in some areas would require removal of approximately 99 acres of vegetation (mostly non-native grasses), including 3.2 acres of trees, along the levee alignment spread out over the 9-mile length of project work and divided on both the south and north levees. The distance between vegetation removal along levee rehabilitation areas would be spread out and not contiguous enough to be noticeable to viewers of the levees. The majority of vegetation removed would be grassland cover crop types that would be replaced after levee raise with native seeding of grasses. Therefore, the project would not result in substantial changes to the viewshed in the project site as the levees' appearance would be the nearly the same as current conditions and consistent with the overall character of the project site and the immediate vicinity. Further, excavated areas would be revegetated with native grasses after the project construction is complete. The staging areas and the temporary ramps over the levees would be restored to pre-project conditions and all disturbed areas would be seeded with native plant species. The appearance of Cache Creek and

its levees to the public at public viewpoints, including views from recreational use along the levee and by motorists along local roads and bridges, would be similar to current conditions and would remain consistent with the overall natural character of the Creek and the rural character of the area.

For these reasons the project would not have considerable temporary or long-term effect on any scenic vistas, nor would it substantially degrade the character or quality of viewsheds in the project site or surrounding areas. Therefore, impacts would be less than significant.

Mitigation Measure: No mitigation is required.

Residual Significant Impacts

The project would not result in residual significant impacts related to aesthetics.

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3.3 Agriculture and Forestry

This section describes agricultural uses and forestry resources on and adjacent to the project site, evaluates the significance and quality of agricultural land, summarizes the regulatory setting related to agricultural and forestry resources, and analyzes the potential impacts to agricultural and forestry resources from implementing the project. Sources used to develop this analysis include the Yolo County General Plan, Yolo County Zoning Ordinances, and State resources such as the California Important Farmland Finder, among others.

3.3.1 Environmental Setting

Yolo County Agricultural Resources

Yolo County's landscape is dominated by irrigated agriculture, predominately alfalfa and rice crops. The agricultural economy of the County is driven by fruit crops with tomatoes and wine grapes being the most profitable, along with others such as almonds, walnuts, cattle and calves, and wheat (Yolo County 2009). Many traditional large-scale growers share their land with an increased number of small, diversified farms and livestock operations.

Fertile soils, a reliable water source, and a mild climate supporting longer growing seasons allow Yolo County's agricultural industry to drive its economy. The Yolo County General Plan's Agriculture and Economic Development Element describe the types of soils and their suitability for a range of uses with the U.S. Department of Agriculture Natural Resources Conservation Service (NRCS) Land Capability Classification system and the California Department of Conservation (DOC) Farmland Mapping and Monitoring Program (Yolo County 2009a). The NRCS land capability classes are categorized by numbers I through VII, with progressively greater limitations and fewer choices for agricultural uses. Class I soils have the least limitations that restrict their use, whereas Class VII soils have very severe limitations that make them unsuitable for cultivation and restrict their use mainly to grazing, forestland and/or wildlife habitat. The project site is nearly surrounded by agriculture fields with Class I designated soils (Yolo County 2009).

Existing Agricultural Uses

The lands surrounding the project site, aside from the more urbanized lands making up the Town of Yolo, are primarily zoned as intensive agriculture (Yolo County GIS 2023), which is applied to preserve lands best suited for intensive agricultural uses dependent on higher quality soils, water availability, and relatively flat topography (Yolo County 2021). The agricultural commodities of these adjacent lands include orchards producing walnuts, pistachios, and almonds, and fields cultivating alfalfa, wheat, and seeds (Yolo County Admin 2021). The majority of the farmland surrounding the project site is designated as Prime Farmland by the California DOC and approximately 20 acres of land bordering the project site near CR 101 is designated as Unique Farmland (DOC 2018).

Williamson Act Contracts

The Williamson Act is designed to preserve agriculture and open space lands by discouraging their premature and unnecessary conversion to urban uses. The act enables local governments to enter into 10-year contracts with private landowners for the purpose of restricting specific parcels of land to agricultural or related open space use. In return, landowners receive property tax assessments that are much lower than normal because they are based on farming and open space uses as opposed to full market value. The project site is not designated under Williamson Act contracts; however, nearly all the agricultural lands bordering the project site have current contracts under the Williamson Act (Data Basin 2018).

Forestry Resources

Appendix G of the CEQA Guidelines defines "forestland" as land that can support 10 percent native tree cover and forest vegetation of any species under natural conditions and that allows for management of one or more forest resources—including timber, aesthetics, fish and wildlife, biodiversity, water quality, recreation—and other public benefits (PRC 12220[g]). The Yolo Habitat Conservancy categorizes land cover types throughout the County. Within the project site, approximately 150 acres, or 33 percent, is categorized as riparian and/or wetlands with the remaining lands categorized as either open water, grasslands, agriculture, or unvegetated urban (Yolo Habitat Conservancy 2023). Therefore, the project site meets the CEQA Guidelines definition of "forestland."

The Yolo County General Plan does not designate any forest resources in the County and only addresses forest and forestland as related to woodland habitat because the County has no commercial forestland or timber resources (Yolo County 2009b). Further, the project site is entirely zoned as public open space and designated as open space for land use and planning purposes (Yolo County GIS 2023).

3.3.2 Regulatory Setting

Federal Plans, Policies, Regulations, and Laws

No Federal plans, policies, regulations, or laws related to agriculture and forestry resources are relevant to the proposed project.

State Plans, Policies, Regulations, Laws

California Land Conservation Act of 1965

As previously mentioned, the California Land Conservation Act of 1965, also known as the Williamson Act, allows local governments and private landowners to enter into contract agreements to restrict specific parcels of land to either agriculture or open space uses during the length of the contract period. The Program was designed for local governments to integrate preservation of open space and agricultural resources into their strategies for planning and urban growth patterns. Three primary objectives were determined including, protection of agricultural resources, preservation of open space land, and promotion of efficient growth patterns.

Landowners are incentivized with lower property tax assessments for enrollment in the contract. Williamson Act contract terms are ten years however since the contract automatically renews, the actual term is indefinite. The Williamson Act was amended in 1998, 2008, and 2013. During the most recent amendment, the contract terms were reduced from 10 years to nine years and an addition to the assessed value of affected properties. This allowed landowners to retain at least 90 percent of the tax savings from participating in the Williamson Act.

Farmland Mapping and Monitoring Program

The DOC's Farmland Mapping and Monitoring Program (FMMP) was established by the State in 1982 to continue the Important Farmland mapping efforts begun in 1975 by the U.S. Soil Conservation Service (now the U.S. Natural Resources Conservation Service). Under the FMMP, DOC prepares agricultural resource maps based on soil quality and land use. The following categories are adjacent to the project site:

Prime Farmland—Land that has the best combination of physical and chemical features able to sustain long-term agricultural production. This land has the soil quality, growing season, and moisture supply needed to produce sustained high yields. Land must have been used for irrigated agricultural production at some time during the 4 years before the mapping date.

Unique Farmland—Land of lesser quality soils used for the production of the State's leading agricultural cash crops. This land is usually irrigated but may include non-irrigated orchards or vineyards as found in some climatic zones in California. Land must have been cropped at some time during the 4 years before the mapping date.

DOC classifies Prime Farmland, Farmland of Statewide Importance, Unique Farmland, and Farmland of Local Importance under the collective term "Important Farmland." CEQA refers to Prime Farmland, Farmland of Statewide Importance, and Unique Farmland collectively as "Agricultural Land" (PRC Section 21060.1), and Appendix G of the State CEQA Guidelines refers to Prime Farmland, Unique Farmland, and Farmland of Statewide Importance collectively as "Farmland."

Regional and Local Plans, Policies, Regulations, and Ordinances

DWR is not subject to local regulations unless expressly authorized by the Legislature. Local plans, policies, regulations, and ordinances potentially relevant to the proposed project are addressed in this section for informational purposes because they may be relevant to certain responsible agencies.

Yolo County General Plan

The Land Use and Community Character Element of the Yolo County General Plan designates the code 'AG' for Agriculture lands and describes allowable land uses (Yolo County 2018) as follows:

"Full range of cultivated agriculture such as row crops, orchards, vineyards, dryland farming, livestock grazing, forest products, confined animal facilities, and equestrian facilities. Agricultural industrial – agricultural research, processing, and storage; crop dusting. Agricultural commercial – roadside stands, "Yolo Stores," wineries, farm-based tourism (e.g., u-pick, dude

ranch, lodging), horse shows, rodeos, crop-based seasonal events; agricultural chemical and equipment sales. Pre-existing isolated restaurants and/or stores (e.g., old stage stops and cross-roads) serving rural areas. Farmworker housing. Surface mining. Incidental habitat."

The following goals and policies from the Agriculture and Economic Development Element of the Yolo County General Plan pertain to agriculture and may be relevant to certain responsible agencies.

Goal AG-1: Preservation of Agriculture**.** Preserve and defend agriculture as fundamental to the identity of Yolo County.

Policy AG-1.18: When undertaking improvement of public roadways and drainage facilities, consult with adjoining farmland owners and incorporate designs that minimize impacts on agriculture.

Yolo County Local Agency Formation Commission Agricultural Conservation Policy

The Yolo County Local Agency Formation Commission Agricultural Conservation Policy includes six considerations when reviewing proposals which could induce, facilitate, or lead to the conversion of existing open-space lands to uses other than open space uses. The policy encourages protection for agricultural lands and enforces preservation of agricultural land for agricultural productive uses. The following guideline provided to promote the policy may be relevant to certain responsible agencies.

Policy Guideline A.5. The continued productivity and viability of agricultural land surrounding existing communities should be promoted, by preventing the premature conversion of agricultural land to other uses and, to the extent feasible, minimizing conflicts between agricultural and other land uses.

3.3.3 Environmental Impacts and Mitigation Measures

Thresholds of Significance

The thresholds for determining the significance of impacts for this analysis are based on the environmental checklist in Appendix G of the State CEQA Guidelines, as amended. Implementing the project would have a significant impact on agricultural and forestry resources if it would:

- Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the FMMP of the California Natural Resources Agency, to non-agricultural use;
- Conflict with existing zoning for agricultural use or a Williamson Act contract;
- Conflict with existing zoning for, or cause rezoning of, forestland (as defined in PRC Section 12220[g]), timberland (as defined by PRC Section 4526), or timberland zoned Timberland Production (as defined by Government Code Section 51104[g]);
- Result in the loss of forestland or conversion of forestland to non-forest use; or

- Involve other changes in the existing environment that, because of their location or nature, could result in conversion of Farmland to non-agricultural use or conversion of forest land to non-forest use.

Issues Not Discussed Further

Convert designated Farmland, as shown on FMMP maps, to nonagricultural uses. No lands within the project site are designated as Prime Farmland, Unique Farmland, or Farmland of Statewide Importance, as shown on the maps prepared pursuant to the FMMP of the California Natural Resources Agency. The lands surrounding the project site which are designated Farmlands would not be converted to nonagricultural uses from the proposed project. Staging areas for construction activities are located adjacent to designated Farmlands but would not interfere with agricultural production or convert the lands to nonagricultural uses. Therefore, there is no impact, and this issue is not discussed further.

Conflict with Forestland Zoning or result in loss of or conversion of forestland. No lands zoned as forestland or timberland occur on the project site. Although trees and shrubs would be removed from sediment excavation areas that meet the CEQA Guidelines definition of "forestland" described previously, because no lands are zoned as such by the County there would be no conversion or loss of zoned forestland and there would be no impact. Therefore, this issue is not discussed further.

Analysis Methodology

Evaluation of potential project impacts on agricultural and forestry resources is based on a review of Yolo County General Plan and other Yolo County planning documents. Additionally, the Important Farmland Map for Yolo County (DOC 2018) was used to evaluate the agricultural significance of the lands in the vicinity of the project site. No comments were received in response to the NOP or scoping meeting relating to impacts on agriculture.

Impact Analysis and Mitigation Measures

Impact 3.3.1: ***Conflict with agricultural zoning or Williamson Act contract.***
The project site is not designated under Williamson Act contracts and is zoned as open space. Construction activities would occur adjacent to many Williamson Act lands; however, the construction impacts would be temporary and short term. Therefore, this impact would be ***less than significant****.*

The proposed project would include construction activities within the creek channel and adjacent to the landside toe of the levee rehabilitation work. In addition, staging areas would be located on vacant land adjacent to the levees in locations directly adjacent to lands with Williamson Act contracts. However, these activities would not impede agricultural use of the adjacent lands. Construction activities would result in a temporary increase in construction-related traffic, noise, and dust in the vicinity of agricultural lands, but the activities would be short term and only occur during the active construction seasons. Therefore, the proposed project would not conflict with agricultural zoning or Williamson Act contracts and impacts would be **less than**

significant. Impacts from dust and noise are discussed further in Chapter 3.3.4, "Air Quality" and Chapter 3.3.12, "Noise."

Impact 3.3.2: ***Involve other changes in the existing environment that could result in conversion of Farmland to non-agricultural use.***
Construction activities would occur adjacent to these Farmlands and could potentially impact the existing environment from noise and dust; however, these impacts would be temporary and would not result in the conversion of Farmland to nonagricultural use. Therefore, this impact would be ***less than significant****.*

As discussed above, the project site is not designated as Farmlands; however, lands surrounding the project site are designated as Prime and Unique Farmlands. The proposed project construction activities adjacent to these Farmlands would result in the short-term and temporary increase in associated traffic, noise, and dust. However, impacts from construction activities would occur in different reaches throughout the project site for the short-term construction seasons and would not impair agricultural operations or use adjacent agricultural land. In the long-term, the project would increase flood protection for the surrounding Farmlands and would not result in the conversion of Farmland to non-agricultural uses. Therefore, impacts would be **less than significant**.

Residual Significant Impacts

There would be no residual significant impacts to agricultural or forestry resources from the proposed project.

3.4 Air Quality

This section examines the degree to which implementing the project may result in adverse changes in air quality. This section describes existing air quality conditions, summarizes applicable regulations, and analyzes construction-related air quality impacts from the project. The analysis of criteria air pollutant and toxic air contaminant (TAC) emissions is consistent with recommendations of the Yolo Solano Air Quality Management District (YSAQMD).

3.4.1 Environmental Setting

The proposed project is located in the Sacramento Valley Air Basin (SVAB) within Yolo County. The YSAQMD is responsible for obtaining and maintaining air quality conditions in the County. The SVAB is bounded by the North Coast Ranges on the west and Northern Sierra Nevada Mountains on the east. These mountain ranges provide a substantial physical barrier to both locally created pollution and the pollution that prevailing winds transport northward from the Sacramento metropolitan area.

Summer conditions in the SVAB are typically characterized by high temperatures and low humidity, with prevailing winds from the south. Hot dry summers and mild rainy winters characterize the Mediterranean climate of the SVAB. Throughout the year, temperatures range from approximately 20 to 115 degrees Fahrenheit with summer highs usually in the 90s and winter lows occasionally below freezing. Average annual rainfall is about 20 inches, and the rainy season generally occurs from November through March. The prevailing winds are moderate in strength and vary from moist clean breezes from the south to dry land flows from the north.

The Coast Ranges and Northern Sierra Nevada Mountains create a barrier to airflow, which can trap air pollutants under certain meteorological conditions. The highest frequency of air stagnation occurs in the autumn and early winter when large high-pressure cells collect over the Sacramento Valley. The lack of surface wind during these periods and the reduced vertical flow caused by less surface heating reduces the influx of outside air and allows air pollutants to become concentrated in a stable volume of air. The surface concentrations of pollutants are highest when these conditions are combined with temperature inversions that trap pollutants near the ground. (YSAQMD 2007)

The ozone season (May through October) in the SVAB is characterized by stagnant morning air or light winds with San Francisco Bay and Delta breezes in the afternoon from the southwest. The afternoon and evening breezes transport air pollutants to the north and out of the SVAB. However, during about half of the days from July to September, a phenomenon called the "Schultz Eddy" causes the wind pattern to circle back to the south instead of allowing the prevailing wind patterns to move north and flush air pollution out of the SVAB. The eddy normally dissipates around noon when the Delta breeze arrives in the SVAB (YSAQMD 2007). The trapped air mass combined with plentiful sunshine create the conditions for photochemical reactions between reactive organic gases (ROG) and nitrogen oxides (NO_X), which result in ozone (smog) formation.

High concentrations of fine particulate matter (PM) with an aerodynamic diameter of 2.5 micrometers or less ($PM_{2.5}$) typically occur during late fall and winter (November through February) with stagnant inversion conditions. The stable air mass concentrates pollutants near the ground, and cooler temperatures and high humidity increase the secondary formation of fine particulates from the precursors of NO_X, sulfur dioxide (SO_2), volatile organic compounds (VOC), and ammonia.

Sensitive Receptors

Sensitive receptors include schools, residences, playgrounds, childcare centers, athletic facilities, long-term health care facilities, rehabilitation centers, convalescent centers, and retirement homes. There are several residential properties located within close proximity of the project site. Most residences are located approximately 0.04 to 0.20-mile from the project site. However, portions of the levee are located adjacent to residences, with some backyards very close to the toe of the levee.

The Cache Creek High School is located approximately 0.17-mile from a portion of the project site where levee raise would occur; this area of proposed levee raise is only approximately 315 feet long, and the next closest project segment would be approximately 0.30-mile from the school. However, haul trucks would use the full project area to haul materials to and from the site, including areas near and adjacent to residences.

Criteria Air Pollutants

Individual air pollutants at certain concentrations may adversely affect human or animal health, reduce visibility, damage property, and reduce the productivity or vigor of crops and natural vegetation. Six air pollutants have been identified by the United States Environmental Protection Agency (EPA) and the California Air Resources Board (CARB) as being of concern on both the nationwide and Statewide levels: ozone; carbon monoxide (CO); nitrogen dioxide (NO_2); sulfur dioxide (SO_2); lead; and particulate matter, which is subdivided into two classes based on particle size: PM equal to or less than 10 micrometers in diameter (PM_{10}) and PM equal to or less than 2.5 micrometers in diameter ($PM_{2.5}$). Because these are the most prevalent air pollutants known to be harmful to human health, and extensive health effects criteria documentation is available for these pollutants, they are commonly referred to as "criteria air pollutants." Each criteria air pollutant is described below.

- **Ozone** is the principal component of smog and is formed in the atmosphere through a series of reactions involving reactive organic gases (ROG) and oxides of nitrogen (NO_X) in the presence of sunlight. ROG and NO_X are called ozone precursors. NO_X includes various combinations of nitrogen and oxygen, such as nitric oxide and NO_2. Ozone is a principal cause of lung and eye irritation in the urban environment. Large ozone concentrations are usually produced only in summer, when atmospheric inversions are greatest and temperatures are high. ROG and NO_X emissions are both considered critical in ozone formation.
- **Carbon monoxide** is a colorless and odorless gas that, in the urban environment, is associated primarily with the incomplete combustion of fossil fuels in motor vehicles. Relatively high concentrations are typically found near crowded intersections and along heavily used roadways carrying slow-moving traffic. Even under the most severe

meteorological and traffic conditions, high CO concentrations are limited to locations within a relatively short distance (300 to 600 ft) of heavily traveled roadways. Vehicle traffic emissions can cause localized CO impacts, and severe vehicle congestion at major signalized intersections can generate elevated CO levels called "hot spots," which can be hazardous to human receptors adjacent to the intersections.

- **Nitrogen dioxide** is a product of combustion and is generated in vehicles and stationary sources such as power plants and boilers. It is also formed when ozone reacts with nitric oxide in the atmosphere. NO_2 can cause lung damage. As noted above, NO_2 is part of the NO_X family and is a principal contributor to ozone and smog generation. Sulfur dioxide is a combustion product, with the primary source being power plants and heavy industries that use coal or oil as fuel. SO_2 is also a product of diesel engine combustion. The health effects of SO_2 include lung disease and breathing problems for asthmatics. SO_2 in the atmosphere contributes to the formation of acid rain.
- **Lead** is a highly toxic metal that may cause a range of human health effects. Previously, the lead used in gasoline anti-knock additives represented a major source of lead emissions to the atmosphere. EPA began working to reduce lead emissions soon after its inception, issuing the first reduction standards in 1973. Lead emissions have decreased substantially as a result of the near-elimination of leaded-gasoline use.
- **Particulate matter** is a complex mixture of extremely small particles and liquid droplets. PM is made up of several components: acids (such as nitrates and sulfates), organic chemicals, metals, and soil or dust particles. Natural PM sources include windblown dust and ocean spray. The size of PM is directly linked to the potential for causing health problems. EPA is concerned about particles that are 10 micrometers in diameter or smaller, because these particles generally pass through the throat and nose and enter the lungs. Once inhaled, these particles can affect the heart and lungs and cause serious health effects. Individuals particularly sensitive to fine-particle exposure include older adults, people with heart and lung disease, and children. As discussed previously, EPA groups PM into two categories:

    - **PM2.5** consists of fine particles, such as those found in smoke and haze. Sources of fine particles include all types of combustion activities (e.g., motor vehicles, power plants, wood burning) and certain industrial processes. $PM_{2.5}$ is also formed through reactions of gases such as SO_2 and NO_X in the atmosphere. $PM_{2.5}$ is the major cause of reduced visibility (haze) in California.

    - **PM10** encompasses both fine and coarse dust particles; the fine particles are $PM_{2.5}$. Coarse particles, such as those found near roadways and dusty industries, are larger than 2.5 micrometers and smaller than 10 micrometers in diameter. Sources of coarse particles include crushing or grinding operations and dust from paved or unpaved roads. Control of PM_{10} is achieved primarily by controlling dust at construction and industrial sites, cleaning paved roads, and wetting or paving frequently used unpaved roads.

Air Quality Standards

Health-based air quality standards have been established for these pollutants by EPA at the national level and by CARB at the State level. These standards were established to protect the public with a margin of safety from adverse health impacts caused by exposure to air pollution.

California has also established standards for sulfates, visibility reducing particles, hydrogen sulfide, and vinyl chloride. A brief description of each criteria air pollutant is provided below along with the most current monitoring station data and attainment designations for the study area. **Table 3.4-1** presents the national ambient air quality standards (NAAQS) and the California ambient air quality standards (CAAQS).

California and National Area Designations

Both EPA and CARB use ambient air quality monitoring data to designate areas according to their attainment status for criteria air pollutants. The purpose of these designations is to identify the areas with air quality problems and initiate planning efforts for improvement. The three basic designation categories are nonattainment, attainment, and unclassified. An "attainment" designation for an area signifies that pollutant concentrations did not exceed the established standard. In most cases, areas designated or redesignated as attainment must develop and implement maintenance plans, which are designed to ensure continued compliance with the standard.

In contrast, a "nonattainment" designation indicates that a pollutant concentration has exceeded the established standard. Nonattainment may differ in severity. To identify the severity of the problem and the extent of planning and actions required to meet the standard, nonattainment areas are assigned a classification that is commensurate with the severity of their air quality problem (e.g., moderate, serious, severe, extreme).

Finally, an "unclassified" designation indicates that insufficient data exists to determine attainment or nonattainment. The California designations also include a subcategory called "nonattainment-transitional," a designation given to nonattainment areas that are progressing and nearing attainment.

Table 3.4-1. National and California Ambient Air Quality Standards

Pollutant	Averaging Time	California Standards[a] Concentration[c]	National Standards[b] Primary[c,d]	National Standards[b] Secondary[c,e]
Ozone (O_3)	1 hour	0.09 ppm (180 µg/m^3)	–	Same as primary standard
Ozone (O_3)	8 hours	0.070 ppm (137 µg/m^3)	0.075 ppm (147 µg/m^3)	Same as primary standard
Respirable particulate matter (PM_{10})[f]	24 hours	50 µg/m^3	150 µg/m^3	Same as primary standard
Respirable particulate matter (PM_{10})[f]	Annual arithmetic mean	20 µg/m^3	–	Same as primary standard
Fine particulate matter ($PM_{2.5}$)[f]	24 hours	–	35 µg/m^3	Same as primary standard
Fine particulate matter ($PM_{2.5}$)[f]	Annual arithmetic mean	12 µg/m^3	12 µg/m^3	15 µg/m
Carbon monoxide (CO)	8 hours	9.0 ppm (10 mg/m^3)	9 ppm (10 mg/m^3)	None
Carbon monoxide (CO)	1 hour	20 ppm (23 mg/m^3)	35 ppm (40 mg/m^3)	None
Carbon monoxide (CO)	8 hours (Lake Tahoe)	6 ppm (7 mg/m^3)	–	–
Nitrogen dioxide (NO_2)[g]	Annual arithmetic mean	0.030 ppm (57 µg/m^3)	0.053 ppm (100 µg/m^3)	Same as primary standard
Nitrogen dioxide (NO_2)[g]	1 hour	0.18 ppm (339 µg/m^3)	100 ppb (188 µg/m^3)	None
Sulfur dioxide (SO_2)[h]	Annual Arithmetic Mean	–	0.030 ppm (for certain areas) [h]	–
Sulfur dioxide (SO_2)[h]	24 hours	0.04 ppm (105 µg/m^3)	0.14 ppm (for certain areas) [h]	–
Sulfur dioxide (SO_2)[h]	3 hours	–	–	0.5 ppm (1,300 µg/m^3)
Sulfur dioxide (SO_2)[h]	1 hour	0.25 ppm (655 µg/m^3)	75 ppb (196 µg/m^3)	–
Lead (Pb)[i,j]	30-day average	1.5 µg/m^3	–	–
Lead (Pb)[i,j]	Calendar quarter	–	1.5 µg/m^3 (for certain areas) [j]	Same as primary standard
Lead (Pb)[i,j]	Rolling 3-month average	–	0.15 µg/m^3	Same as primary standard
Visibility-reducing particles[k]	8 hours	See footnote j	No national standards	No national standards
Sulfates	24 hours	25 µg/m^3	No national standards	No national standards
Hydrogen sulfide	1 hour	0.03 ppm (42 µg/m^3)	No national standards	No national standards
Vinyl chloride[i]	24 hours	0.01 ppm (26 µg/m^3)	No national standards	No national standards

Notes: µg/m^3 = micrograms per cubic meter; mg/m^3 = milligrams per cubic meter; ppb = parts per billion; ppm = parts per million; PM_{10} = particulate matter with aerodynamic diameter less than 10 micrometers; $PM_{2.5}$ = particulate matter with aerodynamic diameter less than 2.5 micrometers

[a] California standard for ozone, carbon monoxide (except 8-hour Lake Tahoe), sulfur dioxide (1- and 24-hour), nitrogen dioxide, and particulate matter (PM_{10}, $PM_{2.5}$, and visibility-reducing particles), are values that are not to be exceeded. All others are not to be

equaled or exceeded. California ambient air quality standards are listed in the Table of Standards in Section 70200 of Title 17 of the California Code of Regulations.

[b] National standards (other than ozone, particulate matter, and those based on annual arithmetic mean) are not to be exceeded more than once a year. The ozone standard is attained when the fourth highest 8-hour concentration measured at each site in a year, averaging over 3 years, is equal to or less than the standard. For PM_{10}, the 24-hour is attained when the expected number of days per calendar year with a 24-hour average concentration above 150 µg/m^3 is equal to or less than 1. For $PM_{2.5}$, the 24-hour standard is attained when 98% of the daily concentrations, averaged over 3 years, are equal to or less than the standards.

[c] Concentration expressed first in the units in which it was promulgated. Equivalent units given in parentheses are based upon a reference temperature of 25 degrees Celsius (°C) and a reference pressure of 760 torr. Most measurements of air quality are to be corrected to a reference temperature of 25°C and reference pressure of 760 torr; parts per million (ppm) in this table refers to ppm by volume, or micromoles of pollutant per mole of gas.

[d] National Primary Standards: The levels of air quality necessary, with an adequate margin of safety to protect public health.

[e] National Secondary Standards: The levels of air quality necessary to protect public welfare from any known or anticipated adverse effects of a pollutant.

[f] On December 14, 2012, the national annual $PM_{2.5}$ primary standard was lowered from 15 µg/m^3 to 12.0 µg/m^3. The existing national 24-hour $PM_{2.5}$ standards (primary and secondary) were retained at 35 µg/m^3, as was the annual secondary standard of 15 µg/m^3. The existing 24-hour PM_{10} standards (primary and secondary) of 150 µg/m^3 also were retained. The form of the annual primary and secondary standards is the annual mean, averaging over 3 years.

[g] To attain the 1-hour national standard, the 3-year average of the annual 98th percentile of the 1-hour daily maximum concentrations at each site must not exceed 100 ppb. California standards are in units of ppm. To directly compare the national 1-hour standard to the California standards the units can be converted from 100 ppb to 0.100 ppm.

[h] On June 2, 2010, a new 1-hour SO_2 standard was established, and the existing 24-hour and annual primary standards were revoked. To attain the 1-hour national standard, the 3-year average of the annual 99th percentile of the 1-hour daily maximum concentrations at each site must not exceed 75 ppb. The 1971 SO_2 national standards (24-hour and annual) remain in effect until 1 year after an area is designated for the 2010 standard, except that in areas designated nonattainment for the 1971 standards, the 1971 standards remain in effect until implementation plans to attain or maintain the 2010 standards are approved. To directly compare the 1-hour national standard to the California standard, the units can be converted to ppm. In this case, the national standard of 75 ppb is identical to 0.075 ppm.

[i] The CARB has identified lead and vinyl chloride as toxic air contaminants with no threshold level of exposure for adverse health effects determined. These actions allow for the implementation of control measures at levels below the ambient concentrations specified for these pollutants.

[j] The national standard for lead was revised on October 15, 2008, to a rolling 3-month average. The 1978 lead standard (1.5 µg/m^3 as a quarterly average) remains in effect until 1 year after an area is designated for the 2008 standard, except that in areas designated nonattainment for the 1978 standard, the 1978 standard remains in effect until implementation plans to attain or maintain the 2008 standards are approved.

[k] In 1989, CARB converted both the general statewide 10-mile visibility standard and the Lake Tahoe 30-mile visibility standard to instrumental equivalents, which are “extinction of 0.23 per kilometer” and the “extinction of 0.07 per kilometer” for the statewide and Lake Tahoe Air Basin standards, respectively.

Source: California Air Resources Board 2016

Yolo County is classified as attainment or unclassified for all national standards (EPA 2023). Yolo County is classified as nonattainment for the 1-hour and 8-hours ozone, 24-hour $PM_{2.5}$, and 24 hour and annual arithmetic mean PM_{10} State standards and classified as attainment or unclassified for all remaining State standards (CARB 2022).

Toxic Air Contaminants

In addition to criteria air pollutants, EPA regulates TACs, also known as hazardous air pollutants. Concentrations of TACs are also used as indicators of ambient air quality conditions. A TAC is defined as an air pollutant that may cause or contribute to an increase in mortality or in serious illness, or that may pose a hazard to human health. TACs are usually present in minute quantities in ambient air; however, their high toxicity may pose a threat to public health even at low concentrations. Most TACs originate from human-made sources: on-road mobile sources, off-road mobile sources such as construction equipment, area sources such as dry cleaners, and stationary sources such as factories and refineries.

3.4.2 Regulatory Setting

Federal Plans, Policies, Regulations, and Laws

Federal air quality is regulated by EPA. The Federal CAA was created in 1970 and was amended in 1977 and 1990 to regulate air emissions from mobile and stationary sources to protect public health and welfare. The law authorized EPA to establish NAAQS for six air pollutants, known as "criteria," air pollutants: CO, lead, NO2, particulate matter (PM_{10} and $PM_{2.5}$), ozone, and SO_2. Pursuant to the Federal CAA, states are required to prepare state implementation plans to achieve these standards.

State Plans, Policies, Regulations, Laws

CARB implements Federal air quality regulations and sets additional regulations at the State level. CARB is responsible for protecting public health, welfare, and ecological resources by reducing air pollutants. CARB's regulations are contained in CCR Title 13, Division 3, and Title 17, Division 3. CARB is responsible for establishing ambient air quality standards and determining if an area is in attainment, nonattainment, or unclassified for each CAAQS.

CARB has primary responsibility and produces a major part of the SIP for pollution sources that are statewide in scope, it relies on the local air districts to provide additional strategies for sources under their jurisdiction. The CARB combines its data with all local district data and submits the completed SIP to the USEPA. The SIP consists of the emissions standards for vehicular sources and consumer products set by the CARB, and attainment plans adopted by the air districts and approved by the CARB.

Regional and Local Plans, Policies, Regulations, and Ordinances

DWR is not subject to local regulations unless expressly authorized by the Legislature. Local plans, policies, regulations, and ordinances potentially relevant to the proposed project are addressed in this section for informational purposes because they may be relevant to certain responsible agencies. However, YSAQMD operates with delegated State and Federal authority, and therefore, DWR and responsible agencies are subject to all rules and regulations enforced by YSAQMD.

Yolo-Solano Air Quality Management District

The proposed project is in Yolo County and is regulated by the YSAQMD, the local agency primarily responsible for controlling emissions from stationary sources. YSAQMD also develops plans and implements control measures, as required by State and Federal requirements.

Guidance for Assessing and Mitigating Air Quality Impacts

To assist lead agencies with analyzing air quality impacts under CEQA, YSAQMD has prepared the *Handbook for Assessing and Mitigating Air Quality Impacts.* The handbook contains the following components:

- Preliminary actions Lead Agencies can take to reduce air quality impacts prior to beginning the California Environmental Quality Act (CEQA) process;

- Criteria and thresholds for determining whether a project may have a significant adverse air quality impact;
- Project screening methods, specific procedures and modeling protocols for quantifying and analyzing air quality impacts; and
- Measures that can be implemented to mitigate air quality impacts.

Air Quality Plans

YSAQMD has adopted several attainments plans to achieve State and Federal air quality standards and comply with the California Clean Air Act and Federal Clean Air Act requirements. The Sacramento Metropolitan Air Quality Management District (SMAQMD), YSAQMD, Placer County Air Pollution Control District, and El Dorado County Air Quality Management District work cooperatively to maintain the region's portion of the State Implementation Plan for ozone. The 2017 Sacramento Regional 8-Hour Ozone Attainment and Reasonable Further Progress Plan demonstrates how the Sacramento Federal Nonattainment Area will meet California Clean Air Act reasonable further progress requirements as well as demonstrate attainment of the 2008 ozone NAAQS and $PM_{2.5}$ (SMAQMD 2017a). SMAQMD also prepared the Federal Ozone Nonattainment Area Redesignation Substitution Request for the 1979 1-Hour Ozone Standard, which includes a redesignation of ozone in YSAQMD (SMAQMD 2017b).

Air Quality Rules

YSAQMD rules and regulations relevant to the project include the following:

- Rule 2.3 (Ringelmann Chart). This rule prohibits stationary diesel-powered equipment from generating visible emissions that would exceed the rule's visibility threshold.
- Rule 2.5 (Nuisance). This rule prohibits any source from generating air contaminants or other materials that would cause injury, detriment, nuisance, or annoyance to the public; endanger the comfort, repose, health, or safety of the public; or damage businesses or property. Under Rule 2.6, the provisions of Rule 2.5. do not apply to odors emanating from agricultural operations in the growing of crops or raising of fowl, animals, or bees.
- Rule 2.11 (Particulate Matter Concentration). This rule prohibits any source that would emit dust, fumes, or total suspended PM from generated emissions that would exceed the rule's established emission concentration limit.

Yolo County General Plan

The following goals and policies from the Yolo County 2030 Countywide General Plan related to air quality are relevant to the proposed project (Yolo County 2009):

GOAL CO-6: Air Quality. Improve air quality to reduce the health impacts cause by harmful emissions.

Policy CO-6.6: Encourage implementation of YSAQMD Best Management Practices to reduce emissions and control dust during construction activities.

Action CO-A107: Implement the regulations and programs established by the YSAQMD to bring local air quality into attainment with State and federal standards.

3.4.3 Environmental Impacts and Mitigation Measures Thresholds of Significance

Thresholds of Significance

The significance criteria used to evaluate project impacts to air quality are based on Appendix G of the State CEQA Guidelines. A significant impact related to air quality would occur if the project would:

- Conflict with or obstruct implementation of the applicable air quality plan;
- Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is nonattainment under an applicable Federal or State ambient air quality standard;
- Expose sensitive receptors to substantial pollutant concentrations; or
- Result in other emissions (such as those leading to odors) adversely affecting a substantial number of people.

As stated in Appendix G of the CEQA Guidelines, the significance criteria established by the applicable air quality district may be relied upon to make the above determinations. Therefore, according to the YSAQMD's *Handbook for Assessing and Mitigating Air Quality Impacts*, the proposed project would result in a significant impact if it would result in the following during either temporary construction activities or long-term operation:

- Result in emissions of criteria air pollutants or precursors to exceed 10 tons per year (tons/year) of ROG, 10 tons/year of NO_X, 80 pounds per day (lbs/day) of PM_{10}, or substantially contribute to CO concentrations that exceed the CAAQS (YSAQMD, 2007).

Analysis Methodology

Emissions of criteria air pollutants were evaluated using methodologies and guidance recommended by YSAQMD. Construction- and operation-related emissions were compared with the applicable thresholds of significance. Project emissions of criteria air pollutants were quantified using the California Emissions Estimator Model (CalEEMod) Version 2022.1. Construction-related emissions were estimated using information such as construction schedule and phasing, expected duration of activities, equipment types, volumes of material to be hauled, and number of construction workers on-site during each construction phase. Construction information used to estimate air emissions is discussed in Chapter 2, "Project Description". As stated previously in Chapter 2, "Project Description," operations and maintenance activities are covered under separate CEQA documentation and approval and, therefore, are not modeled or analyzed in this section. The construction and operation-related criteria air pollutant emissions estimated for each year of project construction are presented and compared to YSAQMD significant thresholds in **Tables 3.4-2.** Air quality modeling data summarized in this section are

provided in **Appendix B**, "Air Quality and GHG Emissions Modeling." No comments were received during the public scoping period regarding air quality.

Table 3.4-2 Unmitigated and Mitigated Criteria Air Pollutant Emissions from Construction Activities

Emissions Category	ROG (tons/year)	NOx (tons/year) [a]	PM_{10} (lbs/day) [b]
Year 2025			
YSAQMD Threshold	10	10	80
Unmitigated Emissions	0.26	2.85	425
Exceedance	*No*	*No*	*Yes*
Mitigated Emissions [c]	0.26	2.85	348
Exceedance after Mitigation	*No*	*No*	*Yes*
Year 2026			
YSAQMD Threshold	10	10	80
Unmitigated Emissions	0.37	3.85	315
Exceedance	*No*	*No*	*Yes*
Mitigated Emissions [c]	0.37	3.85	269
Exceedance after Mitigation	*No*	*No*	*Yes*

Notes: yellow-shaded cells indicate exceedance of the applicable significance threshold.
ROG = reactive organic gases; NO_X = oxides of nitrogen; PM_{10} = particulate matter with aerodynamic diameter less than 10 micrometers; YSAQMD = Yolo-Solano Air Quality Management District
Source: GEI Consultants, 2023; see Appendix B for details.

Impact Analysis and Mitigation Measures

Impact 3.4.1: ***Conflict with Applicable Air Quality Plan from Construction Activities.*** *The proposed project would generate construction-related exhaust emissions below the thresholds of significance; however, PM_{10} emissions would exceed thresholds and conflict with implementation of the Federal and State Air Quality Plans. Feasible mitigation measures would not reduce dust emissions to below the significance threshold and impacts would remain* ***significant and unavoidable****.*

Consistency with an air quality plan is determined based on whether the project would conflict with or obstruct implementation of the Federal and State air quality plans, which would lead to increases in the frequency or severity of existing air quality violations. YSAQMD is responsible for establishing and enforcing air quality rules and regulations at the project site that address the requirements of Federal and State air quality laws. YSAQMD has identified CEQA thresholds of significance to assist lead agencies in determining air quality impacts for projects, as discussed above. Emissions exceeding the thresholds have not been accommodated in the air quality plans and would not be consistent with Federal and State air quality plans and therefore would be considered a significant impact.

Construction emissions are considered temporary, but they have the potential to represent a significant impact on air quality. Construction activities for the project would temporarily generate emissions of criteria air pollutants including ROG, NO_x, and PM_{10}. Emissions of the ozone precursors ROG and NO_x are generated primarily by on-road mobile sources (i.e., delivery

vehicles, construction worker vehicles) and off-road construction equipment. Fugitive PM_{10} is one of the pollutants of greatest concern with respect to construction activities. Construction-related emissions of fugitive PM_{10} can vary greatly depending on the level of activity, the specific operations taking place, the number and types of equipment operated, vehicle speeds, local soil conditions, weather conditions, and the amount of earth disturbance. Hauling along unpaved construction roads would be the primary source of fugitive PM_{10} emissions from construction activities. Movement of off-road construction equipment and work trucks on unpaved roads can also generate emissions of fugitive PM_{10}. Criteria air pollutant emissions would be generated throughout construction in two calendar years.

As shown in **Table 3.4-2**, unmitigated PM_{10} emissions generated during both construction years would exceed YSAQMD's threshold of significance. Unmitigated NO_x and ROG emissions in both construction years would not exceed YSAQMD's threshold of significance. Due to PM_{10} emissions exceeding YSAQMD's established thresholds of significance during construction, the project would result in cumulatively considerable emissions of criteria air pollutants with nonattainment status in Yolo County. Therefore, this impact would be **significant**. The following mitigation measure has been identified to address this impact.

Mitigation Measure 3.4.1: Implement Construction Dust Mitigation and Best Management Practices.

DWR and its construction contractors will implement the following measures consistent with established YSAQMD Construction Dust Mitigation (YSAQMD 2007):

- Water all active construction sites at least twice daily. Frequency should be based on the type of operation, soil, and wind exposure.
- Haul trucks shall maintain at least 2 feet of freeboard.
- Cover all trucks hauling dirt, sand, or loose materials.
- Plant vegetative ground cover in disturbed areas as soon as possible.
- Cover inactive storage piles.
- Sweep streets if visible soil material is carried out from the construction site.
- Treat accesses to a distance of 100 feet from the paved road with a 6 to 12-inch layer of wood chips or mulch.
- Treat accesses a distance of 100 feet from the paved road with a 6- inch layer of gravel.
- Limit vehicle speeds on unpaved roads to 15 miles per hour (mph).
- All roadways, driveways, sidewalks, parking lots to be paved should be completed as soon as possible. In addition, building pads should be laid as soon as possible after grading unless seeding or soil binders are used.

- Minimize idling time either by shutting equipment off when not in use or reducing the time of idling to 5 minutes [California Code of Regulations, Title 13, sections 2449(d)(3) and 2485]. Provide clear signage that posts this requirement for workers at the entrances to the site.

- Provide current certificate(s) of compliance for CARB's In-Use Off-Road Diesel-Fueled Fleets Regulation [California Code of Regulations, Title 13, sections 2449 and 2449.1]. For more information contact CARB at 877-593-6677, doors@arb.ca.gov, or www.arb.ca.gov/doors/compliance_cert1.html.

- Maintain all construction equipment in proper working condition according to manufacturer's specifications. The equipment must be checked by a certified mechanic and determine to be running in proper condition before it is operated.

- Post a publicly visible sign with the telephone number and person to contact at DWR regarding dust complaints. This person will respond and take corrective action within 48 hours. The phone number of YSAQMD also will be visible to ensure compliance.

Timing: Throughout all construction activities.

Responsibility: DWR and construction contractor(s).

Significance after Mitigation: Implementation of Mitigation Measures 3.4-1 would require implementation of BMPs and other on-site controls to reduce PM_{10} emissions at the project site to the extent feasible, as shown by mitigated emissions in **Table 3.4-2**. Even with implementation of all feasible mitigation, the amount of PM_{10} that would be generated during both construction years would exceed applicable YSAQMD construction emissions thresholds. Other mitigation measures to control PM_{10} using chemical dust suppressants were considered but found to be infeasible within and adjacent to the Creek because they would exceed permitted water quality regulations. Further, based on coordination with YSAQMD, there is no available program for in-lieu fee offsets to provide other means of mitigating PM_{10} emissions from the proposed project. Because there are no other feasible mitigation measures, or additional mitigation measures approved by the YSAQMD that can be implemented to further reduce this significant adverse impact related to PM_{10} emissions generated at the project site during construction, impacts would remain **significant and unavoidable**.

Impact 3.4.2: ***Result in Cumulatively Considerable Net Increase of Any Criteria Pollutant from Construction Activities.***
The proposed project would generate construction-related exhaust emissions below the thresholds of significance; however, dust emissions would exceed thresholds and result in conflict with the air quality plan implementation. After implementing mitigation measures dust emissions would remain above thresholds, resulting in a cumulative net increase in dust emissions and impacts would remain ***significant and unavoidable****.*

Under NAAQS, Yolo County is classified as nonattainment for the 1-hour and 8-hour ozone, and 24-hour $PM_{2.5}$. Under CAAQS, Yolo County is classified as nonattainment for the 1-hour and 8-

hour ozone standards, and 24 hour and annual arithmetic mean PM_{10}. YSAQMD's nonattainment/nonattainment-transitional status is attributed to the region's development history. Past, present, and future development projects contribute to the region's adverse air quality impacts on a cumulative basis. By its nature, air pollution is largely a cumulative impact. No single project by itself is sufficient in size to result in nonattainment of ambient air quality standards. Instead, a project's individual emissions contribute to existing cumulatively significant adverse air quality impacts. YSAQMD developed regional air quality thresholds as allowable project-level emissions limits to enable the region to attain and maintain ambient air quality standards. Therefore, if a project exceeds its identified project-level significance thresholds, the project's cumulative impact would be cumulatively considerable.

See Impact 3.4.1 above for detailed discussion of construction-related air emissions. As shown in **Table 3.4-2**, unmitigated PM_{10} emissions generated during both construction years would exceed YSAQMD's threshold of significance. Unmitigated NO_x and ROG emissions in both years of construction would not exceed YSAQMD's threshold of significance. Due to PM_{10} emissions exceeding YSAQMD's established thresholds of significance during construction, the proposed project would result in cumulatively considerable emissions of criteria air pollutants with nonattainment status in Yolo County. Therefore, this impact would be **significant**. The following mitigation measure has been identified to address this impact.

Mitigation Measure 3.4.2: Implement Mitigation Measure 3.4.1, "Implement Construction Dust Mitigation and Best Management Practices."

Please see Mitigation Measure 3.4.1 under Impact 3.4.1 in this section for the full text of this mitigation measure.

Timing: Prior to and during construction activities

Responsibility: DWR

Significance after Mitigation: Implementation of Mitigation Measure 3.4.1 would require implementation of BMPs and other on-site controls to reduce PM_{10} emissions at the project site to the extent feasible, as shown by mitigated emissions in Table 3.4-2. However, even with implementation of all feasible mitigation, the amount of PM_{10} that would be generated during both construction years would remain cumulative considerable. Other mitigation measures to control PM_{10} using chemical dust suppressants were considered but found to be infeasible within and adjacent to the Creek because they would exceed permitted water quality regulations. Further, based on coordination with YSAQMD, there is no available program for in-lieu fee offsets to provide other means of mitigating PM_{10} emissions from the proposed project. Because there are no other feasible mitigation measures, or additional mitigation measures approved by the YSAQMD that can be implemented to further reduce the significant adverse impact related to PM_{10} emissions generated at the project site during construction, impacts would remain **significant and unavoidable**.

Impact 3.4.3: ***Expose Sensitive Receptors to Substantial Pollutant Concentrations.*** *The project would generate construction-related exhaust emissions and dust. Because of the temporary and localized emissions, and the distance*

from sensitive receptors to the primary work areas, this would result in a ***less-than-significant impact****.*

Construction of the proposed project would result in short-term generation of ozone precursors (ROG and NO_x) and diesel particulate emissions from on-site heavy-duty equipment and on-road haul trucks. As shown in Table 3.4-2, construction-generated exhaust emissions of NO_X would not exceed YSAQMD's annual threshold of 10 tons per year. Additionally, only a small portion of PM generated (less than 1 lb/day) would be as diesel exhaust, as shown in Appendix B.

The EPA has determined that ozone and diesel PM would have the greatest effect on human health. The health effects for ozone include mortality, emergency room visits (respiratory) and hospital admissions (respiratory) (SMAQMD 2020). However, as shown in Table 3.4-2, project construction would not exceed established thresholds for ROG or NO_x, and therefore, the project would not generate a significant health risk to sensitive receptors. The health effects for diesel PM include mortality (all causes), hospital admissions (respiratory, asthma, cardiovascular), emergency room visits (asthma), and acute myocardial infarction (non-fatal). Diesel PM, which is classified as a carcinogenic TAC by CARB, is the primary pollutant of concern regarding indirect health risks to sensitive receptors. Nearby land uses, especially residences and schools downwind of the project sites, could be exposed to diesel PM during construction activities, resulting in potential adverse health effects. However, the majority of the PM generated during construction activities would be fugitive dust, with a small portion (less than 1 lb/day) of exhaust PM.

School districts generally operate with a summer recess from mid-June to early September. These summer months constitute the most active period of construction where air emission pollutant concentrations are highest. Daily lunch recess, when children spend most time outside, directly correlates to the lunch hour of construction workers when most construction equipment would be shutdown.

The assessment of health risks associated with exposure to diesel exhaust typically is associated with chronic exposure, in which a 30- or 70-year exposure period is often assumed. However, while cancer can result from exposure periods of less than 30- or 70-years, acute exposure periods (i.e., exposure periods of 2 to 3 years) to diesel exhaust are not anticipated to result in increased health risk, as health risks associated with exposure to diesel exhaust are typically seen in exposure periods that are chronic (OEHHA 2015). Construction activities associated with the Proposed Action would require the use of diesel-powered heavy-duty equipment for up to 2 years. In addition, construction would be completed in a linear fashion, which would further limit emissions at each location work location along the 9-mile project reach. Therefore, construction of the proposed project would not occur over a prolonged period in any one specific location, minimizing exposure from diesel PM at any one receptor. Additionally, as required by 13 CCR Section 2449(d)(3), no off-road diesel vehicles may idle for more than 5 consecutive minutes. Therefore, the project would not have a significant health risk associated with construction activities and impacts would be **less than significant**.

Impact 3.4.4: ***Other Emissions (Such as Those Leading to Odors) Adversely Affecting a Substantial Number of People.***
The proposed project would not generate a considerable amount of other emissions near receptors and impacts would be ***less than significant****.*

During construction, the project would generate odor from the use of diesel fuels during the construction period. Odors from the emissions would be spread throughout the construction areas and not concentrated in one area for a long period of time. Therefore, odors would be dispersed in areas of construction near receptors for temporary and short-term periods of time and most emissions would be a substantial distance from receptors. Therefore, the proposed project would not generate a considerable amount of other emissions that would adversely affect a substantial number of people. This impact would be **less than significant**.

Residual Significant Impacts

The proposed project would result in residual impacts from the emissions of dust during project construction activities. Mitigation measures would reduce dust emissions but not below thresholds and impacts would be **significant and unavoidable**.

3.5 Biological Resources

This section discusses the existing setting for aquatic and terrestrial biological resources in the project vicinity, summarizes applicable regulations, analyzes potential impacts of the project related to biological resources, and identifies mitigation measures to reduce potentially significant impacts to a less than significant level.

The discussion presented in this section is based on information from a variety of sources that address biological resources in the project vicinity and larger region. Several biological resource databases were queried, including the California Department of Fish and Wildlife's (CDFW's) California Natural Diversity Database (CNDDB) (CDFW 2022a) and the California Native Plant Society (CNPS) online Inventory of Rare and Endangered Vascular Plants of California (CNPS 2023). List of resources under NMFS or U.S. Fish and Wildlife Service (USFWS) jurisdiction that could occur in the project vicinity were obtained from the Information for Planning and Conservation (IPaC) website (USFWS 2023a). Additional sources of information on individual plant and wildlife species also were reviewed. Information relating directly to the project is based on that compiled by DWR to support project planning and design and observations made during field surveys conducted by DWR and GEI biologists throughout 2022. The primary purposes of the field surveys were to evaluate potential for the proposed project to impact biological resources, based on current conditions.

3.5.1 Environmental Setting

The project site and surrounding areas outside of the creek channel are generally flat in nature, with levees rising on both the left and right banks of Cache Creek. Elevations on the project site range from approximately 30 to 100 feet. The Biological Technical Report (GEI 2023a) for the project was used to inform this environmental setting, though species' statuses and other details have been updated to the date of publication of this Draft EIR.

Land Cover and Vegetation Types

The Biological Technical Report for the project (GEI 2023a) classified land cover (vegetation) types based on descriptions provided by CDFW's California Wildlife Habitat Relationship types (adapted from Mayer and Laudenslayer's 1988 *A Guide to Wildlife Habitats*) (CDFW 2023c). Where applicable, vegetation assemblages were described to the alliance level based on the descriptions provided in the California Natural Community List (CDFW 2022d), which is adapted from the technical approach and vegetation alliance classification system described in *A Manual of California Vegetation* (Sawyer et al. 2009). The entirety of the project site and a 20-foot buffer surrounding the project site (project study area) was documented in the biological technical report (GEI 2023a) prepared for DWR and measures approximately 462.5 acres. Vegetation communities within the project study area are mapped in **Figures 3.5-1a** to **3.5-1n** and described in more detail below. In addition, three invasive species—arundo (*Arundo donax*), eucalyptus (*Eucalptus* sp.), and tamarisk (*Tamarix parviflora*)—were mapped within the project study area to help plan project vegetation removal in areas with these invasive species where feasible (Appendix C).

Agriculture

Agricultural lands are prevalent landward of the Cache Creek levees. Agricultural lands total approximately 69.5 acres in the project study area. Crop types consist primarily of row crop or orchards, with walnut and *Prunus* spp. being the commonly encountered tree crops. Scattered native trees, such as valley oak (*Quercus lobata*) or black walnut (*Juglans hindsii*), are occasional in agricultural lands. Trees planted for wind breaks, primarily olive (*Olea europaea*) or eucalyptus (*Eucalyptus* sp.), were also noted in the vicinity of the project study area.

Elderberry Savanna

Elderberry savanna occurs at two locations within the project study area. The upstream-most location is located on the left bank approximately 600 feet west of I-5, and the second location is approximately 2,400 feet downstream of I-5 along the right bank. Elderberry savanna totals approximately 4.6 acres of the project study area but is not comprised of all mapped elderberry shrubs within the project study area. Mature elderberry (*Sambucus nigra* ssp. *caerulea*) shrubs are the most prevalent plant in this habitat type, often forming impenetrable thickets. 43 individual elderberry shrubs were mapped within the project study area where direct project construction would occur (Appendix C). In addition, approximately 46 shrubs would be within 20 feet of project activity, and another approximately 527 shrubs would be within 100 feet of project activity. California manroot (*Marah fabaceus*), a California endemic vine related to cucumber, was observed climbing the canopy of elderberry shrubs. Coyote brush (*Baccharis pilularis*) is also present in the shrub layer but comprises less relative cover as compared to the elderberry shrub. Where canopy gaps are present, poison hemlock, white horehound, and non-native annual grasses are present.

This vegetation type is not described in the Manual of California Vegetation (Sawyer et al. 2009), but this vegetation assemblage is described in the *Preliminary Descriptions of the Terrestrial Natural Communities of California* (Holland 1986).

Fremont Cottonwood Forest and Woodland

Fremont cottonwood forest and woodland is a prevalent riparian community along Cache Creek within the project study area. Approximately 57 acres of this vegetation assemblage was mapped to the project study area. This vegetation assemblage is characterized by a high degree of Fremont cottonwood (*Populus fremontii*), with often 30 to 50 percent of the tree canopy layer represented by this species. Other riparian trees, such as valley oak and Goodding's black willow (*S. gooddingii*), are often co-dominant. Occasional Oregon ash (*Fraxinus latifolia*) trees may also be present. This vegetation alliance typically has a diverse and dense shrub layer that often includes elderberry shrub, box elder (*Acer negundo*), poison oak (*Toxicodendron diversilobum*), California rose (*Rosa californica*), narrowleaf willow, and arroyo willow (*S. lasiolepis*). The herbaceous layer is dense with non-native grasses and forbs, which typically include black mustard (*Brassica nigr*a) and wild radish (*Raphanus sativus*).

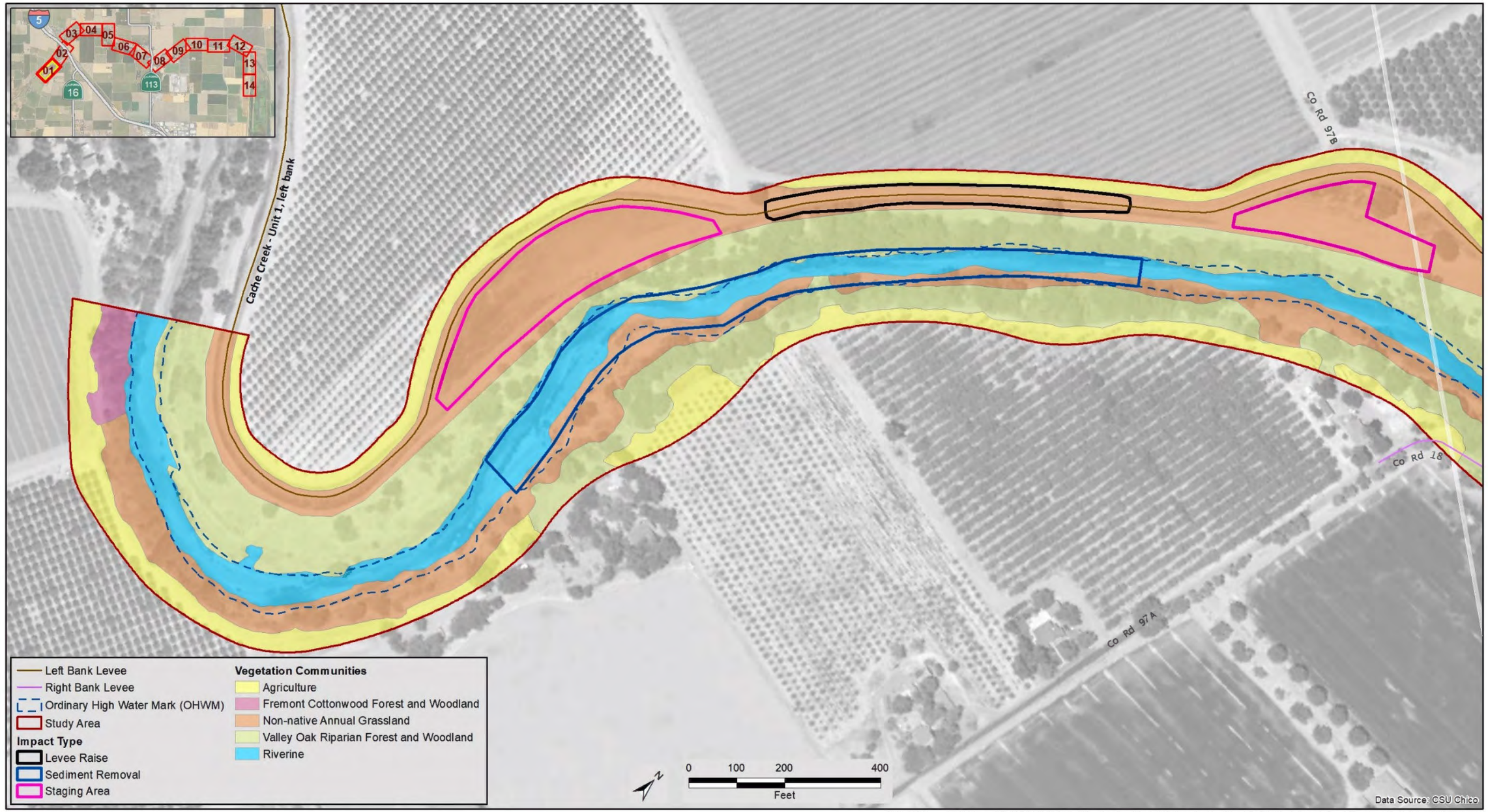

Figure 3.5-1a. Vegetation Communities within the Project Study Area

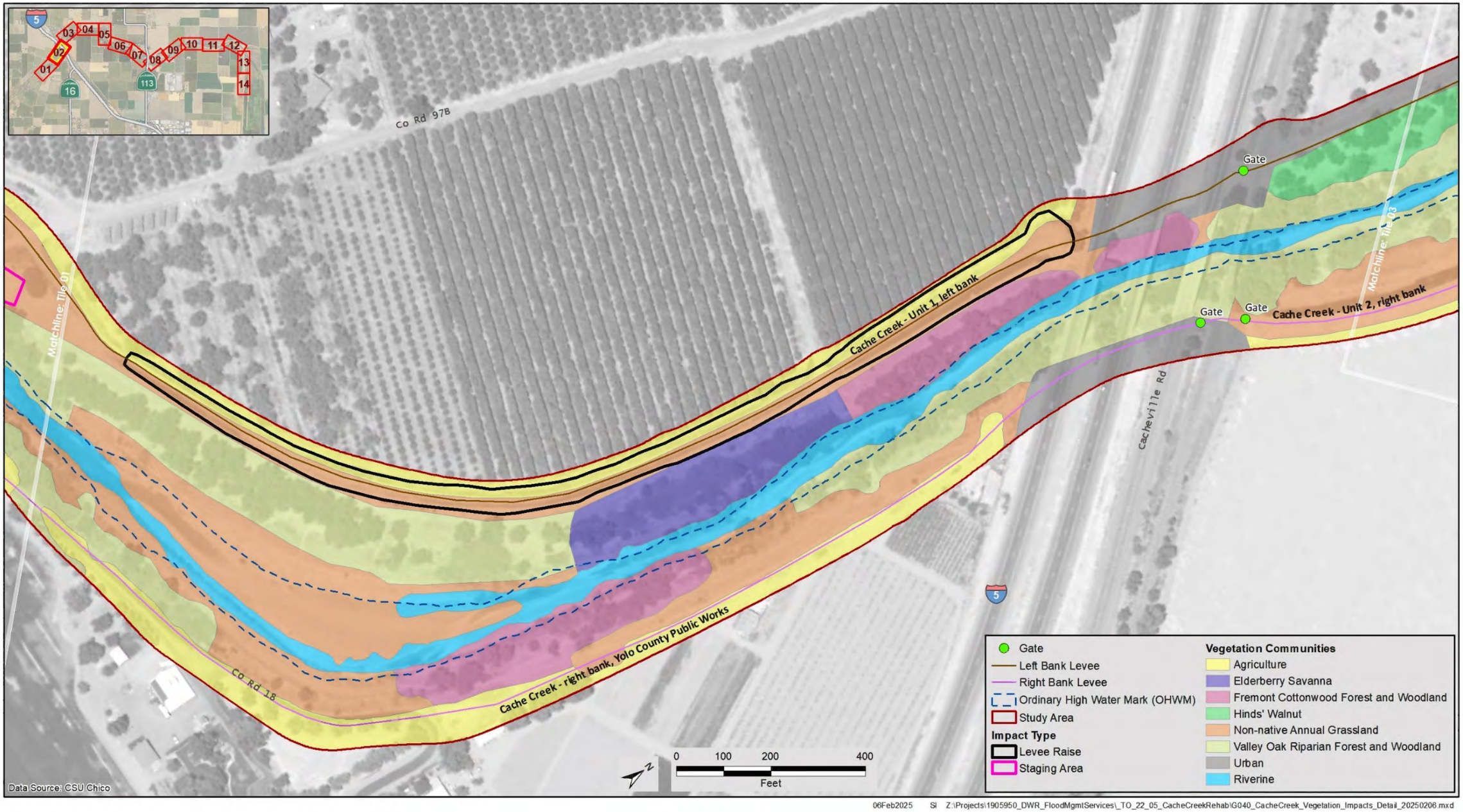

Figure 3.5-1b. Vegetation Communities within the Project Study Area

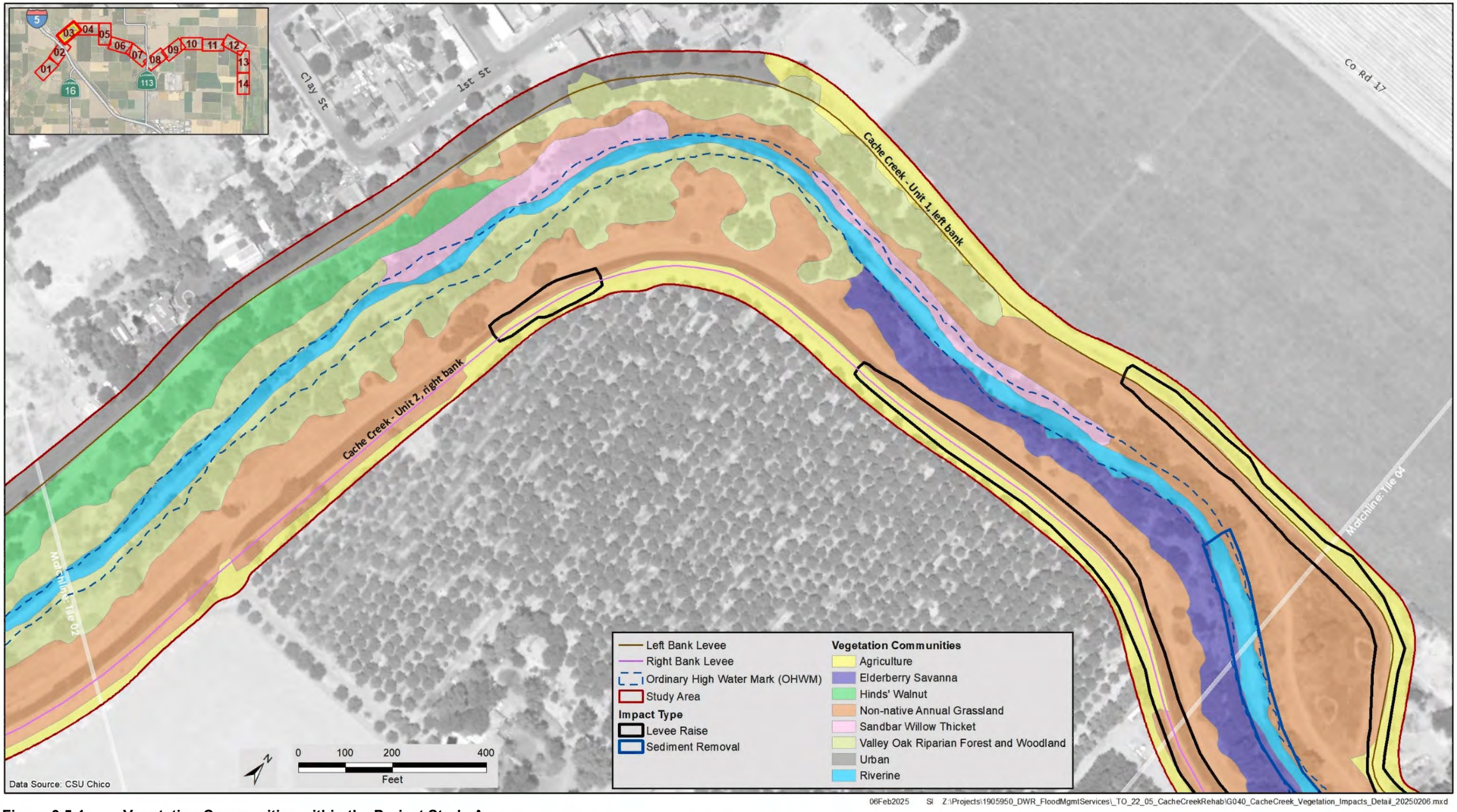

Figure 3.5-1c. Vegetation Communities within the Project Study Area.

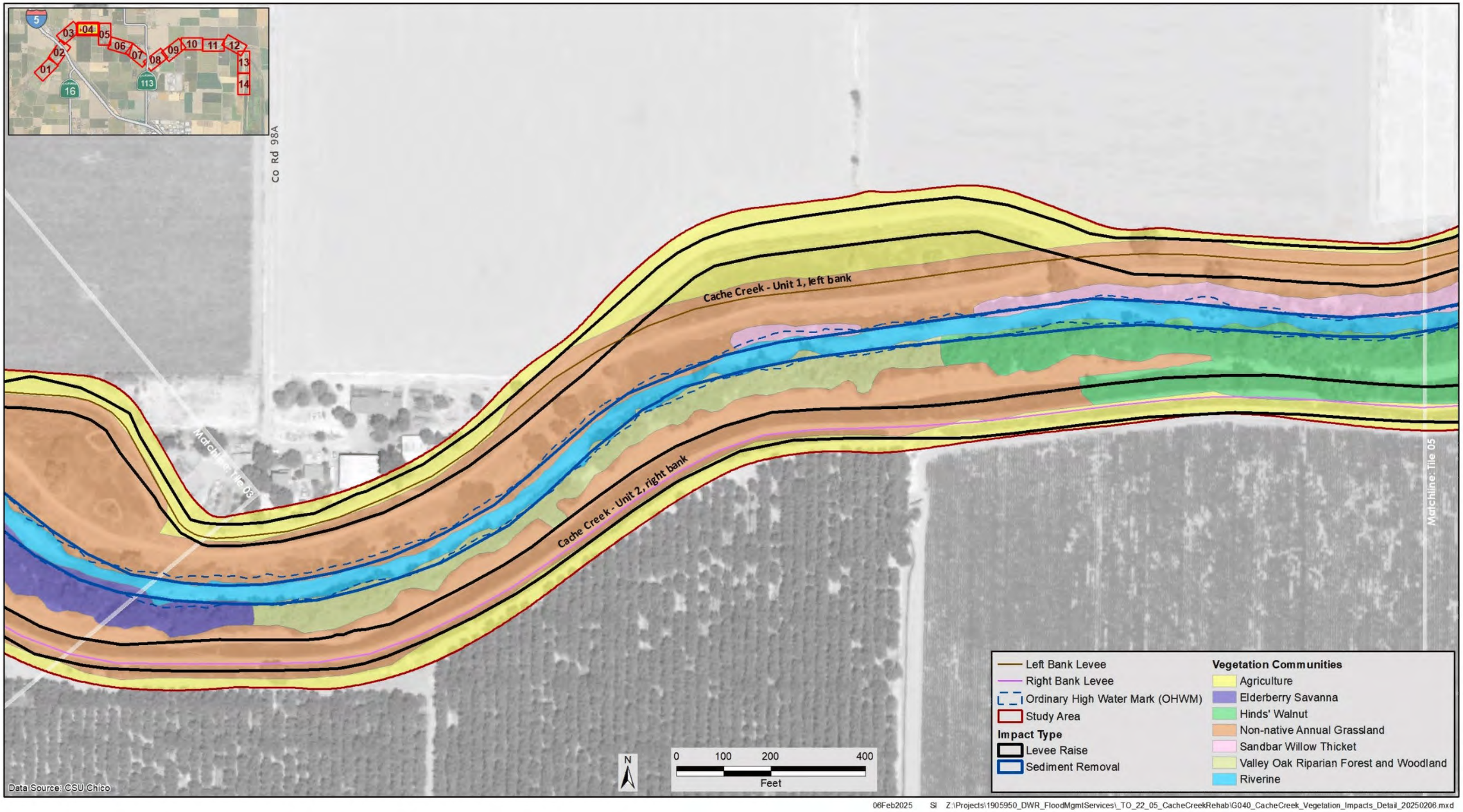

Figure 3.5-1d. Vegetation Communities within the Project Study Area

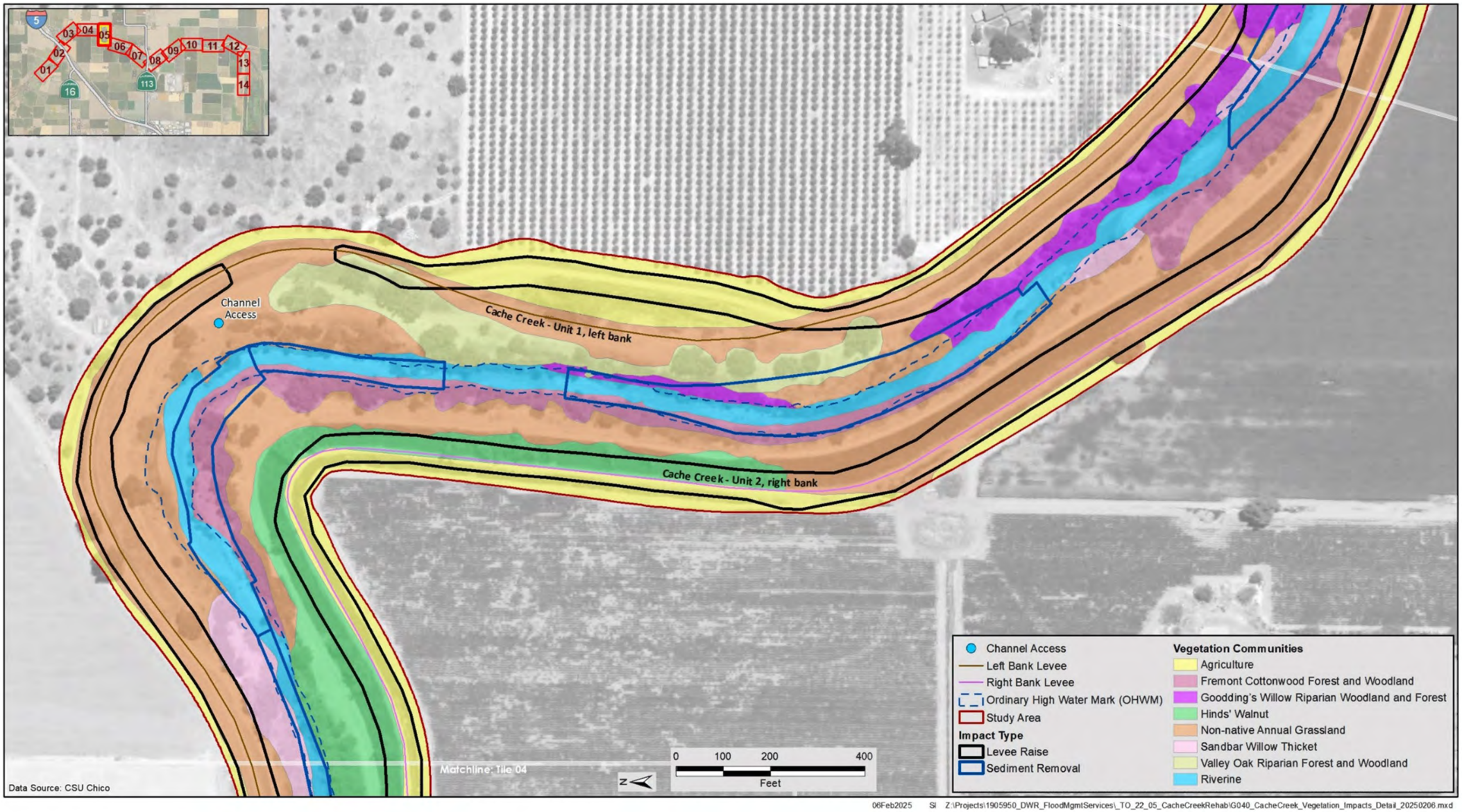

Figure 3.5-1e. Vegetation Communities within the Project Study Area

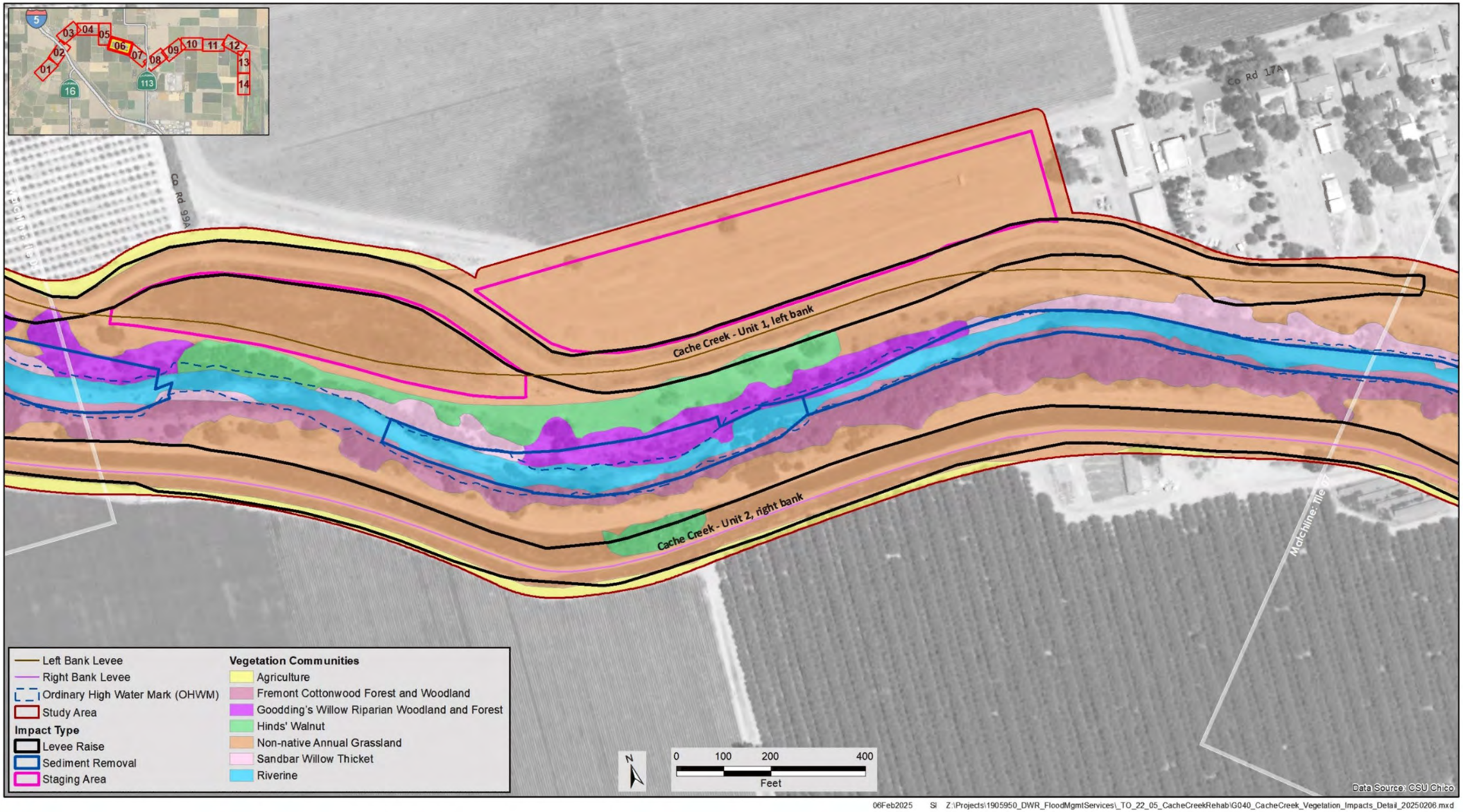

Figure 3.5-1f. Vegetation Communities within the Project Study Area

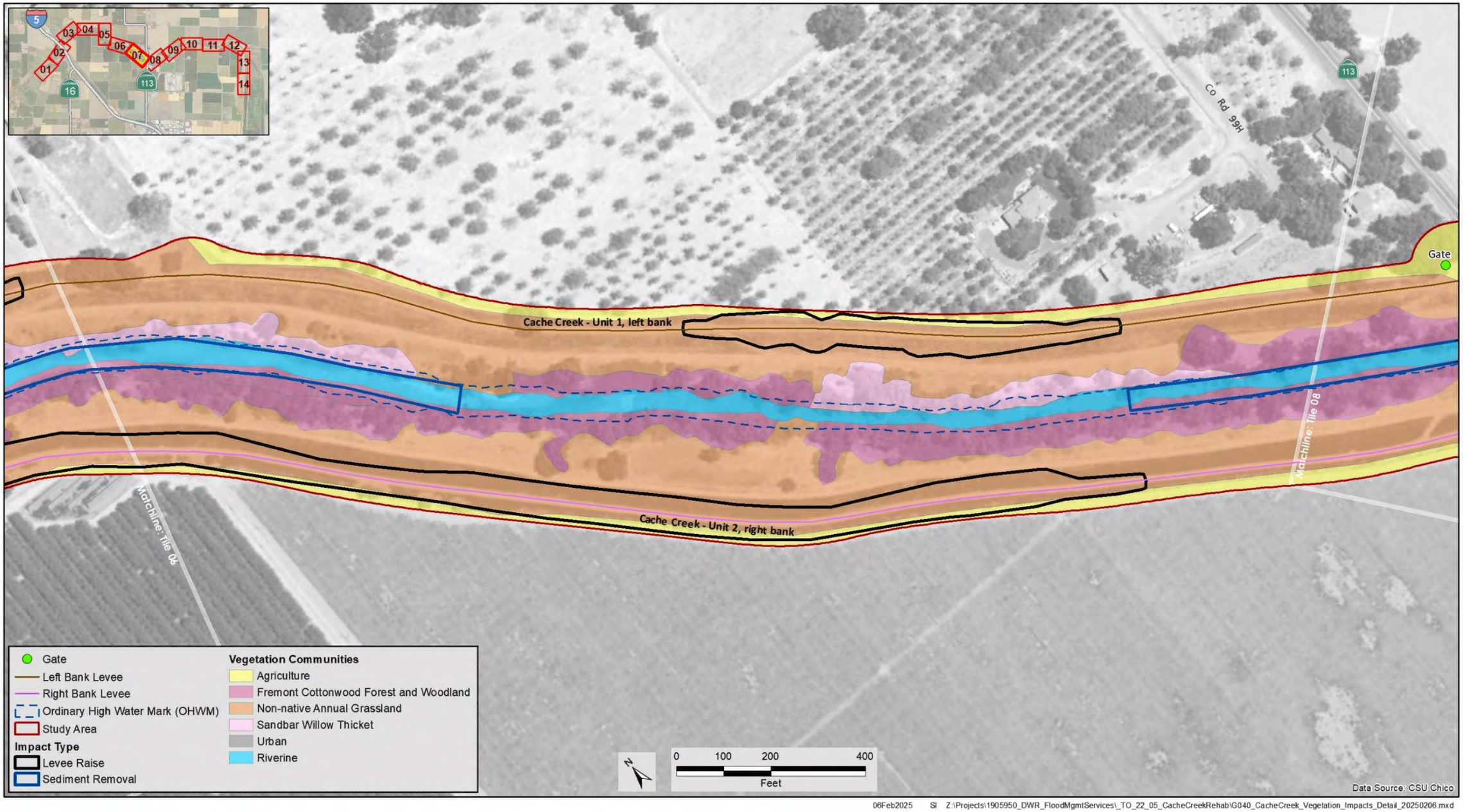

Figure 3.5-1g. Vegetation Communities within the Project Study Area

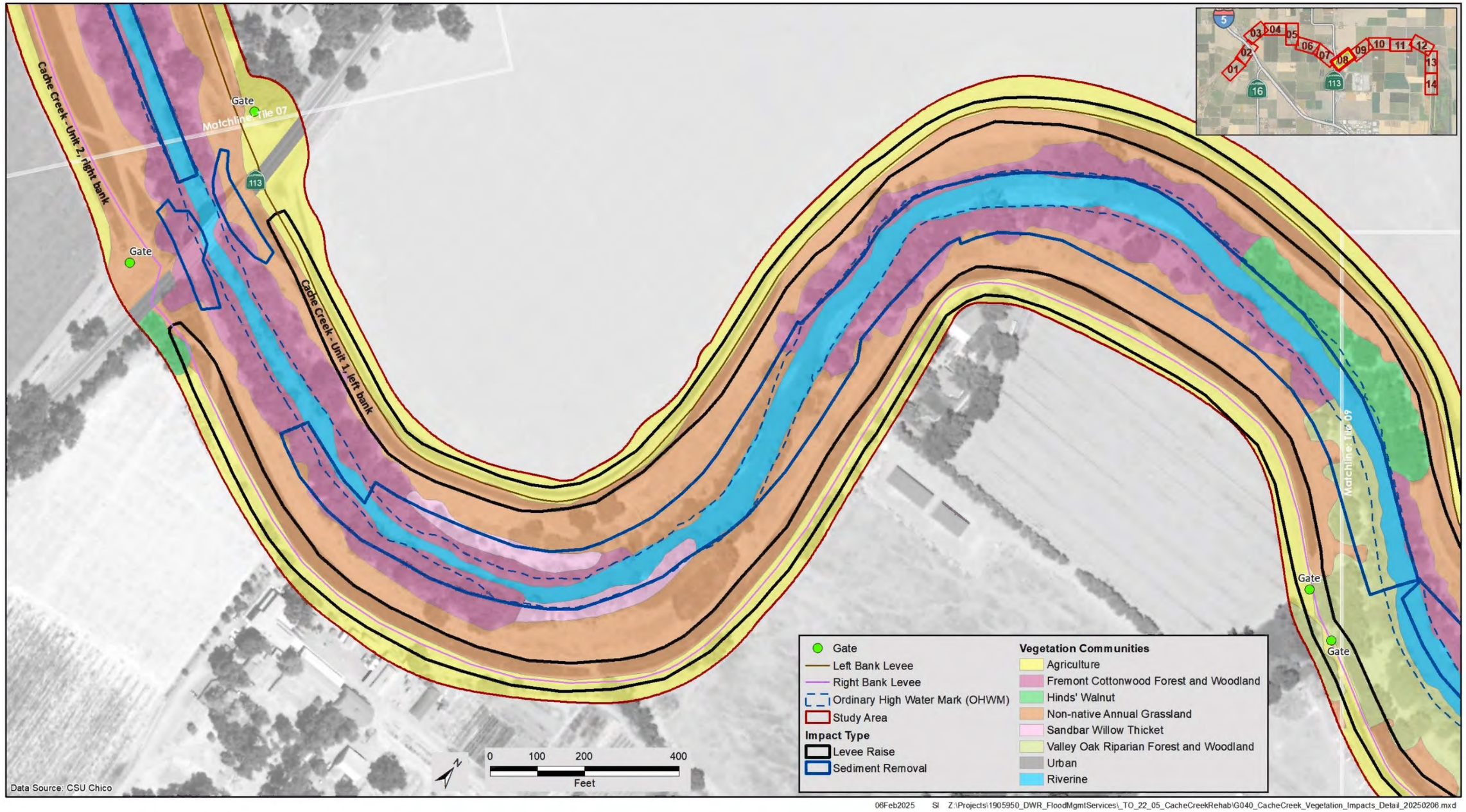

Figure 3.5-1h. Vegetation Communities within the Project Study Area

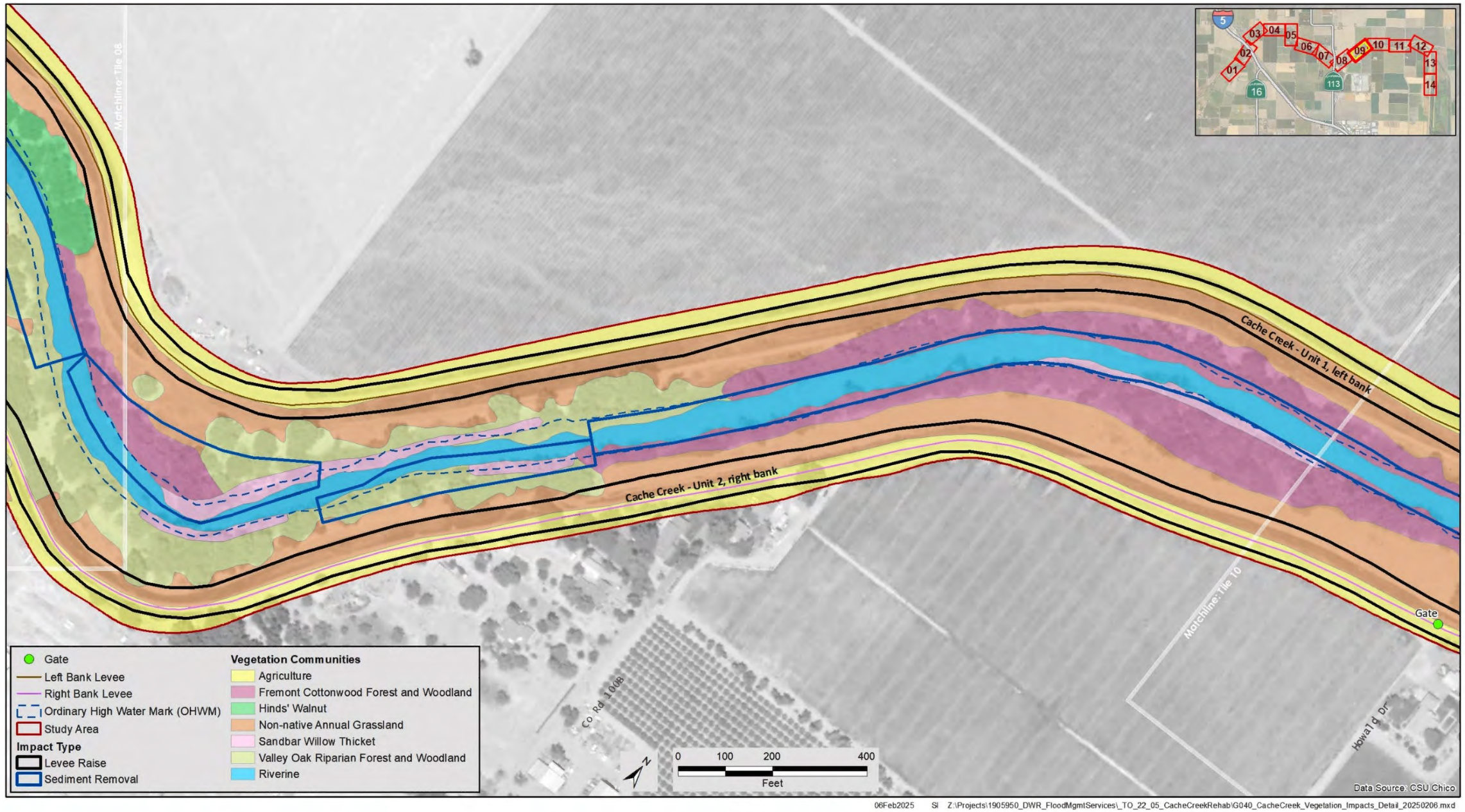

Figure 3.5-1i. Vegetation Communities within the Project Study Area

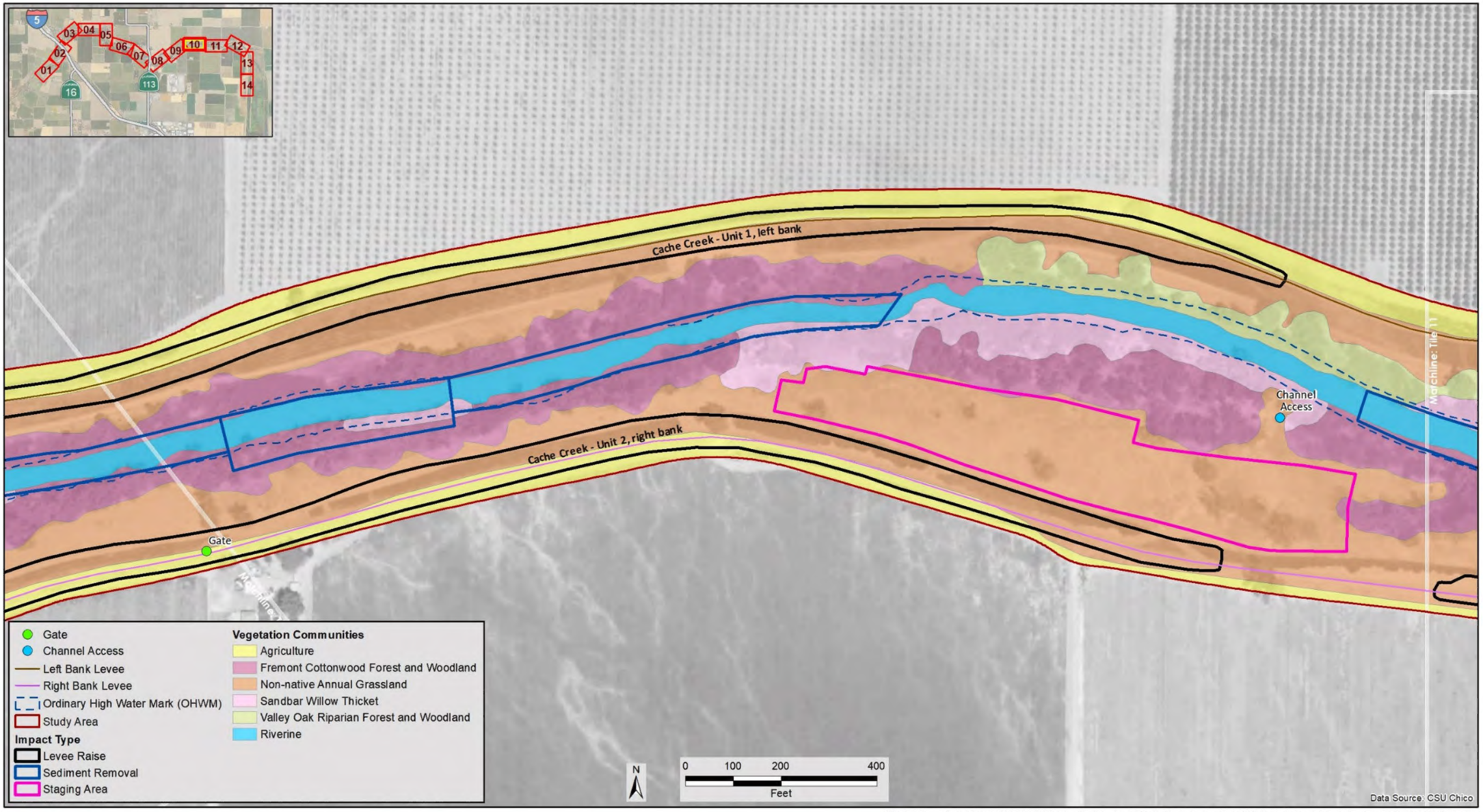

Figure 3.5-1j. Vegetation Communities within the Project Study Area

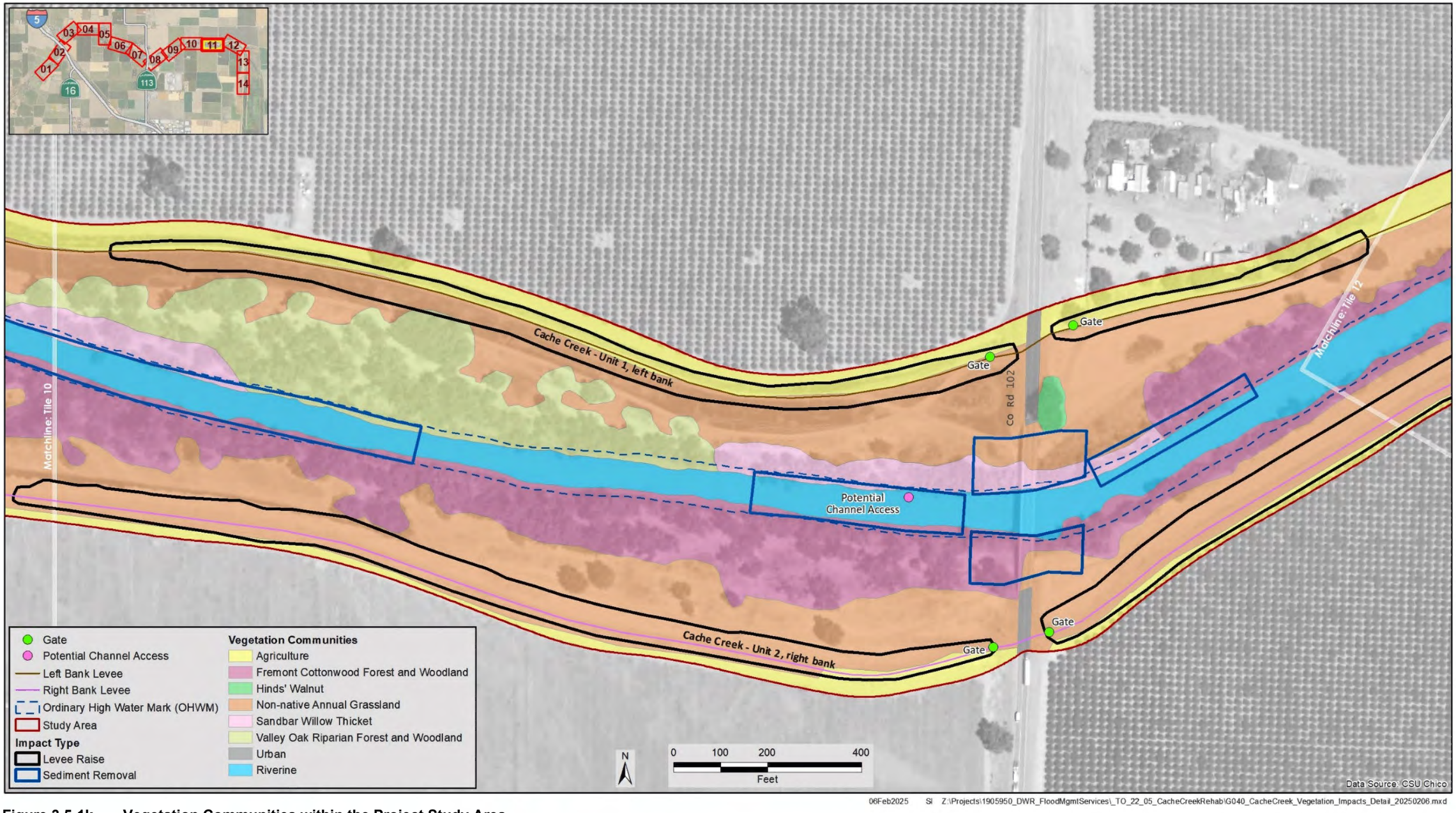

Figure 3.5-1k. Vegetation Communities within the Project Study Area

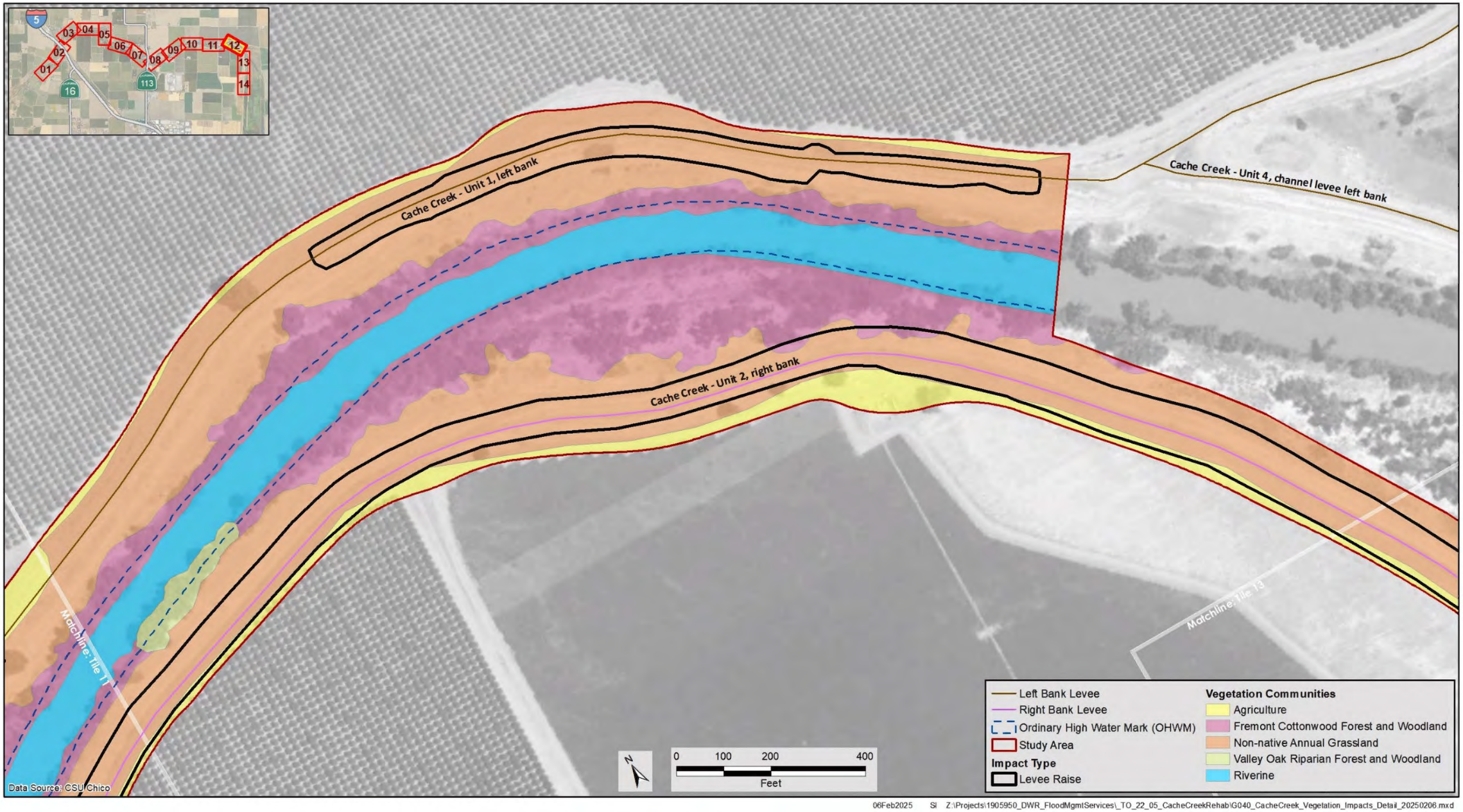

Figure 3.5-1l. Vegetation Communities within the Project Study Area

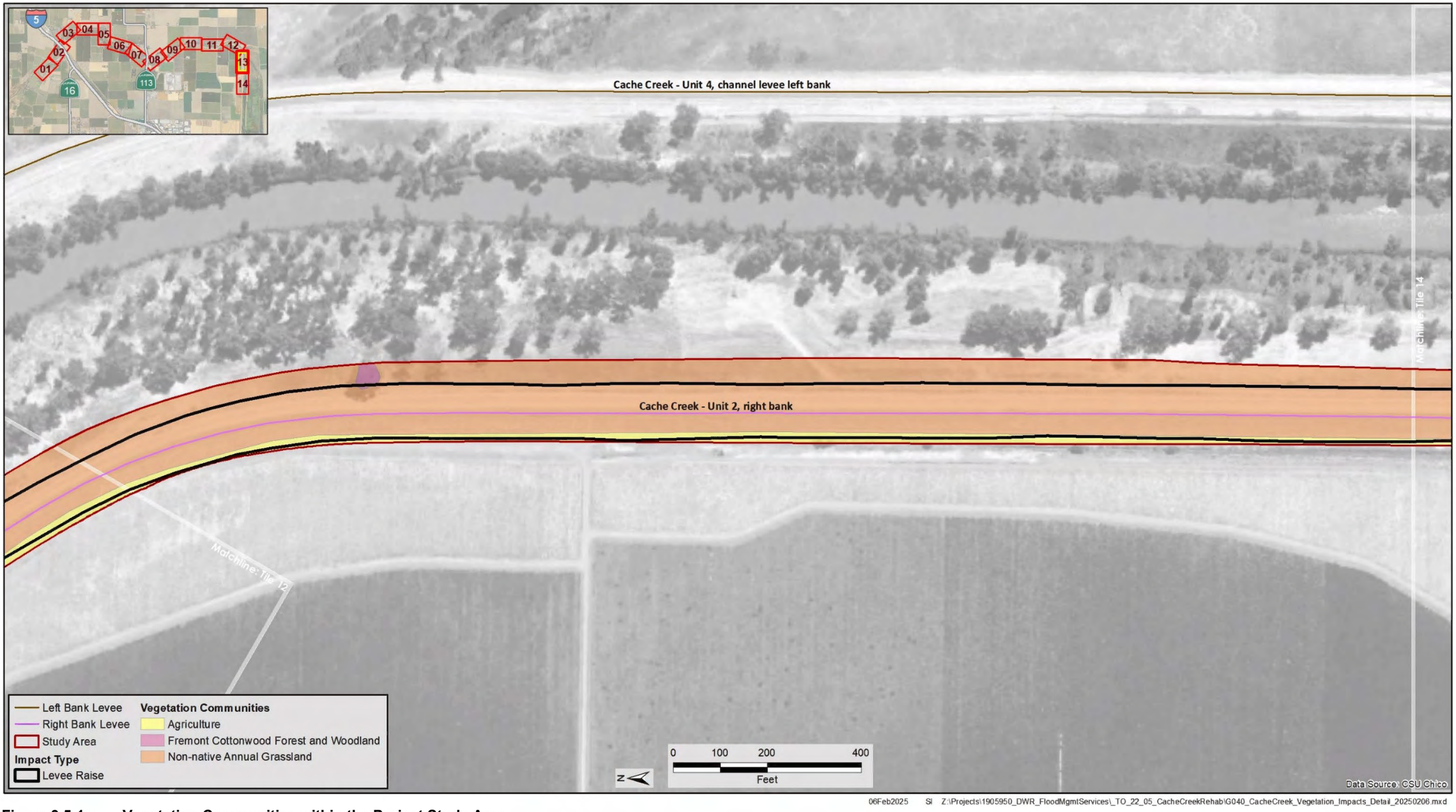

Figure 3.5-1m. Vegetation Communities within the Project Study Area

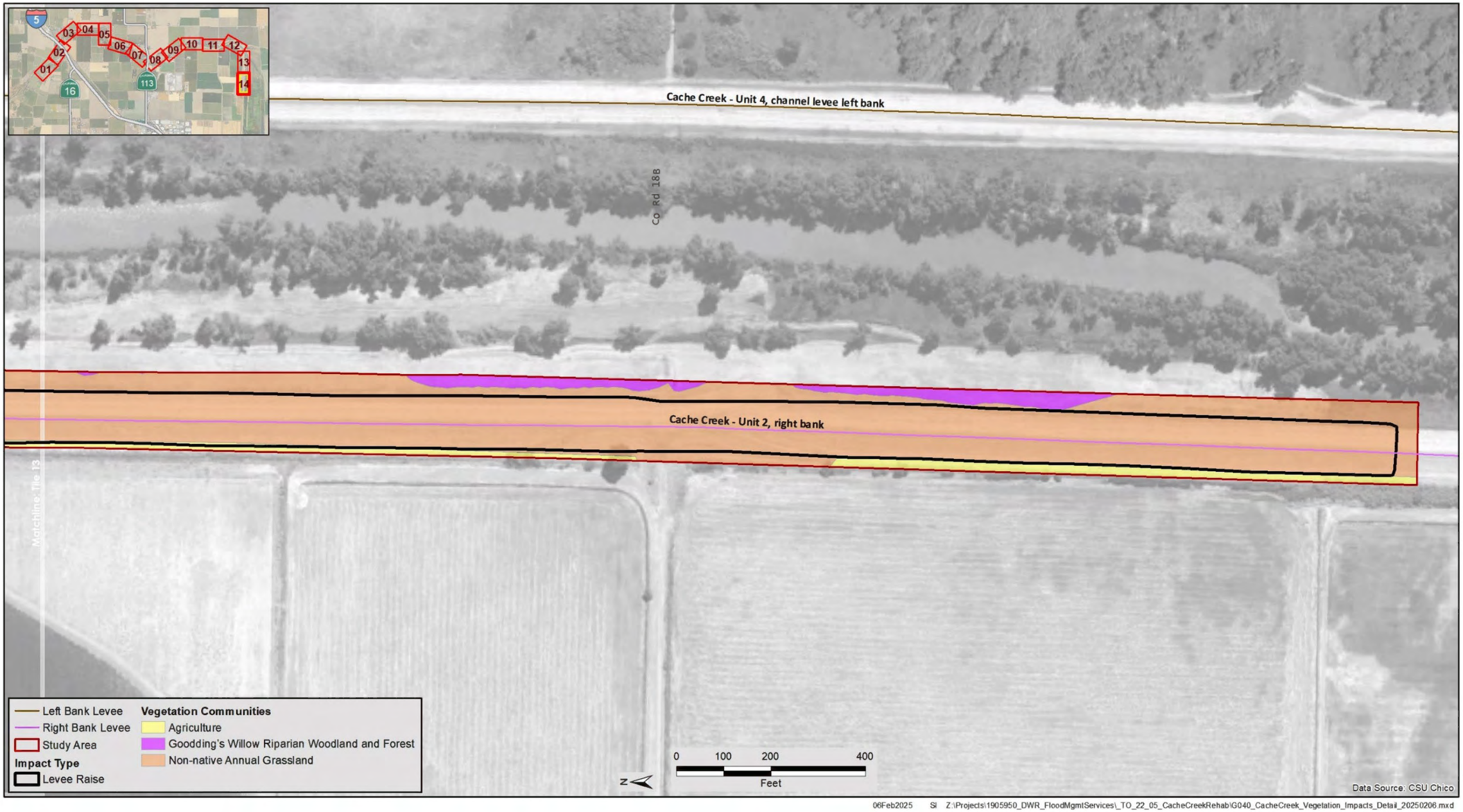

Figure 3.5-1n. Vegetation Communities within the Project Study Area

Valley Oak Riparian Forest and Woodland

Valley oak riparian forest and woodland is common along the top bank of Cache Creek in the project study area, and this vegetation assemblage totals approximately 43 acres. Valley oak is the dominant or co-dominant species in the tree canopy layer. Other tree species commonly associated as co-dominant species in the project study area include Fremont cottonwood and Goodding's black willow. The assemblage of tree and shrub species is often similar to Fremont cottonwood forest and woodland, except that valley oak is the dominant tree species in this habitat type with valley oak, having 35 percent or more relative cover in the tree canopy layer. Valley oak riparian forest and woodland map units are often adjacent to Fremont cottonwood forest and woodland alliances since both are common riparian vegetation assemblages that occur along drainages in the Central Valley.

Goodding's Willow Riparian Woodland and Forest

Goodding's willow riparian woodland and forest is commonly encountered along the Cache Creek top of bank. Approximately4.3 acres of this vegetation type are present within the project study area. Goodding's black willow is the dominant tree species in this vegetation alliance, with 50 percent or more of the canopy being represented by Goodding's black willow. Fremont cottonwood, valley oak, Oregon ash, and box elder may also be present in the tree canopy. The shrub layer of this vegetation assemblage is variable, ranging from negligible shrub cover at the southern project study area extents to prevalent shrub canopy presence upstream of State Route 113. When present, the shrub layer typically includes the same species present in the Fremont cottonwood forest and woodland shrub layer (see above).

Hind's Walnut

The Hind's black walnut vegetation alliance is dominated by the Hind's black walnut, also commonly referred to as Northern California black walnut. This vegetation alliance totals approximately 13.1 acres of the project study area. Areas dominated by this vegetation type typically occur above the top of bank on the rich alluvial floodplain soils. This vegetation alliance within the project study area is generally mono-specific, containing only walnut trees, or low percentage of valley oak trees often near the intergrade limits of adjacent vegetation polygons. The understory is composed of non-native annual grasses and forbs.

Non-native Annual Grassland

This habitat type is characterized by dense cover of non-native annual grasses. Within the project study area, an estimated total of 210.3 acres of grassland habitats are present, dominated primarily by non-native grasses and forbs. Non-native annual grassland types found in the project study area may be classified, according to the Manual of California Vegetation (Sawyer et al. 2009), as wild oats and annual brome grassland, or poison hemlock patches. The herbaceous layer can reach 3 feet or more in height in areas located between the top of channel bank and waterward of the levee toe where regular maintenance activities are not routinely performed on the floodplain. Levee slopes are included in the non-native annual grassland vegetation classification although these areas are subject to regular maintenance, which includes mowing, to ensure required levee inspections can be completed effectively.

Wild oat and annual brome grasslands are dominated by oat species (*Avena fatua* and *A. barbata*) and brome species (*Bromus diandrus*, *B. hordeacous*, and *B. madritensis*). Other non-native grasses typically encountered include wall barley (*Hordeum murinum*), Italian rye grass (*Festuca perennis*), and rattail sixweeks grass (*Festuca myuros*). Non-native forbs commonly encountered include red stem filaree (*Erodium cicutarium*), prickly lettuce (*Lactuca serriola*), bristly oxtongue (*Helminthotheca echioides*), and hairy vetch (*Vicia villosa*).

Dense stands of poison hemlock (*Conium maculatum*) patches were occasionally noted in the project study area. Poison hemlock patches are included in the non-native annual grassland designation since these areas are dominated by herbaceous species. These areas have a high percentage of the vegetative cover represented by poison hemlock. Other non-native forbs, including sweet fennel (*Foeniculum vulgare*), blessed milk thistle (*Silybum marianum*), and white horehound (*Marrubium vulgare*), may individually comprise up to 10 percent of the relative vegetative cover.

Riverine

Riverine is a habitat type that represents open water or predominantly unvegetated areas in the Cache Creek channel that were observed during the habitat assessment surveys conducted in 2022 by GEI. This land cover type, as shown in Figures 3.5-1a through 3.5-1n, does not align with the delineated Ordinary High Water Mark (OHWM) of Cache Creek and is an interpretation of 2022 conditions, therefore, it does not meet the definition of and should not be used as the limits of waters of the United States or waters of the state, as described further in this section under the subsection "Sensitive Habitats." Within the project study area, an estimated total of 42.5 acres of riverine habitat is present.

Sandbar Willow Thickets

Sandbar willow thickets are a shrub-dominated vegetation assemblage that is dominated by narrowleaf willow (*Salix exigua*), often with 50 percent or more of the shrub layer represented by this species. Invasive smallflower tamarisk (*Tamarix parviflora*) often colonizes sandbar willow thickets. Arroyo willow (*S. lasiolepis*) occasionally occurs at low percent cover as well. Herbaceous species are absent from the understory as this vegetation type has an expansive canopy that limits light penetration to the ground surface. Within the project study area, this vegetation assemblage totals approximately 13.1 acres, with most of this vegetation alliance occurring on the channel side slopes of Cache Creek.

Urban

Urban habitat consists of developed land that has been modified by human activity. This land cover type includes areas that are bare ground, paved with asphalt, buildings, or other human land uses. Within the project study area, urban land cover totals approximately 5.1 acres, with most of this land cover type occurring on the channel side slopes of Cache Creek.

Wildlife Use of Land Cover in Project Study Area

Row crops within and adjacent to the project study area, especially those interspersed with native habitat, may provide nectar resources for California's struggling native bee populations as well as provide some crop production security during climactic temperature and drought frequency

increases. Other wildlife use of row crops includes occasional foraging from mule deer (*Odocoileus hemionus*), wild pigs (*Sus scrofa*), rodents, rabbits, and some birds (Schultze 1988). Foraging is often met with determent methods, including pesticide/rodenticide use by growers (Schultze 1988).

Orchards and vineyards, like those within and adjacent to the project study area, have relatively low habitat value for wildlife species due to the removal and/or low height maintenance of habitat/food resources within understory vegetation (DWR 2016). However, orchards and vineyards provide food resources for ground squirrels, although this often leads to a hydrologically harmful increased density of rodent burrows within adjacent levees (Van Vuren et al. 2013).

Wildlife species that may use the non-native annual grassland habitat within the project study area include, but are not limited to, western fence lizard (*Sceloporus occidentalis*), common garter snake (*Thamnophis sirtalis*), and western rattlesnake (*Crotalus atrox*) (Kie 2005).

Common and special-status bird species that use riparian communities, like those within the project study area, include but are not limited to: Swainson's hawk (*Buteo swainsonii*), tricolored blackbird (*Agelaius tricolor*), wild turkey (*Meleagris gallopavo*), black-headed grosbeak (*Meleagris melanocephalus*), tree swallow (*Tachycineta bicolor*), Bewick's wren (*Thryomanes bewickii*), Cooper's hawk (*Accipiter cooperii*), and spotted towhee (*Pipilo maculatus*).

Mule deer forage in this area. Additionally, the following common mammals are found to forage, roost, and den within riparian communities: `many common bat species, western gray squirrel (*Sciurus griseus*), cottontail (*Sylvilagus* spp.), raccoon (*Procyon lotor*), opossum (*Didelphis virginiana*), striped skunk (*Mephitis mephitis*), and American badger (*Taxidea taxus*).

Special-status Species

Plants and animals addressed as special-status species in this section include taxa (distinct taxonomic categories or groups) that fall into any of the following categories:

- Taxa officially listed, candidates for listing, or proposed for listing by the Federal government or the State of California as endangered, threatened, or rare;
- Taxa that meet the criteria for listing;
- Wildlife identified by CDFW as species of special concern and plant taxa considered by CDFW to be "rare, threatened, or endangered in California;"
- Species listed as Fully Protected under the California Fish and Game Code (CFGC); or
- Species afforded protection under local or regional planning documents.

Plant taxa are assigned by CDFW to one of the following six California Rare Plant Ranks (CRPRs):

- CRPR 1A—Plants presumed to be extinct in California;

- CRPR 1B—Plants that are rare, threatened, or endangered in California and elsewhere;
- CRPR 2A—Plants that are presumed extirpated in California, but are more common elsewhere;
- CRPR 2B—Plants that are rare, threatened, or endangered in California but more common elsewhere;
- CRPR 3—Plants about which more information is needed (a review list); or
- CRPR 4—Plants of limited distribution (a watch list).

All plants with a CRPR are considered "special plants" by CDFW, but this is a broad term used to refer to all plant taxa inventoried in the CNDDB, regardless of their legal or protection status. Plants ranked as CRPR 1 or 2 may qualify as endangered, rare, or threatened species within the definition presented in Section 15380 of the State California Environmental Quality Act (CEQA) Guidelines. CDFW recommends, and local governments may require, that CRPR 1 and 2 plants be addressed in CEQA projects. In general, CRPR 3 and 4 species do not meet the definition of endangered, rare, or threatened pursuant to State CEQA Guidelines Section 15380; however, these species may be evaluated by the lead agency on a case-by-case basis when developing significance criteria under CEQA. This analysis considered all plants with a CRPR.

CDFW applies the term "California species of special concern" to wildlife species that are not listed under the federal Endangered Species Act (ESA) or California Endangered Species Act (CESA) but that are nonetheless declining at a rate that could result in listing, or that historically occurred in low numbers and are subject to current known threats to their persistence.

The CNDDB and CNPS inventory queries included the two U.S. Geological Survey 7.5-minute quadrangles containing the project study area, as well as the ten surrounding quadrangles: Woodland, Gray's Bend, Knights Landing, Eldorado Bend, Zamora, Madison, Winters, Merritt, Davis, Sacramento West, Taylor Monument, and Verona.

Special-status Plants

Table 3.5-1 provides information on each special-status plant that was included in the CNDDB, in the CNPS search results, and/or on the USFWS IPaC resource list that have potential to occur in the project study area. Based on the review of existing documentation and habitat evaluations made during field surveys, habitat for all special-status plants is absent from the project study area. Many plant species are unable to grow in the project study area due to lack of soils required for species-specific physiological requirements (see Section 3.7, "Geology, Soils, and Paleontological Resources" for more information on soil types).

Parry's rough tarplant (*Centromadia parryi* ssp. *rudis*) was the only plant with a CRPR to potentially occur on the project study area. All other special-status plants were determined to either have no potential to occur on the project study area or were unlikely to occur on the project study area. Parry's rough tarplant is included in the species searches as it has a CRPR, however the ranking (4.2, plants on the "watch list" and of limited distribution, moderately

threatened in California) does not rise to the level of legal protection under CEQA, CESA, or federal ESA, and is therefore not discussed further within this analysis.

Table 3.5-1. Special-status Plants Evaluated for Potential to Occur in the Project Study Area

Species	Blooming Period	Status[1] Federal	Status[1] State	Habitat Associations	Potential to Occur in the Project study area
depauperate milk-vetch *Astragalus pauperculus*	March-June	--	4.3	Chaparral, cismontane woodland, valley, and foothill grassland in vernally mesic and volcanic soils. Elevation 195-3,985 feet.	Unlikely; while there is a documented occurrence of this species within the Grays Bend USGS 7.5' quadrangle that contains the project study area (CNPS 2023), the project study area is missing several typical habitat characteristics of this species, and the project study area elevation is well below this species' typical range.
Ferris' milk-vetch *Astragalus tener var. ferrisiae*	April–May	--	1B.1	Adobe clay, alkali flats, vernally moist meadows and seeps, valley, and foothill grassland. Elevation 5 to 245 feet.	None; no suitable adobe clay or alkaline soil is present on or adjacent to the project study area.
alkali milk-vetch *Astragalus tener var. tener*	March–June	--	1B.2	Playas and vernal pools in valley and foothill grassland, alkali flats and flooded lands. Elevation 5 to 195 feet.	None; no suitable alkaline soil is present on or adjacent to the project study area.
heartscale *Atriplex cordulata var. cordulata*	April–October	--	1B.2	Saline or alkaline soils in meadows, chenopod scrub, alkaline flats and scalds, sandy soils in valley and foothill grassland. Elevation 0 to 1835 feet.	None; no suitable alkaline or saline soil is present on or adjacent to the project study area.
brittlescale *Atriplex depressa*	April–October	--	1B.2	Alkali scalds or playas alkaline clay soils in chenopod scrub, meadows, and valley and foothill grassland, rarely associated with riparian, marshes, or vernal pools. Elevation 5 to 1050 feet.	None; no suitable alkaline soil is present on or adjacent to the project study area.
pappose tarplant *Centromadia parryi ssp. parryi*	May–November	--	1B.2	Chaparral, Coastal prairie, marshes and swamps, meadows and seeps, Valley foothill grassland in alkaline soils. Elevation 0 to 1380 feet.	None; no suitable alkaline soil is present on or adjacent to the project study area.

Species	Blooming Period	Status[1] Federal	Status[1] State	Habitat Associations	Potential to Occur in the Project study area
Parry's rough tarplant *Centromadia parryi* ssp. *rudis*	May-October	--	4.2	Valley and foothill grassland and vernal pools, in alkaline soils, roadsides, seeps, and vernally mesic microhabitats. Elevation 0-330 feet.	Could Occur; the project study area contains suitable habitat for the species and is within its elevation and geographic range. There are documented occurrences of this species within the Grays Bend USGS 7.5' quadrangle that contains the project study area.
Palmate-bracted bird's-beak *Chloropyron palmatum*	May–October	FE	SE	Chenopod scrub, alkaline areas in valley and foothill grassland, usually on Pescadero silty clay which is alkaline. Elevation 15 to 510 feet.	None; no suitable alkaline or clay soil is present on or adjacent to the project study area. Covered Species under the Yolo HCP/NCCP (Yolo County 2018).
San Joaquin spearscale *Extriplex joaquinana*	April–October	–	1B.2	Clay and alkaline soils in chenopod scrub, meadows and seeps, playas, valley, and foothill grassland. Elevation 5 to 2740 feet.	None; no suitable alkaline or clay soil is present on or adjacent to the project study area.
stinkbells *Fritillaria agrestis*	March-June	--	4.2	Chaparral, cismontane woodland, pinyon and juniper woodland, and valley and foothill grassland in clay and sometimes serpentinite soils. Elevation 35-5,100 feet.	Unlikely; while the project study area lies within the species elevation and general habitat range, the nearest occurrence of the species is over 8 miles to the south of the project study area (Calflora 2023).
hogwallow starfish *Hesperevax caulescens*	March-June	--	4.2	Valley and foothill grasslands in mesic clay, shallow vernal pools, sometimes in alkaline soils. Elevation 0-1,655 feet.	Unlikely; while the project study area lies within the species elevation and general habitat range, the nearest occurrence of the species is over 18 miles to the south of the project study area (Calflora 2023).
woolly rose-mallow *Hibiscus lasiocarpos* var. *occidentalis*	July–September	–	1B.2	Marshes and swamps (freshwaters in moist, river banks and low peat island in sloughs; can also occur on riprap and levees. Elevation 0 to 1655 feet.	None; no suitable habitat is present on or adjacent to the project study area.
Ferris' goldfields *Lasthenia ferrisiae*	February-May	--	4.2	Vernal pools in alkaline and clay soils. Elevation 65-2,295 feet.	None; no suitable habitat is present on or adjacent to the project study area, which is outside the species' known elevation range.
Heckard's peppergrass *Lepidium latipes* var. *heckardii*	March–May	–	1B.2	Alkaline soils at edges of vernal pools or in valley and foothill grassland. Elevation 5 to 655 feet.	None; no suitable habitat is present on or adjacent to the project study area, which is outside the species' known elevation range.

Species	Blooming Period	Status[1] Federal	Status[1] State	Habitat Associations	Potential to Occur in the Project study area
wooly-headed lessingia *Lessingia hololeuca*	June-October	--	3	Broadleafed upland forest, coastal scrub, lower montane coniferous forest, and valley and foothill grassland in clay and serpentinite soils. Elevation 50-1,000 feet.	None; while there are some minor habitat components for this species within the project study area, the only documented occurrence of this species in vicinity of the project study area is within the innermost portion of the City of Woodland and is from the 1800s (Calflora 2023). In addition, the project study area is outside of this species' typical elevation range.
Heller's bush-mallow *Malacothamnus helleri*	May-July	--	3.3	Chaparral (sandstone) and gravel riparian woodlands. Elevation 1,000-2,085 feet.	None; no suitable habitat is present on or adjacent to the project study area, which is outside the species' known elevation range.
cotula navarretia *Navarretia cotulifolia*	May-June	--	4.2	Chaparral, cismontane woodland, and valley and foothill grassland in adobe soils. Elevation 15-6,005 feet.	None; while there are some minor habitat components for this species within the project study area, the nearest documented occurrence of the species is over 4.5 miles southwest of the project study area and is from 1946 (Calflora 2023).
Baker's navarretia *Navarretia leucocephala* ssp. *bakeri*	April–July	–	2B.1	On adobe or alkaline soils; vernal pools, swales, meadows, and seeps in cismontane woodland, and valley and foothill grassland. Elevation 15 to 5740 feet.	None; no suitable habitat is present on or adjacent to the project study area, which is outside the species' known elevation range.
Keck's checkerbloom *Sidalcea keckii*	May-July	–	1B.2	Cismontane woodland, valley, and foothill grassland; grassy slopes in blue oak woodland on serpentine soils or clay. Elevation 245 to 2135 feet.	None; no suitable habitat is present on or adjacent to the project study area.
Suisun Marsh aster *Symphyotrichum lentum*	NA	–	2B.2	Marshes and swamps (brackish and freshwater; often found along sloughs with *Phragmites*, *Scirpus,* blackberry, *Typha.* Elevation 0 to 10 feet.	None; no suitable habitat is present on or adjacent to the project study area.
saline clover *Trifolium hydrophilum*	May–August	–	1B.2	Marshes and swamps, valley and foothill grassland, vernal pools in mesic, alkaline soils. Elevation 0 to 985 feet.	None; no suitable habitat is present on or adjacent to the project study area.

Notes: CNDDB = California Natural Diversity Database; CRPR = California Rare Plant Rank; Yolo HCP/NCCP = Yolo Habitat Conservation Plan/Natural Communities Conservation Plan; CNPS = California Native Plant Society; USGS = U.S. Geological Survey.

1 Status Definitions

Legal Status

E = Listed as Endangered under the Federal (F) or State (S) Endangered Species Act

T = Listed as Threatened under the Federal (F) or State (S) Endangered Species Act

– = No status

California Rare Plant Ranks

1B = Considered rare or endangered in California and elsewhere

2B = Considered rare or endangered in California but more common elsewhere

– = No status

California Rare Plant Rank Extensions

.1 = Seriously threatened in California (greater than 80 percent of occurrences are threatened and/or have a high degree and immediacy of threat)

.2 = Moderately threatened in California (20 to 80 percent of occurrences are threatened and/or have a moderate degree and immediacy of threat).

Sources: CDFW 2023a,b,c; CNPS 2023; ICF 2018; data compiled by GEI Consultants, Inc. 2022

Special-status Wildlife

Table 3.5-2 provides information on each special-status animal that was included in the CNDDB search results, on the IPaC resource list, or was otherwise determined to have potential to occur in the project study area. Based on the review of existing documentation and observations made during the field survey, GEI determined 13 of these taxa could occur, are likely to occur, or are known to occur on and/or adjacent to the project study area. These taxa are discussed further below.

Table 3.5-2. Special-Status Wildlife Evaluated for Potential to Occur in the Project Study Area

Species	Status[1] Federal	Status[1] State	Habitat Associations	Potential to Occur in the Project Study Area
Fish				
Sacramento perch *Archoplites interruptus*	–	--/SSC	Sloughs and slow-flowing streams with heavily vegetated, sluggish waters	None; no suitable habitat is present on or adjacent to the project study area.
Delta smelt *Hypomesus transpacificus*	T	E/--	Endemic to the Sacramento-San Joaquin Delta, occurring primarily downstream of Isleton on the Sacramento River.	None; no suitable habitat is present on or adjacent to the project study area.
steelhead, Central Valley California DPS, pop 11 *Oncorhynchus mykiss irideus*	T	--/--	Anadromous; requires suitable gravel for spawning; rears seasonally in inundated floodplains, rivers, and tributaries.	None; no suitable habitat is present on or adjacent to the project study area.
Chinook salmon, Central Valley spring-run ESU, pop 11 *Onchorhynchus tshawytscha*	T	T/--	Anadromous; requires suitable gravel for spawning; rears seasonally in the Sacramento River and tributaries.	None; no suitable habitat is present on or adjacent to the project study area.
Chinook salmon, Sacramento winter-run ESU, pop 7 *Onchorhynchus tshawytscha*	E	E/--	Anadromous; requires suitable gravel for spawning; rears seasonally in the Sacramento River and tributaries.	None; no suitable habitat is present on or adjacent to the project study area.
Sacramento splittail *Pogonichthys macrolepidotus*	–	--/SSC	Brackish-water rearing habitats in the San Francisco Estuary and on floodplain and river-edge spawning habitat immediately above estuary.	None; no suitable habitat is present on or adjacent to the project study area.

Species	Status[1] Federal	Status[1] State	Habitat Associations	Potential to Occur in the Project Study Area
longfin smelt *Sprinchus thaleichthys*	C	T/--	Anadromous, prefers saline to brackish water. Found in open waters of estuaries, mostly in the water column.	None; the study site is outside the species' range.
eulachon *Thaleichthys pacificus*	T	--/--	Anadromous; spawns in coastal freshwater streams immediately above tidal sloughs.	None; no suitable habitat is present on or adjacent to the project study area.
Invertebrates				
western bumble bee *Bombus occidentalis*	–	C/–	Open grassland and woodland habitats; primarily nests underground.	Unlikely; marginally suitable grassland and frequent maintenance of levee slopes limit potential nesting.
vernal pool fairy shrimp *Branchinecta lynchi*	T	–/–	Vernal pools/seasonal wetlands, including a wide range of sizes and depths.	None; no suitable habitat is present on or adjacent to the project study area.
monarch butterfly *Danaus plexippus*	C	–/–	Winter roost sites located in wind-protected tree groves (eucalyptus, Monterey pine, cypress), with nectar and water sources nearby.	Could occur; host plant (*Asclepias fascicularis*) has been marginally planted within the Cache Creek corridor and water sources are present adjacent to the project study area (Western Monarch Milkweed Mapper 2023).
valley elderberry longhorn beetle *Desmocerus californicus dimorphus*	T	–/–	Closely associated with blue elderberry (Sambucus sp.), the obligate host plant for the beetle larvae.	Likely; suitable elderberry habitat present on and adjacent to the project study area.
vernal pool tadpole shrimp *Lepidurus packardi*	E	–/–	Vernal pools, typically medium to large	None; no suitable habitat is present on or adjacent to the project study area.
Amphibians				
California tiger salamander, Pop. 1 *Ambystoma californiense*, Pop.1 Central California DPS	T	T/WL	Lives in burrows; in vernal pools and seasonal ponds; in grassland, savanna, or open woodland habitats. Breeding occurs in shallow ephemeral or semi–permanent pools and permanent ponds.	None; no suitable breeding habitat is present on or adjacent to the project study area.
California red-legged frog *Rana draytonii*	T	–/SSC	Lowlands and foothill areas, in or near permanent deep water with dense, shrubby, or emergent riparian vegetation.	None; no suitable breeding habitat is present on or adjacent to the project study area.
western spadefoot *Spea hammondii*	PT	–/SSC	Occurs primarily in grassland habitat but can be found in valley foothill woodland. Vernal pools are essential for breeding and egg-laying.	None; no suitable breeding habitat is present on or adjacent to the project study area.
Reptiles				

Species	Status[1] Federal	Status[1] State	Habitat Associations	Potential to Occur in the Project Study Area
northwestern pond turtle *Emys marmorata*	PT	–/SSC	A variety of permanent or nearly permanent water bodies in a wide range of habitats; nests in sunny upland habitats, typically within several hundred feet of aquatic habitat.	Could Occur; some years, Cache Creek remains inundated long enough to support this species and western pond turtle has been documented along the project study area (iNaturalist 2024).
giant garter snake *Thamnophis gigas*	T	T/--	Open water associated with marshes, rivers, streams, sloughs, and irrigation/drainage ditches within the Central Valley; requires emergent herbaceous wetland vegetation for escape and foraging habitat, grassy banks and opening in waterside vegetation for basking, and higher elevation upland habitat for cover and refuge from flooding;	None; no suitable aquatic habitat is present on or adjacent to the project study area.
Birds				
burrowing owl *Athene cunicularia*	–	C/SSC	Nests and forages in grasslands, agricultural lands, and other open habitats with natural or artificial burrows or friable soils.	Could Occur; suitable burrowing and foraging habitat adjacent to the project study area.
golden eagle *Aquila chrysaetos*	–	–/FP	Nest on cliffs and steep escarpments in grassland, chapparal, shrubland, forest, and other vegetated areas.	Could Occur; suitable foraging habitat present on and adjacent to the project study area.
Swainson's hawk *Buteo swainsonii*	--	T	Forages in grasslands and agricultural fields; nests in open woodland or scattered trees often near riparian habitat.	Known to Occur; multiple nests of this species were observed along Cache Creek within the project study area during multiple site visits from spring through summer of 2022.
northern harrier *Circus cyaneus*	–	–/SSC	Nests and forages in grasslands, field crops, and marshes; nests on the ground in patches of dense, often tall, vegetation	Could Occur; suitable foraging and nesting habitat present on and adjacent to the project study area.
white-tailed kite *Elanus leucurus*	–	–/FP	Nests in woodlands and isolated trees and forages in grasslands, pasture, and agricultural fields	Could Occur; suitable foraging and nesting habitat present on and adjacent to the project study area.
bald eagle *Haliaeetus leucocephalus*	delisted	E/FP	Nests in tall trees or cliffs, seen most often near coastlines of oceans, rivers, or lakes.	Unlikely; the project study area does not provide the permanent/long term aquatic habitat/fishing opportunities required to sustain this species. It may occasionally migrate through the project study area.
tricolored blackbird *Agelaius tricolor*	–	T/SSC	Nests in dense cattails and tules, riparian scrub, grain crops, and other low dense vegetation; forages in grasslands and agricultural fields	Could Occur; suitable foraging and nesting habitat present on and adjacent to the project study area.

Species	Status[1] Federal	Status[1] State	Habitat Associations	Potential to Occur in the Project Study Area
western yellow-billed cuckoo *Coccyzus americanus occidentalis*	T	E	Wooded riparian habitat with dense cover and water nearby; dense thickets along streams and marshes.	Unlikely; marginally suitable habitat is present adjacent to the project study area. Nearest CNDDB occurrence in 2006 over 4 miles northeast from project study area.
California black rail *Laterallus jamaicensis coturniculus*	–	T/FP	Saltwater, brackish, and occasionally freshwater marshes.	None; project area is outside the known range for this species.
purple martin *Progne subis*	–	–/SSC	Inhabits woodland, low elevation coniferous forest. Nests in old woodpecker cavities mostly, or man-made structures. Nest often in tall, isolated trees or snags.	Could Occur; suitable nesting and foraging habitat present in the project study area.
mountain plover *Charadrius montanus*	–	–/SSC	Fallow agricultural fields, grazed grasslands, dry tablelands, and other sparsely vegetated open habitats.	Could Occur; suitable foraging habitat present in the project study area.
western snowy plover *Charadrius nivosus nivosus*	T	–/SSC	Barren or sparsely vegetated sand beaches along the coast, and on alkaline flats and river bars farther inland.	None; project area is outside the known range for this species.
song sparrow *Melospiza melodia*	–	–/SSC	Found in a variety of open habitat, including agricultural fields, overgrown pastures, freshwater marsh and lake edges, and suburbs.	Could Occur; suitable nesting and foraging habitat present in the project study area.
bank swallow *Riparia riparia*	–	T	Forages over ponds, rivers and streams, meadows, field, and pastures. Burrow in sandy, vertical bluff or riverbanks, streams, coastal bluff and sand and gravel pits.	Unlikely; marginally suitable habitat is present adjacent to the project study area. Nearest CNDDB occurrence in 2006 over 4 miles northeast from project study area.
least Bell's vireo *Vireo bellii pusillus*	E	–/E	Riparian or dry rivers; nests placed along margin of bushes or on twigs projecting into pathways, usually willow, *Baccharis*, or mesquite.	Unlikely; frequency of disturbance within riparian corridor reduces any habitat suitability for this species. In addition, this species is rare in the greater project vicinity and the nearest documented occurrence of this species is over 12 miles southeast of the project study area.
Mammals				
pallid bat *Antrozous pallidus*	–	–/SSC	Various habitats, but most common in open, dry areas with rocky habitat for roosting; also roost in buildings and occasionally hollow trees.	Could Occur; suitable nesting and foraging habitat present in the project study area.

Species	Status[1] Federal	Status[1] State	Habitat Associations	Potential to Occur in the Project Study Area
western red bat *Lasirus blossevillii*	–	–/SSC	Roosts primarily in trees, often in edge habitats adjacent to streams, fields, or urban areas.	Could Occur; suitable nesting and foraging habitat present in the project study area.
American badger *Taxidea taxus*	–	–/SSC	Dry, open areas in various habitats with friable soils and uncultivated ground.	Unlikely; marginally suitable habitat adjacent to the project study area. Additionally, disturbance related to agriculture, levee maintenance, and public access reduces the likelihood of the species to occur.

Notes: CNDDB = California Natural Diversity Database
[1] Status Definitions
E = Listed as Endangered under the Federal or State Endangered Species Act
T = Listed as Threatened under the Federal or State Endangered Species Act
C = Candidate for listing as Threatened or Endangered under the Federal or State Endangered Species Act
FP = Fully Protected under the California Fish and Game Code
PT = Proposed for listing as Threatened under the Federal or State Endangered Species Act
SSC = California Species of Special Concern
Sources: CDFW 2022a,b,c; USFWS 2023a; GEI Consultants, Inc. field survey observations 2022

Monarch Butterfly

The California overwintering population of monarch butterfly is a candidate for federal ESA listing. This North American subpopulation's range extends throughout the western U.S. from Idaho to Arizona, and they overwinter in coastal California from Mendocino County south to Baja California, Mexico. Monarchs are considered to be a signal species for ecological health due to their susceptibility to habitat loss, disease, pesticides, and climate change (CDFW 2023d). For these and other reasons, recent steep declines in their population have caused alarm and a heavy push for federal listing status to aid in conservation efforts. In California, roosting monarchs are known to prefer closed-cone coniferous forests, though roosts are located in wind-protected tree groves of multiple species, including eucalyptus, Monterey pine (*Pinus radiata*), and cypress (Family Cupressaceae). Adult monarchs require nectar and water sources, whereas reproduction can only take place on milkweed species (*Asclepias* sp.). In California, the typical larval host plant is the native narrow-leaved milkweed (*A. fascicularis*), although any landscape/ornamental plant of the same genus may be used by monarchs. The project study area is located in the "Priority #1" Action Zone for recovering western monarchs due to being within the early breeding zone (USFWS 2023c). Actions for this priority zone include protecting monarch habitat and planting pesticide-free early season milkweed and nectar plants (USFWS 2023c). Monarchs may occur within the project study area as their host plant (specifically *Asclepias fascicularis*) has been planted within the Cache Creek corridor and water sources, notably the Cache Creek channel, are present in and adjacent to the project study area (Western Monarch Milkweed Mapper 2023).

Valley Elderberry Longhorn Beetle

Valley elderberry longhorn beetle (VELB) is federally listed as threatened. The range of this species extends throughout the Central Valley and associated foothills from about 3,000 ft in

elevation to the east and the watershed of the Central Valley to the west. VELB is dependent on its host plant, elderberry (*Sambucus* spp.), for all stages of its life cycle. Adults feed on the elderberry leaves and mate within the elderberry canopy. Females deposit eggs on or adjacent to the host elderberry. The larvae bore into the wood of the host plant where they feed on the pith of the plant for 1 to 2 years. The larvae metamorphose between December and April; the adult then emerges from the chamber through an exit hole. Most records for adults occur from late April to mid-May (USFWS 2006), although April 15 to June 15 is considered to be the "flight season" for the species. This is when VELB is in the adult stage and present within the elderberry shrub canopy. The active beetles may be found in the immediate vicinity of the shrubs. The nearest documented occurrence of an elderberry shrub with exit holes, located approximately 800 feet south of the Cache Creek channel, is 1.25 miles southeast of the project study area (CDFW 2022a); however, VELB may occur anywhere within the project study area where elderberry shrubs are located.

Northwestern Pond Turtle

Northwestern pond turtle is a CDFW Species of Special Concern and proposed for listing as threatened under ESA. This species is found in and adjacent to a variety of aquatic habitats, including ponds, marshes, rivers, streams, and irrigation ditches that typically have muddy or rocky bottoms and support aquatic vegetation. Preferred habitat for the turtle consists of calm waters, such as near stream banks, backwater, or pools, with vegetated banks and logs or rocks for basking. Hatchlings and juveniles require shallow water with abundant emergent vegetation (Jennings and Hayes 1994). Northwestern pond turtles may occur within the project study area as Cache Creek remains inundated long enough to support this species during particularly wet years and western pond turtle has been documented along the project study area (iNaturalist 2024).

Burrowing Owl

Burrowing owl is a CESA candidate species and a CDFW Species of Special Concern. Burrowing owls typically inhabit grasslands and other open habitats with low-lying vegetation. They are also known to nest and forage in idle agricultural fields, ruderal fields, and the edges of cultivated fields, although these areas provide lower-quality habitat than native grasslands. Burrow availability is an essential component of suitable habitat. Burrowing owls are capable of digging their own burrows in areas with soft soil, but they generally prefer to adopt those excavated by other animals, typically ground squirrels. In areas where burrows are scarce, they can use pipes, culverts, debris piles, and other artificial features. Burrowing owls are most likely to inhabit areas of sparse/low vegetation within the project study area, particularly where California ground squirrel (*Otospermophilus beecheyi*) burrows are located.

Golden Eagle

Golden eagle is a CDFW Fully Protected species. Golden eagles typically nest on cliffs or in trees and nests are typically in mountainous or hilly terrain. Hunting for small mammals, snakes, birds, or carrion takes place over open lands. Golden eagles can be found in valleys and plains (especially during migration and the winter) and are fairly common in the western United States (Dunn and Alderfer 2011). Golden eagles are most common in vicinity of the project study area in the months of July and August and are highly unlikely to nest in, adjacent, or near the project study area due to a lack of mountainous/hilly terrain (USFWS 2023a).

Swainson's Hawk

Swainson's hawk is State-listed as threatened. This species typically occurs in California only during the breeding season (March to September) and winter in Mexico and South America; the Central Valley population migrates only as far south as central Mexico. Swainson's hawks begin to arrive in the Central Valley in March; nesting territories are usually established by April, with incubation and rearing of young occurring through June. Swainson's hawks are found most commonly in grasslands, low shrublands, and agricultural habitats that include large trees for nesting. Nests are found in riparian woodlands, roadside trees, trees along field borders, and isolated trees. Nesting pairs frequently return to the same nest site for multiple years and decades.

Prey abundance and accessibility are the most important features determining the suitability of Swainson's hawk foraging habitat. In addition, agricultural operations (e.g., mowing, flood irrigation) have a substantial influence on the accessibility of prey and thus create important foraging opportunities for Swainson's hawk. Certain crops provide better foraging than others due to crop height and the frequency of the disturbance regime. Periodic disturbances such as harvesting, tilling, and flooding can increase prey availability. Generally, alfalfa crops are considered the highest value foraging habitat for Swainson's hawk. Crops that are tall and dense enough to preclude the capture of prey do not provide suitable habitat except around field margins, but prey animals in these habitats are accessible during and soon after harvest. Swainson's hawks feed primarily on small rodents but also consume insects and birds. Any habitat within the foraging distance may provide food at some time in the breeding season that is necessary for reproductive success. During the course of several field visits in the summer of 2022, GEI biologists observed numerous active Swainson's hawk nests along the project study area.

Northern Harrier

Northern harrier is a CDFW Species of Special Concern. Northern harriers nest and forage in grasslands, field crops, and marshes; nests on the ground in patches of dense, often tall, vegetation. Prey includes primarily small mammals and passerines (Shuford and Gardali 2008). Northern harriers may inhabit and/or nest within any of the low grass and/or low shrub vegetated areas of the project study area.

White-tailed Kite

White-tailed kite is a CDFW Species of Special Concern and a Fully Protected species. They nest in trees and shrubs, especially along marshes or rivers and forage in grasslands and agricultural fields. They are a year-long resident, breeding, nesting, and rearing young between February and October. White-tailed kite may inhabit and/or nest within any of the tree and/or shrub habitat along the project study area's riparian corridor.

Tricolored Blackbird

Tricolored blackbird is State-listed as threatened. This species nests April – July in a variety of substrates, including cattails, bulrushes, and willows in freshwater marshes, as well as other dense vegetation, such as mustard, blackberry, milk thistle (*Silybum marianum*), mallow (*Malva* spp.), and cultivated grain crops (e.g., triticale). Nesting areas must be large enough to support a

minimum colony of 50 pairs as tricolored blackbirds are highly colonial. Tricolored blackbirds forage on the ground in croplands, grassy fields, flooded land, and pond edges. Tricolored blackbirds may inhabit/nest at the project study area when aquatic features of the project study area are inundated during breeding/nesting season and will likely closely associate with any shrubby and/or cattail/bulrush vegetation directly adjacent to a flooded feature.

Purple Martin

Purple martin is a CDFW Species of Special Concern. Purple martins inhabit woodland and low elevation coniferous forest. Nests are created in old woodpecker cavities mostly, though manmade structures may be used as well. When tree-nesting, purple martins often use tall, isolated trees or snags. Purple martins may inhabit and/or nest anywhere along the linear project study area, utilizing any isolated trees or snags for nesting.

Mountain Plover

Mountain plover is a CDFW Species of Special Concern. Mountain plovers reside in short-grass prairie land or flat areas devoid of vegetation. They prefer non-cultivated lands, as they hunt for prey within dry land cracks. While these birds typically do not nest in California, they can be found wintering around the Yolo Bypass and Central Valley (Shuford and Gardali 2008). Mountain plover may occur on the project study area where suitable foraging habitat is present.

Pallid Bat

Pallid bat is a CDFW Species of Special Concern. It is a noticeably large species of bat with distinct ears, body size, eyes, and snout-like nose. In California, they occur in a variety of habitat, including coastal woodland forests, low deserts, and oak woodlands (Pierson and Rainy 1998). Pallid bats are primarily crevice roosters, roosting in buildings, bridges, caves, and hollow trees. As such, pallid bats are most likely to utilize hollow trees for roosting within the project study area, and areas of denser tree vegetation with tree hollows may be used for longer-term and/or maternity roosting.

Western Red Bat

Western red bat is a CDFW Species of Special Concern. They are medium-sized bats with a distinctive fluffy, amber/orange fur and white patches on their shoulders (BCI 2023). Western red bats roost in forests and woodlands of varying elevation but prefer trees (Zeiner et al 1990). Foraging takes place over many vegetation types, including grassland, shrubby zones, open woodland, forests, and agricultural zones. Typical roost sites include those that are within edge habitat adjacent to riparian corridors, open fields, or urban zones. Western red bats are most likely to utilize trees for roosting within the project study area, and areas of denser tree vegetation may be used for longer-term and/or maternity roosting.

Sensitive Habitats

Sensitive habitats include those that are of special concern to resource agencies or are afforded specific consideration under State and Federal regulations. Sensitive habitats may be of special concern for a variety of reasons, including their locally or regionally declining status, or because

they provide important habitat for special-status species. Sensitive habitats that could occur in the project study area are described below.

Waters and Wetlands

The U.S. Army Corps of Engineers (USACE) has jurisdiction over features that qualify as waters of the United States, including some wetlands that support appropriate vegetation, soils, and hydrology. Likewise, Regional Water Quality Control Board (RWQCB) jurisdiction includes Federally protected waters and areas that meet the definition of "waters of the state." Waters of the state include all surface water and groundwater, including saline waters, within the State's boundaries. Finally, CDFW also has jurisdiction over any feature that holds water at least periodically or intermittently, and associated habitat (e.g., riparian vegetation), that supports fish, other aquatic life, or terrestrial wildlife. Cache Creek flows are typically intermittent, and, on average, the creek is dry for up to several months each year during summer.

GEI completed an aquatic resources delineation for the project study area (GEI 2023b). The delineation identified a total of 63.98 acres of aquatic resources in the survey area, including one perennial channel (Cache Creek), one ditch, and one fresh emergent wetland. All features except for Cache Creek appear to be non-natural and formed as a result of urban and agricultural development. The extent of these features is shown in the mapbook provided as Appendix A of the *Aquatic Resources Delineation Report* (GEI 2023b), and each feature class is described in more detail. Table 3 of the *Aquatic Resources Delineation Report* summarizes the aquatic resources in the project study area. Although Cache Creek is not considered a traditionally navigable water by the USACE, it is a tributary to the Sacramento River. Because all of the features identified in the project study area are tributaries to, or within close proximity to Cache Creek, all aquatic resources are considered waters of the U.S. and waters of the State, and therefore, are considered sensitive habitat.

Critical Habitat

Critical habitat is a geographic area containing features determined to be essential to the conservation of a species federally listed as threatened or endangered. USFWS has jurisdiction over terrestrial wildlife and freshwater fish critical habitat, while the National Marine Fisheries Service (NMFS) maintains jurisdiction over marine species and anadromous fish. No designated critical habitat is present within the project study area.

Sensitive Natural Communities

CDFW maintains a list of terrestrial natural communities that are native to California, the List of Vegetation Alliances and Associations (CDFW 2022b). Within that list, CDFW identifies and ranks sensitive natural communities of special concern considered to be highly imperiled. Within the project study area, Hinds' walnut, Fremont cottonwood forest and woodland, valley oak riparian forest and woodland, sandbar willow thickets, Goodding's willow riparian woodland and forest, riverine, and emergent wetlands are all considered sensitive natural communities.

3.5.2 Regulatory Setting

Federal Plans, Policies, Regulations, and Laws

Federal Endangered Species Act

Under the ESA (Title 16, Section 1531 and following sections of the U.S. Code [16 USC 1531 et seq.]), USFWS and the NMFS have regulatory authority over species listed or proposed for Federal listing as threatened or endangered and over projects that may result in take of Federally listed species. In general, persons subject to the ESA (including private parties) are prohibited from "take" of endangered or threatened fish and wildlife species on private property and from taking endangered or threatened plants in areas under Federal jurisdiction or in violation of State law.

The ESA defines take as "to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct." "Harass" is further defined as an intentional or negligent act or omission which creates the likelihood of injury to wildlife by annoying it to such an extent as to significantly disrupt normal behavioral patterns which include, but are not limited to, breeding, feeding, and sheltering. "Harm" is defined as an act that actually kills or injures wildlife. This may include significant habitat modification or degradation where it actually kills or injures wildlife by significantly impairing essential behavioral patterns, including breeding, feeding, or sheltering.

Section 7 of the ESA outlines procedures for Federal interagency cooperation to protect and conserve Federally listed species and designated critical habitat. Section 7(a)(2) requires Federal agencies to consult with USFWS and NMFS to ensure that they are not undertaking, funding, permitting, or authorizing actions likely to jeopardize the continued existence of listed species, or destroying or adversely modifying designated critical habitat. For projects where Federal action is not involved and take of a listed species may occur, the California Department of Water Resources (DWR) may seek an incidental take permit under Section 10(a) of the ESA.

Fish and Wildlife Coordination Act

The Fish and Wildlife Coordination Act requires an agency to consult with USFWS if the agency plans to conduct, license, or permit an activity involving the impoundment, diversion, deepening, control, or modification of a stream or body of water. The Fish and Wildlife Coordination Act also requires consultation with the head of the state agency that administers wildlife resources in the affected state. The purpose of this process is to promote conservation of wildlife resources by preventing loss of and damage to such resources and to provide for the development and improvement of wildlife resources in connection with the agency action.

Migratory Bird Treaty Act

The Federal Migratory Bird Treaty Act (MBTA) (16 USC, Sec. 703, Supp. I, 1989) prohibits killing, possessing, or trading migratory birds, except in accordance with regulations prescribed by the Secretary of the Interior. This act encompasses whole birds, parts of birds, bird nests, and eggs and applies to all persons and agencies in the U.S., including Federal agencies. The MBTA is administered by the USFWS, but there is no process for obtaining project-related take authorization under the MBTA.

Bald and Golden Eagle Protection Act

The Bald and Golden Eagle Protection Act (16 USC 668-668d), enacted in 1940, and amended several times since, prohibits anyone, without a permit issued by the Secretary of the Interior, from "taking" bald or golden eagles, including their parts (including feathers), nests, or eggs. This Act provides criminal penalties for persons who "take, possess, sell, purchase, barter, offer to sell, purchase or barter, transport, export or import, at any time or any manner, any bald eagle ... [or any golden eagle], alive or dead, or any part "(including feathers), nest, or egg thereof."

This Act defines "take" as "pursue, shoot, shoot at, poison, wound, kill, capture, trap, collect, molest or disturb." Regulations further define "disturb" as "to agitate or bother a bald or golden eagle to a degree that causes, or is likely to cause, based on the best scientific information available, 1) injury to an eagle, 2) a decrease in its productivity, by substantially interfering with normal breeding, feeding, or sheltering behavior, or 3) nest abandonment, by substantially interfering with normal breeding, feeding, or sheltering behavior" (50 Code of Federal Regulations [CFR] 22.6).

In addition to immediate impacts, this definition also covers effects that result from human-induced alterations initiated around a previously used nest site during a time when eagles are not present, if, upon the eagle's return, such alterations agitate or bother an eagle to a degree that interferes with or interrupts normal breeding, feeding, or sheltering habits, and causes injury, death or nest abandonment. The USFWS issues and maintains permits for eagle take and provides additional information on eagle take permitting, as well as eagle conservation, through their Eagle Management Program.

Clean Water Act

Section 404

Clean Water Act Section 404 regulates the discharge of dredged and fill materials into waters of the United States. The Navigable Waters Protection Rule became effective on June 22, 2020 (85 FR 22250), which redefined the scope of navigable "waters of the United States." On June 9, 2021, the U.S. Environmental Protection Agency (EPA) and USACE announced their intention, through two separate rulemakings, to revise the definition of waters of the United States. On August 31, 2021, the United States District Court for the District of Arizona vacated and remanded the Navigable Waters Protection Rule in the case of the Pascua Yaqui Tribe v. the EPA. Following the decision, EPA and USACE halted implementation of the Navigable Waters Protection Rule and are currently interpreting "waters of the United States" consistent with the pre-2015 regulations and associated guidelines and case law, including the Supreme Court decision Rapanos v. United States, 547 U.S. 715 (2006). Waters of the United States (with the exception of wetlands) are currently defined as territorial seas and waters which are currently used, were used in the past, or may be susceptible to use in interstate or foreign commerce, including waters which are subject to the ebb and flow of the tide; interstate waters, including wetlands; other waters such as intrastate lakes, rivers, streams (including intermittent streams), mudflats, sandflats, wetlands, sloughs, prairie potholes, wet meadows, playa lakes, or natural ponds, the use, degradation or destruction of which could affect interstate or foreign commerce; impoundments of waters otherwise defined as waters of the United States. For wetlands, the U.S. Supreme Court in Sackett v. EPA (Supreme Court of the U.S. [SCOTUS] 2022) recently

announced the continuous surface connection test which requires direct adjacency between the waterbodies. USACE and the EPA are expected to issue additional guidance on the continuous surface connection test.

Section 401

Under Section 401 of the CWA, an applicant for a Section 404 permit must obtain a certificate from the appropriate State agency stating that the intended dredging or filling activity is consistent with the State's water quality standards and criteria. In California, the State Water Resources Control Board (SWRCB) delegates the authority to grant water quality certification to the nine RWQCBs; the Central Valley RWQCB has jurisdiction over the San Joaquin Valley.

State Plans, Policies, Regulations, Laws

California Endangered Species Act

CESA (CCFGC 2050 et seq.) directs State agencies not to approve projects that would jeopardize the continued existence of an endangered or threatened species or result in the destruction or adverse modification of habitat essential to the continued existence of a species. Furthermore, CESA states that CDFW, together with DWR and any State lead agency, must develop reasonable and prudent alternatives consistent with conserving the species, while maintaining the project purpose to the greatest extent possible. Take of State-listed species incidental to otherwise lawful activities require a permit, pursuant to Section 2081(b) of CESA. Project-related impacts of the authorized take must be minimized and fully mitigated, and adequate funding must be in place to implement mitigation measures and monitor compliance and effectiveness. Mitigation can include land acquisition, permanent protection and management, and/or funding in perpetuity of compensatory lands.

As under Federal law, listed plants have considerably less protection than fish and wildlife under State law. The California Native Plant Protection Act (CFGC Section 19000 et seq.) allows landowners to take listed plant species from, among other places, a canal, lateral ditch, building site, or road, or other right-of-way, provided that the owner first notifies CDFW and gives the agency at least 10 days to retrieve (and presumably replant) the plants before they are destroyed.

California Fish and Game Code

Rivers, Lakes, and Streams

Under CFGC Section 1602, it is unlawful for any entity to substantially divert or obstruct the natural flow of or substantially change or use any material from the bed, channel, or bank of, any river, stream, or lake, or to deposit or dispose of debris, waste, or other material where it may pass into any river, stream, or lake, without first notifying CDFW of such activity and obtaining an agreement authorizing the activity. In practice, CDFW may exert authority over any feature that holds water at least periodically or intermittently, and associated habitat (e.g., riparian vegetation), that supports fish, other aquatic life, or terrestrial wildlife.

Fully Protected Species

Sections 3511, 4700, 5050, and 5515 of the CFGC provide protection from take for 37 fish and wildlife species referred to as fully protected species. Except for take related to scientific

research or incidental take authorized as part of an approved Natural Communities Conservation Plan (NCCP), take of fully protected species is prohibited.

Protection of Birds

Section 3503 of the CFGC states that it is unlawful to take, possess, or needlessly destroy the nest or eggs of any bird. Section 3503.5 states that it is unlawful to take, possess, or destroy any raptors (i.e., species in the orders Falconiformes and Strigiformes), including their nests or eggs.

Porter-Cologne Water Quality Control Act

The Porter-Cologne Water Quality Control Act (Porter-Cologne Act; California Water Code Section 13000 et seq.) requires that each of the State's nine RWQCBs prepare and periodically update basin plans for water quality control. Each basin plan sets forth water quality standards for surface water and groundwater and actions to control nonpoint and point sources of pollution to achieve and maintain these standards. Basin plans offer an opportunity to protect wetlands through the establishment of water quality objectives. RWQCB jurisdiction includes Federally protected waters and areas that meet the definition of "waters of the state." Waters of the state include all surface water and groundwater, including saline waters, within the State's boundaries. The RWQCBs have discretion to take jurisdiction over areas not Federally regulated under Section 401, provided they meet the definition of waters of the State. Mitigation requiring no net loss of wetlands functions and values of waters of the State is typically required by the RWQCB.

Regional and Local Plans, Policies, Regulations, and Ordinances

DWR is not subject to local regulations unless expressly authorized by the Legislature. Local plans, policies, regulations, and ordinances potentially relevant to the proposed project are addressed in this section for informational purposes because they may be relevant to certain responsible agencies.

Yolo Habitat Conservation Plan/Natural Community Conservation Plan

The Yolo Habitat Conservancy (Conservancy), formerly the Yolo County Habitat Conservation Plan (HCP)/NNCCP Joint Powers Agency, prepared the Yolo HCP/NCCP (ICF 2018). The Yolo HCP/NCCP provides a framework to improve conservation of natural resources, including endangered species habitat, while streamlining the permitting process for planned development, infrastructure, and maintenance activities. It allows Yolo County, the Conservancy, and the Cities of Davis, West Sacramento, Winters, and Woodland to receive Incidental Take Permits under ESA and CESA for activities and projects they conduct and those under their jurisdiction. The Yolo HCP/NCCP was completed in 2017 and implemented in January of 2018.

Yolo County General Plan

The following policies from the *Yolo 2030 Countywide General Plan* Conservation and Open Space Element (Yolo County 2009) related to biological resources apply to the project, as listed below:

Policy CO-1.28: Balance the needs of agriculture with recreation, flood management, and habitat, within the Yolo Bypass.

Policy CO-2.1: Consider and maintain the ecological function of landscapes, connecting features, watersheds, and wildlife movement corridors.

Policy CO-2.3: Preserve and enhance those biological communities that contribute to the county's rich biodiversity including blue oak and mixed oak woodlands, native grassland prairies, wetlands, riparian areas, aquatic habitat, agricultural lands, heritage valley oak trees, remnant valley oak groves, and roadside tree rows.

Policy CO-2.8: Encourage all public land management agencies to protect, restore, and enhance the fish habitat within their jurisdiction.

Policy CO-2.9: Protect riparian areas to maintain and balance wildlife values.

Policy CO-2.14: Ensure no net loss of oak woodlands, alkali sinks, rare soils, vernal pools, or geological substrates that support rare endemic species, with the following exception. The limited loss of blue oak woodland and grasslands may be acceptable, where the fragmentation of large forests exceeding 10 acres is avoided, and where losses are mitigated.

Policy CO-2.24: Promote floodplain management techniques that increase the area of naturally inundated floodplains and the frequency of inundated floodplain habitat, restore some natural flooding processes, river meanders, and widen riparian vegetation, where feasible.

Policy CO-2.31: Protect wetland ecosystems by minimizing erosion and pollution from grading, especially during grading and construction projects.

Policy CO-2.38: Avoid adverse impacts to wildlife movement corridors and nursery sites (e.g., nest sites, dens, spawning areas, breeding ponds).

Policy CO-2.41: Require that impacts to species listed under the State or Federal Endangered Species Acts, or species identified as special-status by the resource agencies, be avoided to the greatest feasible extent. If avoidance is not possible, fully mitigate impacts consistent with applicable local, State, and Federal requirements.

Policy CO-2.42: Projects that would impact Swainson's hawk foraging habitat shall participate in the *Agreement Regarding Mitigation for Impacts to Swainson's Hawk Foraging Habitat in Yolo County* entered into by the CDFW and the Yolo County HCP/NCCP Joint Powers Agency, or satisfy other subsequent adopted mitigation requirements consistent with applicable local, State, and Federal requirements.

3.5.3 Environmental Impacts and Mitigation Measures

Thresholds of Significance

The thresholds for determining the significance of impacts for this analysis are based on the environmental checklist in Appendix G and Section 15065 of the State CEQA Guidelines, as amended. Implementing the project would have a significant impact on biological resources if it would:

- Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by CDFW, USFWS, or NMFS;
- Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, or regulations, or by CDFW, USFWS, or NMFS;
- 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;
- Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of nursery sites by native wildlife;
- Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance; or
- Conflict with the provisions of an adopted HCP, NCCP, or other approved local, regional, or state HCP.

Issues Not Discussed Further

Because birds are generally highly mobile, the project would result in only minor impacts, if any, to bird species that do not have nesting ranges or nesting habitat within the project site. These bird species, including those that are special-status, (see sub-section "Special-status Wildlife" in Section 3.5.1, "Environmental Setting") are *not* considered below for avoidance, minimization, and compensation measures for project implementation. Any birds that utilize the project site for foraging have ample foraging opportunities outside the boundary of the project site and would be able to return once project work has completed. These issues are not discussed further within this analysis.

Analysis Methodology

The following analysis of impacts on biological resources that could result from project implementation focuses on evaluating the potential to adversely affect special-status species, other common species protected by the CFGC and/or MBTA, and their habitats or other communities considered sensitive by Federal, State, or local agencies. This evaluation considers temporary and permanent habitat loss and disturbance and potential for direct or indirect injury

or death of individual plant and wildlife species as sources of potentially significant impacts. Information on activities and habitat conditions that could affect special-status species is based on scientific publications, agency documents, and other relevant sources. Impact conclusions consider the habitat quality, impact extent, impact duration, and impact intensity (e.g., level of harm, injury/loss, or degradation suffered by the resource).

Several comments received during the public scoping period were broadly related to vegetation, aquatic habitats, processes to analyze impacts, among others. Comments related to vegetation include concern regarding overgrowth, invasive species, sensitive plant communities, and suggestions for restoration planning. Several comments were received regarding processes such as the protocols for field surveys, reporting species observed to CNDDB, relocation of onsite wildlife, habitat mapping, documentation of potential species present onsite and surrounding the project site, as well as identifying all aquatic resources and associated habitats present. Finally, comments were received regarding special status species and specific habitats including nesting birds, and native wildlife nursery sites. These public comments are addressed in the impact analysis that follows.

Impact Analysis and Mitigation Measures

Table 3.5-3 identifies impacts on land cover types and habitat associations that are attributable to the proposed project. These impacts are based on the project footprint and land cover mapping completed by GEI in 2024. Permanent impacts consist of sediment removal areas because the existing contours and vegetation conditions of these areas would be permanently modified by excavation and permanent removal of riparian habitat associated with levee raising activities. Temporary impacts consist of ground disturbance associated with use of staging areas and construction activities for levee raises outside of riparian habitat, where approximate existing conditions would be restored after construction of the project.

Table 3.5-3. Acreage of Land Cover/Habitat Types Impacted by the Proposed Project.

Land Cover/Habitat Type	Temporary Impacts (acres)	Permanent Impacts (acres)
Riparian Habitat Types		
Fremont Cottonwood Forest and Woodland	0.0	9.1
Goodding's Willow Riparian Woodland and Forest	0.0	1.2
Hind's Walnut	0.0	2.8
Sandbar Willow Thickets	0.0	2.3
Valley Oak Riparian Forest and Woodland	0.0	2.5
Riparian Habitat Subtotal	*0.0*	*17.9*
Other Land Cover/Habitat Types		
Agriculture	24.4	0.0
Elderberry Savanna	0.0	0.2
Non-native Annual Grassland	86.9	4.4
Riverine	0.0	20.9
All Land Cover/ Habitat Types		
Project Total	**111.3**	**43.4**

Impact 3.5.1: ***Impacts on Riparian Habitat.***
Vegetation disturbance/removal associated with sediment removal and levee raises would result in permanent impacts to riparian habitat, which would be a ***significant impact****.*

Riparian habitat is protected under Section 1602 of the California Fish and Game Code and is considered a sensitive natural community by CDFW. Riparian habitats within the project study area are mapped as Fremont cottonwood forest and woodland, Goodding's willow riparian woodland and forest, Hind's walnut, sandbar willow thickets, and valley oak riparian woodland and forest in **Figures 3.5-1a** to **3.5-1n**. The project would impact riparian habitat within the project site directly via vegetation disturbance/removal. Permanent impacts to riparian habitats would primarily occur from excavation during sediment removal and to a small extent from vegetation disturbance/removal required to raise levees. As shown in **Table 3.5-3,** approximately 17.9 acres of sensitive riparian habitats would be permanently impacted by the project. Permanent impacts to riparian habitat from vegetation disturbance/removal would be a **significant** impact. The following mitigation measures have been identified to reduce this impact.

Mitigation Measure 3.5.1a Implement Best Management Practices to Avoid and Minimize Impacts to Sensitive Biological Resources

DWR will implement the following measures to avoid and minimize impacts on sensitive biological resources in the project area:

- **Confine and Delineate Work Area**. DWR shall clearly identify boundaries of work areas using temporary fencing or equivalent and shall identify areas designated as environmentally sensitive prior to beginning construction activities. Land clearing shall be confined to the minimum area necessary to facilitate construction activities. Workers shall restrict movement of heavy equipment to and from the project site to established roadways to minimize natural community and covered species habitat disturbance. All construction vehicles, other equipment, and personnel shall avoid these designated areas.

- **Control Fugitive Dust**. Workers shall minimize the spread of dust from work sites to natural communities on adjacent lands.

- **Conduct Worker Training**. All construction personnel shall participate in a worker environmental training program (approved/authorized by the Conservancy if using the Yolo HCP/NCCP permitting process) and administered by a qualified biologist. A "qualified biologist" typically has appropriate academic qualifications, work experience with the species of focus for the project, and/or has been authorized by USFWS, CDFW, or another regulatory body to manage protected biological resources on the project site. The training shall provide education regarding sensitive habitats and special-status species and their habitats, the need to avoid adverse effects, state and federal protection, and the legal implications of violating the federal ESA (and Natural Community Conservation Planning Act, if applicable). The training shall include, at a minimum, a discussion of all special-status species that have the

potential to occur in the study area, their conservation status, an overview of their habitats, measures to be implemented for their protection, and possible penalties for non-compliance. A pre-recorded video presentation by a qualified biologist shown to construction personnel may fulfill the training requirement.

- **Restoration of Construction Staging Areas and Temporary Work Areas**. Within 1 year following completion of project activities, DWR shall restore temporary work and staging areas to a condition equal to or greater than the habitat function of the affected habitat. Restoration of vegetation in temporary work and staging areas shall use clean, native seed mixes (approved by the Conservancy only if using the Yolo HCP/NCCP permitting process) that are free of noxious plant species seeds.

  Timing: Before, during, and after project construction activities

  Responsibility: DWR

Mitigation Measure 3.5.1b Avoid and Minimize Loss of Riparian Habitats

DWR will implement the following measures to avoid and minimize impacts on riparian habitats (e.g., Fremont cottonwood forest and woodland, Goodding's willow riparian woodland and forest, Hind's walnut, sandbar willow thickets, and valley oak riparian woodland and forest):

- **Limit Ground-Disturbance to Construction Areas and Avoid and Limit Disturbance to Riparian Habitats When Feasible.** Ground-disturbance will be limited to construction areas, including necessary access routes and staging areas. The number of access routes, size of staging areas, and total area of the project activity will be limited to the minimum necessary. When possible, existing access routes and points will be used. All roads, staging areas, and other facilities will be placed to avoid and limit disturbance to riparian habitats when feasible.

- **Establish Buffers Around Avoided Riparian Habitats.** For riparian habitats that will be avoided, a buffer of 100 feet from the canopy dripline shall be applied where feasible. If a 100-foot buffer is infeasible, a lesser buffer shall be applied.

- **Erect and Maintain High-visibility Fencing during Construction to Protect Sensitive Biological Resource Areas**. Before project activities adjacent to riparian habitat begin, fencing, stakes, and/or flagging shall be placed to clearly delineate the extent of material excavation and other construction and restoration activities. To the maximum extent feasible, a minimum 20-foot buffer shall be established and maintained around riparian vegetation to prevent accidental damage during project activities. If work must occur closer to riparian vegetation, fencing or other means of minimizing potential for accidental damage shall be installed and maintained when work is occurring in adjacent areas.

  Timing: Before, during, and after project construction activities

Responsibility: DWR

Mitigation Measure 3.5.1c Compensate for Loss of Riparian Habitats (Fremont Cottonwood Forest and Woodland, Goodding's Willow Riparian Woodland and Forest, Hind's Walnut, Sandbar Willow Thickets, and Valley Oak Riparian Woodland and Forest)

DWR will implement the measures described below to minimize and compensate for loss of riparian habitat:

- **Compensate for Permanent Impacts to Riparian Habitats.** Unavoidable impacts on riparian habitat shall be compensated at up to a 3:1 replacement ratio for each acre removed to ensure no net permanent loss of riparian habitat. Appropriate replacement ratios for the proposed project will be determined in consultation with CDFW and in accordance with a Lake and Streambed Alteration Agreement, pursuant to Section 1600 of the California Fish and Game Code, which will be obtained from CDFW prior to project construction.

- **Prepare and Implement a Mitigation Plan.** A mitigation plan shall be prepared, reviewed by appropriate agencies, and implemented addressing how the loss of riparian habitat that cannot be avoided will be compensated. The mitigation plan shall identify compensation ratios for acres lost and mitigation sites, if applicable. The plan will include using a riparian habitat mitigation bank, offsite mitigation, and/or may incorporate the requirements defined in the Yolo HCP/NCCP guidelines, including compensation through the use of the HCP through consultation with USFWS.

  Timing: Before project construction activities

  Responsibility: DWR

Significance after Mitigation: Implementation of Mitigation Measures 3.5.1a through 3.5-1c would reduce significant impacts to riparian habitats through: delineation of work areas; dust suppression to avoid sediment covering habitat adjacent to impacted areas; educating site workers about sensitive biological resources and consequences for noncompliance with applicable laws and permits; and avoiding, minimizing, and compensating for loss of riparian habitats. By avoiding and minimizing impacts to the extent feasible and compensating for any impacts that cannot be avoided or minimized, impacts to sensitive riparian habitats would be reduced to a **less than significant** level.

Impact 3.5.2: ***Impacts on Aquatic Resources.***
Permanent impacts to aquatic resources would occur from sediment removal, but no adverse effects or loss of waters of the United States or State would occur. Temporary impacts during construction could result in impairment of water quality in aquatic resources, which would be a ***significant impact****.*

Aquatic resources are jurisdictional wetlands and other waters of the United States and the State that are protected under the Clean Water Act. Aquatic resources within the project study area are mapped as riverine habitat and areas up to the OHWM in Figures 3.5-1a to 3.5-1n. These aquatic resources may be either directly or indirectly impacted by the project.

Permanent impacts would occur from sediment removal within riverine habitat and within areas up to the OHWM. As shown in Table 3.5-3, approximately 20.9 acres of riverine habitat would be permanently impacted by the project. These impacts are considered permanent because the existing contours and conditions would be permanently modified by excavation. However, the project would not result in loss of waters of the United States or State because riverine habitat would persist after the project, and in fact, could be increased due to widening of the Cache Creek channel during sediment removal activities. Since the project would not result in adverse effects to aquatic resources nor loss of waters of the United States or State, permanent impacts to riverine habitat are considered **less than significant**.

During construction, haul trucks and heavy equipment would use the Cache Creek channel and temporary ramps would be installed in the channel to facilitate access to sediment removal sites. Upon completion of construction, any temporary fill would be removed, and site restoration measures would be implemented to return areas around project improvements to pre-construction conditions. Temporary impacts could occur from erosion of temporary fills, polluted stormwater runoff, and other contaminants/hazardous materials (such as fuels, lubricants, hydraulic fluids, and coolants required for operation of equipment during construction) entering the riverine habitat in the Cache Creek channel during the project construction period and impairing water quality. The potential temporary impacts to aquatic resources would be **significant**. The following mitigation measures have been identified to reduce this impact.

Mitigation Measure 3.5.1a Implement Best Management Practices to Avoid and Minimize Impacts to Sensitive Biological Resources

Please refer to Mitigation Measure 3.5.1a under Impact 3.5.1 in this section for the full text of this mitigation measure.

Timing: Before and during project construction activities

Responsibility: DWR

Mitigation Measure 3.7.1 Acquire Appropriate Regulatory Permits and Prepare and Implement a Storm Water Pollution Prevention Plan, Spill Prevention Control and Countermeasures Plan, and Associated Best Management Practices

Please refer to Section 3.7, “Hazards and Hazardous Materials,” Impact 3.7.1 for the full text of this mitigation measure.

Timing: Before and during project construction activities

Responsibility: DWR

Significance after Mitigation: Implementation of Mitigation Measures 3.5.1a and 3.7.1 would implement water quality management measures to meet Federal and State regulations and reduce water quality impacts from exposure of disturbed areas to storm events and accidental spills of hazardous materials. This would reduce temporary impacts on aquatic resources to **less than significant**.

Impact 3.5.3: ***Impacts on Valley Elderberry Longhorn Beetle.***
Vegetation removal and/or trimming of any individual elderberry shrubs within or outside of the 4.56 acres of elderberry savanna identified in the project study area, either by mechanized or hand alteration of habitat, would result in ***significant impacts*** *to VELB through habitat destruction, direct loss of individual beetles, and loss of reproductive potential due to habitat loss.*

VELB habitat within the project study area is mapped as riverine in Figures 3.5-1a to 3.5-1n. VELB may be impacted directly (i.e., mortality or loss of reproductive potential) through project-wide vegetation removal and impacts to their host plant, elderberry shrubs. Out of the 4.6 acres of elderberry savanna and over 600 elderberry shrubs mapped in the project study area, 0.2-acre of elderberry savanna and 43 elderberry shrubs were mapped within areas that would not be avoided during project construction activities and the project would remove and/or otherwise disturb VELB habitat during construction. Approximately 46 additional shrubs would be within 20 feet of project activity, while approximately 527 shrubs would be within 100 feet of project activity. The loss of approximately 43 elderberry shrubs and any indirect impacts to shrubs in the general project vicinity would be a **significant impact** on VELB through disturbance/destruction of habitat and/or direct loss of individual beetles. The following mitigation measures have been identified to reduce this impact.

Mitigation Measure 3.5.1a Implement Best Management Practices to Avoid and Minimize Impacts to Sensitive Biological Resources

Please refer to Mitigation Measure 3.5.1a under Impact 3.5.1 in this section for the full text of this mitigation measure.

Timing: Before and during project construction activities

Responsibility: DWR

Mitigation Measure 3.5.3a Avoid Take and Adverse Effects on Habitat of the VELB

DWR will implement the following measures to avoid take and adverse effects on VELB:

- **Temporarily Fence All Elderberry Shrubs Adjacent to Construction Areas and Establish Avoidance Buffers.** Before project activities begin near elderberry shrubs that can be avoided, fencing, stakes, and/or flagging shall be placed to clearly delineate the extent of material excavation and other construction and restoration activities. To the maximum extent feasible, a 100-foot buffer shall be established and maintained around elderberry shrubs/clusters to prevent accidental damage during

project activities. If work must occur closer to elderberry shrubs, fencing or other means of minimizing potential for accidental damage shall be installed and maintained when work is occurring in adjacent areas.

- **Prohibit Use of Pesticides or Chemicals within Established Buffers around Elderberry Shrubs**. No insecticides, herbicides, or other chemicals that might harm the beetle or its host plant will be used by DWR within established buffers (20 feet) around elderberry shrubs.

- **Monitor Construction Activities in Sensitive Biological Resource Areas and Stop Work if Unauthorized Project Impacts Occur.** A qualified biological monitor shall supervise buffer establishment and conduct periodic inspections during project construction and restoration activities to ensure that impact avoidance and minimization measures are properly implemented.

Timing: Before and during project construction activities

Responsibility: DWR

Mitigation Measure 3.5.3b Minimize and Compensate for Adverse Effects on Habitat of the VELB

DWR will implement the following measures to minimize and compensate for impacts on VELB.

- **Time Vegetation Trimming to Minimize Impacts to VELB.** To the maximum extent feasible, trimming of elderberry shrub branches and stems shall occur between November and February and will avoid removal of those greater than 1 inch in diameter, where feasible. Other project activities involving heavy equipment use within 165 feet of an elderberry shrub will be conducted outside of the VELB flight season (March through July) to the extent feasible.

- **Transplant for Elderberry Shrubs That Cannot be Avoided.** Elderberry shrubs that cannot be avoided and require removal will be transplanted by DWR at an appropriate mitigation bank or site, approved by USFWS. Transplant activities will be conducted in accordance with USFWS guidelines (USFWS 2017).

- **Compensate for Unavoidable Impacts to VELB.** If elderberry shrubs are trimmed and if ground-disturbing activities are to occur within 20 feet of the dripline of an elderberry shrub, DWR will provide compensation consistent with the USFWS conservation guidelines (USFWS 2017) and through consultation with USFWS. These measures include possible need to transplant elderberry shrubs and to compensate for the impact as agreed to based on discussions with USFWS.

- **Prepare and Implement a Mitigation Plan.** The mitigation plan will specify the number of elderberry transplants, the transplant location(s), and identify the mitigation ratios associated with the specific impacts. The plan will include using a

VELB mitigation bank or may incorporate the requirements defined in the Yolo HCP/NCCP guidelines including compensation through the use of the HCP through consultation with USFWS.

Timing: Before and during project construction activities

Responsibility: DWR

Significance after Mitigation: With the implementation of Mitigation Measures 3.5.1a, 3.5.3a, and 3.5.3b, avoidance and minimization measures, transplanting of elderberry shrubs, and compensating for unavoidable impacts, the VELB impacts are reduced to a **less than significant** level.

Impact 3.5.4: ***Impacts on Habitat of Northwestern Pond Turtle.*** *Vegetation removal and site disturbance associated with the project construction could result in significant impacts to northwestern pond turtle through direct removal of habitat and potential nesting sites, as well as subsequent loss of reproductive potential.*

Northwestern pond turtle may be either temporarily or permanently impacted by project activities directly (through harm to individuals or nests via vegetation removal and/or ground disturbance) or indirectly (through nest or nesting behavior disturbance from nearby equipment usage, vibration or other general project-related human disturbance causing nest abandonment and mortality of young). Loss of any adults or young associated with project construction activities could have a substantial adverse effect on the regional distribution of northwestern pond turtle. This would be a **significant** impact. The following mitigation measures have been identified to reduce this impact.

Mitigation Measure 3.5.1a Implement Best Management Practices to Avoid and Minimize Impacts to Sensitive Biological Resources

Please refer to Mitigation Measure 3.5.1a under Impact 3.5.1 in this section for the full text of this mitigation measure.

Timing: Before and during project construction activities

Responsibility: DWR

Mitigation Measure 3.5.4 Minimize Take and Adverse Effects on Northwestern Pond Turtle

DWR will implement the following measures to minimize take and adverse effects on Northwestern pond turtle:

- **Conduct Preconstruction Surveys and Inspections.** A qualified biologist shall conduct surveys for northwestern pond turtles in suitable habitat where construction activities will occur. Surveys shall be conducted within 48 hours before construction activities (including vegetation removal) begin in or adjacent to suitable habitat.

Before construction activities begin each workday, construction areas shall be inspected for pond turtles by project personnel that has been trained by a qualified biologist.

- **Establish Buffers Around Suitable Nesting Habitat, Where Feasible, and Monitor Construction Activities**. DWR shall avoid ground disturbance (e.g., grading, disking, road construction or similar activities that could disturb or crush northwestern pond turtles and their nests), where feasible. Suitable nesting habitat for northwestern pond turtle generally occurs within 200 feet of aquatic habitat that includes suitable basking sites (such as logs, rocks, mats of floating vegetation, or open mud banks) and underwater refugia (such as rocks or submerged vegetation). When feasible, DWR shall observe a 200-foot buffer during northwestern pond turtle breeding periods (May 1 to November 1), when nests and hatchlings may be present. This 200-foot buffer, or another buffer approved in consultation with CDFW, shall be marked in the field by a qualified biologist using temporary fencing, high-visibility flagging, or other means that are equally effective in clearly delineating the buffers. Project activities that could result in ground disturbance shall not occur within the buffer to the extent feasible. Otherwise, all ground-disturbing maintenance activities occurring within the buffer distance shall be monitored by a qualified biologist who would be either on-call or on-site, as appropriate to reduce impacts.

- **Stop Work if a Pond Turtle is Observed in Construction Area and Allow Turtles to Leave the Construction Area on Their Own or Have CDFW-qualified Biologist Capture and Relocate Pond Turtle**. If northwestern pond turtles are observed in a project area, DWR shall stop work within approximately 200 feet of the turtle, and a qualified biologist shall be notified immediately. If possible, the turtle shall be allowed to leave on its own and the qualified biologist shall remain in the area until the biologist deems his or her presence no longer necessary to ensure that the turtle is not harmed. Alternatively, the qualified biologist may capture and relocate the turtle, unharmed and with prior CDFW approval, to suitable alternative habitat (see below).

- **Monitor Dewatering Activities and Relocate Turtles, As Necessary**. Any dewatering attempt of isolated ponds in the Cache Creek channel shall be monitored by a CDFW-qualified biologist, who shall use a seine or net to collect any turtles. The qualified biologist may capture and relocate the turtle, unharmed and with prior CDFW approval, to suitable alternative habitat.

- **Any captured turtles shall be moved to suitable habitat that would not be affected by project construction**. Habitat to which pond turtles are moved shall be located as close as possible to the area from which they are removed and, to the extent feasible, shall be of a similar habitat type and quality (i.e., turtles removed from riparian habitat will be relocated to riparian habitat).

  Timing: Before and during project construction activities

  Responsibility: DWR

Significance after Mitigation: Implementation of Mitigation Measures 3.5.1a and 3.5.4 would implement avoidance and minimization measures and establish pre-construction surveys and monitoring to identify any northwestern pond turtles that can be avoided during project activity and methods for relocating any turtles discovered during project implementation, thereby reducing impacts to northwestern pond turtle to a **less than significant** level.

Impact 3.5.5: ***Impacts on Common and Special-Status Nesting Birds***
Vegetation removal and site disturbance associated with project construction could result in ***significant impacts*** *to common and special-status nesting birds through direct removal of habitat and nesting trees, as well as subsequent loss of reproductive potential.*

Common species of nesting birds (those protected under the MBTA and CFGC) and special-status nesting birds (including golden eagle, white-tailed kite, northern harrier, and purple martin) have potential to nest within the project study area. These species may be impacted by project activities directly through nest harm via vegetation removal or indirectly through nest disturbance from nearby heavy equipment usage, vibration, or other general project-related human disturbance causing nest or roost abandonment and mortality of young. Loss of any adults or young associated with project construction activities could have a substantial adverse effect on the regional distribution of special-status species birds and common raptor species. This would be a **significant impact**. The following mitigation measures have been identified to reduce this impact.

Mitigation Measure 3.5.1a Implement Best Management Practices to Avoid and Minimize Impacts to Sensitive Biological Resources

Please refer to Mitigation Measure 3.5.1a under Impact 3.5.1 in this section for the full text of this mitigation measure.

Timing: Before and during project construction activities

Responsibility: DWR

Mitigation Measure 3.5.5a Conduct Pre-construction Surveys for Active Nests of Special-status Birds and Common Raptor Species in Areas of Suitable Habitat before Starting Construction

DWR shall retain a qualified biologist to conduct pre-construction surveys for nesting birds (including raptor and passerines, as well as and heron and egret rookeries). Surveys of all potential nesting trees and habitat in the area will be conducted by a qualified biologist during the nesting season (generally February 15 – September 15 but may be adjusted for individual species). Surveys will be conducted within suitable nesting habitat that could be affected by construction activities and will include a 500-foot buffer area (or larger area if required by established survey protocol) surrounding these areas. The results of the survey shall be submitted to the CDFW (or the Conservancy and CDFW if the Yolo HCP/NCCP permitting process is used).

Where appropriate, pre-activity surveys will follow established survey protocols or guidelines. These protocols include the following:

- Staff Guidance Regarding Avoidance of Impacts to Tricolored Blackbird Breeding Colonies on Agricultural Fields in 2015 (CDFW 2015)
- Results of Tricolored Blackbird 2008 Census (Kelsey 2008)
- Recommended Timing and Methodology for Swainson's Hawk Nesting Surveys in California's Central Valley (Swainson's Hawk Technical Advisory Committee 2000)
- Least Bell's Vireo Survey Guidelines (USFWS 2001)

If no established survey protocol exists, the qualified biologist will complete surveys within 1 week of the start of the activity, or within 2 weeks of restart of the activity after the activity has lapsed. If no nesting birds are detected during pre-activity surveys, no additional mitigation measures are required.

Timing: Before project construction activities

Responsibility: DWR

Mitigation Measure 3.5.5b Avoid and Minimize Impacts on Nesting Birds

DWR will implement the following measures to avoid and minimize impacts on nesting birds:

- **Conduct Vegetation Removal between September 16 and January 31 to the Extent Feasible.** Vegetation removal, particularly tree removal, will be conducted between September 16 and January 31, to the extent feasible, to minimize potential loss of active bird nests.
- **Establish and Maintain Buffers Around Active Nest Sites to Avoid Nest Failure and Monitor Nest Sites to Confirm that Project Activities Are Not Adversely Affecting the Nesting Birds or Their Young.** If any active nests, or behaviors indicating active nests are present, are observed, DWR will establish appropriate-sized avoidance buffers around the nest sites, as determined by a qualified biologist in coordination with CDFW to avoid nest failure resulting from project activities. If required, buffers will be marked in the field by a qualified biologist using temporary fencing, high-visibility flagging, or other means that are equally effective in clearly delineating. The size and shape of the buffer will depend on the species, nest location, nest stage, and specific construction activities to be performed while the nest is active. However, the recommended buffer distances for specific nesting birds that have potential to nest within the project site are as follows:
  - Swainson's hawk: 0.5 mile
  - common nesting raptors: 300 feet

- tricolored blackbird: 300 feet (or 1,300 if the Yolo HCP/NCCP permitting process is used)
- common nesting passerines: 100 feet
- heron or egret rookeries: 200 feet

- Monitoring will be conducted by a qualified biologist, either continuously or periodically during work, to confirm that project activity is not resulting in detectable adverse impacts on nesting birds or their young. The qualified biologist will be empowered to stop construction activities that, in the biologist's opinion, threaten to cause unanticipated and/or unpermitted adverse effects on special-status wildlife (e.g., nest abandonment, reduced care of eggs or young, or premature fledging).

- No project activity will commence within the buffer areas until a qualified biologist has determined that the young have fledged, or the nest site is otherwise no longer in use.

- If the project would result in take of Swainson's hawk in accordance with California Fish and Game Code Section 2081, an incidental take permit will be obtained from CDFW before take occurs.

Timing: Before and during project construction activities

Responsibility: DWR

Significance after Mitigation: Implementation of Mitigation Measures 3.5.1a, 3.5.5a, and 3.5.5b would implement avoidance and minimization measures, establish pre-construction surveys to identify any active nests prior and during project implementation to be avoided, restrict project activities within distance of existing nests to reduce impacts to nesting birds, and provide monitoring of active nests, which would reduce this impact to a **less than significant** level.

Impact 3.5.6: ***Impacts on Swainson's Hawk.***

Vegetation removal and site disturbance associated with project construction could result in ***significant impacts*** *on Swainson's hawk through direct habitat loss or general loss of reproductive potential due to habitat loss.*

Swainson's hawk nests have been frequently documented in the project study area and could be temporarily or permanently impacted by project activities directly (through nest harm via vegetation removal or other heavy equipment use in the area) or indirectly (through nest disturbance from nearby heavy equipment usage, vibration, or other project-related human

disturbance) causing nest abandonment and mortality of young. This would be a **significant impact**. The following mitigation measures have been identified to reduce this impact.

Mitigation Measure 3.5.1a Implement Best Management Practices to Avoid and Minimize Impacts to Sensitive Biological Resources

Please refer to Mitigation Measure 3.5.1a under Impact 3.5.1 in this section for the full text of this mitigation measure.

Timing: Before and during project construction activities

Responsibility: DWR

Mitigation Measure 3.5.5a Conduct Pre-Construction Surveys Active Nests of Special-Status Birds and Common Raptor Species in Areas of Suitable Habitat before Starting Construction

Please refer to Mitigation Measure 3.5.5a under Impact 3.5.5 (which includes direction on following the Recommended Timing and Methodology for Swainson's Hawk Nesting Surveys in California's Central Valley [Swainson's Hawk Technical Advisory Committee 2000]) in this section for the full text of this mitigation measure.

Timing: Before and during project construction activities

Responsibility: DWR

Mitigation Measure 3.5.5b Avoid and Minimize Impacts on Nesting Birds

Please refer to Mitigation Measure 3.5.5b under Impact 3.5.5 (which includes direction for Swainson's hawk and other protected bird species' protective buffers) in this section for the full text of this mitigation measure.

Timing: Before and during project construction activities

Responsibility: DWR

Mitigation Measure 3.5.6 Obtain Take Coverage for Impacts on Active Swainson's Hawks Nests

If active nest trees are proposed to be removed and the project would result in take of Swainson's hawk in accordance with California Fish and Game Code Section 2081, an incidental take permit will be obtained from CDFW or the Yolo HCP/NCCP permitting process will be used before take occurs. DWR will be required to abide by all avoidance/minimization measures and limits of take determined in consultation with CDFW.

Timing: Before and during project construction activities

Responsibility: DWR

Significance after Mitigation: Implementation of Mitigation Measures 3.5.1a, 3.5.5a, 3.5.5b, and 3.5.6 would implement avoidance and minimization measures, establish pre-construction surveys to identify any active nests prior and during project implementation to be avoided, restrict project activities within distance of existing nests to reduce impacts to Swainson's hawk, provide monitoring of active nests, and obtain authorization for take of active Swainson's hawk nests, which would reduce this impact to a **less than significant** level.

Impact 3.5.7: ***Impacts on Burrowing Owl.***
Vegetation removal and site disturbance associated with project construction could result in ***significant impacts*** *on burrowing owl through direct habitat loss or general loss of reproductive potential due to habitat loss.*

Burrowing owl can be temporarily or permanently impacted by project activities directly (through nest harm via vegetation removal or trampling via feet or equipment) or indirectly (through nest disturbance from nearby heavy equipment usage, vibration, or other project-related human disturbance) causing nest abandonment and mortality of young. This would be a **significant impact**. The following mitigation measures have been identified to reduce this impact.

Mitigation Measure 3.5.1a Implement Best Management Practices to Avoid and Minimize Impacts to Sensitive Biological Resources

Please refer to Mitigation Measure 3.5.1a under Impact 3.5.1 in this section for the full text of this mitigation measure.

Timing: Before and during project construction activities

Responsibility: DWR

Mitigation Measure 3.5.7 Conduct a Habitat Assessment and Focused Surveys for Burrowing Owls and Avoid Impacts

DWR will implement the following measures to avoid impacts to Burrowing Owls.

- **Conduct an Assessment of Burrowing Owl Habitat Suitability in Areas Subject to Project-Related Disturbance and Conduct a Focused Survey for Burrowing Owl**. DWR shall retain a qualified biologist to conduct planning-level surveys and identify western burrowing owl habitat within or adjacent to (i.e., within 500 feet of) construction activities prior to any construction activities. If habitat for this species is present, additional focused surveys for the species by a qualified biologist are required, consistent with guidelines provided in Appendix D of the *Staff Report on Burrowing Owl Mitigation* (CDFW 2012).

- **Establish Avoidance Buffers around Active Burrows and Monitor.** If burrowing owls or active burrows are observed, DWR will establish a buffer based on the activity dates and the level of disturbance in accordance with the *Staff Report on*

Burrowing Owl Mitigation (CDFW 2012; see **Table 3.5-4**). Buffers will be marked in the field by a qualified biologist using temporary fencing, high-visibility flagging, or other means that are equally effective in clearly delineating the buffers. Construction activities will not occur within the established buffer and workers will avoid entering the area. Occupied habitat is considered fully avoided if the project footprint does not impinge on a non-disturbance buffer around the suitable burrow. DWR may qualify for a reduced buffer size, based on existing vegetation, human development, and land use, if agreed upon by CDFW and USFWS (CDFW 2012).

Table 3.5-4. Recommended Restricted Activity Dates and Setback Distances (in Feet) by Level of Disturbance for Burrowing Owls

Time of Year	Low	Medium	High
April 1-August 15	600	1,500	1,500
August 16-October 15	600	600	1,500
October 16-March 31	150	300	1,500

- **Minimization Plan for Work within Burrows.** DWR shall retain a qualified biologist to conduct pre-construction surveys and document the presence or absence of western burrowing owls that could be affected by the covered activity. If the project does not fully avoid direct and indirect effects on nesting sites (i.e., if the project cannot adhere to the buffers described above), then DWR shall consult with CDFW to determine an acceptable methodology to proceed with work. If active nests would be removed and the project would result in take of burrowing owl, in accordance with California Fish and Game Code Section 2081 an incidental take permit shall be obtained from CDFW or the Yolo HCP/NCCP permitting process before take occurs. DWR shall be required to abide by all avoidance/minimization measures and limits of take determined in consultation with CDFW.

  Timing: Before and during project construction activities

  Responsibility: DWR

Significance after Mitigation: Implementation of Mitigation Measures 3.5.1a and 3.5.7 would avoid, minimize, and protect burrowing owl from project activities, thereby reducing impacts to **less than significant.**

Impact 3.5.8: ***Impacts on Tricolored Blackbird.***
Vegetation removal and site disturbance associated with project construction could result in ***significant impacts*** *on the tricolored blackbird through direct habitat removal or general loss of reproductive potential due to habitat loss.*

Tricolored blackbird could be temporarily or permanently impacted by project activities directly (through nest harm via vegetation removal or trampled via feet or equipment) or indirectly (through nest disturbance from nearby heavy equipment usage, vibration, or other general project-related human disturbance causing nest or roost abandonment and mortality of young).

This would be a **significant impact**. The following mitigation measures have been identified to reduce this impact.

Mitigation Measure 3.5.1a Implement Best Management Practices to Avoid and Minimize Impacts to Sensitive Biological Resources

Please refer to Mitigation Measure 3.5.1a under Impact 3.5.1 in this section for the full text of this mitigation measure.

Timing: Before and during project construction activities

Responsibility: DWR

Mitigation Measure 3.5.5a Conduct Pre-construction Surveys for Active Nests of Special-status Birds and Common Raptor Species in Areas of Suitable Habitat before Starting Construction

Please refer to Mitigation Measure 3.5.5a under Impact 3.5.5 in this section for the full text of this mitigation measure.

Timing: Before project construction activities

Responsibility: DWR

Mitigation Measure 3.5.5b Avoid and Minimize Impacts on Nesting Birds

Please refer to Mitigation Measure 3.5.5b under Impact 3.5.5 in this section for the full text of this mitigation measure.

Timing: Before and during project construction activities

Responsibility: DWR

Mitigation Measure 3.5.8 Conduct Tricolored Blackbird Habitat Suitability Analysis and Avoid and Minimize Impacts

DWR shall retain a qualified biologist to identify and quantify (in acres) tricolored blackbird nesting and foraging habitat (as defined in Appendix A of the Yolo HCP/NCCP [ICF 2018], Covered Species Accounts) within 1,300 feet of the footprint of the project study area. The qualified biologist will also check records maintained by the Conservancy (which will include CNDDB data, and data from the tricolored blackbird portal) to determine if tricolored blackbird nesting colonies have been active in or within 1,300 feet of the project study area during the previous five years. Based on the results of this habitat suitability analysis as well as nesting bird surveys (see Mitigation Measure 3.5.5a), DWR will establish an avoidance buffer (see Mitigation Measure 3.5.5b) to avoid adverse effects within 300 feet (or, if using the Yolo HCP/NCCP permitting process, 1,300 feet) of the colony site(s), unless a shorter distance is approved by the Conservancy, USFWS, and CDFW.

Timing: Before and during project construction activities

Responsibility: DWR

Significance after Mitigation: With the implementation of Mitigation Measures 3.5.1a, 3.5.5a, 3.5.5b, and 3.5.8, avoidance and minimization measures for protection of tricolored blackbird would reduce impacts to **less than significant**.

Impact 3.5.9: ***Impacts on Special-status Roosting Bats***
Planned project activities including vegetation removal, sediment removal, and levee rehabilitation could result in ***significant impacts*** *on special-status roosting bats through direct habitat removal or general loss of reproduction potential due to habitat loss.*

Pallid bat, western red bat, and other bats protected by the CFGC have potential to roost within the project study area as well. These species could be temporarily or permanently impacted by project activities directly (through roost harm via vegetation removal or trampling from feet or equipment usage) or indirectly (through roost disturbance from nearby heavy equipment usage, vibration, or other project-related human disturbance) causing roost abandonment and mortality of young. These impacts would be **significant**. The following mitigation measures have been identified to reduce this impact.

Mitigation Measure 3.5.1a Implement Best Management Practices to Avoid and Minimize Impacts to Sensitive Biological Resources

Please refer to Mitigation Measure 3.5.1a under Impact 3.5.1 in this section for the full text of this mitigation measure.

Timing: Before and during project construction activities

Responsibility: DWR

Mitigation Measure 3.5.9a Avoid Disturbance and Loss of Roosting Special-status Bats

DWR will implement the following measures to avoid loss of roosting special-status bats:

- **Conduct Vegetation Removal Between September 16 and January 31 to the Extent Feasible**. Vegetation removal, particularly tree removal, shall be conducted between September 16 and January 31, to the extent feasible, to minimize potential loss of bat maternity roosts.

- **Conduct Bat Surveys for Active Maternity Roosts for Trees with Suitable Roost Cavities or Dense Cover Designated for Removal**. If removal of trees with suitable roost cavities and/or dense cover must occur during the bat pupping season (April 1 through July 31), surveys for active maternity roosts in trees designated for removal shall be conducted by a qualified biologist. The surveys would include both a roosting habitat evaluation and an emergence survey (conducted from dusk until dark).

- **Establish Appropriate Buffers Around Roosts Sites to Avoid Destruction or Abandonment and Prohibit all Construction Activity Until the End of the Pupping Season**. If a special-status bat maternity roost is located, appropriate buffers around the roost sites shall be determined by a qualified biologist and implemented to avoid destruction or abandonment of the roost resulting from tree removal or other project activities. The size of the buffer shall depend on the species, roost location, and specific construction activities to be performed in the vicinity. No project activity shall commence within the buffer areas until the end of the pupping season (August 1) or until a qualified biologist confirms the maternity roost is no longer active.

  Timing: Before and during project construction activities

  Responsibility: DWR

Mitigation Measure 3.5.9b Minimize Disturbance and Loss of Roosting Special-status Bats

Outside the pupping season, bats may still use trees to roost. If trees within the project study area that are slated for removal have suitable bat roosting habitat (such as a tree larger than 24 inches in diameter at breast height), all trimming and tree removal shall be conducted in the presence of a biological monitor. Trees that are indicated to contain roosting habitat shall be trimmed or removed in a two-phase process outside the pupping season. The first day, under the supervision of the biological monitor, remove limbs and branches that do not contain cavities, cracks, crevices, or deep bark fissures that can provide roosting habitat. On the second day, remove the remainder of tree by gently lowering the tree to the ground, under the supervision of the biological monitor and leave material undisturbed for 48-hours. If it is not feasible to remove a tree using the two-phased approach, limbs containing habitat features shall be removed and gently lowered to the ground in a location where they are not likely to be crushed or disturbed by the felling of the tree and left undisturbed for the next 48-hours. Standing dead trees or snags with habitat features shall be removed over a single day by gently lowering the tree or snag to the ground. The tree or snag shall be left undisturbed on the site for the next 48-hours, as feasible.

Timing: Before and during project construction activities

Responsibility: DWR

Significance after Mitigation: With the implementation of Mitigation Measures 3.5.1a, 3.5.9a, and 3.5.9b, protection of special-status roosting bats through avoidance and minimization measures would reduce impacts to **less than significant.**

Impact 3.5.10: ***Impacts on Breeding, Migrating, and Larval Monarch Butterflies.*** *Project activities including vegetation removal, sediment removal, and levee rehabilitation could result in* ***significant impacts*** *on breeding, migrating, and larval monarch butterflies through direct habitat loss and loss of reproduction potential due to habitat loss.*

The host plant for breeding monarchs, narrow-leaved milkweed, has been planted within the Cache Creek corridor (but outside of the areas identified for vegetation and sediment removal activities) and water sources are present adjacent to the project study area (Western Monarch Milkweed Mapper 2023). Monarch roosts and maturing larvae may be impacted directly from project activities through site mobilization disturbance (staging, etc.), vegetation removal, and project construction activities (e.g., noise, vibration, human presence). This impact would be **significant**. The following mitigation measures have been identified to reduce this impact.

Mitigation Measure 3.5.1a Implement Best Management Practices to Avoid and Minimize Impacts to Sensitive Biological Resources

Please refer to Mitigation Measure 3.5.1a under Impact 3.5.1 in this section for the full text of this mitigation measure.

Timing: Before and during project construction activities

Responsibility: DWR

Mitigation Measure 3.5.10 Protection of Breeding, Migrating, and Larval Monarch Butterflies

DWR will implement the following measures based on the USFWS *Western Monarch Butterfly Conservation Recommendations* (USFWS 2023c) and *Managing for Monarchs in the West* (Xerces 2018) to avoid and minimize project impacts on monarch butterflies:

- **Conduct Vegetation Removal Outside of Monarch Season**. Where feasible, DWR shall conduct vegetation removal between November 15 to March 15, outside of the estimated timeframe when monarchs are likely present.

- **Conduct Milkweed and Nectar Plant Survey in Advance of Vegetation Removal and Flag for Avoidance or Plant Replacements**. A qualified biologist shall survey any area to have vegetation removed or be otherwise disturbed (staging, heavy vibration, noise, etc.) for the presence of monarch milkweed (larval host plants) and adult nectar plants. If there is milkweed or adult nectar plants within the project study area to be disturbed, they shall be flagged and avoided to the extent possible. If vegetation removal must occur between March 15 and November 15 or if milkweed or adult nectar plants cannot be avoided, the following measure apply:

    - Any plants with eggs present or larvae actively feeding shall not be impacted until larvae have completed metamorphosis and migrated outside the project site, as documented by a qualified biologist.

    - If eggs/larvae are not present, but avoidance of host and nectar plants is not possible, DWR shall attempt to replace any plants lost in post-construction efforts through reseeding. Plants shall be replaced at a 1:1 ratio, with the goal of no net loss of monarch habitat within the project site. Replacement plants shall be from

insecticide-free nurseries and any plants grown via contract shall use specifications that limit harmful pesticide residue.

- **Prohibit Herbicide Use.** Prohibit herbicide use within the project site.

Timing: Before, during, and after project construction activities

Responsibility: DWR

Significance after Mitigation: With the implementation of Mitigation Measures 3.5.1a and 3.5.10, protection of breeding, migrating, and larval monarch butterflies would reduce impacts to **less than significant**.

Impact 3.5.11: ***Potential Interference with Terrestrial Wildlife Movement, Migration Corridors, and Wildlife Nursery Sites.***
Project activities, including vegetation removal, sediment removal, and levee rehabilitation could affect terrestrial wildlife movement, migration corridors, and wildlife nursery sites directly through removal of habitat or disturbance during construction (e.g., noise, vibration, human presence). This impact would be ***potentially significant****.*

The project study area supports wildlife nursery sites, particularly nesting birds, and potentially roosting bats. In addition, the entirety of the riparian vegetation along Cache Creek is considered a migratory corridor for native species, especially given the agricultural development surrounding the site that is not preferred for cryptic species searching for cover. While these nursery sites and wildlife corridor may be temporarily impacted by project activities, the project study area would remain usable as a nursery site and wildlife corridor during project construction and upon project completion. Nonetheless, the direct removal of habitat and project construction activities (e.g., noise, vibration, human presence) could impact wildlife nursery sites and wildlife migration. This impact would be **significant**. The following mitigation measures have been identified to reduce this impact.

Mitigation Measure 3.5.1a Implement Best Management Practices to Avoid and Minimize Impacts to Sensitive Biological Resources

Please refer to Mitigation Measure 3.5.1a under Impact 3.5.1 in this section for the full text of this mitigation measure.

Timing: Before and during project construction activities

Responsibility: DWR

Mitigation Measure 3.5.1b Avoid and Minimize Loss of Riparian Habitats

Please refer to Mitigation Measure 3.5.1b under Impact 3.5.1 in this section for the full text of this mitigation measure.

Timing: Before, during, and after project construction activities

Responsibility: DWR

Mitigation Measure 3.5.1c Obtain and Comply with Necessary State Permits / Authorizations and Compensate for Loss of Riparian Habitats (Fremont Cottonwood Forest and Woodland, Goodding's Willow Riparian Woodland and Forest, Hind's Walnut, Sandbar Willow Thickets, and Valley Oak Riparian Woodland and Forest)

Please refer to Mitigation Measure 3.5.1c under Impact 3.5.1 in this section for the full text of this mitigation measure.

Timing: Before project construction activities

Responsibility: DWR

Mitigation Measure 3.5.3a Avoid Take and Adverse Effects on Habitat of the VELB

Please refer to Mitigation Measure 3.5.3a under Impact 3.5.3 in this section for the full text of this mitigation measure.

Timing: Before and during project construction activities

Responsibility: DWR

Mitigation Measure 3.5.3b Minimize and Compensate for Adverse Effects on Habitat of the VELB

Please refer to Mitigation Measure 3.5.3b under Impact 3.5.3 in this section for the full text of this mitigation measure.

Timing: Before and during project construction activities

Responsibility: DWR

Mitigation Measure 3.5.4 Minimize Take and Adverse Effects on Northwestern Pond Turtle

Please refer to Mitigation Measure 3.5.4 under Impact 3.5.4 in this section for the full text of this mitigation measure.

Timing: Before and during project construction activities

Responsibility: DWR

Mitigation Measure 3.5.5b Avoid and Minimize Impacts on Nesting Birds

Please refer to Mitigation Measure 3.5.5b under Impact 3.5.5 in this section for the full text of this mitigation measure.

Timing: Before and during project construction activities

Responsibility: DWR

Mitigation Measure 3.5.6 Obtain Take Coverage for Impacts on Active Swainson's Hawks Nests

Please refer to Mitigation Measure 3.5.6 under Impact 3.5.6 in this section for the full text of this mitigation measure.

Timing: Before and during project construction activities

Responsibility: DWR

Mitigation Measure 3.5.7 Conduct a Habitat Assessment and Focused Surveys for Burrowing Owls and Avoid Impacts

Please refer to Mitigation Measure 3.5.7 under Impact 3.5.7 in this section for the full text of this mitigation measure.

Timing: Before and during project construction activities

Responsibility: DWR

Mitigation Measure 3.5.8 Conduct Tricolored Blackbird Habitat Suitability Analysis and Avoid and Minimize Impacts

Please refer to Mitigation Measure 3.5.8 under Impact 3.5.8 in this section for the full text of this mitigation measure.

Timing: Before and during project construction activities

Responsibility: DWR

Mitigation Measure 3.5.9a Avoid Disturbance and Loss of Roosting Special-status Bats

Please refer to Mitigation Measure 3.5.9a under Impact 3.5.9 in this section for the full text of this mitigation measure.

Timing: Before and during project construction activities

Responsibility: DWR

Mitigation Measure 3.5.9b Minimize Disturbance and Loss of Roosting Special-status Bats

Please refer to Mitigation Measure 3.5.9b under Impact 3.5.9 in this section for the full text of this mitigation measure.

Timing: Before and during project construction activities

Responsibility: DWR

Mitigation Measure 3.5.10 Protection of Breeding, Migrating, and Larval Monarch Butterflies

Please refer to Mitigation Measure 3.5.10 under Impact 3.5.10 in this section for the full text of this mitigation measure.

Timing: Before and during project construction activities

Responsibility: DWR

Significance after Mitigation: The implementation of Mitigation Measures 3.5.1a, 3.5.1b, 3.5.1c, 3.5.2a, 3.5.3b, 3.5.3b, 3.5.4, 3.5.6, 3.5.7, 3.5.8, 3.5.9a, and 3.5.10 would reduce the temporary and permanent impacts of project implementation on wildlife nursery sites and wildlife corridor habitat to **less than significant**.

Impact 3.5.12: ***Conflict with Any Local Plans or Policies Aimed at Protection of Biological Resources.***
*Project activities would have a **potentially significant impact** in conflicting with local plans or policies aimed at protecting biological resources.*

The *Yolo County General Plan* has several policies aimed at preserving, avoiding impacts to, and mitigating for the sensitive natural resources within the project study area, including oak woodland and riparian vegetation communities. In particular, the *Yolo County General Plan* stipulates, with Policy CO-2.14, that there should be no net loss of oak woodlands and that fragmentation of large forests exceeding 10 acres should be avoided. The removal of oak woodland and riparian vegetation communities could conflict with local plans or policies aimed at protection of biological resources; thus, this would be a **potentially significant** impact. The following mitigation measures have been identified to reduce this impact.

Mitigation Measure 3.5.1b Avoid and Minimize Loss of Riparian Habitats

Please refer to Mitigation Measure 3.5.1b under Impact 3.5.1 in this section for the full text of this mitigation measure.

Timing: Before, during, and after project construction activities

Responsibility: DWR

Mitigation Measure 3.5.1c Obtain and Comply with Necessary State Permits / Authorizations and Compensate for Loss of Riparian Habitats (Fremont Cottonwood Forest and Woodland, Goodding's Willow Riparian Woodland and

Forest, Hind's Walnut, Sandbar Willow Thickets, and Valley Oak Riparian Woodland and Forest)

Please refer to Mitigation Measure 3.5.1c under Impact 3.5.1 in this section for the full text of this mitigation measure.

Timing: Before project construction activities

Responsibility: DWR

Significance after Mitigation: The implementation of Mitigation Measures 3.5.1b and 3.5.1c would ensure project compliance with local plans or policies aimed at protection of biological resources, and thus, reduce the impacts of project to **less than significant**.

Impact 3.5.13: ***Conflict with Provisions of an Adopted HCP or NCCP.*** *Project activities would have a* ***less-than-significant impact*** *on local plans or policies aimed at protecting biological resources*

The project site is within the planning area for the adopted Yolo HCP/NCCP (Yolo Habitat Conservancy 2018), which provides a framework to improve conservation of natural resources, including endangered species habitat, while streamlining the permitting process for planned development, infrastructure, and maintenance activities.

The project study area occurs in an area that the Yolo HCP/NCCP identifies as a Priority 1 acquisition area as part of the HCP/NCCP conservation strategy. The project would result in land use conversions rather than loss of habitat (e.g., conversion of annual grassland to riverine) and, following project implementation, the area would still provide habitat for the special-status species in the study area, which are also identified as Covered Species under the Yolo HCP/NCCP. These land use conversions would not cause a net loss in the habitat values provided by these lands for HCP/NCCP-covered species in the project study area and vicinity. The overall habitat quality for HCP/NCCP-covered species that use these habitats is unlikely to be adversely affected. This is because many components of the proposed project would support attainment of HCP/NCCP goals and objectives through the expansion of the amount of habitat available for HCP/NCCP-covered species and the connection of habitats (e.g., the establishment of additional riparian habitat).

If DWR does not mitigate project impacts through payment of Yolo HCP/NCCP fees, then DWR would implement proposed mitigation to compensate for temporary and permanent habitat loss; and therefore, the project would not jeopardize the implementation and efficacy of the Yolo HCP/NCCP. The project would not threaten the viability of populations of HCP/NCCP-covered species, reduce the effectiveness of the Yolo HCP/NCCP conservation strategy, or adversely affect attainment of the goals and objectives of the Yolo HCP/NCCP. Therefore, the project would therefore have a **less-than-significant impact** on the Yolo HCP/NCCP with incorporation of the previous Mitigation Measures.

Residual Significant Impacts

Significant impacts to biological resources within the project study area may occur at the habitat or community level, depending on the final amount and type of vegetation that is altered/removed. However, implementation of Mitigation Measures 3.5.1a through 3.5.10, and fees paid and requirements of project permitting through the Yolo HCP/NCCP and/or other regulatory agencies, impacts would be mitigated to **less than significant**. The project would therefore not result in residual significant impacts related to biological resources, and, with the implementation of mitigation measures identified above, the project would not have any significant and unavoidable impacts related to biological resources.

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3.6 Cultural Resources

This section discusses cultural resources, which are defined as buildings, sites, structures, or objects, each of which may have historic, architectural, archaeological, cultural, or scientific importance. CEQA defines a "historical resource" as any resource listed in or determined to be eligible for listing in the California Register of Historical Resources (CRHR).

The area studied included all areas of project activities, including staging areas and access roads, which have the potential to affect known or undiscovered archeological and historical resources or historic properties. Horizontally, the project includes approximately 7.12 miles along both sides of Cache Creek and encompasses approximately 401 acres. Vertically, project components include in-channel sediment removal that would vary in depth from one foot to thirty feet depending on target specific elevation targets. Vegetation removal would occur in in-channel sediment removal areas as well as non-native vegetation removal in select areas of the main channel.

3.6.1 Environmental Setting

The geology and natural environment of the project site and surrounding area is discussed in other sections of Chapter 3, and this section focuses on the Native American archaeological setting (also known as the prehistoric setting), the ethnographic setting, and the historic era setting of the project site. A geological-based analysis of the potential archaeological sensitivity for surface and buried sites is included, as well as discussion of natural environmental factors relevant to the cultural and historical patterns discussed, and both rely on the information presented in other sections in Chapter 3.

The information in this environmental setting section is presented to contextualize the inventory of cultural and potential Tribal Cultural Resources discussed in the Environmental Impacts section that follows, and as a basis for evaluating the significance of cultural resources in the project site and degree of potential impacts to these resources.

Native American Archaeological Setting

The Paleo-Indian (11,550-8,550 cal[1] Before Common Era [BCE]) and Lower Archaic (8,550-5,550 cal BCE) Periods

The earliest well-documented entry and spread of humans into California occurred at the beginning of the Paleo-Indian Period (11,550 to 8550 cal BCE), which is represented by the Clovis archaeological culture, though there is some evidence of humans in the Americas and California earlier than this period. Social units are thought to have been small and highly mobile. Known sites are often near ancient pluvial lake shores and coastlines and contain distinctive hunting implements such as fluted projectile points and chipped stone crescent forms. Paleo-Indian and Lower Archaic adaptations during these periods have been identified in the archaeological record by numerous researchers working in the area since the early 1900s and are summarized by Fredrickson (1974), Moratto (1984), and Rosenthal et al. (2007).

[1] CAL - calibrated years before the common era.

Beardsley (1948), Lillard et al. (1939), and others have conducted numerous studies that form the core of our understanding of Sacramento Valley archaeology. Few archaeological materials dating to the Paleo-Indian, or the Lower Archaic (8550 to 5550 cal BCE) time periods have been found; however, archaeologists have recovered a great deal of data from sites occupied by the later Middle Archaic period (described below). The lack of sites from earlier periods may be due to high sedimentation rates in the valley's floodplains, which may have left the earliest sites deeply buried.

The Middle Archaic (5,550-550 cal BCE) and Upper Archaic (550 cal BCE to cal Common Era [CE] 1100) Periods

During the Middle Archaic Period (5550 to 550 cal BCE), there was a shift from highly mobile foraging subsistence strategies to more intensive food and resource procurement practices. Subsistence economies also became more diversified and possibly included the development of acorn processing technology. Acorns were a major staple crop for many Native California Tribes during later periods; a subsistence practice which likely began during the Middle Archaic in some regions. Human populations grew and people began occupying a wider range of diverse settings. Year-round permanent villages were established in many regions, primarily along major waterways, alongside the appearance of fishing technologies such as gorge hooks, composite bone hooks, and fishing spears appear in assemblages In and near the Central Valley, the Middle Archaic Period is typically associated with the "Windmiller Pattern" archaeological culture (Bennyhoff and Fredrickson 1969; Moratto 1984). Windmiller sites show an increased emphasis on acorn use as well as a continuation of hunting and fishing activities. Ground and polished charmstones, twined basketry, baked-clay artifacts and worked shell and bone were hallmarks of Windmiller culture in the Central Valley. Extensive trade networks brought goods in from the Coast Ranges and trans-Sierran partners, in addition to more localized trade networks. Distinctive burial practices (ventrally extended, oriented westward) identified with the Windmiller Pattern also appeared in the Sierra Nevada foothills, indicating possible seasonal migration into the Sierra Nevada. Perforated charmstones were associated with some burials. Mano and metate and small mortars were used but were rare though overall, assemblages from this period are diverse and elaborative.

The Upper Archaic Period (550 cal BCE to cal CE 1100) is marked by the development of more social status distinction appearing in burials along with other material culture indicators of growing sociopolitical complexity. Trade networks became more complex and formalized, with there being more evidence for regular and sustained trade between groups. Archaeological sites from the Upper Archaic Period are typified by the Berkeley Pattern. The use of acorn as a staple crop is more evident during this period, and distinctive stone and shell artifacts distinguish the Berkely Patter from earlier and later archaeological cultures. Burials were predominantly placed in a tightly flexed position and frequently included red ochre. Minimally shaped mortar and pestle technology was much more prevalent than mano/metate technology, and non-stemmed projectile points become more common. Berkeley Pattern sites are also distinctive for their large, mounded villages.

The Emergent Period (cal CE 1000 to the Historic Era)

Several technological and social changes characterized the Emergent Period (cal CE 1100 to Historic). This period is typified by the Augustine Pattern of sites, or the Sweetwater and Shasta

Complexes in the northern part of the Sacramento Valley, which show marked population increases resulting from more intensive food procurement strategies, as well as a marked change in burial practices and increased trade activities. Intensive fishing, hunting, and gathering, complex exchange systems, and a wider variety in mortuary patterns were all hallmarks of this period. Mortars and pestles were more carefully shaped, and bow-and-arrow technology was introduced, replacing the dart and atlatl. Fishing implements became more common, trade increased, and cremation was used for some higher status individuals. Territorial boundaries between groups became well established. It became increasingly common that distinctions in an individual's social status could be linked to acquired wealth. Exchange of goods between groups became more regularized with more goods, including raw materials, entering exchange networks. In the latter portion of this period exchange relations became highly regularized and sophisticated. The clamshell disk bead became a monetary unit and increasing quantities of goods moved greater distances. Specialists arose to govern various aspects of production and exchange.

Ethnographic Setting

The project site is situated within the traditional homelands of the Patwin, a collection of linguistically and culturally related groups. The Patwin village of *Churup* is mapped very near and possibly extends into the project area (Johnson 1978). Other nearby villages include *Yo'doi* and *Moso* (Johnson 1978). The language of the Patwin, which includes just a few dialects, is classified as a Wintuan language (Golla 2011; Mithun 1999; Shipley 1978). In 2004 the Colusa Indian Community Council published the first edition of the Cachil DeHe Band of Wintun Indians language book and have instituted a program, the Language Application, to restore and proliferate the language (Colusa Indian Community Council 2024). The Yocha Dehe Wintun Nation has also published a grammar and dictionary book as well as a language website for Tribal Citizens (Yocha Dehe Wintun Nation 2024). The project site lies with the Southern Wintu linguistic area and is specifically associated with the regional vicinity of the Hill Patwin (Kroeber 1932).

The Hill Patwin typically lived in small groups, commonly known as Tribelets. Tribelets were characterized by a main village with smaller satellite villages and temporary camps (Kroeber 1932). Patwin constructed permanent, semi-subterranean structures near water sources for residence during the winter months. The structures in these "winter villages" (*di'hi*) were circular, earth-covered, domed buildings which could be used for both dwelling and ceremonial purposes. The permanent structures ranged from 20ft to 75ft in diameter, varying based on use. The smallest of the structures being menstrual huts and dwelling houses, and the largest being sweat houses and ceremonial dance houses. Winter villages also commonly contained a well and granaries to store harvested acorns, pine nuts, and grass seeds (Elliot 2011). Temporary villages were constructed in Summer and Fall for individuals living further away from the main village for the purposes of hunting and harvesting. Temporary dwellings took the form of ramadas, with four posts, thatched roofs, and typically no walls. These ramadas could be built in tandem to create small complexes (McKern 1923).

The Patwin people followed a seasonal round of food gathering, as did most Indigenous Californians. Elk, deer, acorns, and salmon are important staples of historic and contemporary Patwin diet. Acorns were processed into flour for large bread loaves. Numerous types of berries,

nuts, seeds, and herbs were harvested and dried or processed. Locally available fish included perch, rainbow trout, hardheads, and pike. Non-local fish such as salmon, hitch, and blackfish were acquired through trade and fishing expeditions in collaboration with neighboring Tribes. Group hunting methods were employed to corral and shoot or trap deer, elk, and larger fowl. Taboo foods for the Patwin people included reptiles and amphibians, buzzards, canines, and some insects (Elliot 2011).

Euro-American contact with the Patwin people likely began with Spanish explorers, followed by the expansion of the Spanish Mission system eastward from the North Bay Area in the late 18th century (Poska 2019). Contact with Russian trappers and Spanish missionaries would begin to disrupt Patwin lifeways begin in the early and middle 19th century. Though the Hill Patwin land was relatively isolated from the epicenter of Spanish influence, the influx of both European trade goods and foreign diseases led to population realignment, with traditional lifeways and subsistence strategies giving way to reorganization around European trading crossroads.

The malaria epidemic of 1833 decimated indigenous populations across the Sacramento Valley, with a mortality rate of 40 percent to 75 percent and an incidence rate close to 100 percent. Coupled with increasingly violent encounters with European and Euro-American settlers in the middle and late 19th century nearly depleted the Patwin population (Poska 2019). Despite centuries of historical setbacks, modern Native American communities in the Sacramento Valley continue to maintain traditional cultural practices.

Historic Setting

Yolo County

In 1853, settler Henry Wycoff arrived in present-day Yolo County and established a small store to service neighboring farmers and ranchers who lived a far distance from the Sacramento area. (Woodland Chamber of Commerce 2022). Wycoff's success attracted additional settlers, and within a few years the town of Woodland was established. By 1862 the Yolo County seat moved from West Sacramento to Woodland (Hoover et al. 1990: 532-533). Throughout the town's history, horse and cattle-raising and the cultivation of grain and fruit orchards drove the local economy during the 19th and 20th century (Larkey et al. 1987:19, 23).

The town of Yolo is evident on historic maps as early as 1857. Originally known as Cacheville, the town was renamed Yolo by 1907 (Yolo County 2022; USGS Woodland 1907). The agricultural community experienced a general decline in population throughout the 20th century as inhabitants saw their small farms increasingly absorbed by larger, mechanized farming enterprises (United States Census Bureau 2022).

Agricultural Development

For much of the 19th century, to present day, the Central Valley including the Yolo County area, was heavily focused on agriculture and the raising of livestock. Many emigrants who arrived in California during the Gold Rush saw opportunities in more stable livelihoods such as ranching and farming and decided to stay in the Sacramento Valley rather than travel on to the gold fields of the Sierra foothills (Olney 1902: 171-172). Improvement in irrigation in the early 20th century encouraged varied crop plantings throughout the region and allowed the local communities to

meet increased agricultural demands brought on by World War I. Although the Great Depression strained the local economy for several years, the post-World War II years saw the development of several large scale agribusiness operations that became the main drivers of the local economy. Agriculture, along with food processing and livestock raising remains the region's primary sources of activity today (Larkey et al. 1987: 30-31, 38-39).

Flood Management

In addition to improving irrigation, the state and local governments made efforts to manage flooding in local communities. As early as 1861, the California Legislature tried to coordinate a levee system and control levee construction by creating the Swamp Land Commission which gave California drainage districts the power to construct levees. (O'Neill 2006: 81). In January 1884, the case of *Edwards Woodruff v. North Bloomfield Gravel Mining Co., et. al.* resulted in the Sawyer Decision. Judge Lorenzo Sawyer ruled that hydraulic mining destroyed the property of others and caused so much damage to the rivers that the court placed a federal injunction against all mines that failed to build restraints to prevent the debris from entering the rivers. (Kelley 1989: 217; O'Neill 2006: 90).

The Biggs Commission

Although the hydraulic mining methods stopped, tons of debris already created continued to accumulate in the rivers for many years. The U.S. Army Corps of Engineers (USACE) established the Biggs Commission in 1888 which was comprised of USACE engineers. The Biggs Commission recommended reviving hydraulic mining on the condition that the mines had to construct dams to keep debris from reaching the rivers (O'Neill 2006: 90; Kelley 1989: 225-227).

To implement the Biggs Commission plan, the California Debris Commission (Commission) was created in 1893. The Commission was tasked with regulating hydraulic mining and preparing plans to improve the navigability of the rivers, deepen the channels, and protect the riverbanks (O'Neill 2006: 92). In 1897 the legislature gave the Commissioner of Public Works responsibility for all flood control planning and operations in the Sacramento Valley (Kelley 1989: 230, 234, 244; Blackie et al. 1953: 2-3).

The Dabney Commission

In 1904 the River Improvement and Drainage Association (RIDA) was established. RIDA recommended creating a board of USACE engineers (the Dabney Commission). By 1906, RIDA helped to establish reliable and comprehensive data on river flows. Captain Thomas Jackson of USACE came to California in 1905 and began studying the Sacramento River to develop a comprehensive flood management plan for the Sacramento Valley. In 1910, Jackson's plan, known as the Jackson Report, became the foundation for the Sacramento River Flood Control Project (SRFCP) (Russo 2010: 20; Kelley 1989: 267, 280).

Flood Control Acts

During the first half of the 20th century, Congress passed several flood control acts. The Flood Control Act of 1928 authorized the USACE to design and construct flood control projects and emphasized the requirement for local communities to perform post-construction operation and

maintenance for flood control levees (Federal Emergency Management Agency [FEMA] 2012). The 1936 Flood Control Act established the Federal government's responsibility for flood control and solidified USACE's authority (O'Neill 2006: 165-166). The Flood Control Committee (formed in 1911) was tasked with regulating and controlling the flood waters of the United States through levees, land reclamation, swampland reclamation, and storage for waterpower (O'Neill 2006: 125). The SRFCP began in 1918 and marked the first expansive flood control efforts on the Sacramento River (Arnold 1988: 14).

By 1944, the SRFCP was nearly 90 percent complete, and 980 miles of levees had been constructed (Kelley 1989: 309). By 1967, the entire SRFCP included river canal and stream channels, miles of levees, weirs, outfall gates, pumping plants, bypasses, dams, drainage canals and seepage ditches; as well as numerous control structures, bridges, and gaging stations (Jones 1967: 20).

Transportation

Roads

Local farmers constructed informal dirt roads during the second half of the 19th century to access farms and crops. Farmers, during the first half of the 20th century, began using trucks to transport their crops to market (AECOM 2011). Officials likely paved the roads sometime after World War II as asphalt became more widely used.

Railroads

In 1861, three Sacramento merchants: Leland Stanford, Collis P. Huntington, and Charles Crocker, established the Central Pacific Railroad (CPRR). One year later, Congress passed the Pacific Railway Act which authorized the construction of a transcontinental railroad to consolidate the United States. As a result of this act, in 1866 the CPRR was tasked with constructing a rail to the east, while Union Pacific Railroad (UPRR) would work its way west. The two lines eventually met in 1869 at Promontory, Utah (Linda Hall Library 2023). Called the Transcontinental Railroad, it promoted commerce and made transportation more obtainable and safer for Americans which forever changed the path of the country (McGowan and Willis 1983: 59).

The Southern Pacific Railroad (SPRR) was incorporated in 1884 as a consolidation of the CPRR and other railroads (Adams 2022). The SPRR was crucial during the agricultural boom in the region and contributed to the development of small farming communities in the Sacramento Valley. Aside from produce and passenger transportation, the line also delivered mail to the rural communities. The SPRR eventually merged with UPRR and currently focuses mainly on freight transportation services (Union Pacific Railroad 2023).

The California Pacific Railroad (CalPRR) is the first railroad line constructed by the "Big Four," after the completion of the Transcontinental Railroad, to connect to other cities and towns nearby. Completed in 1869, the CalPRR route initially operated independently and began in Davis and ended in Marysville. In 1872, the CalPRR tracks in Woodland were moved to a different location downtown. The CPRR purchased the line during the same year and operated the route until it abandoned the alignment in 1934 (Online Archive of California 2023).

3.6.2 Regulatory Setting

State Plans, Policies, Regulations, Laws

California Environmental Quality Act

CEQA includes provisions that specifically address the consideration of cultural resources. CEQA states that if a project would have significant impacts on important cultural resources, then alternative plans or mitigation measures must be considered. However, only significant cultural resources (termed "historical resources") need to be addressed, specifically resources listed in, or determined to be eligible for listing in, the CRHR (PRC Section 21084.1).

California Register of Historical Resources

The CRHR includes resources listed in or formally determined eligible for listing in the National Register of Historic Places (NRHP), as well as some California Historical Landmarks and Points of Historical Interest. Properties of local significance that have been designated under a local preservation ordinance (local landmarks or landmark districts) or that have been identified in a local historical resources inventory may be eligible for listing in the CRHR and are presumed to be significant resources for purposes of CEQA, unless a preponderance of evidence indicates otherwise (PRC Section 5024.1, 14 CCR Section 4850). Eligibility criteria for the CRHR are similar to the NRHP but focus on importance of resources to California history and heritage. A cultural resource may be eligible for listing in the CRHR if it:

1. Is associated with events that have made a significant contribution to the broad patterns of California's history and cultural heritage;
2. Is associated with the lives of persons important in our past;
3. Embodies the distinctive characteristics of a type, period, region, or method of construction or represents the work of an important creative individual or possesses high artistic values; or
4. Has yielded, or may be likely to yield, information important in prehistory or history.

The CRHR also includes California properties formally determined eligible for, or listed in, the NRHP.

State CEQA Guidelines also require consideration of unique archaeological resources (CCR Section 15064.5). As used in California PRC Section 21083.2, the term "unique archaeological resource" refers to an archaeological artifact, object, or site about which it can be clearly demonstrated that, without merely adding to the current body of knowledge, there is a high probability that it meets any of the following criteria:

- Contains information needed to answer important scientific research questions and that there is a demonstrable public interest in that information,
- Has a special and particular quality such as being the oldest of its type or the best available example of its type, or
- It is directly associated with a scientifically recognized important prehistoric or historic event or person.

In addition, State CEQA Guidelines require consideration of Tribal Cultural Resources (TCRs), which are either: (1) sites, features, places, cultural landscapes, sacred places, and objects with cultural value to a California Native American Tribe that is either on or eligible for inclusion in the CRHR or a local historic register; or, (2) resources the lead agency, at its discretion and supported by substantial evidence, chooses to treat as a TCR. Additionally, a cultural landscape may also qualify as a TCR if it meets the criteria to be eligible for inclusion in the CRHR and is geographically defined in terms of the size and scope of the landscape. Other historical resources, unique archaeological resources, and non-unique archaeological resources addressed in this section could also be TCRs if they conform to the criteria to be eligible for inclusion in the CRHR. TCRs are addressed in Chapter 3.15 of the current document.

In addition to meeting one or more of the above criteria, resources eligible for listing in the CRHR must retain enough of their historic character or appearance to be recognizable as historical resources and to convey the reasons for their significance. Integrity is evaluated with regard to the retention of location, design, setting, materials, workmanship, feeling, and association. These regulations apply to the eligibility determination of cultural resources in the project area.

California Public Resources Code Section 5097

PRC Section 5097.9

PRC Section 5097.9 states that no public agency or private party using public property or operating on public property, under a public license, grant, lease, or contract shall in any manner interfere with the free expression or exercise of Native American religion as provided in the United States or California constitutions. It further states that no such agency or party shall cause irreparable damage to any Native American sanctified cemetery, place of worship, religious or ceremonial site, or sacred shrine located on public property.

PRC Section 5097.99

PRC Section 5097.99 states that no person shall obtain or possess any Native American artifacts or human remains which are taken from a Native American grave or cairn except as otherwise provided by law; doing so constitutes a felony punishable by imprisonment as is removal of Native American artifacts or human remains with an intent to sell or dissect or with malice or wantonness.

PRC Section 5097.993 (Native American Historic Resource Protection Act)

PRC Section 5097.993, the Native American Historic Resource Protection Act, states that a person who unlawfully and maliciously excavates upon, removes, destroys, injures, or defaces a Native American historic, cultural, or sacred site that is listed or may be eligible for listing in the CRHR is guilty of a misdemeanor if the act was committed with specific intent to vandalize, efface, destroy, steal, convert, possess, collect, or sell.

California Health and Safety Code Section 7050.5

Section 7050.5 of the California Health and Safety Code prohibits the disinterment, disturbance, or removal of human remains from any location other than a dedicated cemetery. PRC Section 5097.98 (also referenced in State CEQA Guidelines Sectio 15064.59[e]) identifies steps to

follow in the event of the accidental discovery or recognition of any human remains in any location other than a dedicate cemetery. These steps include but are not limited to requiring that if human remains are discovered in any place other than a dedicated cemetery no further disturbance or excavation of the site or nearby area reasonably suspected to contain remains shall occur until the county coroner has examined the remains.

California Native American Graves Protection and Repatriation Act (CalNAGPRA) - AB 978 and associated bills

In 2001, the State Legislature passed AB-978, the California Native American Graves Protection and Repatriation Act of 2001, requiring all state agencies and museums that receive state funding and that have possession or control over collections of human remains or cultural items to provide a process for the identification and repatriation of these items to the appropriate Tribes. The bill also created a Repatriation Oversight Commission with oversight authority. The intent of the legislation was to cover gaps in the federal Native American Graves Protection and Repatriation Act specific to the State of California.

On September 25, 2020, AB-275 was signed into law, which amended CalNAGPRA and became effective on January 1, 2021. In AB-275, the State Legislature added additional Native American Heritage Commission (NAHC) responsibilities, including maintaining a list of California Indian Tribes and their state aboriginal territories, adopting mediation procedures, and publishing notices of completion of preliminary inventories and summaries on the Commission website.

CalNAGPRA is in the California Health and Safety Code, Division 7 (“Dead Bodies”), Part 2 (Disinterment and removal”), Chapter 5 – California Native American Graves Protection and Repatriation Act (CalNAGPRA sections 8010 – 8030 as added in 2001 and amended in 2018, 2020, and 2021).

Regional and Local Plans, Policies, Regulations, and Ordinances

DWR is not subject to local regulations unless expressly authorized by the Legislature. Local plans, policies, regulations, and ordinances potentially relevant to the proposed project are addressed in this section for informational purposes because they may be relevant to certain responsible agencies.

Yolo County's Cache Creek Area Plan (CCAP), Cache Creek Resources Management Plan (CCRMP), and Cache Creek Improvement Plan (CCIP) plans cover the area immediately west of the project and includes approximately 0.75 miles of the western extent of the project site (Yolo County, 2019).

Yolo County General Plan 2030

The Yolo County General Plan describes cultural resources as follows:

“Cultural resources include archaeological, paleontological, and historic resources, including cemeteries and burials outside of cemeteries. Yolo County has examples of all of these, including prehistoric Native American sites, fossilized dinosaur remains, and historical man-made artifacts, buildings, sites, and landmarks. [….] The artifacts and legends left by these groups are important

cultural resources. The preservation of cultural resources is important because they offer important educational opportunities, and they provide the County with a unique sense of identity" (Yolo County 2019 – open space chapter: pdf pages 49-60).

Yolo County has fourteen policies and policy goals and sixteen actions regarding cultural resources.

Yolo – Census Designated Place

The Town of Yolo is a census designated place. The historical resource regulations of this community are the same as Yolo County.

3.6.3 Environmental Impacts and Mitigation Measures

Thresholds of Significance

Significance criteria are based on Appendix G of the State CEQA Guidelines. Implementing the proposed project would result in a significant impact related to cultural resources if it would:

- Cause a substantial adverse change in the significance of a historical resource as defined in CCR Section 15064.5,
- Cause a substantial adverse change in the significance of an archaeological resource pursuant to CCR Section 15064.5, or
- Disturb any human remains, including those interred outside of dedicated cemeteries.

3.6.4 Analysis Methodology

Analysis of potential project impacts on cultural resources is based on results of records searches, archival research, a field survey, communication with the NAHC, and consultation with Native American Tribes, as described below.

Comments submitted in response to the NOP were reviewed for relevance to the impact analysis and mitigation measure development. A comment was received over concern whether an attempt was made to communicate with the Yocha Dehe Wintun Nation Tribe. This comment is addressed in the Native American Consultation and Identification section below. NAHC provided comments related to AB 52 and cultural resources assessments. Prior to receiving their letter, NAHC and other cultural resource information sources, including local Native American Tribes, had been contacted, as recommended by NAHC and described below. SLC provided comments related to submerged resources and title to resources on State lands. Subsequent correspondence with the SLC was conducted, as recommended, regarding the SLC shipwrecks database; the SLC representative indicated their database does not include any shipwrecks on the project site.

Records Search

A record search covering the project site was completed at the California Historical Resources Information System (CHRIS) Northwest Information Center (NWIC) on April 14, 2022, by GEI archaeologist Amy Wolpert, MA (NWIC File No.: 21-1445). The search consisted of an

electronic search of NWIC's Geographic Information System (GIS) containing reported resources and previous investigations organized by base U.S. Geological Service (USGS) 7.5-minute quadrangle maps.

The records searches included the following sources:

- NRHP-listed properties (NPS 1996) and updates;
- California Inventory of Historic Resources (State of California 1976 and updates);
- California Points of Historical Interest (State of California 1992 and updates);
- Historic maps;
- Directory of Properties in the Historic Resources Inventory (State of California 2006); and
- Historic Spots in California (Hoover et al. 1990).

The NWIC records search identified seven previous studies covering the project site that were conducted between 1997 and 2015.

In addition, the NWIC search found nine previously recorded cultural resources within or intersecting the project site. These include six archaeological resources (P-57-000040; P-57-000076; P-57-000110; P-57-000652; P-57-001415; and P-57-001421) and three built environment resources (P-57-000194 [aka P-57-000970]; P-57-000977; and P-57-000573). The resources are discussed in more detail below.

Archival Research

GEI's architectural historians conducted primary and secondary research of the project site. Research efforts included review of relevant project-related documentation, historic aerials and maps, and the Office of Historic Preservation Built Environment Resource Directory (BERD). Additional research was conducted at the GEI cultural library.

Research Methods

A cultural resources bibliography was created, based on the works cited in standard professional references for ethnographic study of the region near Cache Creek (Heizer 1978; Kroeber 1932; Powers 1874). Map data from these standard resources were digitized to begin construction of a geographic database. Materials relevant to the history of Cache Creek were also identified, including state agency reports and other records.

Field Survey

Archaeological Field Survey

On April 26, 27, and 28, 2022, GEI archaeologists Miles Jenks, MA and Kyle Brudvik, MA, RPA, conducted pedestrian survey of the project site. All areas that were accessible and that had adequate ground-visibility were surveyed to intensive standards (i.e., transect spacing no more than 15 meters). Accessible areas during the surveys were also examined for cultural resources, including artifacts, ecofacts, and midden, which included dirt roads and the road shoulder, cut

banks, and the edges of plowed fields. Other areas were obscured by bushes, trees, grasses and pavement.

Built Environment Field Survey

On April 26 and June 22, 2022, GEI conducted a field inventory of the project site. Built environment resources 45 years old or older were recorded through written notes and photography.

Assessment of Sensitivity for Buried Archaeological Resources

Surface geologic and soils maps were examined to assess the sensitivity for the project site to contain buried and intact cultural resources. Historical maps were also examined to understand landscape changes in proximity to the project site. Previous geoarchaeological studies in and proximal to the project site are also included in the analysis. The project site occurs within an alluvial setting that is characterized by periodic sediment deposition and erosion. It is the kind of geomorphic setting that has been important for human settlement in the region since the Late Pleistocene/Early Holocene transition (i.e., the last 13,000 years or so). The following discussion of archaeological sensitivity in the project site is largely based on interpretation of available geologic and soils map.

A tripartite sensitivity classification is used here to describe the potential for soils and landforms in the project site to contain buried and intact archaeological resources (Meyer and Rosenthal, 2008, and Meyer et al., 2010). Sensitivities range from high to low. Except for soils mapped as "Riverwash" all soils within the project site are assessed to be late Holocene soils with a high archaeological sensitivity with a high potential for containing buried archaeological resources. The number of archaeological sites near the project site supports this assessment.

Table 3.6-1. Archaeological Sensitivity of NRCS Soil Mapping Units

Mapping Unit	Associated Geologic Unit	Age*	Archaeological Sensitivity
Laugenour	Qha, Qhc	Latest Holocene	High
Loamy land	Qha, Qhc	Latest Holocene	High
Maria	Qhb	Latest Holocene	High
Reiff	Qha	Latest Holocene	High
Riverwash	Qhc	Latest Holocene/Modern	Low
Soboba	Qha	Latest Holocene	High
Tyndall	Qha	Latest Holocene	High
Yolo	Qha	Latest Holocene	High

Note: Geologic era.

Native American Consultation

Please see Chapter 3.15 "Tribal Cultural Resources" for information on Native American Consultation.

3.6.5 Identified Cultural Resources

Archaeological Resources

Six previously identified archaeological resources were identified during the records search as plotted within or partially intersecting the project site: P-57-000040/CA-YOL-37; P-57-000076/CA-YOL-100; P-57-000110/CA-YOL-135/H; P-57-652; P-57-001415; and P-57-001421. During the pedestrian survey, however, only evidence for P-57-000110/CA-YOL-135/H was identified. The other five archaeological resources may be mis-plotted or destroyed.

P-57-000040/CA-YOL-37

Description

Site CA-YOL-37 consisted of obsidian points when first recorded (no date given). The original recordation suggested that it was "leveled to 1ft", suggesting it was already largely destroyed. Recent surveys of the site have found significant modern disturbances and no culturally significant material.

During the current investigation, GEI archaeologists found no surface evidence of CA-YOL-37. Likely, the site first described by Gallup (n.d.) has been entirely covered and/or destroyed by the modern build-up of the maintenance areas now present. Therefore, it is not possible to evaluate this resource for the CRHR.

The NWIC records and the shapefiles provided by the NWIC state this resource is "approximately located" and so it remains possible that there is an archaeological/historical resource within the general vicinity of the NWIC mapped resource. Thus, the mapped resource area should be considered as "archaeologically sensitive" with some potential for inadvertent discoveries in the vicinity.

P-57-000076/CA-YOL-100

Description

Site CA-YOL-100 is a pre-contact "mound" site originally measuring approximately 100 yards in diameter. No artifacts or features were recorded from the site when it was originally described in 1934. ESA surveyed the resource area in 2018 and updated the site record, providing a site photograph and map of the possible area~~,~~ The ESA survey, which was "restricted to the extent of the levee and associated toe roads" recorded "no cultural material."

GEI archaeologists did not identify surface evidence of CA-YOL-100 during the current investigation. This suggests that either the site no longer exists or that it was initially mis-plotted. No further evidence of this resource exists at this time. Therefore, it is not possible to evaluate this resource for the CRHR.

The NWIC records and the shapefiles provided by the NWIC state this resource is "approximately located" and so it remains possible that there is an archaeological/historical resource within the general vicinity of the NWIC mapped resource. Thus, the mapped resource

area should be considered as “archaeologically sensitive” with some potential for inadvertent discoveries in the vicinity.

P-57-000652

Description

This site was originally recorded in 2011. It consists of the remains of a historic-era farmstead including a large trash scatter, concrete foundation, palm trees, and a barn. No evidence of the site existed during a 2018 pedestrian survey. The 2022 survey conducted for the project also failed to find any evidence of the site including the palm trees and barn. Therefore, it is not possible to evaluate this resource for the CRHR as it is no longer extant.

P-57-000110/CA-YOL-135/H

Description

This site was originally recorded in 1980 as a “very large open village site of several acres, in field.” Situated on the field was a large orchard and house and outbuildings. The field and buildings still exist, and the land is still under cultivation, however, the site is not visible, if it still exists in the field. Johnson (1980) describes the site as containing midden and a large and diverse artifacts assembly, faunal material, and more. It is possible that the site represents the remains of the Patwin village of *Churup*, but this has never been confirmed (see e.g., Kroeber 1932). A 2018 survey was able to observe the levee road and adjacent toe road areas, but not the orchard field.

Evaluation

The current re-survey of the site, by GEI in April 2022, noted high counts of artifacts and faunal material and a very diverse assemblage of each. As with the ESA (2018) survey, the GEI (2022) survey found artifacts mostly along the levee crown road, the waterside levee toe road, and landside levee toe. Items were found approximately 100 m north of the current site boundary, in the middle of the waterside levee toe road. Artifacts were also found embedded in this toe road, just west of the current site boundary and the site boundary was adjusted.

As with other sites along levee and toe roads in this part of Cache Creek (e.g., CA-YOL-71), it seems likely that subsequent site re-surveys of CA-YOL-135/H would continue to expand the site boundaries within road areas; periodic grading and occasionally wet sediments would continue to smear artifacts eroding out of the levee laterally away from the initial site core.

P-57-000110/CA-YOL-135/H is not eligible for listing in the CRHR under Criterion 1 because it is not associated with events that have made a significant contribution to the broad patterns of history. The resource is not eligible for listing in the CRHR under Criterion 2 because the resource is not associated with the lives of persons significant in history. Nor is the resource eligible under Criterion 3 because it does not embody the distinctive characteristics of a type, period, or method of construction, does not represent the work of a master, or possess high artistic values or represent a significant and distinguishable entity whose components may lack individual distinction.

Based on surface observations, the site appears to have properties that may yield important information in history or prehistory and are assumed to be eligible for listing under Criterion 4. While the site has undergone some damage due to agricultural development, levees construction and dirt roads grading, it seems to be in fair condition and therefore likely retains integrity in the original site boundaries. Of the original resource boundary only the western tip of the resource is in the project site, subsequent expansions of the site boundary likely reflect smearing of site components by road grading and vehicle traffic.

P-57-001415 (French Camp Site)

The French Camp Site is a supposed settlement established by trappers from the Hudson Bay Company. The original description on the site derived from an oral history given by a Yolo County resident. A record in 1995 attempted to verify the existence of the site and was able to find no supporting documents. The 2022 survey conducted by GEI found no evidence of the site. Therefore, it is not possible to evaluate this resource for the CRHR.

P-57-001421 (Elvaton Site)

This resource was recorded in 2018 as the former town site of Elvaton, located along the Southern Pacific Railroad. The town of Elvaton appeared on maps up until 1915, with the adjacent railroad tracks being removed in the 1930s. Recent pedestrian surveys have found no evidence of the site in the recorded area. In addition, the 2022 survey conducted by GEI found no evidence of the site. Therefore, it is not possible to evaluate this resource for the CRHR. It could be that evidence for this town site has been completely destroyed, or it was mis-plotted on older maps.

Built Environment Resources

Eleven historic-era built environment resources are in the project site: the CalPRR grade (P-57-000194/970), a CPRR segment (P-57-000977), County Road 99A (P-57-000573), County Road 17A, Cache Creek Levee, 15090 County Road 97A, a pump structure, and four bridges. The four bridges include: Cacheville Road Bridge (no. 22C0019) built in 1955; the Highway 113 Bridge (no. 220038) built in 1960; and two I-5 Bridge Crossings (nos. 220007L, 220007R) built in 1970 and 1956, respectively. The bridges are listed in the Caltrans Bridge survey as Category 5 (not eligible for the NRHP). Because they lack NRHP eligibility and do not have sufficient significance at the state or local level, the bridges are also not eligible for the CRHR.

The records search indicated that a segment of the former CalPRR alignment is in the project site (previously recorded under two different P numbers: P-57-000194 and P-57-00970), however, during the field survey, GEI was unable to locate the resource. The resource has likely eroded over time and/or is overgrown with vegetation. Two modern-era residences (14151 County Road and 15390 County Road) are also on the project site. The residences date to 2009 and 1992, respectively, and do not appear to retain the exceptional significance criteria required for recently established properties and they are not discussed further. For detailed information on the built environment resources see *Cultural Resources Inventory and Evaluation Report for the Cache Creek Channel and Levee Rehabilitation Project* (GEI 2022).

California Pacific Railroad Grade (P-57-000194/970)

A segment of the CalPRR alignment in the project area consists of a railroad grade, as the track and ties have been removed. The segment is in the eastern portion of the Cache Creek Levee. The resource in the project area was recorded as part of P-57-000194 in 2015 which also includes several other segments of the CalPRR and the SPRR railroad. The same alignment was also recorded during the same year as P-57-000970. This evaluation is for CRHR eligibility and focuses on the segment in the project site. Previous documentation also discussed a potential CalPRR historic district, although there is no indication that an evaluation for the district was prepared. The potential historic district was not evaluated as part of this project as it is beyond the scope of the project. Therefore, for the purposes of this project, the entire CalPRR alignment is assumed to be eligible for the CRHR. The period of significance for the entire alignment would begin and end in 1869, the year of construction. The CalPRR alignment would likely be eligible under CRHR Criterion 1 for its contribution to railroad transportation and development during the late 19th century. Below is a discussion of the CRHR eligibility status of the CalPRR grade in the project area, individually and as a contributor to a potential CalPRR historic district.

The CalPRR grade in the project area is part of the original CalPRR route that was constructed in 1869 and began in Yolo County (Robertson 1998: 93). The CalPRR alignment was established during a period when rail travel was a common mode of transportation. The alignment was an important route in the Central Valley and has the potential to meet CRHR Criterion 1 for its association with early railroad transportation in the region. Under Criterion 2, there are no known important individuals associated with the railroad alignment and thus the railroad grade in the project area does not appear to meet Criterion 2, individually or as part of the larger district. All railroad-related features of the segment in the project area have been removed and the grade itself is not of unique construction. Therefore, the segment does not appear to meet CRHR Criterion 3, individually or as part of the larger district. Under Criterion 4, there is no evidence the resource in the project area has yielded or may be likely to yield information important in prehistory or history. For this reason it does not appear eligible, individually or as part of the larger district. In addition, the resource in the project area lacks integrity. The segment of railroad retains integrity of location and its original rural setting; however, integrity of design, materials, and workmanship has been compromised due to upgrades and replacement parts to accommodate modern rail cars. In addition, the removal of several miles of track in the Yolo County part of the overall alignment has affected integrity of design. Integrity of feeling and association remains as the segment is still in use by the UPRR. Therefore, while an argument for eligibility for the entire alignment may be made under Criterion 1, due to a lack of integrity, the CalPRR grade in the project is not able to convey its significance. The resource in the project area also does not appear eligible as a contributing resource to a potential historic railroad district because of a lack of integrity. In summary, the CalPRR grade in the project area does not appear to be eligible for the CRHR, individually or as part of a larger district.

Central Pacific Railroad Segment (P-57-000977)

The CPRR segment in the project site spans Cache Creek and consists of standard gauge railroad tracks, grade, and a steel railroad trestle. No other associated features were identified in the project site. The railroad segment was previously recorded under P-57-000977 and segments of the alignment have been determined ineligible for the NRHP because of a lack of integrity (OHP

2023). Previous documentation also discussed a potential historic district associated with the CPRR, although there is no indication that an evaluation was prepared. The potential district was not evaluated as part of this project as it is beyond the scope of the project, therefore the district is assumed to be eligible for the CRHR for the purposes of this project. The resource would likely be eligible for the CRHR under Criterion 1 for its contribution to railroad transportation and development during the late 19th century.

Below is a discussion of the eligibility status of the CPRR segment, individually and as a contributor to a potential historic district.

The segment in the project area is part of the CPRR alignment which was laid in 1869 (Robertson 1998: 93). The resource has the potential to meet CRHR Criterion 1 for its association with railroad development in the region. Under Criterion 2, research did not reveal any known important individuals associated with the railroad segment. The resource does not exhibit any unique design or engineering method of construction. Therefore, it is not likely to meet CRHR Criterion 3. Under Criterion 4, the resource is not likely to be a source of important information relative to history. In addition, the resource lacks integrity. Integrity, of design, materials, and workmanship has been compromised due to upgrades and replacement parts on the track and trestle to accommodate modern rail cars. The removal of several miles of track has affected integrity of design of this segment. Therefore, while the railroad segment within the project area could be eligible under Criterion 1, due to a lack of integrity, this portion of the resource is not able to convey its significance or association with the greater CPRR alignment. On its own, it also does not retain adequate integrity to be part of a larger district. Therefore, the resource does not appear to be eligible for the CRHR, individually or as part of a larger district.

County Road 99A (P-57-000573)

County Road 99A is a single lane paved road that travels on the north side of the Cache Creek Levee. The road was previously evaluated for NRHP significance in 2011 and was recommended as not eligible because of a lack of historical significance (AECOM 2011). Because the evaluation was prepared more than five years ago, GEI revisited the resource and evaluated it for the CRHR for the purposes of this project. County Road 99A was constructed as early as 1907 and is related to agricultural development in the region during this period. It does not play a significant role in the region's history, thus does not appear to be eligible for CRHR Criterion 1. Research also did not reveal any important individuals to be associated with the resource and therefore, the road is not likely to be eligible for CRHR Criterion 2. Under Criterion 3, the resource is a road and as a utilitarian feature it does not exhibit any unique method of construction or engineering style. Lastly, under Criterion 4, the resource is not a source of important information. The road also lost some integrity over the years. In summary, County Road 99A does not appear to be eligible for the CRHR due to a lack of historical significance.

County Road 17A

County Road 17A is a single lane paved road located on the north side of Cache Creek Levee. It is evident on historic maps as early as 1907 (USGS Woodland 1907). County Road 17A did not directly contribute to the region's history and therefore, the resource does not appear to be eligible for the CRHR under Criterion 1. Research did not reveal any important individuals to be associated with the road, making it not likely to be eligible under CRHR Criterion 2. Under

Criterion 3, the road is a utilitarian feature that does not display any unique method of construction or engineering style. Lastly, the road is not the sole source of important information, making it not likely to be eligible under CRHR Criterion 4. In summary, the resource does not appear to retain enough historical significance to be eligible for the CRHR.

Cache Creek Levee (Levee No. 5205000412)

A segment of the Cache Creek Levee is on the project site. The earthen levee travels along the east and west banks of Cache Creek. The State Historic Preservation Officer determined the resource ineligible for the NRHP in 2006 (OHP 2023). GEI revisited the levee as part of this project. It remains in good condition and the finding of ineligibility remains valid. The resource is also not eligible for the CRHR.

15090 County Road 97A (APN: 025-320-004)

A two-story single-family residence with two outbuildings is on the project site. The National style residence was constructed in 1925 (Yolo County Assessor 2022). It does not appear to meet CRHR criteria. It did not contribute directly to area development or general history; therefore, the residence does not appear to meet CRHR Criterion 1. Under Criterion 2, research did not reveal any important individuals associated with the resource. The residence and outbuildings do not exhibit any unique method or style of architecture and are not likely to be eligible for CRHR Criterion 3. Under Criterion 4, the resource is not the sole source of important information. The residence also lacks integrity through the replacement of the original wood-frame windows with aluminum and vinyl. In summary, the property does not retain sufficient historical significance or integrity and is therefore not recommended as eligible for listing in the CRHR.

Pump Structure

A Pump Structure is located on the east side of the Cache Creek Levee. It consists of a concrete block base a cylindrical metal pump constructed circa 1943 (Yolo County Flood Control & Water Conservation District 2022). The resource is a part of the local flood control system and does not significantly contribute to the region's development or history and does not appear to meet CRHR Criterion 1. Under Criterion 2, there are no known important individuals associated with the resource. The pumphouse does not exhibit any unique method of construction therefore, it is not likely to be eligible under CRHR Criterion 3. Under Criterion 4, the resource is not the sole source of important information. In summary, the Pump Structure does not appear to meet CRHR eligibility due to a lack of historical significance.

Table 3.6-2. Resources within the Project Site

Primary Number (P-57-)	Trinomial (CA-YOL-)	Name	Observed During Survey	CRHR Eligible
000040	37	X-8	No	NA
000076	100	S-100; Schneider	No	NA
000110	135H	Reiff Site	Yes	Yes
000194	178H	HB-1; SPRR; C-Davis-1; CPRR (now UPRR); R.R. Trestle; Old CalPRR Spur; Old CalPRR Grade; Office of Historic Preservation (OHP) Property Number - 045978; OHP PRN - 5616-0112-0000	Yes	No

Primary Number (P-57-)	Trinomial (CA-YOL-)	Name	Observed During Survey	CRHR Eligible
000573	245H	County Road 99A	Yes	No
000652	-	Cache Creek Historic Site #1; Dozier Farm (no longer extant).	No	NA
000970	-	CalPRR Route Thru Yolo County District; CalRR; California-Northern RR	Yes	No
000977	-	CPRR Route Thru Yolo County District; SPRR; California-Northern RR; CalPRR; UPRR	Yes	No
001415	-	French Camp Site (pre-1850-??); French Camp	No	NA
001421	-	Elvaton Site (pre1900-c.1930s); Elvaton	No	NA
-	-	County Road 17A	Yes	No
-	-	Cache Creek Levee	Yes	No
-	-	15090 County Road 97A	Yes	No
-	-	Pump Structure	Yes	No
-	-	Cacheville Road Bridge (no. 22C0019)	Yes	No
-	-	Highway 113 Bridge (no. 220038)	Yes	No
-	-	I-5 Bridge Crossing (no. 220007L)	Yes	No
-	-	I-5 Bridge Crossing (no. 220007R)	Yes	No

3.6.6 Impact Analysis and Mitigation Measures

Impact 3.6.1: ***Substantial Adverse Change in the Significance of a Built Environmental Historical Resource Pursuant to CCR Section 15064.5.*** *Eleven built environmental and cultural resources are within or near the project site. However, these built resources are recommended as ineligible for the CRHR. Therefore, the project would have* ***no impact*** *on built environmental historical resources.*

The cultural resources inventory and evaluation study prepared for the project identified eleven historic-era built environment resources at the project site. However, these built resources are ineligible for the CRHR, as described previously. Therefore, these built environmental cultural resources are not considered historical resources for the purposes of CEQA, and there would be ***no impact*** to built-environmental historical resources.

Impact 3.6.2: ***Substantial Adverse Change in the Significance of an Archaeological Historical Resource Pursuant to CCR Section 15064.5 or a Unique Archaeological Resource as Defined in PCR Section 21080.1.*** *It is possible buried historical or archaeological resources are present on the project site. If encountered during project-related, ground-disturbing activities, these resources could be substantially impacted resulting in a* ***significant impact****.*

The cultural resources inventory and evaluation study prepared for the project identified six archaeological-historical resources in or potentially near the project site through record searches and a pedestrian survey. The Native American archaeological site P-57-000110 is eligible to the CRHR. Levee raise work would occur within the P-57-000110 resource boundary. Therefore, the

project could result in a ***significant impact*** to this resource if intact components of the resource were encountered during project activities.

The Native American archaeological sites P-57-000040 and P-57000076, and the historic-era P-000652, French Camp site (P-57-001415) and Elvaton site (P-57-001421) are also located in the project site according to the NWIC record search maps, however P-57-000652 is no longer extant and the NWIC maps label the boundaries of the four other sites as "approximate" and the sites have not been relocated during recent archaeological surveys or evaluated for eligibility for listing in the CRHR.

Nonetheless, the project could inadvertently impact P-57-000040, -000076, -001415, or -001421 if these sites, or buried portions of them, are discovered in the project site. Similarly, due to the moderate to high archaeological sensitivity of the project site, there is the possibly of unanticipated finds in the project site which could be impacted during construction activities that require excavation below ground surface. Impacts to known or unknown archaeological resources and historical resources determined to be eligible for listing in the CRHR would result in a ***significant impact*** to a historical or archaeological resource. The following mitigation measures have been identified to address this impact.

Mitigation Measure 3.6.2a: Worker Environmental Awareness Program (WEAP) Training for Cultural and Tribal Resources.

Cultural resources awareness training, as part of an overall Workers Environmental Awareness Program, should be conducted for all construction personnel and field workers by a cultural resources specialist who meets the SOI's Professional Qualifications Standards (36 CFR Part 61; 48 Federal Register 44716) in coordination with consulting California Native American Tribes prior to starting work each construction season. The training should be conducted before any stages of physical project implementation and construction. Consulting California Native American Tribes will be provided an opportunity to present the Tribal perspective and potential to encounter resources of cultural importance at each training session.

The WEAP training should include information on the potential kinds of pre-contact Native American and historic-era cultural materials that could be encountered, how to identify buried faunal and human remains, and how to identify anthropogenic soils (e.g., midden soils). The WEAP training should also include a summary of the relevant laws concerning cultural resources and human remains, along with a summary of the following protocols to follow if workers encounter cultural resources or human remains.

Timing: Prior to and during construction activities.

Responsibility: DWR.

Mitigation Measure 3.6.2b: Cultural Monitoring and Communication Plan

A Cultural Monitoring and Communication Plan shall be developed for the entire project site, with particular attention to the locations of the known archaeological sites in the

project site, including the archaeological sites that were not relocated, that could be affected in areas that require excavation below ground surface. This plan shall be developed through consultation between DWR and participating Tribe(s), and with the involvement of a project archaeologist(s) who meets SOI qualifications. The Cultural Monitoring and Communication Plan shall specify process and procedures in the event human remains are discovered, including notification to the County Coroner and coordination with the Native American Heritage Commission (NAHC) in the event human remains are identified as Native American in origin consistent with CA Health and Safety Code Section 7050.5 and PRC 5097.5.

The Cultural Monitoring Plan shall include details for invitations to tribes to participate in determining impact avoidance including site monitoring. This may include dedicated fulltime archaeological and/or Tribal monitoring at and near identified resource locations including P-57-000110/CA-YOL-135H, which is eligible for listing in the CRHR under Criterion 4, to ensure that if an intact archaeological deposit is encountered during project-related ground-disturbing activities then appropriate treatment measures can be quickly developed and implemented. Monitoring should as well be conducted at and near the previously mapped locations of P-57-000040, -00076, -000652 –001415, and -001421. No subsurface testing or data collection is recommended at this time because of the following constraints: most of the five sites are partially located on private property and cannot be accessed; other portions of the sites are in and under the levee; and the exposed toe road within the DWR right-of-way is too narrow to allow for archaeological excavation.

Due to the moderate to high archaeological sensitivity of the project site, the Cultural Monitoring Plan shall include the entire project site. However, less dedicated monitoring efforts (e.g., an archaeologist and/or Tribal monitor visiting multiple locations instead of intensively monitoring one location) may be possible outside of the known archaeological sites if reasonable levels of monitoring efforts in the non-site areas are agreed upon through consultation between DWR and the affiliated Tribe(s) prior to construction activities that require excavation below ground surface, and are also considered reasonable by the project archaeologist(s). Any discovery of historical or archeological resources during construction within the project site will be addressed according to the procedures in Mitigation Measure 3.6.2c.

Timing: Prior to and during construction activities.

Responsibility: DWR.

Mitigation Measure 3.6.2c: In the Event that potential Archaeological or Tribal Cultural Resources are Discovered during Construction, Implement Procedures to Evaluate, Avoid, and Minimize Effects.

It is unknown but possible that an intact component of P-57-000110/CA-YOL-135H could be identified during project activities. Likewise, it is unlikely but possible that intact components of P-57-000040, -00076, -000652 –001415, and -001421 may also be identified during project activities as well as undiscovered resources that have never been

previously recorded. Therefore, a Resource Treatment Plan shall be developed in consultation with participating Native American Tribes prior to the initiation of project construction. The Resource Treatment Plan shall address the methods to identify and document previously recorded resources. The Resource Treatment Plan shall also include methods for addressing the inadvertent discovery of potential archaeological and Tribal cultural resources, including issuance of a stop work order and establishment of a no work zone in the immediate vicinity of the find. The area of the discovery shall be flagged to delineate the boundary of the sensitive zone. If either an archaeological or Tribal monitor are not present at the time of the discovery, representatives from participating Native American Tribes will be notified and a qualified archaeologist, who meets the U.S. Secretary of the Interior's Professional Qualifications Standards for Archaeology, shall visit the discovery site as soon as practicable for identification and evaluation pursuant to CEQA Guidelines Section 15064.5. If the archaeologist determines that the archaeological find is not a "historical" or "unique archaeological" resource and if participating Tribes determine that the find is not a resource of cultural importance, and thus not significant as a potential Tribal cultural resource, construction may resume. If the archaeologist or representative from a participating Native American Tribe determines that the find is significant or potentially significant, the Tribal representative will work in concert with the archaeologist to determine if the find can be avoided and, if so, shall detail avoidance procedures. If the find cannot be avoided, the archaeologist will coordinate with the lead agency to facilitate consultation with participating Tribes to develop an Action Plan within 48 hours which shall include provisions to minimize impacts.

The preferred treatment for impacts to archaeological sites, including those identified as Tribal Cultural Resources, is avoidance, as directed under CEQA Guidelines 15126.4(b)93)(b)(1). Not all archaeological sites that may be encountered may be able to be avoided. The Resource Treatment Plan will be developed consistent with requirements in the CEQA Guidelines Section 15126.4(b). If archaeological data recovery is included in the Treatment Plan, the Plan shall include a research design to identify research questions as the focus of data recovery efforts and detail the field and laboratory methods to address the questions. The Treatment Plan shall also include a specific discussion of the methods and level of effort at each site for data recovery excavation, which are an acceptable form of mitigation under Section 15126.4(b)(3)(c) of the CEQA Guidelines. Specific plans for Tribal Cultural Resources shall be prepared in consultation with participating Native American Tribes. The Data Recovery and Treatment Plan protocols shall also be used for addressing accidental discoveries as discussed in Mitigation Measure 3.6.2b.

Timing: Prior to and during construction activities.

Responsibility: DWR.

Significance after Mitigation: Implementation of Mitigation Measures 3.6.2a, 3.6.2b, and 3.6.2c would reduce potentially significant construction-related impacts on an historical or archaeological resource to a **less than significant** level by requiring preparation and implementation of Cultural Monitoring and Communication Plan and an Unanticipated Discoveries Plan and implementing actions to avoid, protect, or conserve resources in consultation with culturally affiliated Tribes.

Impact 3.6.3: ***Substantial Impacts to Unknown Human Burials Pursuant to the Provisions of California Health and Safety Code (CHSC) Section 7050.5-7055.***
There are no known human burials within the project site but encountering unanticipated human burials or remains is possible during any construction project. Therefore, the project could result in a ***significant impact*** *to unknown human burials or remains.*

The cultural resources inventory and evaluation study prepared for the proposed project did not identify any human burials or remains in the project site, however, encountering unanticipated human burials or remains is possible during any construction project, and particularly during ground disturbing construction projects in or near Native American sites. Consultation with affiliated Tribes may identify additional concerns related to unknown human burials within the project site. Therefore, the project could result in a **significant impact** to unknown human burials or remains. The following mitigation measures have been identified to address this impact.

Mitigation Measure 3.6.1 WEAP Training for Cultural and Tribal Resources.

Please refer to Mitigation Measure 3.6.1 under Impact 3.6.1 in this section for full text of this mitigation measure.

Timing: Prior to and during construction activities.

Responsibility: DWR.

Mitigation Measure 3.6.2b Cultural Monitoring and Communication Plan.

Please refer to Mitigation Measure 3.6.2b under Impact 3.6.2 in this section for full text of this mitigation measure.

Timing: Prior to and during construction activities.

Responsibility: DWR.

Mitigation Measure 3.6.3 Additional Mitigation Measures if Human Remains are Encountered.

If human remains are found, the CHSC requires that excavation be halted in the immediate area and that the Yolo County Coroner be notified to determine the nature of the remains. The coroner is required to examine all discoveries of human remains within

48 hours of receiving notice of a discovery on private or state lands (CHSC Section 7050.5[b]). If the coroner determines that the remains are those of a Native American, he or she must contact the NAHC by telephone within 24 hours of making that determination (CHSC Section 7050.5[c]).

Once notified by the coroner, the NAHC shall identify the person it believes is the Most Likely Descendant (MLD) of the Native American remains. With permission of the legal landowner(s), the MLD may visit the site and make recommendations regarding the treatment and disposition of the human remains and any associated grave goods. This visit should be conducted within 24 hours of the MLD's notification by the NAHC (California Public Resources Code [PRC], Section 5097.98[a]). If a satisfactory agreement for treatment of the remains cannot be reached, any of the parties may request mediation by the NAHC (PRC, Section 5097.94[k]). Should mediation fail, the landowner or the landowner's representative must reinter the remains and associated items with appropriate dignity on the property in a location not subject to further subsurface disturbance (PRC, Section 5097.98[b]).

Timing: During construction activities.

Responsibility: DWR.

Significance after Mitigation: Implementation of Mitigation Measures 3.6.1, 3.6.2b, and 3.6.3 would reduce potentially significant construction-related impacts on unknown human burials or remains to a **less than significant** level by requiring additional procedure in compliance with State law if human remains are encountered during construction.

Residual Significant Impacts

The proposed project would not result in residual significant impacts related to cultural resources or TCRs.

3.7 Geology, Soils, and Paleontological Resources

This section discusses the existing geological setting of the project vicinity; describes applicable regulations; analyzes potential project impacts related to geology, soils, and paleontological resources; and identifies mitigation measures to reduce potentially significant impacts to a less than significant level.

3.7.1 Environmental Setting

Regional Geology

The project site and vicinity are located in the north-central portion of the Great Valley Geomorphic Province (CGS 2002). The Great Valley is an alluvial basin/trough in the central part of California, that is approximately 50 miles wide (east to west) and 400 miles long (north to south). The northern portion of the Great Valley encompasses the Sacramento Valley, which is primarily drained by the Sacramento River. Sediments have been accumulating in this trough almost continuously since the Jurassic, about 160 million years ago. Most of what is now California was formed by accretion and deformation of marine and volcanic terranes carried from the west along the oceanic crustal plate and scraped off as the plate subducted under the western edge of North America. Rocks formed and altered by these processes are between about 205 million and 66 million years old and are known collectively as the Franciscan Complex. These rocks are below the sequence of sedimentary deposits that underlie the project site and surrounding area.

Local Geology

The Cache Creek watershed drains roughly 1,150 square miles of the eastern slope of the northern Coast Ranges in Lake, Colusa, and Yolo counties. The project site is in the eastern portion of the watershed, in the Lower Cache Creek portion, where it drains into Yolo Bypass. Geologic units underlying the project site include Holocene alluvium (Qha), Latest Holocene stream channel deposits (Qhc) and Holocene basin deposits (Qhb). Unit names and abbreviations follow those used in the recent synthesis by Gutierrez (2011) (**Figure 3.7-1**).

Local Soils

Soil formation is a geomorphic process, and systematic and predictable relationships exist between soil types and landforms. While several factors link soil genesis to landscapes, the age of a landform is generally reflected in the type and degree of soil development. All things being equal, soil development on older landforms is generally better expressed (e.g., thicker and/or with more "typical" A/B/C horizons) than on younger landforms. The Natural Resources Conservation Service (NRCS) partly relies on soil-landform relationships when mapping soils, and thus resultant soil mapping units are useful for understanding the origin and relative age of landforms. Native (e.g., intact) soils in and proximal to the project site have formed on primarily alluvial and basin landforms and these soils have clear age associations with those landforms. Soils in the project area include the following series: Laugenour, Loamy alluvial land, Maria, Reiff, Riverwash, Soboba, Tyndall, and Yolo (**Figure 3.7-2**). These series are described briefly here based on official descriptions maintained by the National Cooperative Soil Survey (NCSS).

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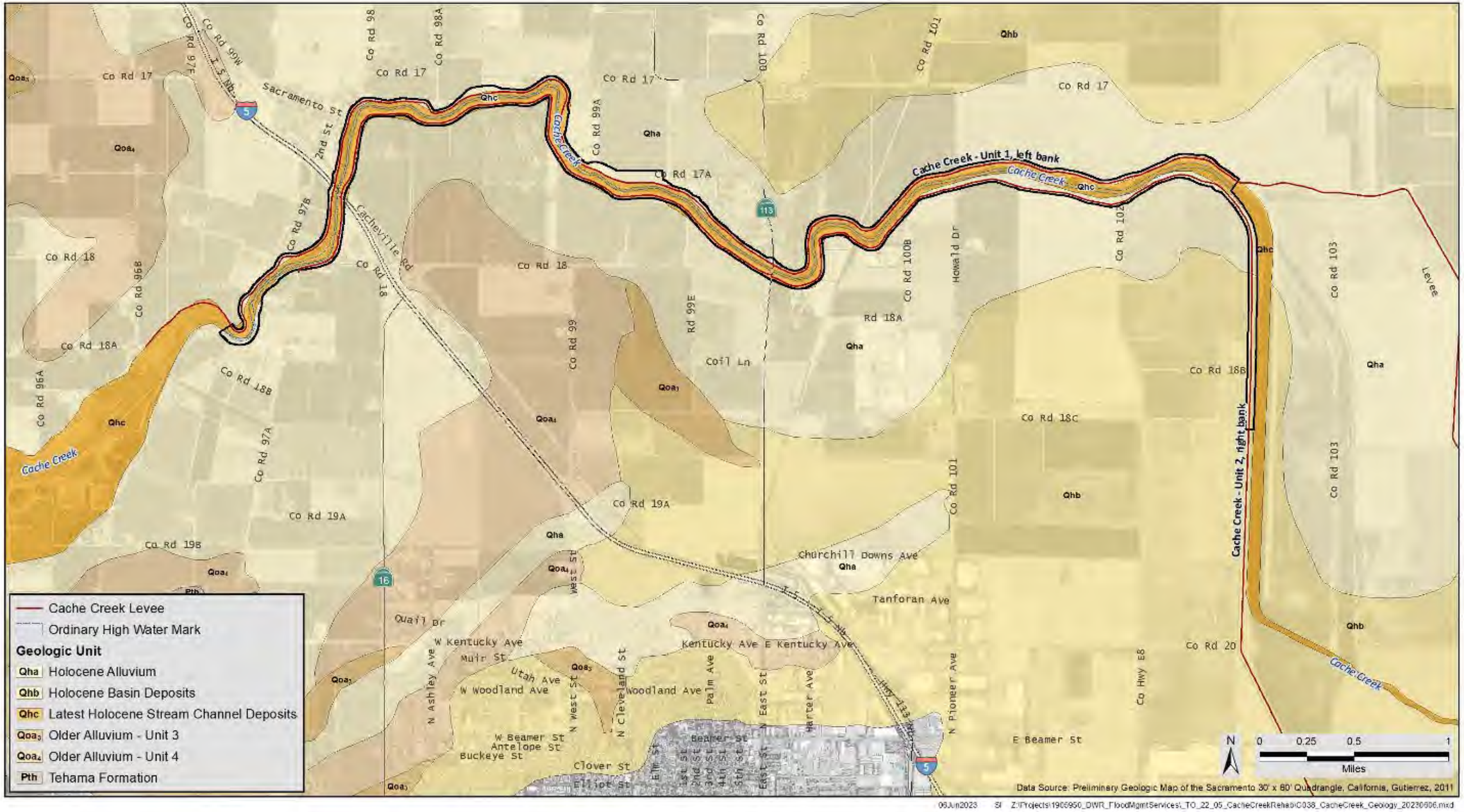

Figure 3.7-1. Local Geology Map

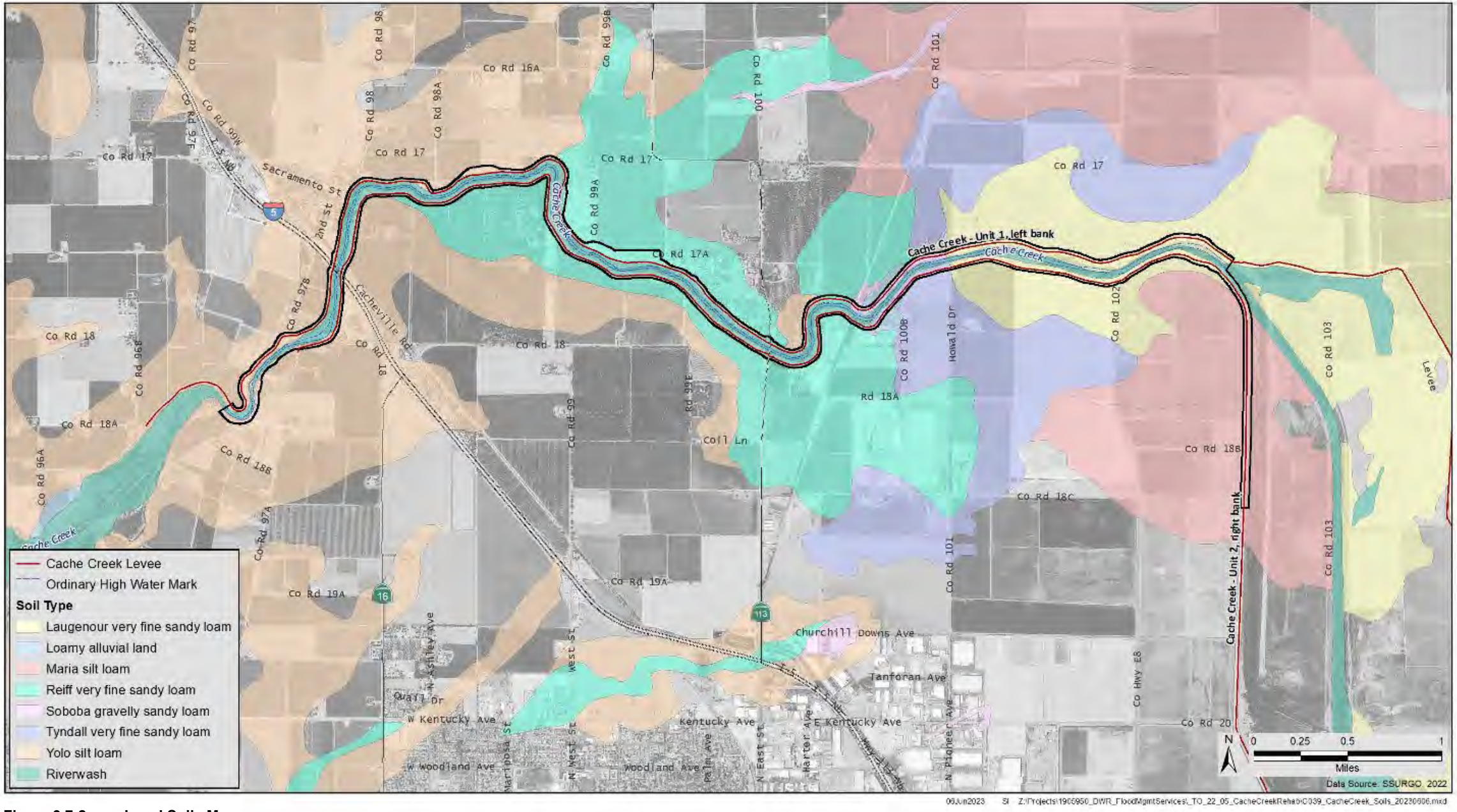

Figure 3.7-2. Local Soils Map

3.7.2 Regulatory Setting

Federal Plans, Policies, Regulations, and Laws

National Pollutant Discharge Elimination System

The National Pollutant Discharge Elimination Program is implemented by California's State Water Resources Control Board (SWRCB) and brings construction activities into compliance under the Clean Water Act Section 402 (CWA Section 402). The SWRCB has adopted specific National Pollution Discharge Elimination System (NPDES) permits for a variety of activities that have the potential to discharge waste (including sediment) to waters of the State. The SWRCB's Statewide storm water general permit for construction activity (2022-0057-DWQ) applies to all land-disturbing construction activities that would disturb 1 acre or more. Compliance with the NPDES permit requires implementing a Storm Water Pollution Prevention Plan (SWPPP) that includes best management practices (BMPs) to minimize water quality degradation during construction activities.

Paleontological Resources Preservation Act

The federal Paleontological Resources Preservation Act (PRPA) of 2002 (81 Federal Register 88173) limits the collection of vertebrate fossils and other rare and scientifically significant fossils to qualified researchers who have obtained a permit from the appropriate state or federal agency. Additionally, it specifies researchers must agree to donate any materials recovered to recognized public institutions, where they will remain accessible to the public and for research. The PRPA incorporates key findings and recommendations of the report, *Fossils on Federal Land & Indian Lands*, issued by the Secretary of the Interior in 2000, which established that most vertebrate fossils and some invertebrate and plant fossils are rare resources, and that fossils are a unique resource for understanding the evolution of life on Earth (USDOI 2000).

USACE Manual 1110-2-1913, Design and Construction of Levees

The U. S. Army Corps of Engineers has developed a comprehensive manual of design and construction principles that applies to all USACE Divisions and Districts having responsibility for designing and constructing levees (USACE 2000). Because levees occur around natural river and stream courses, understanding the full scope of surficial and bedrock geological contexts for a given project area is paramount. As such, the USACE recommends a full geological investigation prior to and during the design phase. This investigation comprises both office- and laboratory-based research and field-based testing and sampling. Results of all these analyses are then used to aid in the design of the levee, in preparation for establishing trial sections, as needed, for determining parameters like under-seepage and trough-seepage, slope stability, settlement, and trafficability of the levee surface. The proposed project design is based on USACE levee design criteria for flood protection.

State Plans, Policies, Regulations, Laws

Alquist-Priolo Earthquake Fault Zoning Act

The Alquist-Priolo Earthquake Fault Zoning Act (PRC Section 2621-2630) requires the State Geologist to establish regulatory zones known as Earthquake Fault Zones around the surface traces of active faults and to issue appropriate maps. The project site and surrounding areas are not located within a Alquist-Priolo Earthquake Fault Zone.

Seismic Hazards Mapping Act

The Seismic Hazards Mapping Act of 1990 (PRC Sections 2690–2699.6) addresses earthquake hazards from non-surface fault rupture, including liquefaction and seismically induced landslides. The Act established a mapping program for areas that have the potential for liquefaction, landslide, strong ground shaking, or other earthquake and geologic hazards. The Act also specifies that the lead agency for a project may withhold development permits until geologic or soils investigations are conducted for specific sites, and mitigation measures are incorporated into plans to reduce hazards associated with seismicity and unstable soils.

Regional and Local Plans, Policies, Regulations, and Ordinances

DWR is not subject to local regulations unless expressly authorized by the Legislature. Local plans, policies, regulations, and ordinances potentially relevant to the proposed project are addressed in this section for informational purposes because they may be relevant to certain responsible agencies.

Yolo County General Plan

The following goals and policies from Chapter 7: Conservation and Open Space Element and Chapter 8: Health and Safety Element of the *County of Yolo 2030 Countywide General Plan* could be relevant to the geology, soils, and paleontological resources within the proposed project area (Yolo County 2009).

Goal CO-3: Mineral Resources. Protect mineral and natural gas resources to allow for their continued use in the economy.

Policy CO-3.1: Encourage the production and conservation of mineral resources, balanced by the consideration of important social values, including recreation, water, wildlife, agriculture, aesthetics, flood control, and other environmental factors.

Policy CO-3.2: Ensure that mineral extraction and reclamation operations are compatible with land uses both on-site and within the surrounding area and are performed in a manner that does not adversely affect the environment.

Policy CO-3.5: Preserve and protect the County's unique geologic and physical features, which include geologic or soil "type localities", and formations or outcrops of special interest. (DEIR MM GEO-1a)

Goal CO-4: Cultural Resources. Preserve and protect cultural resources within the County. [Please note, the County of Yolo 2030 Countywide General Plan defines "cultural resources" to "include archaeological, paleontological, and historic resources, including cemeteries and burials outside of cemeteries. Yolo County has examples of all of these, including prehistoric Native American sites, fossilized dinosaur remains, and historical man-made-artifacts, buildings, sites, and landmarks" (CO-49).]

Policy CO-4.1: Identify and safeguard important cultural resources.

Policy CO-4.13: Avoid or mitigate to the maximum extent feasible the impacts of development on Native American archaeological and cultural resources.

Goal HS-1: Geologic Hazards. Protect the public and reduce damage to property from earthquakes and other geologic hazards.

Policy HS-1.1: Regulate land development to avoid unreasonable exposure to geologic hazards.

Policy HS-1.2: All development and construction proposals shall be reviewed by the County to ensure conformance to applicable building standards.

Policy HS-1.3: Require environmental documents prepared in connection with CEQA to address seismic safety issues and to provide adequate mitigation for existing and potential hazards identified.

Yolo County Code

Yolo County Code (Sec. 7-1.02 [a]) states that Yolo County has adopted the 2013 edition of the California Building Standards Code (CBSC), Volume 1 and 2, incorporating the 2012 edition of the International Building Code.

3.7.3 Environmental Impacts and Mitigation Measures

Thresholds of Significance

The thresholds for determining the significance of impacts for this analysis are based on the environmental checklist in Appendix G of the State CEQA Guidelines, as amended (2023). Implementing the project would result in a significant impact related to geology and soils if it would:

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;

   ii) Strong seismic ground shaking;

   iii) Seismic-related ground failure, including liquefaction;

iv) Landslides; or

b) Result in substantial soil erosion or the loss of topsoil;

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

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

e) Have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of wastewater; or

f) Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature.

For this analysis, a unique paleontological resource or site is considered significant under the following professional paleontological standards. As stated in the Society of Vertebrate Paleontology ([SVP] 2010) an individual vertebrate fossil specimen may be considered unique or significant if it is identifiable and well preserved, and it is a:

- type specimen (i.e., the individual from which a species or subspecies has been described);
- member of a rare species;
- species that is part of a diverse assemblage (i.e., a site where more than one fossil has been discovered) wherein other species are also identifiable, and important information regarding life history of individuals can be drawn;
- skeletal element different from, or a specimen more complete than, those now available for its species; or
- complete specimen (i.e., all, or substantially all, of the entire skeleton is present).

The value or importance of different fossil groups varies depending on the age and depositional environment of the rock unit that contains the fossils, their rarity, the extent to which they have already been identified and documented, and the ability to recover similar materials under more controlled conditions (such as for a research project). Marine invertebrates are generally common; their fossil record is well developed and well documented, and they would generally not be considered a unique paleontological resource. Identifiable vertebrate marine and terrestrial fossils are generally considered scientifically important because they are relatively rare.

Comments received during the public scoping period include concerns over erosion, sedimentation, and sediment removal. These issues are addressed in the impact analysis below.

Issues Not Discussed Further

Surface Fault Rupture or Ground Shaking. Fault ground rupture or ground shaking is unlikely because the project area is not within a Alquist-Priolo Earthquake Fault Zone and there are no

known active faults on or adjacent to the project site. Therefore, there would be no impact and this issue is not discussed further.

Liquefaction and Lateral Spreading. Liquefaction refers to loose, saturated sand or silt deposits that behave as a liquid and lose their load-supporting capacity when strongly shaken. The lateral movement of soils when this occurs is referred to as lateral spreading. Loose granular soils and silts that are saturated by relatively shallow groundwater are susceptible to liquefaction, especially during fault-rupturing. Liquefaction is a serious hazard because buildings in areas that experience it may suddenly subside and suffer major structural damage. Liquefaction is also very unlikely because the project area is not within a Alquist-Priolo Earthquake Fault Zone and fault-rupturing is very unlikely. Further, the proposed project would not result in conditions within the project site that could increase the likelihood of liquefaction compared to current conditions. Therefore, there would be no impact and this issue is not discussed further.

Landslides. Landslides are the downslope movement of geologic materials. Slope failures in the form of landslides are common during strong seismic shaking in areas of steep hills. In the portions of Yolo County where the project site is located, topography is relatively flat and limited to the creek channel and adjacent areas primarily consisting of agricultural uses. There is no risk of landslide in this area and there would be no impact. This issue is not discussed further.

Soil Suitability for Septic Systems. Because the project would not include wastewater disposal systems of any kind, there would be no impact related to the ability of project site soils to support septic systems, and this issue is not discussed further.

Unique Geologic Feature. A unique geologic feature is a major natural element that stands out in the landscape, such as a large and scenic river, gorge, waterfall, volcanic cinder cone, lava field, or glacier. The project area does not include any unique geologic features. Therefore, there would be no impact on such a feature, and this issue is not discussed further.

Analysis Methodology

The evaluation of potential impacts relied on a review of published geological and paleontological literature and maps, and soil survey data for Yolo County.

Paleontology

In its standard guidelines for assessment and mitigation of adverse impacts on paleontological resources, the Society of Vertebrate Paleontology (SVP 1995) established three categories of potential for rock units to contain paleontological resources: high, low, and undetermined. This scheme was revised in 2010 and now includes a “no potential” category (SVP 2010). It should be explicitly stated that the probability of presence of paleontological resources are associated directly with the rock units (e.g., geologic formations) themselves, which may occur over geographic areas larger than those of the proposed project. As discussed in SVP (2010), it is the mapped “limits of the entire rock unit, both areal and stratigraphic” that “define the extent of paleontological resources” (p.2).

Rock units in which vertebrate or significant invertebrate, plant, or trace fossils have been previously found are considered to have a high potential for producing additional fossils. Rock

units for which sparse information is available concerning fossil content, geologic age, and depositional setting are considered to have undetermined potential. Rock units from which few or poorly preserved fossils have been recovered, or only in rare circumstances, are determined to have low potential. Finally, some rock units will have no potential to yield fossils, for example if they are a high-grade metamorphic rock or plutonic igneous rock. All vertebrate fossils are typically considered to have potential scientific value and so any rock units that contain them are considered to have high potential.

Subsidence

Land subsidence refers to the lowering of the ground surface due to extraction or lowering of water levels or other stored fluids within the subsurface soil pores, or due to seismic activity that can cause alluvial sediments to compact. Known current and historical instances of land subsidence in California have been recorded by the U. S. Geological Survey (USGS). The project site is within the USGS-defined area of the Sacramento Valley subjected to groundwater pumping for irrigation and public water supplies.

A 1,000 ft-deep extensometer (11N01E24Q008M) constructed in the area of maximum subsidence north of Woodland and Yolo measured an average annual inelastic compaction of about 55 millimeters per year (mm/yr) (0.18 ft/yr) during 1988-1992 (Ikehara 1995). The average annual rate of subsidence since 1988 is 15.5 mm/yr (0.051 ft/yr); thus, inelastic compaction at the extensometer site continues, but has slowed considerably since 1992. Borehole extensometers at 10 other locations in the Sacramento Valley operated by DWR indicate that substantial subsidence has not occurred in the areas monitored. However, because overall subsidence has accumulated over the years, the project area is potentially prone to further subsidence, necessitating levee raise modifications.

Impact Analysis and Mitigation Measures

Impact 3.7.1: ***Potential Temporary, Short-term Construction-related Erosion.*** *The project includes construction activities in and near Cache Creek. Soil materials exposed during construction would potentially be subject to wind and water erosion hazards. Therefore, this impact would be* ***significant****.*

The proposed project would involve significant channel, levee, and levee-adjacent construction activities ranging from vegetation removal, in-channel sediment removal, levee raising, and construction access routes. Project-related earth-moving activities would result in temporary and short-term disturbance of soil and could expose disturbed areas to storm events. Rainfall of sufficient intensity could dislodge soil particles from the soil surface. If particles are dislodged and the storm is large enough to generate runoff, substantial localized erosion could occur. In addition, soil disturbance could result in substantial loss of topsoil because of wind erosion. This impact would be **significant**. The following mitigation measure has been identified to address this impact.

Mitigation Measure 3.7.1: Acquire Appropriate Regulatory Permits and Prepare and Implement a SWPPP, Spill Prevention Control and Countermeasures Plan, and Associated BMPs

Prior to the start of earthmoving activities, the DWR's construction contractor shall obtain coverage under the SWRCB NPDES stormwater permit for general construction activity (Order 2009-0009-DWQ), including preparation and submittal of a project-specific SWPPP at the time the Notice of Intent to discharge is filed. The SWPPP shall identify and specify the following:

- the use of an effective combination of robust erosion and sediment control BMPs and construction techniques that shall reduce the potential for runoff and the release, mobilization, and exposure of pollutants, including legacy sources of mercury from project-related construction sites. These may include but would not be limited to temporary erosion control and soil stabilization measures, sedimentation ponds, inlet protection, perforated riser pipes, check dams, and silt fences;
- the implementation of approved local plans, non-stormwater management controls, permanent post-construction BMPs, and inspection and maintenance responsibilities;
- the pollutants that are likely to be used during construction that could be present in stormwater drainage and non-stormwater discharges, including fuels, lubricants, and other types of materials used for equipment operation;
- the means of waste disposal;
- spill prevention and contingency measures, including measures to prevent or clean up spills of hazardous waste and of hazardous materials used for equipment operation, and emergency procedures for responding to spills (see further details below);
- personnel training requirements and procedures that shall be used to ensure that workers are aware of permit requirements and proper installation methods for BMPs specified in the SWPPP; and
- the appropriate personnel responsible for supervisory duties related to implementation of the SWPPP.

Where applicable, BMPs identified in the SWPPP will be in place throughout all site work, construction/demolition activities, and will be used in all subsequent site development activities. BMPs may include, but are not limited to, such measures as those listed below:

- work window - conduct earthwork during low flow periods;
- to the extent possible, stage construction equipment and materials on the landside of the levee in areas that have already been disturbed;
- minimize ground and vegetation disturbance during project construction by establishing designated equipment staging areas, ingress and egress corridors, spoils disposal and soil stockpile areas, and equipment exclusion zones prior to the commencement of any grading operations;

- stockpile soil on the landside of the levee reaches, and install sediment barriers (e.g., silt fences, fiber rolls, and straw bales) around the base of stockpiles to intercept runoff and sediment during storm events. If necessary, cover stockpiles with geotextile fabric to provide further protection against wind and water erosion;
- install sediment barriers on graded or otherwise disturbed slopes as needed to prevent sediment from leaving the project site and entering nearby surface waters;
- install plant materials to stabilize cut and fill slopes and other disturbed areas once construction is complete. Plant materials will include an erosion control seed mixture. Temporary structural BMPs, such as sediment barriers, erosion control blankets, mulch, and mulch tackifier, will be installed as needed to stabilize disturbed areas until vegetation becomes established;
- water (e.g., trucks, portable pumps with hoses) shall be used to control fugitive dust during construction activities that could cause substantial wind erosion.
- conduct water quality tests specifically for increases in turbidity and sedimentation caused by construction activities;
- a copy of the approved SWPPP shall be maintained and available at all times on the construction site; and
- DWR's construction contractor shall also prepare a Spill Prevention, Control, and Countermeasure Plan (SPCCP). A SPCCP is intended to prevent any discharge of oil into navigable water or adjoining shorelines. The contractor shall develop and implement a SPCCP to minimize the potential for adverse effects from spills of hazardous, toxic, or petroleum substances during construction and operation activities. The SPCCP shall be completed before any construction activities begin. Implementation of this measure will comply with state and Federal water quality regulations. The SPCCP shall describe spill sources and spill pathways in addition to the actions that would be taken in the event of a spill (e.g., an oil spill from engine refueling would be immediately cleaned up with oil absorbents). The SPCCP shall outline descriptions of containments facilities and practices such as doubled-walled tanks, containment berms, emergency shut-offs, drip pans, fueling procedures, and spill response kits. It shall also describe how and when employees are trained in proper handling procedures and spill prevention and response procedures.

  Timing: Before and during construction.

  Responsibility: DWR.

Significance after Mitigation: Implementation of Mitigation Measure 3.7.1 would reduce the potentially significant impact associated with temporary and short-term construction-related erosion to a **less than significant** level because a SWPPP and BMPs specifically designed to control erosion would be implemented.

Impact 3.7.2: ***Potential Damage to or Destruction of Unique Paleontological Resources.***
The project site is underlain by recent sedimentary deposits that do not represent fossil-bearing geologic formations. This impact would be ***less than significant****.*

The project site is within Late/Latest Holocene stream channel, basin, and undivided alluvial deposits (Gutierrez 2011). Young alluvial deposits may cover and obscure sedimentary bedrock, and any fossils that may occur in that bedrock would be unidentifiable or irretrievable prior to construction activities (SVP 2010). Additionally, recent sedimentary deposits are subject to past and present erosion and periodic shifts during high-water events and therefore do not represent fossil-bearing geologic formations. Therefore, the proposed project would result in a **less-than-significant** impact on paleontological resources.

Mitigation Measure: No mitigation is required.

Impact 3.7.3: ***Location of the Project on Unstable Soil or Result in Subsidence.***
The proposed project is located within an area that has experienced ground subsidence over decades, however the project is designed to offset the effects of that subsidence by raising the levee and impacts would be ***less than significant****.*

The project site located within Late/Latest Holocene stream channel, basin, and undivided alluvial deposits (Gutierrez 2011) that are prone to subsidence because of their relatively large sediment grain sizes and intragranular pore spaces. Because subsidence in this area will continue, with or without the levee, and because the levee is designed to help offset the decline in levee elevation from past subsidence, the proposed project would not exacerbate or otherwise result in unstable geologic conditions that could result in further subsidence and impacts would be **less than significant**.

Mitigation Measure: No mitigation is required.

Residual Significant Impacts

The proposed project would not result in residual significant impacts associated with geology, soils, or paleontological resources.

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3.8 Greenhouse Gas Emissions

This section assesses the Greenhouse Gas (GHG) emissions that would be generated by the proposed project. GHG emissions have the potential to adversely affect the environment because such emissions contribute, on a cumulative basis, to global climate change. This section discusses climate change, existing sources of GHG emissions, applicable regulations, and potential impacts of the project related to GHG emissions.

3.8.1 Environmental Setting

Certain gases in the earth's atmosphere, classified as GHGs, play a critical role in determining the earth's surface temperature. A portion of the solar radiation that enters the earth's atmosphere is absorbed by the earth's surface, and a smaller portion of this radiation is reflected back toward space. This infrared radiation (i.e., thermal heat) is absorbed by GHGs within the earth's atmosphere. As a result, infrared radiation released from the earth that otherwise would have escaped back into space is instead "trapped," resulting in a warming of the atmosphere. This phenomenon, known as the "greenhouse effect," is responsible for maintaining a habitable climate on the earth.

GHGs are present in the atmosphere naturally, are released by natural and anthropogenic (human-caused) sources and are formed from secondary reactions taking place in the atmosphere. Natural sources of GHGs include human, animal, and plant respiration; organic matter decomposition; and ocean evaporation. Anthropogenic sources include the combustion of fossil fuels, waste treatment, and agricultural processes. The following GHGs are widely accepted as the principal contributors to human-induced global climate change: carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), and sulfur hexafluoride (SF_6).

Natural sources of CO_2 include organic matter decomposition, animal and plant respiration, and ocean evaporation. Anthropogenic sources include the burning of coal, oil, natural gas, and wood. CH_4 is the main component of natural gas and is associated with agricultural practices and landfills. N_2O is a colorless GHG that results from industrial processes, vehicle emissions, and agricultural practices. HFCs are synthetic chemicals used as a substitute for chlorofluorocarbons in automobile air conditioners and refrigerants. PFCs are produced as a byproduct of various industrial processes associated with aluminum production and the manufacturing of semiconductors. SF_6 is an inorganic, odorless, colorless, nontoxic, and nonflammable GHG used for insulation in electric power transmission and distribution equipment, and in semiconductor manufacturing.

Global warming potential (GWP) is a concept developed to compare the ability of each GHG to trap heat in the atmosphere relative to CO_2. The GWP of a GHG is based on several factors, including the relative effectiveness of a gas to absorb infrared radiation and length of time (i.e., lifetime) that the gas remains in the atmosphere ("atmospheric lifetime"). The reference gas for GWP is CO_2; therefore, CO_2 has a GWP of 1. The other main GHGs that have been attributed to human activity include CH_4, which has a GWP of 21, and N_2O, which has a GWP of 310 (UNFCCC 2012). For example, 1 ton of CH_4 has the same contribution to the greenhouse effect as approximately 21 tons of CO_2. GHGs with lower emission rates than CO_2 may still contribute

to climate change because they are more effective at absorbing outgoing infrared radiation than CO_2 (i.e., they have a high GWP). The concept of CO_2-equivalents (CO_2e) is used to account for the different GWP potentials of GHGs to absorb infrared radiation.

GHG emissions related to human activities have been determined to be highly likely responsible for intensifying the greenhouse effect and leading to a trend of unnatural warming of the earth's atmosphere and oceans, with corresponding effects on global circulation patterns and climate (Intergovernmental Panel on Climate Change [IPCC] 2023). Similarly, impacts of GHGs are borne globally, as opposed to the more localized air quality effects of criteria air pollutants and TACs. The quantity of GHGs that it takes to ultimately result in climate change is not precisely known; however, no single project alone is expected to measurably contribute to a noticeable incremental change in the global average temperature or to a global climate, local climate, or microclimate. Given the nature of environmental consequences from GHGs and global climate change, CEQA requires that lead agencies evaluate the cumulative impacts of GHGs, even relatively small additions, on a global basis.

Trends of Climate Change

Warming of the climate system is now considered to be unequivocal (IPCC 2023), with global surface temperature increasing approximately 1.33°F over the last 100 years. The rate of increase in global average surface temperature over the last 100 years has not been consistent; the last three decades have warmed at a much faster rate—on average, 0.32°F per decade. Continued warming is projected to increase the global average temperature by 2°F to 11°F over the next 100 years.

The causes of this warming have been identified as both natural processes and human actions. The IPCC concluded that variations in natural phenomena, such as solar radiation and volcanoes, produced most of the warming from preindustrial times to 1950 and had a small cooling effect afterward. However, after 1950, increasing GHG concentrations resulting from human activity, such as increasing fossil fuel burning and deforestation, have been responsible for most of the observed temperature increase.

Impacts of Climate Change

Over the same period that increased global warming has occurred, many other changes have occurred or are predicted to occur in other natural systems. Sea levels have risen; precipitation patterns throughout the world have shifted, with some areas becoming wetter and others drier; snowlines can rise, resulting in changes to the snowpack, runoff, and water storage; and numerous other conditions have been observed. Although it is difficult to prove a definitive cause-and-effect relationship between global warming and other observed changes to natural systems, there is a high level of confidence within the scientific community that these changes are a direct result of increased global temperatures caused by the increased presence of GHGs in the atmosphere (IPCC 2023).

Greenhouse Gas Emission Sources

GHG emissions contributing to global climate change are attributable in large part to human activities. For purposes of accounting for and regulating GHG emissions, sources of GHG emissions are grouped into emission categories. The California Air Resources Board identifies the following categories, which account for most anthropogenic GHG emissions generated within California:

- *Transportation:* On-road motor vehicles, recreational vehicles, aviation, ships, and rail.
- *Electric Power:* Use and production of electrical energy.
- *Industrial:* Mainly stationary sources (e.g., boilers and engines) associated with process emissions.
- *Commercial and Residential:* Area sources, such as landscape maintenance equipment, fireplaces, and consumption of natural gas for space and water heating.
- *Agriculture:* Agricultural sources that include off-road farm equipment; irrigation pumps; crop residue burning (CO_2); and emissions from flooded soils, livestock waste, crop residue decomposition, and fertilizer volatilization (CH_4 and N_2O).
- *High GWP Gases:* Refrigerants for stationary and mobile source air conditioning and refrigeration, electrical insulation (e.g., SF_6), and various consumer products that use pressurized containers.
- *Recycling and Waste:* Waste management facilities and landfills; primary emissions are CO_2 from combustion and CH_4 from landfills and wastewater treatment.

3.8.2 Regulatory Setting

Federal Plans, Policies, Regulations, and Laws

Federal Clean Air Act

At the federal level, EPA administers the CAA. In 2007, the U.S. Supreme Court ruled GHGs are "pollutants" under CAA. In 2009, EPA found, under Section 202(a) of the CAA, that six GHGs constitute a threat to public health and welfare, and the combined emissions from motor vehicles cause and contribute to climate change. In 2014, the U.S. Supreme Court upheld EPA's ability to regulate major sources of GHG emissions.

Energy Policy and Conservation Act and Corporate Average Fuel Economy Standards

The Energy Policy and Conservation Act of 1975 established nationwide fuel economy standards to conserve oil. Pursuant to this Act, the National Highway Traffic Safety Administration (NHTSA), part of the U.S. Department of Transportation (DOT), is responsible for revising existing fuel economy standards and establishing new vehicle economy standards.

Under the Energy Independence and Security Act of 2007, the CAFE standards were revised for the first time in 30 years then later updated in 2012 and 2019.

Greenhouse Gas Findings under the Clean Air Act

On December 7, 2009, the EPA Administrator signed two distinct findings regarding GHGs under Section 202(a) of the CAA:

- Endangerment finding: The EPA Administrator found that the current and projected concentrations of the six key well-mixed GHGs (CO_2, CH_4, N_2O, HFCs, PFCs, and SF_6) in the atmosphere threaten the public health and welfare of current and future generations.
- Cause or contribute finding: The EPA Administrator found that the combined emissions of these well-mixed GHGs from new motor vehicles and new motor vehicle engines contribute to the GHG pollution, which threatens public health and welfare.

Energy Policy Act of 1992 and 2005

The Energy Policy Act of 1992 (EPAct) was enacted to reduce the country's dependence on foreign petroleum and improve air quality. EPAct includes several parts intended to build an inventory of alternative fuel vehicles (AFVs) in large, centrally fueled fleets in metropolitan areas. EPAct requires certain Federal, State, and local government and private fleets to purchase a percentage of light-duty AFVs capable of running on alternative fuels each year. In addition, financial incentives are also included in EPAct. Federal tax deductions are allowed for businesses and individuals to cover the incremental cost of AFVs. States are also required by the act to consider a variety of incentive programs to help promote AFVs. The Energy Policy Act of 2005 provides renewed and expanded tax credits for electricity generated by qualified energy sources, such as landfill gas; provides bond financing, tax incentives, grants, and loan guarantees for clean renewable energy and rural community electrification; and establishes a Federal purchase requirement for renewable energy.

State Plans, Policies, Regulations, Laws

Assembly Bill 1493

AB 1493 requires CARB to develop and implement regulations to reduce automobile and light truck GHG emissions. These stricter emission standards were designed to apply to automobiles and light trucks beginning with model year 2009. In 2009, the EPA Administrator granted a CAA waiver of preemption to California. This waiver allowed California to implement its own GHG emissions standards for motor vehicles beginning with model year 2009. California agencies worked with Federal agencies to conduct joint rulemaking to reduce GHG emissions for passenger car model years 2017–2025.

Executive Order S-3-05

Executive Order (EO) S-3-05 included the following GHG emission reduction targets: by 2010, reduce GHG emissions to 2000 levels; by 2020, reduce GHG emissions to 1990 levels; by 2050 reduce GHG emissions to 80 percent below 1990 levels. This EO directs the California Environmental Protection Agency (CalEPA) Secretary to develop and lead a climate action team of state agency representatives and report on the progress made toward meeting the targets to the Governor and the Legislature.

Executive Order S-13-2008

Executive Order S-13-08 required the National Academy of Sciences to complete a California Sea Level Rise Assessment Report. The Executive Order also dictates that the California Ocean Protection Council shall work with DWR, the California Energy Commission, California's coastal management agencies, and SWRCB to conduct a review of the Assessment Report every 2 years or as necessary. California adopted its 2009 Climate Adaptation Strategy (CAS 2009) in response to this Executive Order, which is used to prepare, plan, and respond to future detrimental effects of climate change.

Statewide GHG Emission Targets

AB 32 requires GHG emissions in California to be reduced to 1990 levels by 2020. CARB adopted its *Climate Change Scoping Plan* (Scoping Plan), which contains the main strategies California will implement to achieve the required GHG reductions required by AB 32. The Scoping Plan also includes CARB-recommended GHG reductions for each emissions sector of the State's GHG inventory. CARB further acknowledges that decisions about how land is used will have large impacts on the GHG emissions that will result from the transportation, housing, industry, forestry, water, agriculture, electricity, and natural gas emission sectors. CARB is required to update the Scoping Plan at least once every 5 years to evaluate progress and develop future inventories that may guide this process. CARB has updated the Scoping Plan three times since it was first adopted in December 2008. The latest update was published in November 2022. California's 2022 Climate Change Scoping Plan identifies strategies to achieve the GHG emissions targets for 2030 and advance toward 2050 goals. Senate Bill 32 required emissions to be reduced to 40 percent below 1990 levels by 2030.

California Department of Water Resources Greenhouse Gas Emissions Reduction Plan

In May 2012, DWR adopted the Greenhouse Gas Emissions Reduction Plan (GGERP), which details DWR's efforts to reduce its GHG emissions consistent with EO S-3-05 and AB 32. DWR developed the GGERP Update 2020 to review its GHG reductions since the 2012 Plan and to update strategies for further reduction consistent with legislative changes, including the GHG emissions reduction targets established in Senate Bill (SB) 32 (2016), SB 100 (2018), Executive Order B-18-12 (2012), Executive Order B-30-15 (2015), and Executive Order B-55-18 (2018). The GGERP Update 2020 specifies aggressive 2030 and 2045 emission reduction goal and identifies a list of GHG emissions reduction measures to achieve those goals.

DWR specifically prepared its GGERP Update 2020 as a "Plan for the Reduction of Greenhouse Gas Emissions" in accordance with State CEQA Guidelines Section 15183.5. Section 15183.5 states that such a document, which must meet certain specified requirements, "may be used in the cumulative impacts analysis of later projects." Because global climate change, by its very nature, is a global cumulative impact, an individual project's compliance with a qualifying GHG reduction plan may suffice to mitigate the project's incremental contribution to that cumulative impact to a level that is not "cumulatively considerable" (State CEQA Guidelines, Section 15064, Subdivision [h][3]).

Section 15064 further states that "[l]ater project-specific environmental documents may tier from and/or incorporate by reference" the "programmatic review" conducted for the GHG emissions reduction plan. "An environmental document that relies on a greenhouse gas reduction plan for a cumulative impacts analysis must identify those requirements specified in the plan that apply to the project, and, if those requirements are not otherwise binding and enforceable, incorporate those requirements as mitigation measures applicable to the project" (State CEQA Guidelines Section 15183.5, Subdivision [b][2]).

Section 10 of the GGERP Update 2020 outlines five steps that each DWR project must take to demonstrate consistency with the GGERP:

1. Identify, quantify, and analyze the GHG emissions from the proposed project and alternatives using a method consistent with that described in DWR internal guidance, "Guidance for Quantifying Greenhouse Gas Emissions and Determining the Significance of their Contribution to Global Climate Change for CEQA Purposes," as such guidance document may be revised.
2. Determine that construction emissions levels do not exceed the Extraordinary Construction Project threshold of either 25,000 mtCO2e for the entire construction phase of the project or 12,500 mtCO2e in any single year of construction.
3. Incorporate into the design or implementation plan for the project all project-level GHG emissions reduction measures listed in Chapter VI or explain why measures that have not been incorporated do not apply to the project.
4. Determine that the project does not conflict with DWR's ability to implement any of the specific project GHG emissions reduction measures listed in Chapter VI.
5. If implementation of the proposed project would result in additional energy demands on the SWP system of 15 GWh/year or greater, the project must obtain a written confirmation from the DWR SWP Power.

Although not a requirement of CEQA, DWR is required to meet the requirements of Assembly Bill 2800 (Climate-Safe Infrastructure Working Group) by considering the current and future impacts of climate change when planning, designing, building, operating, maintaining, and investing in state infrastructure such as the proposed project. To meet this requirement, Appendix F is included to consider climate change associated with the proposed project.

Regional and Local Plans, Policies, Regulations, and Ordinances

DWR is not subject to local regulations unless expressly authorized by the Legislature. Local plans, policies, regulations, and ordinances potentially relevant to the proposed project are addressed in this section for informational purposes because they may be relevant to certain responsible agencies.

Yolo-Solano Air Quality Management District

YSAQMD has not adopted a quantitative threshold for evaluating the significance of GHG emissions. YSAQMD states that if a lead agency jurisdiction has adopted a Climate Action Plan or General Plan goals and policies with regard to GHGs, these would be the most relevant

guidance for assessing GHG-related impacts for projects in Yolo County. If the lead agency jurisdiction has not adopted a Climate Action Plan or General Plan goals and policies, then the YSAQMD recommends that lead agencies consider a project's total emissions in relation to the AB 32 and AB 32 Scoping Plan goals (and additional state goals as they are adopted) or the thresholds established by other jurisdictions.

County of Yolo 2030 Countywide General Plan

The Yolo County General Plan (Yolo County 2009, as amended in 2023) includes the following Resource Conservation and Resilience objectives relevant to GHG analysis that may be relevant to the proposed project for certain responsible agencies:

GOAL CO-8: Climate Change. Reduce greenhouse gas emissions and plan for adaptation to the future consequences of global climate change.

Thresholds of Significance

The thresholds for determining the significance of impacts for this analysis are based on the environmental checklist in Appendix G of the State CEQA Guidelines, as amended. The project would result in a significant impact related to climate change if it would:

- generate GHG emissions, either directly or indirectly, that may have a significant impact on the environment; or
- conflict substantially with an applicable plan, policy, or regulation adopted for the purpose of reducing GHG emissions.

Because DWR is the Lead Agency for the proposed project, the GGERP is used as the threshold of significance. Pursuant to State CEQA Guidelines Sections 15064(h)(3) and 15183(b), lead agencies may rely on plans for the reduction of GHGs in evaluating a project's GHG emission; a project's incremental contribution to a cumulative GHG emissions effect may be determined not to be cumulatively considerable if it complies with the requirements of a previously adopted plan or mitigation program, including a GHG reduction plan or climate action plan, under specified circumstances. As noted by the Natural Resources Agency in the Final Statement of Reasons for the changes to the State CEQA Guidelines, including the changes that added Section 15183.5 on GHG reduction programs, "the addition of GHG emissions reduction plans and regulations for the reduction of GHG emissions reflects the view of both the Office of Planning and Research and the Resources Agency that the effects of GHG emissions resulting from individual projects are best addressed and mitigated at a programmatic level" and the "Legislature has created several tiering and streamlining methods, reflected in various provisions of the existing State CEQA Guidelines, that can reduce duplication in the analysis of GHG emissions." SMAQMD similarly notes that it supports that GHG emissions are "best analyzed and mitigated at the program level" (SMAQMD 2021). Consequently, if a project is consistent with a local climate action plan that was created to meet that area's fair share reductions towards the State's targets, then the project would be consistent with statewide GHG reduction goals and would not result in a significant GHG impact.

As explained above in the State Plans, Policies, Regulations, and Ordinances described under Section 3.12.2, "Regulatory Setting," DWR adopted and updated its GGERP in 2020. DWR specifically prepared its GGERP as a "plan for the reduction of GHG emissions" as discussed in State CEQA Guidelines Section 15183.5(b). Section 15183.5(b) states that such a document, which must meet specified requirements, "may be used in the cumulative impacts analysis of later projects." Because global climate change, by its very nature, is a global cumulative impact, an individual project's compliance with a qualifying GHG reduction plan may suffice to mitigate the project's incremental contribution to that cumulative impact to a level that is not "cumulatively considerable." (See State CEQA Guidelines Section 15064[h][3].) Therefore, for the purposes of analysis, the project is considered less than significant if it is consistent with the GGERP.

GHG Analysis Methodology

Construction-related GHG emissions were estimated using the California Emissions Estimator Model (CalEEMod) Version 2022.1. Construction-related exhaust emissions for the project were estimated for construction worker commutes, haul trucks, and the use of off-road equipment (*see* **Table 3.8-1**). The project's potential GHG impact was analyzed using a conservative construction scenario to estimate the maximum construction emissions generated. Since operation and maintenance activities are part of the existing environmental baseline and thus would not create a substantial source of new emissions, operational GHG emissions were not modeled.

A variety of methods and emissions modeling software were used to quantify criteria air pollutants, described in Section 3.5, "Air Quality." The emission factors and models described were also used to quantify GHG emissions. GHG emissions were summed over the duration of all anticipated activity, including the use of heavy-duty equipment, haul trucks, and worker commute trips. All inputs and assumptions are included in Appendix B.

Table 3.8-1. Unmitigated GHG Emissions from Construction Activities Within YSAQMD

Emissions Category	MT of CO_2e per year
DWR GGERP Threshold	12,500
Year 1	
Unmitigated Emissions	615
Exceedance	No
Year 2	
Unmitigated Emissions	799
Exceedance	No

Notes: yellow-shaded cells indicate exceedance of SMAQMD significance threshold.
CO_{2e}/year=carbon dioxide equivalent per year; MT=metric tons; SMAQMD=Sacramento Metropolitan Air Quality Management District
Source: GEI Consultants, 2023

3.8.3 Impact Analysis and Mitigation Measures

Impact 3.8.1: ***Direct Emissions of Greenhouse Gases from Construction Activities.*** *Project construction activities would directly emit GHGs, but these emissions would be below the threshold of significance. This impact would be* ***less than significant****. In addition, DWR would implement project-level BMPs to reduce GHG emissions.*

The proposed project would directly emit GHGs during construction activities. Construction-related emissions were estimated for off-road construction equipment, on-road haul trucks and delivery vehicles, and construction worker commutes. As shown in Appendix B, annual construction emissions in Year 1 would equal 615 MT CO_2e/year and Year 2 would equal 799 MT CO_2e/year. DWR's GGERP considers projects that generate 25,000 MT of CO2e over the entire project construction period, or 12,500 MT of CO2e in any single construction year, to be "extraordinary construction projects." Such extraordinary projects are not included in the GGERP and are not eligible to use the plan to streamline the cumulative impacts analysis of later projects under CEQA. Using this threshold, the proposed project is not considered an extraordinary construction project.

Based on the analysis provided in the GGERP and the demonstration that the proposed project is consistent with the Inventory and Calculation of Greenhouse Gas Emissions (see Appendix B), DWR, as lead agency, has determined the proposed project's incremental contribution to the cumulative impact of increasing atmospheric levels of GHGs would be less than cumulatively considerable and, therefore, **less than significant**.

DWR would further reduce the proposed project's incremental contribution to the cumulative impact of increasing atmospheric levels of GHGs by implementing DWR's project-level GHG emissions-reduction BMPs. Implementing these BMPs reduces GHG emissions from construction projects by minimizing construction equipment fuel usage, reducing fuel consumption for transportation of construction materials, reducing the amount of landfill material, and reducing emissions from the production of cement.

DWR's Pre-construction and Final Design BMPs are designed to ensure individual projects are evaluated and their unique characteristics taken into consideration when determining if specific equipment, procedures, or material requirements are feasible and efficacious for reducing project-related GHG emissions. The following Pre-construction and Final Design BMPs are anticipated to be implemented for the proposed project:

- **GHG 1.** Evaluate project characteristics, including location, project workflow, site conditions, and equipment performance requirements, to determine whether specifications of the use of equipment with repowered engines, electric drive trains, or other high-efficiency technologies are appropriate and feasible for the project or specific elements of the project.
- **GHG 2.** Evaluate the feasibility and efficacy of performing on-site material hauling with trucks equipped with on-road engines.
- **GHG 3.** Ensure that all feasible avenues have been explored for providing an electrical service drop to the construction site for temporary construction power. When generators must

be used, use alternative fuels, such as propane or solar, to power generators to the maximum extent feasible.

- **GHG 6.** Limit deliveries of materials and equipment to the site to off-peak traffic congestion hours.

Construction BMPs apply to all construction and maintenance projects that DWR completes or for which DWR issues contracts. All projects are expected to implement all Construction BMPs unless a variance is granted by the Division of Engineering Chief, Division of Operation and Maintenance Chief, or Division of Flood Management Chief (as applicable), and the variance is approved by the DWR CEQA Climate Change Committee. Variances are granted when specific project conditions or characteristics make implementation of a Construction BMP infeasible and where omitting the BMP will not be detrimental to the project's consistency with the GGERP. DWR Construction BMPs that would be implemented by the proposed project include the following:

- **GHG 7.** Minimize idling time by requiring that equipment be shut down after five minutes when not in use (as required by California Code of Regulations, Title 13, Section 2485, the State's airborne toxics control measure). Provide clear signage that posts this requirement for workers at the entrances to the site and provide a plan for the enforcement of this requirement.
- **GHG 8.** Maintain all construction equipment in proper working condition and perform all preventative maintenance. Required maintenance includes compliance with all manufacturer's recommendations, proper upkeep and replacement of filters and mufflers, and maintenance of all engine and emissions systems in proper operating condition. Maintenance schedules shall be detailed in an air quality control plan prior to commencement of construction.
- **GHG 9.** Implement a tire inflation program on the job site to ensure that equipment tires are correctly inflated. Check tire inflation when equipment arrives on-site and every two weeks for equipment that remains on-site. Check vehicles used for hauling materials off-site weekly for correct tire inflation. Procedures for the tire inflation program shall be documented in an air quality management plan prior to commencement of construction.
- **GHG 10.** Develop a project-specific ride share program to encourage carpools, shuttle vans, transit passes, and/or secure bicycle parking for construction worker commutes.
- **GHG 11.** Reduce electricity use in temporary construction offices by using high-efficiency lighting and requiring that heating and cooling units be Energy Star compliant. Require that all contractors develop and implement procedures for turning off computers, lights, air conditioners, heaters, and other equipment each day at close of business.
- **GHG 12.** For deliveries to project sites where the haul distance exceeds 100 miles and a heavy-duty class 7 or class 8 semi-truck or 53-foot or longer box-type trailer is used for hauling, a SmartWay certified truck will be used to the maximum extent feasible.
- **GHG 13.** Minimize the amount of cement in concrete by specifying higher levels of cementitious material alternatives, larger aggregate, longer final set times, or lower maximum strength, where appropriate.

- **GHG 14.** Develop a project-specific construction debris recycling and diversion program to achieve a documented 50-percent diversion of construction waste.
- **GHG 15.** Evaluate the feasibility of restricting all material hauling on public roadways to off-peak traffic congestion hours. During construction scheduling and execution, minimize, to the extent possible, uses of public roadways that would increase traffic congestion.

The proposed project would result in a **less-than-significant** impact on GHG emissions without implementing the GHG BMPs identified above. With implementation of the GHG BMPs identified above, the proposed project's less-than-significant impact with respect to GHG emissions would be further reduced.

Mitigation Measure: No mitigation is required.

Impact 3.8.2: ***Conflict with and Applicable Plan, Policy, or Regulation Adopted for the Purposes of Reducing Greenhouse Gas Emissions.***
Project construction activities would directly emit GHGs, but these emissions would be below the DWR GGERP threshold of significance. This impact would be ***less than significant****.*

As noted previously, DWR adopted its GGERP, which details DWR's efforts to reduce GHG emissions consistent with EO S-3-05 and AB 32 and consistent with more recent State targets established in SB 32 (2016), SB 100 (2018), EO B-18-12 (2012), EO B-30-15 (2015), and EO B-55-18 (2018). The GGERP estimates historical (back to 1990), current, and future GHG emissions from operations, construction, maintenance, and business practices (e.g., building-related energy use). The plan specifies aggressive 2035 and 2045 emissions reduction goals and identifies a list of measures to achieve these goals.

As detailed in Impact GHG-1 above, the proposed project is found to be consistent with the GGERP. The GGERP was specifically developed with consideration of State legislation including the State's GHG reduction targets and Scoping Plan. In addition, a CEQA initial study and negative declaration analyzing the environmental effects of the 2012 Plan was adopted in 2012. For the purposes of Update 2020, DWR prepared an addendum to the negative declaration pursuant to State CEQA Guidelines Sections 15162(b) and 15164(b). In the addendum, DWR evaluated the changes to the 2012 Plan under Update 2020 and changes in surrounding circumstances (including legislative, regulatory, and market changes) and concluded that these changes would not cause any new significant environmental impacts that would require preparation of a subsequent negative declaration or an environmental impact report. Therefore, this impact would be **less than significant**.

Residual Significant Impacts

The project would not result in residual significant impacts related to GHG emissions.

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3.9 Hazards and Hazardous Materials

This section discusses the existing setting for hazards and hazardous materials in the project vicinity, describes applicable regulations, analyzes potential project impacts related to hazards and hazardous materials, and identifies mitigation measures to reduce potentially significant impacts to a less than significant level. Sources used to develop this analysis primarily include State and Federal databases.

3.9.1 Environmental Setting

Hazardous Materials Sites

A database search was conducted of all data sources in the Cortese List (enumerated in Public Resource Code Section 65962.5), including: the GeoTracker database, a groundwater information management system maintained by the State Water Resource Control Board (SWRCB); the Hazardous Waste and Substances Site List (i.e., the EnviroStor database) maintained by the California Department of Toxic Substances Control (DTSC); and EPA's Superfund Site database (CalEPA 2023a; CalEPA 2023b; DTSC 2023; SWRCB 2023). There were no active hazardous waste sites, large hazardous waste generators, or Federal Superfund sites identified within 0.25 mile of the project site (CalEPA 2023a; CalEPA 2023b; DTSC 2023; SWRCB 2023). Further, soil testing done within the project site by DWR confirmed that there are no constituents of concern present at levels that would qualify them as hazardous or hazardous waste (DWR 2022).

The project site is not in an area mapped as ultramafic rock, which has been more likely than other rock types to contain naturally occurring asbestos (DOC 2000).

Hazards Associated with Agricultural Land Uses

Portions of the project site have historically been and are currently being used for agricultural purposes. Agricultural land use typically involves the application of pesticides and herbicides and the use of fuels, lubricants, and other fluids associated with the operation and maintenance of agricultural equipment. The storage of these materials in the large quantities necessary for agricultural operations frequently requires the use of aboveground and/or underground storage tanks. These tanks could pose a health hazard to workers and a hazard to the environment if encountered during construction activities. In addition, agricultural land uses often require wells, underground piping, and other subsurface infrastructure that could become a hazard if encountered during construction activities.

Schools

There are two schools within 0.25 mile of the project site; the Cache Creek High School located at 14320 2nd St. in the Town of Yolo, which is approximately 0.11 mile from the project site, and the Laugenour School, an elementary school, located at 14913 County Road 99H in the City of Woodland approximately 0.06 mile from the project site. The latter is listed as temporarily closed (Google Maps 2023).

Airports and Airstrips

The Watts-Woodland Airport is located approximately five miles southwest of the project site at 17992 County Road 94B in the City of Woodland. It is a privately owned, public use airport founded by the Yolo Fliers club in 1919. The project site is not located within the airport safety zones or other planning areas identified in the airport land use plan (SACOG 1993). The Sacramento International Airport is approximately 7 miles southeast of the project site, and the proposed project is not located within a safety zone of the Sacramento International Airport LUCP (SACOG 2013).

Wildland Fire Hazards

The project site is surrounded by actively farmed and irrigated lands, the Town of Yolo, and encompasses natural habitat surrounding the flow of water in Cache Creek. The project site is not located in a State Responsibility Area or a high- or very high severity fire zone (CAL FIRE 2022). The project site is located in the Local Responsibility Area (LRA) and designated as Unzoned, with the exception of a small area in the eastern portion of the project site that is designated as an LRA Moderate Fire Hazard Severity Zone (CAL FIRE 2008).

3.9.2 Regulatory Setting

Federal Plans, Policies, Regulations, and Laws

No Federal plans, policies, regulations, or laws related to hazards or hazardous materials apply to the proposed project.

State Plans, Policies, Regulations, Laws

California Government Code Section 65962.5

The provisions of California Government Code Section 65962.5 are commonly referred to as the "Cortese List" (after the legislator who authored the legislation that enacted it). The Cortese List is a planning document used by State and local agencies to comply with CEQA requirements in providing information about the location of hazardous materials release sites. California Government Code Section 65962.5 requires CalEPA to develop an updated Cortese List annually, at minimum. DTSC and SWRCB are responsible for a portion of the information contained in the Cortese List. Other State and local government agencies are required to provide additional hazardous material release information for the Cortese List. CEQA requires an evaluation as to whether or not a project would be located on a hazardous materials site that is included on the Cortese List.

Regional and Local Plans, Policies, Regulations, and Ordinances

DWR is not subject to local regulations unless expressly authorized by the Legislature. Local plans, policies, regulations, and ordinances potentially relevant to the proposed project are addressed in this section for informational purposes because they may be relevant to certain responsible agencies.

Yolo County General Plan

The Yolo County General Plan Health and Safety Element lists the following goals and policies related to hazards and hazardous waste that may be relevant to certain agencies (Yolo County 2009):

GOAL HS-4: Hazardous Materials. Protect the community and the environment from hazardous materials and waste.

Policy HS-4.1: Minimize exposure to the harmful effects of hazardous materials and waste.

Goal HS-6: Emergency Preparedness. Provide timely and effective emergency response to reduce the potential loss of life and property.

The Health and Safety Element discusses emergency evacuation as an integral component of the County emergency management system. There are no set evacuation routes, however the Office of Emergency Services (OES) evaluates potential evacuation routes on an ongoing basis. Evacuation routes are established for events based on the circumstance at the time. **Table 3.9-1** displays the egress points that are identified in the General Plan (Yolo County 2009).

Table 3.9-1. Evacuation routes identified in Yolo County General Plan

Interstate or Major Roadway	Route
I-5	North towards Redding and south into Sacramento
I-80	East into Sacramento and west toward Solano County and the San Francisco Bay Area
I-505	South to the junction of E/WB I-80
SR 16	West from Woodland into the Capay Valley and then north into Colusa County
SR 45	North from Knights Landing into Colusa County
SR 84	South from West Sacramento into Solano County with two crossing east into Sacramento County across the Sacramento River
SR 113/CR 102	North from Woodland into Sutter County and south from Davis
SR 128	West from Winters into Napa County
CR 22	East from Woodland into West Sacramento and then into Sacramento at two locations across the Sacramento River
CR 98	South from Woodland into Solano County

Notes: CR = County Road; I = Interstate; SR = State Route
Source: (Yolo County 2009)

Additionally, the County works with neighboring counties and the State to prepare for regional evacuation during emergencies.

Yolo County OES

Yolo County OES has created pre-planned evacuation zones throughout Yolo County to facilitate evacuations. The project site partially overlaps the four evacuation zones identified **Table 3.9-2**.

Table 3.9-2. Evacuation zones overlapping the project site.

Evacuation Zone	Primary Evacuation Routes
29	SR 113, CR 102, CR 17 west, or CR 18C
27	CR 19 west, CR 17 east, CR 94B, CR 18 west, or SR 113.
28	CR 99W, CR 17, or CR 98 north
36	SR 16, CR 20 east, CR 95 south, or CR 98

Notes: CR = County Road; I = Interstate; SR = State Route
Source: (Yolo County OES 2023)

The Yolo County Emergency Operations Plan defines emergency response as, "Actions taken immediately before, during or directly after an emergency occurs to save lives, minimize damage to property and the environment and enhance the effectiveness of recovery. Response measures include, but are not limited to, emergency plan activation, Emergency Activation System activation, emergency instructions to the public, emergency medical assistance, staffing the Emergency Operations Center, public official alerting, reception and care, shelter and evacuation, search and rescue, resource mobilization and warning systems activation" (Yolo County 2013).

3.9.3 Environmental Impacts and Mitigation Measures

Thresholds of Significance

The thresholds for determining the significance of impacts for this analysis are based on the environmental checklist in Appendix G of the CEQA Guidelines, as amended. Implementing the project would result in a significant impact related to hazards and hazardous materials if it would:

- create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials;
- 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;
- emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within 0.25 mile of an existing or proposed school;
- be located on a site which is included on a list of hazardous materials sites compiled pursuant to California Government Code Section 65962.5 and, as a result, would create a significant hazard to the public or the environment;
- result in a safety hazard or excessive noise for people residing or working in a project area that is within an airport land use plan area;
- impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan; or
- expose people or structures, either directly or indirectly to a significant risk of loss, injury, or death involving wildland fires.

Issues Not Discussed Further

Routine Transport, Use, or Disposal of Hazardous Materials. The proposed project would involve the transport and use of common construction materials such as oils, lubricants, and gasoline. Potential impacts of accidental spills associated with the use of these hazardous materials are analyzed in Impact 3.9.1. However, the project would not involve routine or long-term transport, use, or disposal of such materials, and the project would not use acutely toxic hazardous materials. Therefore, no impact would occur related to the routine transport, use, or disposal of hazardous materials, or the use of acutely toxic materials and this issue is not discussed further.

Location on a Cortese-listed Site. The project site and the vicinity are not included on the lists of hazardous materials sites compiled pursuant to California Government Code Section 65962.5. Therefore, no impact related to a Cortese-listed site would occur, and this issue is not discussed further.

Result in a Safety Hazard Related to Airport Operations. The project site is not located within an airport safety zone. Further, because the project site is over 2 miles from the nearest airport or airstrip, it would not introduce people or create hazards related to airport operations. Therefore, no impact related to safety hazards from airport operations would occur, and this issue is not discussed further.

Expose People or Structures to a Significant Risk Involving Wildland Fires. The proposed project is in an undeveloped open space with a water source, Cache Creek, running through the entire site. In addition, the project site is surrounded by active agricultural land and the community of Yolo and there would be no structures constructed as part of the proposed project. Therefore, the proposed project would not result in changes to the existing environment that would expose people or structures, either directly or indirectly to a significant risk of loss, injury or death involving wildfires compared to existing conditions. There would be no impact, and this issue is not discussed further.

Analysis Methodology

The assessment of impacts related to hazards and hazardous materials considered the locations, duration, and types of project-related activities in relation to known hazardous materials sites (derived from databases maintained by DTSC, SWRCB, CalEPA, and EPA); school district location maps; and CAL FIRE fire-hazard severity zone classifications. In addition, comments received during the public scoping period express concern over potential contaminated sediment, hazardous debris, and potential for spills. These comments are addressed in the impact analysis below.

Impact Analysis and Mitigation Measures

Impact 3.9.1: ***Possible Accidental Spills of Hazardous Materials used during Construction Activities.***

Project construction activities would include use of hazardous materials. Construction contractors would be required to use, store, and transport hazardous materials in compliance with federal, State, and local

*regulations. However, an accidental spill of hazardous materials could occur during project construction. This impact would be **significant**.*

The project would not include unusual risks requiring permitting or other federal, State, or local oversight above and beyond existing regulations associated with the transport and handling of hazardous materials. Equipment such as haul trucks, excavators, bulldozers, and scrapers would be used during construction activities. Construction activities would use minor amounts of hazardous materials, such as fuels (gasoline and diesel), oils and lubricants, and cleaners (which could include solvents and corrosives in addition to soaps and detergents) that are commonly used in construction projects. The proposed project would not use or store large quantities of hazardous or flammable materials on the project site. Further, as described in Chapter 2, "Project Description," all excavated soil would be hauled offsite to a landfill that is permitted to accept soil with mercury.

Regulations governing hazardous materials transport are included in CCR Title 22, the California Vehicle Code (CCR Title 13), and the State Fire Marshal Regulations (CCR Title 19). Transport of hazardous materials can only be conducted under a registration issued by DTSC. Identification numbers are issued by DTSC or EPA for tracking hazardous waste transporters and for treatment, storage, and disposal facilities that handle hazardous materials. The identification number is used to identify the hazardous waste handler and to track waste from point of origin to final disposal; all material transport takes place under manifest. Businesses that handle hazardous materials are required by law to comply with federal, State, and local laws, regulations, and policies regarding the handling, storage, reporting, tracking, and cleanup (if any accidental spills occur) of hazardous materials, including preparing a hazardous materials business plan and disclosing hazardous materials inventories. DWR contractors are registered businesses and, therefore, would be required to meet these federal, State, and local laws and regulations during project construction. However, because an accidental spill of hazardous materials could occur during construction this would be a **significant impact**. The following mitigation measure has been identified to address this impact.

Mitigation Measure 3.9.1: Implement a Spill Prevention Control and Countermeasures Plan and Other Measures to Reduce the Potential for Environmental Contamination during Construction Activities.

In addition to compliance with all applicable federal, State, and local regulations, DWR shall implement through contractual obligations, prescribed in project plans and specifications with its contractors, the measures described below to further reduce the risk of accidental spills and protect the environment.

- **Prepare and Implement a Spill Prevention Control and Countermeasures Plan.** A written SPCCP shall be prepared and implemented by the DWR contractor prior to any construction activities. The SPCCP and all material necessary for its implementation shall be accessible onsite prior to initiation of project construction and throughout the construction period. The SPCCP shall include a plan for the emergency cleanup of any spills of fuel or other material. Construction personnel shall be provided the necessary information from the SPCCP to prevent or reduce the discharge of pollutants from construction activities, contact information for the

appropriate response agencies, and to use the appropriate measures should a spill occur. In the event of a spill in the channel, work shall stop immediately, and the Central Valley Regional Water Quality Control Board shall be notified within 24 hours.

- **Dispose of All Construction-related Debris and Materials at an Approved Disposal Site.** All debris, litter, unused materials, rubbish, or other material removed from the construction work areas that cannot reasonably be secured shall be removed from the project work area and deposited at an appropriate disposal or storage site.
- **Use Safer Alternative Products to Protect Waters.** Every reasonable precaution shall be exercised to protect waters from pollution with fuels, oils, and other harmful materials. Safer alternative products (such as biodegradable hydraulic fluids) shall be used where feasible.
- **Prevent Any Contaminated Construction By-products from Entering Flowing Waters; Collect and Transport Such By-products to an Authorized Disposal Area.** Petroleum products, chemicals, fresh cement, and construction by-products containing, or water contaminated by any such materials shall not be allowed to enter flowing waters. In the event any of these materials are spilled, they shall be collected and transported to an authorized upland disposal area.
- **Prevent Hazardous Petroleum or Other Substances Hazardous to Aquatic Life from Contaminating the Soil or Entering Waters.** Gas, oil, other petroleum products, or any other substances that could be hazardous to aquatic life and resulting from project-related activities, shall be prevented from contaminating the soil and/or entering waters.
- **Properly Maintain All Construction Vehicles and Equipment and Inspect Daily for Leaks; Remove and Repair Equipment/Vehicles with Leaks.** Construction vehicles and equipment shall be properly maintained to prevent contamination of soil or water from external grease and oil or from leaking hydraulic fluid, fuel, oil, and grease. Vehicles and equipment shall be checked daily for leaks. If leaks are found, the equipment shall be removed from the site and shall not be used until the leaks are repaired.
- **Refuel and Service Equipment at Designated Refueling and Staging Areas.** Equipment shall be refueled and serviced at designated refueling and staging sites. All refueling, maintenance, and staging of equipment and vehicles shall be conducted in a location where a spill shall not drain directly toward aquatic habitat. Appropriate containment materials shall be installed to collect any discharge, and adequate materials for spill cleanup shall be maintained onsite throughout the construction period.
- **Store Heavy Equipment, Vehicles, and Supplies at Designated Staging Areas.** All heavy equipment, vehicles, and supplies shall be stored at the designated staging areas at the end of each work period.
- **Install an Impermeable Membrane between the Ground and Any Hazardous Material in Construction Storage Areas.** Storage areas for construction materials that contains hazardous or potentially toxic materials shall have an impermeable

membrane between the ground and the hazardous material and shall be bermed as necessary to prevent the discharge of pollutants to groundwater and runoff water.

- **Use Water Trucks to Control Fugitive Dust during Construction.** Water (e.g., trucks, portable pumps with hoses) shall be used to control fugitive dust during temporary access road construction.
- **Use Only Nontoxic Materials and Materials with No Coatings or Treatments Deleterious to Aquatic Organisms for Placement in Any Waters.** All materials placed in the channel or other waters shall be nontoxic and shall not contain coatings or treatments or consist of substances deleterious to aquatic organisms that may leach into the surrounding environment in amounts harmful to aquatic organisms.

Timing: During construction activities

Responsibility: DWR

Significance after Mitigation: Implementation of Mitigation Measure 3.9.1 would reduce significant construction-related impacts from accidental spills of hazardous materials to **less than significant** levels by requiring preparation and implementation of an SPCCP along with other measures specifically designed to prevent contamination of the environment from hazardous materials.

Impact 3.9.2: ***Handling of Hazardous Materials within 0.25 Mile of a School.*** *Project construction activities would require small quantities of hazardous materials within 0.25 mile from a school. Project activities in the area closest to the high school could result in accidental release of hazardous materials that could expose people at the nearby school. This impact would be* ***significant****.*

The proposed project site is located less than the 0.25-mile from two schools; the Cache Creek High School located at 14320 2nd St. in the Town of Yolo, which is approximately 0.11 mile from the project site, and the Laugenour School, an elementary school, located at 14913 County Road 99H in the City of Woodland approximately 0.06 mile from the project site. The hazardous materials used for construction activities mentioned above are not classified as acutely hazardous and would not represent a safety hazard for persons who attend or be employed in either of the two schools. Furthermore, the temporary nature and short-term duration of the work in any one area would not result in hazardous air emissions (i.e., toxic air contaminants [TACs]) in excess of screening levels. Other impacts related to TACs are evaluated in Section 3.4, "Air Quality". However, accidental release of hazardous materials used during construction activities could expose people at the nearby schools and this would be a **significant** impact. The following mitigation measure has been identified to address this impact.

Mitigation Measure 3.9.1 Implement a Spill Prevention Control and Countermeasures Plan and Other Measures to Reduce the Potential for Environmental Contamination during Construction Activities.

Please refer to Impact 3.9.1 above for full text of this mitigation measure.

Timing: During construction activities.

Responsibility: DWR

Significance after Mitigation: Implementation of Mitigation Measure 3.9.1 would reduce potentially significant construction-related impacts from accidental spills of hazardous materials on people in nearby schools to **less than significant** levels by requiring preparation and implementation of an SPCCP along with other measures specifically designed to prevent contamination of the environment from hazardous materials.

Impact 3.9.3: ***Interfere with an Adopted Emergency Response Plan or Emergency Evacuation Plan.***
Project construction would not require road closures during the 2-year construction phase. Although project construction would include some heavy truck traffic, this would not interfere with an emergency response or evacuation plan. This impact would be ***less than significant****.*

The project site is located approximately 2 miles north of the City of Woodland, borders the Town of Yolo to the north and west, and intersects with I-5. The project site is accessed via Cacheville Road, County Roads 17A, 18A, 97B, 99A, 100B, 102, Howard Drive, East Kentucky Avenue, and North East Street. Project construction would include use of these roadways by construction vehicles, including heavy trucks, accessing the site. Hauling materials to and from the site would result in approximately 17,860 truck trips. Truck trips generated during construction of the proposed project would be temporary and would not interfere with emergency response or evacuation. Therefore, this impact would be **less than significant**. Other impacts associated with VMTs generated from the project are evaluated in Section 3.4, "Air Quality", Section 3.8 "Greenhouse Gas Emissions", and Section 3.14 "Transportation".

Residual Significant Impacts

The project would not result in residual significant impacts related to hazards or hazardous materials.

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3.10 Hydrology and Water Quality

This section discusses the existing setting for hydrology and water quality in the project vicinity, describes applicable regulations, analyzes potential project impacts related to hydrology and water quality, and identifies mitigation measures to reduce potentially significant impacts to a less than significant level.

3.10.1 Environmental Setting

Surface Water

The project site extends along an approximately nine-mile-long reach of Cache Creek (referred to as the project reach). Cache Creek drains an area of approximately 1,150 square miles in Lake, Colusa, and Yolo Counties. Excluding the Clear Lake drainage area, Cache Creek consists of 611 square miles of draining. Seasonal stormwater runoff and releases from Cache Creek Dam at Clear Lake are the main sources of flow in Cache Creek. Cache Creek fills most flood seasons, but typically empties quickly. In past flood seasons, additional flows are created from allowing backwater from the CCSB to flood the channel. In a standard year, the Cache Creek channel is dry from summer through late autumn.

Cache Creek is a component of the SRFCP, serving as the sole discharge of the Cache Creek drainage basin into the Yolo Bypass. The portion of SRFCP enveloping Cache Creek is composed of levees on both banks in the lower reach of both the creek itself and the CCSB, which was constructed to prevent deposition of sediment into the Yolo Bypass downstream. Cache Creek levees provide flood protection to the Town of Yolo, the City of Woodland, and adjacent agricultural lands. The left bank (north) levee begins approximately 240 feet east of County Road 96B and continues to the entrance of the CCSB. The right bank (south) levee begins approximately 0.5 mile upstream of I-5 and becomes the west levee of the CCSB. The width of the channel from levee to levee varies from approximately 250 to 650 feet between I-5 and County Road 102. The channel widens to approximately 950 feet in the upstream reach near County Road 96B and the stream bed width varies from 20 to 100 feet Overbank widths vary from approximately 20 to 100+ feet on either side and exceed 500 feet at the upstream end of the Cache Creek flood infrastructure. The difference in elevation between the channel bottom and the overbanks is as much as 35 feet in places.

Surface Water Quality

The project site is in Cache Creek watershed within the greater Sacramento River Hydrologic Basin Planning Area, as designated by CVRWQCB (RWQCB 2019). Historic mining activities in the Cache Creek watershed discharged in the past and continue to discharge today inorganic mercury (termed total mercury) to creeks in the watershed. Much of the mercury discharged from legacy mining activity is now distributed in the creek channels and floodplain downstream from the mines. Current and proposed activities in and around creek channels can enhance mobilization of mercury in sediment deposits. Total mercury is converted to methylmercury by bacteria in the sediment in areas downstream of the proposed project, mainly in areas with wetlands and marshes (RWQCB 2019).

In accordance with CWA Section 303, water quality standards for this basin are contained in the Water Quality Control Plan for the Sacramento River Basin and the San Joaquin River Basin, as amended (RWQCB 2019). Lower Cache Creek, which encompasses the entirety of the project site, is on the 303(d) list as an impaired water for drinking water, aquatic life, fish and shellfish consumption, swimming and boating, and "other" (examples include agricultural, industrial, and navigation); with specific water quality concerns including: acidity, low oxygen, mercury, salts, and toxic inorganic chemicals (EPA ND).

Soil sampling within the project site, particularly in areas of proposed excavation, was completed by DWR and tested for constituents of concern (COCs) to determine potential health and safety risks related to excavation activities and to evaluate potential reuse of excavated soil on the project site. The results of the soil sampling concluded that COCs exceeded background concentrations but were not high enough to classify the soil as a hazard or hazardous waste. Soil was determined to be reusable in areas that would not be exposed to surface water or in areas of groundwater recharge. Total mercury concentrations were found above background levels and exceeding several screening standards in non-soluble tests, but there was no detectable mercury in soluble tests (DWR 2022b).

Flood Risk

See Chapter 1, "Introduction," for a detailed description of the background of flood risk reduction in Cache Creek and need for the proposed project to maintain the design level flood flows.

The project site and all surrounding areas are located in a special flood hazard area and mapped as Zone A or AE (areas with a 1 percent annual chance of flooding) and the entirety of the project site is within a designated floodway (FEMA 2020). In 2021, DWR updated the Cache Creek hydraulic model and reported that flooding along the reach of the proposed project would occur during a 10-year storm event even after recent levee repairs done in 2019 and 2020 (DWR 2024). The entirety of the project site is bounded to the north and south with levees that are in the USACE National Levee Database (USACE 2023). The project site is not in a DWR-mapped dam inundation zone (DWR 2023). Seasonal storm runoff and upstream releases from Clear Lake are the main water sources for Cache Creek. There are no other natural sources of surface water to the project site (DWR 2006).

Groundwater

The project site is on the northern border of the Sacramento Valley – Yolo Groundwater Subbasin (#5-021.67), as designated by DWR Bulletin 118 (DWR 2004), and is in a high priority groundwater basin, as designated by DWR (DWR 2020). Groundwater sustainability planning in the project area is under the governance of the Northern Delta Groundwater Sustainability Agency (GSA) Groundwater Sustainability Plan (GSP). The GSP was developed as required under the Sustainable Groundwater Management Act (SGMA) (Northern Delta GSA ND). The monitoring well network administered by the Northern Delta GSA does not include any wells on or near the project site (Northern Delta GSA 2023), however there are several irrigation groundwater supply wells along the entire project reach of Cache Creek, as well as one residential groundwater supply well.

The "Cache Creek Rehabilitation Project Results of Soil Testing" (DWR 2022b) reported that local wells indicated that as of March 2022, groundwater levels ranged between 34.7 and 49.0 feet below ground surface (bgs). A previous study found that subsurface groundwater outflow may take place from the Yolo subbasin into the Solano subbasin to the south (DWR 2004). In addition, subsurface outflow and inflow could also take place under the Sacramento River to the east with the South and North American subbasins. Finally, subsurface inflow may also take place from the west from the Capay Valley Basin.

According to a 2004 report (Luhdorff & Scalmanini Consulting), Yolo County groundwater levels are high and stable, though quality is variable throughout the county with the deep aquifer being of higher quality than the shallow aquifer. A 2021 report (GEI) stated that the water quality constituents that have potential to impact groundwater quality of the Yolo Subbasin are arsenic, hexavalent chromium, nitrate, sodium, boron, selenium, conductivity, and total dissolved solids (TDS). Within this grouping, arsenic, hexavalent chromium, boron, and selenium are all primarily naturally occurring). This is in contrast to salinity constituents (chloride, conductivity, sodium, and TDS), which also occur naturally but are particularly concentrated due to surface activities. Nitrate within the groundwater is caused primarily by anthropogenic sources. Boron, hexavalent chromium, chloride, and sodium are all considered groundwater constituents of concern with regards to water quality (GEI 2021).

Overall, high groundwater quality in the upper aquifer meets the requirements for use by the public (GEI 2021). Although nitrate contamination is an issue in the shallow groundwater, it does not affect drinking water standards in most cases because drinking water supply comes from much deeper in the aquifer where nitrates are not high concentrations. Salinity levels on the other hand are of primary concern to agricultural land users, like those adjacent to the project site. There are no major widespread groundwater contamination issues within Yolo County as of the 2004 report and point sources are addressed on a case-by-case basis by the Yolo County Flood Control & Water Conservation District, along with other relevant regulatory groups (Luhdorff & Scalmanini Consulting 2004).

3.10.2 Regulatory Setting

Federal Plans, Policies, Regulations, and Laws

Clean Water Act

Several sections of the CWA, the primary Federal law governing water quality control activities, are relevant to the project. Two of these, Sections 401 and 404, are described in Section 3.5, "Biological Resources." The other two are described below.

Section 402

Section 402 of the CWA is implemented under the jurisdiction of the State and regulates discharges through NPDES and State waste discharge requirements. SWRCB and CVRWQCB have adopted specific NPDES permits for a variety of activities that have the potential to discharge wastes (including sediment) to waters of the State. SWRCB's Statewide storm water general permit for construction activity (2022-0057-DWQ) is applicable to all land-disturbing construction activities that would disturb one acre or more. Compliance with the NPDES permit

requires submitting a notice of intent to discharge to CVRWQCB and implementing a SWPPP that includes BMPs to minimize water quality degradation during construction activities.

Section 303(d)

Under Section 303(d), states are required to adopt water quality standards for all surface waters of the United States. In California, EPA has delegated responsibility to the SWRCB and its nine RWQCBs for identifying beneficial uses and adopting applicable water quality objectives. CWA Section 303(d) requires the identification of water bodies that do not meet, or are not expected to meet, water quality standards (i.e., impaired water bodies). The affected water body, and associated pollutant or stressor, is prioritized in the 303(d) List, and a Total Maximum Daily Load (TMDL) must be identified. Further information on implementation of TMDL by the SWRCB applicable to the proposed project is provided in the following section.

State Plans, Policies, Regulations, Laws

Several State regulations related to water quality control activities are relevant to the project. The Porter-Cologne Act is described in Section 3.5, "Biological Resources." Additional relevant water quality and groundwater regulations are described below.

California Water Code

Section 8350

California Water Code (CWC) Section 8350 approves and adopts the conditions, plans, construction, and mode of maintenance and operation of works within the SRFCP by and on behalf of the State of California.

Section 8361

Per CWC Section 8361(m), DWR maintains the levees of Cache Creek and the easterly and westerly levees of the CCSB, except the portion of the southerly levee of Cache Creek (Huff's Corner levee) upstream of State Highway Route 7 [now U.S. Highway 99W].

Section 12648

CWC Section 12648 adopts and authorizes modified suite of Congressional acts previously approved for projects for the control of floods and other purposes on the Sacramento River. The Congressional acts authorized projects to accomplish the same flood control purposes as previously proposed by the Table Mountain Dam, or any other dam across the Sacramento River in the same general vicinity, subject to any modification by Congress.

California Toxics Rule and State Implementation Policy

The California Toxics Rule (CTR) was promulgated in 2000 in response to requirements of the EPA National Toxics Rule (NTR). The NTR and CTR address inland surface waters, enclosed bays, and estuaries in California that are subject to regulation pursuant to Section 303(c) of the CWA. The NTR and CTR include criteria for the protection of aquatic life and human health. Human health criteria (water and organisms) apply to all waters with a "Municipal and Domestic Water Supply" beneficial use designation, as indicated in the RWQCBs' basin plans. The Policy for Implementation of Toxics Standards for Inland Surface Waters, Enclosed Bays, and Estuaries

of California (SWRCB 2005), also known as the State Implementation Policy, establishes a standardized approach for permitting discharges of toxic pollutants to non-ocean surface waters in a manner that promotes statewide consistency.

California State Nondegradation Policy

In 1968, as required under the Federal antidegradation policy, SWRCB adopted a nondegradation policy aimed at maintaining high quality waters in California. The nondegradation policy states that the disposal of wastes into State waters shall be regulated to achieve the highest water quality consistent with maximum benefit to the people of the State and to promote the peace, health, safety, and welfare of the people of the State.

Water Quality Control Plan for the Sacramento River and San Joaquin River Basins

Pursuant to the Porter-Cologne Act, the CVRWQCB prepares and updates the *Water Quality Control Plan (Basin Plan) for the Sacramento River Basin and the San Joaquin River Basin* every 3 years; the most recent update was completed in 2019 (RWQCB 2019). The Basin Plan describes officially designated beneficial uses for specific surface water and groundwater resources and enforceable objectives for physical and chemical water quality constituents to protect those beneficial uses. The Basin Plan includes water quality objectives. The primary method of ensuring Basin Plan conformance is to issue waste discharge requirements that specify terms and conditions for implementation and operation for projects that may discharge wastes to land or water.

The Basin Plan was amended by the RWQCB to include water quality objectives and water quality management program to fulfill the requirements of the CWA Section 303(d) TMDL to reduce mercury and methylmercury for Cache Creek, Bear Creek, and Harley Gulch (Bain Plan Amendment [Resolution No. R5-2005-0146]). The RWQCB identified the following actions applicable to the proposed project needed to achieve the water quality objectives in the Basin Plan Amendment: 1)) where feasible, implement projects to reduce total mercury inputs from existing mercury-containing sediment deposits in creek channels and creek banks downstream from historic mine discharges, 2) reduce erosion of soils with enriched total mercury concentrations, and 3) limit activities in the watershed that will increase methylmercury from existing sources.

In addition, the following requirements applicable to the proposed project by the Basin Plan Amendment are as follows:

“Project proponents are required to: 1) implement management practices to control erosion and 2) conduct monitoring programs that evaluate compliance with the turbidity objective and submit monitoring results to the Regional Water Board. The monitoring program must include monitoring during the next wet season in which the project sites are inundated. In general, there must be monitoring for each project. However, in cases where projects are being implemented as part of a detailed resource management plan that includes erosion control practices, monitoring is not required as a condition of this amendment for individual projects. Instead, the project proponent may conduct monitoring at designated sites up and downstream of the entire management plan area.

Upon written request by project proponents, the Executive Officer may waive the turbidity monitoring requirements for a project, or group of projects, if the project proponents submit an alternative method for assessing compliance with the turbidity objective.

Whenever practicable, proponents should maximize removal of mercury enriched sediment from the floodplain. Sediment removed from the channel, or the Settling Basin must be placed outside of the floodplain so that it will not erode into the creek."

General Order for Storm Water Discharges Associated with Construction and Land Disturbance Activities/NPDES General Permit (General Construction Permit)

The SWRCB adopted the General Construction Permit for construction activity that applies to storm water discharges associated with construction and land disturbance activities for construction activities on one acre or more. Permit conditions for storm water discharges from construction/land disturbances are specified in the *General Permit for Storm Water Discharges Associated with Construction and Land Disturbance Activities* (Order No. 2022-0057-DWQ, as amended). The proposed project is subject to the General Construction Permit because the project would result in construction activities of more than once acre. Requirements for dischargers to notify the RWQCB of project activities and Stormwater Pollution Prevention Plan are listed in the General Construction Permit (RWQCB 2013).

General Order for Waste Discharge Requirements/NPDES Permit for Limited Threat Discharges to Surface Waters

The CVRWQCB has adopted a General Waste Discharge Permit that applies to various categories of discharge activities. Permit conditions for discharge of these types of wastewaters to surface water are specified in the *General Order for Limited Threat Discharges to Surface Waters* (Order No. R5-2019-0087). The project is subject to this General Order as it is designed because the project proponent is a public agency and the project is only expected to have minor, if any, discharges of limited threat into Cache Creek. Tier 1 discharges are defined as "Clean or relatively pollutant-free wastewaters that pose little or no threat to water quality" (RWQCB 2016). Requirements for dischargers to notify the CVRWQCB of their discharge are listed in the General Order (RWQCB 2016).

Sustainable Groundwater Management Act

In 2014, the State adopted SGMA to help manage its groundwater. According to the act, local GSAs must be formed for all high and medium priority basins in the state. These GSAs must develop and implement GSPs for managing and using groundwater without causing undesirable results, including significant groundwater-level declines, groundwater-storage reductions, seawater intrusion, water-quality degradation, land subsidence, and surface-water depletions. These are also referred to as sustainability indicators. DWR and the SWRCB are the two lead State agencies that implement SGMA.

Regional and Local Plans, Policies, Regulations, and Ordinances

DWR is not subject to local regulations unless expressly authorized by the Legislature. Local plans, policies, regulations and ordinances potential relevant to the proposed project are

addressed in this section for informational purposes because they may be relevant to certain responsible agencies.

Yolo Habitat Conservation Plan/Natural Community Conservation Plan

The Yolo Habitat Conservancy (Conservancy), formerly the Yolo County Habitat Conservation Plan (HCP)/Natural Communities Conservation Plan (NCCP) Joint Powers Agency, prepared the Yolo HCP/NCCP (ICF 2018). The Yolo HCP/NCCP provides a framework to improve conservation of natural resources, including endangered species habitat, while streamlining the permitting process for planned development, infrastructure, and maintenance activities. It allows Yolo County, the Yolo Habitat Conservancy, and the Cities of Davis, West Sacramento, Winters, and Woodland to receive Incidental Take Permits under ESA and CESA for activities and projects they conduct and those under their jurisdiction. The Yolo HCP/NCCP was completed in 2017 and implemented in January of 2018.

Yolo County General Plan

The following policies from the Yolo 2030 Countywide General Plan Agricultural and Economic Development, and Conservation and Open Space Elements (Yolo County 2009) related to hydrological resources and water quality apply to the project, as listed below:

Policy AG-2.1: Protect areas identified as significantly contributing to groundwater recharge from uses that would reduce their ability to recharge or would threaten the quality of the underlying aquifers.

Policy CO-9.8: Work to implement high priority projects in Yolo County's Integrated Regional Water Management Plan, especially related to flood management on Cache Creek.

Yolo County Municipal Code

Title 10, Chapter 9 - Stormwater Management and Discharge Control of the Yolo County Municipal Code provides the County with the legal authority to regulate the control of stormwater to protect water quality in the County and comply with the CWA. Though it stipulates that it is constructed to maintain "consistency with the requirements of the Clean Water Act and the Porter-Cologne Act," it qualifies that "in the event of a conflict between this Chapter and any Federal or State law, regulation, order or permit, the requirement that establishes the higher standard for public health and safety shall govern" (Yolo County 2022). The sections of Chapter 9 that apply to the project include regulations on discharges, regulations on waste disposal, notification of spills, BMPs, site inspection/sampling authorities, and types and noticing of any violations.

3.10.3 Environmental Impacts and Mitigation Measures

Thresholds of Significance

The thresholds for determining the significance of impacts for this analysis are based on the environmental checklist in Appendix G of the CEQA Guidelines, as amended. Implementing the project would result in a significant impact on hydrology and water quality if it would:

- Violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or ground water quality;
- Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the basin;
- 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:
  - Result in substantial erosion or siltation on- or offsite;
  - Substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site;
  - 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
  - Impede or redirect flows.
- In flood hazard, tsunami, or seiche zones, risk release of pollutants due to project inundation.
- Conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan.

Issues Not Discussed Further

Impacts of Tsunami or Seiche. The project site is not in a coastal area and is outside the tsunami hazard zone. Additionally, there are no water bodies on or near the project site large enough to be subjected to a seiche as a result of an earthquake. Therefore, there would be no impact related to tsunami or seiche, and this issue is not discussed further.

Construction Dewatering. The proposed project would not require dewatering of groundwater during construction. Therefore, no dewatering would need to be managed during construction or discharged to surface waters, and the project would not require a NPDES "Groundwater from Construction and Project Dewatering" permit. Therefore, there would be no impact to groundwater associated with dewatering. The proposed project may need to dewater isolated ponded areas of perched water within the creek channel. Dewatering of these isolated ponds would be done by pumping water out of the ponded areas or creating a small ditch to drain the area elsewhere to areas further downstream to percolate and flow out of the area to allow for construction activities. Release of the ponded water within the creek channel would not change hydrology or water quality existing within the creek, and this issue is not discussed further.

Analysis Methodology

This evaluation of potential project impacts on hydrology and water quality conditions is based on professional standards and information cited throughout the section. Hydrologic and hydraulic modeling completed by DWR for the proposed project is used in the analysis of impacts related to flooding and stormwater conveyance. Designing flow criteria using data from the latest flood in 2019 was used to calibrate the model to identify the areas of deficiency in channel capacities and levee elevations to meet the original design flow conveyance capacity (30,000 cfs) that was

used to design the proposed project (DWR 2024). Potential impacts were identified and evaluated based on the environmental characteristics of the project site and activities related to project construction.

In addition, comments received during the public scoping period include concerns over flooding, impacts to water quality from construction activities, sedimentation, debris runoff, and changes to drainage patterns and water quality. These comments are addressed in the impact analysis below.

Impact Analysis and Mitigation Measures

Impact 3.10.1: ***Impacts on Water Quality or Conflict with Implementation of a Water Quality Control Plan from Construction Activities.***

The project includes activities and soil disturbance that could cause storm runoff of sediment and pollutants into a tributary of the Sacramento River and could therefore result in a ***significant impact*** *on water quality.*

Surface Water

Due to the nature of the project activities planned within the channel of Cache Creek, work would only take place during the dry season when no water is in the channel. If surface water is unexpectedly present in the channel, then construction activities would not be conducted, and equipment would not be operated in the channel. Construction would result in temporary and short-term disturbance of soil that could be exposed to storm events. Soil within Cache Creek was sampled and found to contain COCs above background concentrations, as previously described (DWR 2022b). The proposed project would haul the excavated soils offsite to a landfill permitted to accept soils with the documented COCs. During construction, rainfall of sufficient intensity could result in storm water runoff conveying sediment to downstream reaches of Cache Creek. However, any sediment transported through Cache Creek would be deposited within the CCSB, which provides protection from degradation of water quality further downstream in the Yolo Bypass and Sacramento River. During construction, haul trucks and heavy equipment would use the Cache Creek channel and temporary ramps would be installed in the channel to facilitate access to sediment removal sites. Upon completion of construction, any temporary fill would be removed, and site restoration measures would be implemented to return areas around project improvements to pre-construction conditions. The proposed project would stabilize excavated areas to specific engineering criteria for bank stabilization to resist failure and erosion. Areas of exposed soils within the channel would be replanted with native grasses to stabilize bank slopes and soil in the channel and these areas would also be surrounded by stormwater pollution control measures until vegetation matures to ensure soil does not migrate downstream. Further, excavation of soil within the channel would remove a source of total mercury within the Cache Creek watershed, meeting one of the main goals of the Basin Plan Amendment described previously.

The proposed project would involve the storage and use of hazardous materials such as fuels, lubricants, hydraulic fluids, and coolants required for operation of equipment during construction on the project site. Use and onsite storage of these hazardous materials could be a direct source

of contamination through accidental release or unsafe storage and handling practices. The release of these hazardous materials could directly affect the water quality in Cache Creek.

Groundwater

As discussed above for surface water, construction activities for the proposed project would occur during completely dry channel conditions with minimal impact on surface water and groundwater is not expected to be encountered during the construction period. However, as for surface water, exposure of soil and the storage and use of relatively small amounts of hazardous materials required for equipment operation could result in runoff or accidental spill of hazardous materials that could result in a significant impact on groundwater.

Conclusions

Water quality impacts associated with exposure of disturbed areas to storm events and accidental releases of hazardous materials would be **significant**. The following mitigation measure has been identified to address this impact.

> **Mitigation Measure 3.10.1: Implement Mitigation Measure 3.7.1, "Acquire Appropriate Regulatory Permits and Prepare and Implement a Storm Water Pollution Prevention Plan, Spill Prevention Control and Countermeasures Plan, and Associated Best Management Practices"**
>
> Please refer to Section 3.7, "Hazards and Hazardous Materials," Impact 3.7.1 for the full text of this mitigation measure.
>
> **Timing:** Before and during construction activities
>
> **Responsibility:** DWR

Significance after Mitigation: Implementation of Mitigation Measure 3.10.1 would reduce potentially significant construction-related impacts on water quality from exposure of disturbed areas to storm events and accidental spills of hazardous materials, respectively, to **less than significant** levels because a SWPPP and BMPs specifically designed to control erosion and sedimentation would be implemented and a SPCCP and other measures specifically designed to prevent water contamination would be implemented.

Impact 3.10.2: ***Impacts on Groundwater Supplies, Recharge, and Management.***

The project includes construction within a high priority groundwater basin. However, construction activities are unlikely to affect groundwater supplies, recharge, or sustainability in the project vicinity. This impact would be less than significant.

The proposed project would not require the use of groundwater for construction activities and would not affect the existing connectivity of Cache Creek with the local water table. Surface runoff from the project site would continue to flow overland in the same manner as under current conditions and infiltrate into the soil or flow into Cache Creek and percolate into the underlying groundwater aquifer. Further, the proposed project would not construct impervious surfaces that

could decrease groundwater recharge. Therefore, the proposed project would not substantially decrease groundwater supplies, interfere substantially with groundwater recharge, or impede sustainable management of the groundwater basin in the region. This impact would be **less than significant**.

Mitigation Measure: No mitigation is required.

Impact 3.10.3: ***Alteration of the Drainage Pattern Resulting in Changes in Stormwater Conveyance and Flood Flows.***

The proposed project would result in construction within Cache Creek, a tributary to the Sacramento River. However, the proposed project would improve on-site drainage patterns and flood conveyance within Cache Creek and reduce likelihood of levee failure during a flood event. These impacts would be beneficial.

The proposed project would include excavating sediment deposited in the project area from upstream and includes areas where vegetation has become overgrown and is causing significant flow restrictions. In areas where freeboard deficiencies exist, there is existing potential for levee failure during flow changes in Cache Creek, including flood events (DWR 2024). The proposed project includes raising levee segments to the original design heights where it is needed to meet the required 3 feet of freeboard. Therefore, compared to existing conditions, the proposed project would improve on-site drainage flows, on-site stormwater flows, and improve flood risk reduction to adjacent residents and agricultural land uses. The portion of Cache Creek within the project site is considered a regional drainage (or stormwater) facility within Yolo County as the project reach of Cache Creek includes facilities for conveyance and flood risk reduction, among others (Yolo County 2010). Therefore, the proposed project would also improve regional stormwater conveyance and control.

Although the project site is mapped within a 100-year flood hazard zone and lies partially within a designated floodway, the proposed project would not increase the possibility of flooding or impede or redirect flood flows in a manner that would adversely affect flood risk at the project site or offsite. Further, the proposed project would increase the capacity of the Cache Creek channel at the project site and improve the ability of the channel to accommodate design maximum flood flows. The possibility of an excessive hydraulic force that could lead to levee failure would be greatly reduced, and the more durable design would improve levee stability during large flood events.

For these reasons, the proposed project would result in a **beneficial** effect on stormwater drainage, flood flow conveyance, and flood protection.

Mitigation Measure: No mitigation required.

Impact 3.10.4: ***Alteration of the Drainage Pattern Resulting in Erosion and Sedimentation.***

The proposed project would result in the excavation of sediment and vegetation within the Cache Creek channel, a tributary to the Sacramento

River. The proposed project would increase the capacity of the channel and decrease restriction on flows passing through to the CCSB. An increase in flows within the Cache Creek channel would not result in a significant increase in erodibility of areas of excavation and would not result in a significant long-term increase in sediment transport into the CCSB and into downstream areas and impacts would be less than significant.

The proposed project includes excavating sediment deposited in the project reach from upstream reaches of Cache Creek and includes areas where vegetation has become overgrown. During construction, haul trucks and heavy equipment would use the Cache Creek channel and temporary ramps would be installed in the channel to facilitate access to sediment removal sites. Upon completion of construction, any temporary fill would be removed, and site restoration measures would be implemented to return areas around project improvements to pre-construction conditions. While the project would result in the benefit of increasing the capacity of the channel to accommodate the original design flow criteria for the channel in the project reach of 30,000 cfs, this change in the drainage pattern could result in potential short-term impacts from erosion of areas where excavations would occur until revegetation and stabilization have occurred (DWR, J. Bautista, P.E., personal communication). However, after construction is complete, DWRs EPOM would implement monitoring and maintaining vegetative growth and implement erosion protection prior to winter flows in the project site, thereby minimizing erosion within the areas of sedimentation removal until vegetation has matured.

By increasing the capacity of the Cache Creek channel, the project would increase the amount of flow conveyed by the reach of Cache Creek within the project site which could also increase the amount of sediment transport through the project site and downstream to the CCSB. This increase in sediment transport and deposition within the CCSB could result in a decrease in the remaining storage capacity within the CCSB. However, flow and sediment deposition data from the past 34.5 years of data collected (during most of the years the CCSB has been in operation) were analyzed and show that sediment deposition would only increase by approximately 0.53 percent as a result of the proposed project. Further, the potential decrease in storage in the CCSB from the proposed project increase in flows was predicted to be approximately 0.6% over the remaining storage capacity lifetime of the CCSB (approximately 16 more years). The data analysis shows that the proposed project would not result in a substantial deposition of sediment in the CCSB and would not result in a significant loss of storage lifetime remaining in the CCSB (GEI 2024 provided in Appendix E). Therefore, the proposed project's impact to erosion and sedimentation related to alteration of the creek's drainage pattern would be **less than significant**.

Mitigation Measure: No mitigation required.

Residual Significant Impacts

The project would result in significant impacts related to hydrology and water quality, but mitigation measures would be implemented to reduce temporary water quality impacts during construction to a less than significant level. With imposition of mitigation measures identified above, the project would have no residual significant impacts.

3.11 Land Use and Planning

This section provides an overview of the land use and planning framework in the project area and analyzes the potential project impacts to land use and planning. Sources used to develop this analysis primarily include planning documents from Yolo County including various elements of the General Plan, as well as State and Federal resources.

3.11.1 Environmental Setting

The project site is entirely zoned as public open space (POS) and designated as open space for land use and planning purposes (Yolo County 2023c). The levees surrounding Cache Creek within the project site are maintained by DWR and the lands surrounding the project site are privately-owned and zoned as Intensive Agriculture. The project site is within the Special Flood Hazard Area (SFHA) Zone AE indicating a 1-percent chance of flooding in any given year (FEMA 2023). Approximately 0.75 mile of the project site, from the western end of Cache Creek to County Road (CR) 18, exists within the Cache Creek Area Plan (CCAP)that is described below in the regulatory setting section as it relates to the proposed project.

3.11.2 Regulatory Setting

Federal Plans, Policies, Regulations, and Laws

No Federal plans, policies, regulations, or laws related to land use and planning are relevant to the analysis of land use and planning impacts for the project.

State Plans, Policies, Regulations, Laws

Central Valley Flood Protection Plan

The Central Valley Flood Protection Plan (CVFPP) is a strategic blueprint prepared by the Central Valley Flood Protection Board (CVFPB) to guide flood risk management in the Central Valley (DWR 2022). The CVFPP is updated every 5 years and was most recently updated in 2022. The CVFPP provides guidance on how the state will:

- prioritize investment in flood management for 30-year projection;
- promote multi-benefit projects; and,
- integrate and enhance ecosystem function associated with flood-risk-reduction projects.

The proposed project is part of the Sacramento River Flood Control Project (SPFCP). The CVFPP was used as a tool to guide the design and implementation of the proposed project. Cache Creek's levees, including within the project site boundaries, were evaluated in the latest CVFPP Update and determined to be of high concern in the Sacramento River Watershed (DWR 2022).

Regional and Local Plans, Policies, Regulations, and Ordinances

DWR is not subject to local regulations unless expressly authorized by the Legislature. Local plans, policies, regulations, and ordinances potentially relevant to the proposed project are

addressed in this section for informational purposes because they may be relevant to certain responsible agencies.

Yolo County General Plan

The Land Use and Community Character Element of the Yolo County General Plan defines the land use designation of Open Space as follows (Yolo County 2023b):

> "Open Space (OS) includes POS lands, major natural water bodies, agricultural buffer areas, and habitat. The primary land use is characterized by "passive" and/or very low-intensity management, as distinguished from AG or PR land use designations, which involve more intense management of the land. Detention basins are allowed as an ancillary use when designed with naturalized features and native landscaping, compatible with the open space primary use."

The following goals and policies from the Land Use and Community Character Element (Yolo County 2023b) and Health and Safety Element (Yolo County 2023a) of the Yolo County General Plan may be relevant to the proposed project for certain responsible agencies:

Goal LU-5: Equitable Land Use Decisions. Ensure inclusion, fair treatment and equitable outcomes in local land use decisions and regulations.

Policy LU-5.6: Assist existing communities to obtain the services, support and infrastructure needed to thrive and be successful.

Goal HS-2: Flood Hazards. Protects the public and reduce damage to property from flood hazards.

Policy HS 2.2: Ensure and enhance the maintenance and integrity of flood control levees.

Action HS-A14: Require a minimum 50-foot setback for all permanent improvements from the tow of any flood control levee.

Yolo County Zoning Codes

The Yolo County Zoning Code Article 8, POS Zones (Yolo County 2021) may be relevant to the proposed project for certain responsible agencies and defines POS Zone (b) as follows:

> "The purpose of the POS zone is to recognize major publicly owned open space lands, major natural water bodies, agricultural buffer areas, and habitat preserves. POS lands are characterized by passive or low management uses. Detention basins are allowed in the POS zone if they are designed with naturalized features and native landscaping. The POS zone implements the OS land use designation in the 2030 Countywide General Plan."

Cache Creek Area Plan

The CCAP, adopted by Yolo County, consists of the Off-Channel Mining Plan (OCMP) and Cache Creek Resource Management Plan (CCRMP). The OCMP is a scientifically based aggregate resource management plan that allows for off-channel mining adjacent to Cache

Creek. The CCRMP is a river management plan that eliminated in-channel commercial mining, established an "improvement program" for implementing on-going projects to improve channel stability, encouraged restoration along the creek banks, and established a framework for future recreation along the Creek. Approximately 0.75 mile of the project site from the western end of Cache Creek to CR 18, exists within the CCAP.

Under the CCRMP, Cache Creek will continue to be managed to protect agricultural and off-channel mining operations, and to protect nearby communities from the effects of flooding and erosion. Channel modifications and in-channel work must adhere to specific channel slope standards and typical design cross-sections developed for the Creek. The following goals from the CCRMP relate to land use and planning that may be relevant to certain responsible agencies:

Goal 2.2-3: Coordinate land uses and improvements along Cache Creek so that the adverse effects of flooding and erosion are minimized.

Goal 2.2-4: Ensure that the floodway is maintained to allow other beneficial uses of the channel, including groundwater recharge, recreation, and riparian habitat, without adversely affecting flood flow conveyance capacity.

Goal 3.2-3: Maintain the quality of surface and groundwater so that nearby agricultural productivity and available drinking water supplies are not diminished.

Goal 4.2-4: Manage riparian habitat so that it contributes to channel stability.

Goal 4.4-2: Remove vegetation when it threatens channel stability. In particular, the growth of invasive species, willow scrub, and other native and nonnative vegetation on mid-channel gravel bars shall be controlled to prevent stream flows from being diverted towards nearby banks.

Goal 6.2-1: Use the removal of in-channel aggregate deposits as an opportunity to reclaim, restore, and/or enhance the channel stability and habitat of Cache Creek.

3.11.3 Environmental Impacts and Mitigation Measures

Thresholds of Significance

The thresholds for determining the significance of impacts for this analysis are based on the environmental checklist in Appendix G of the CEQA Guidelines, as amended. Implementing the project would have a significant impact on land use and planning if it would:

- physically divide an established community; or
- conflict with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect.

Issues Not Discussed Further

Physically Divide a Community. The project site is in unincorporated Yolo County, adjacent to the Town of Yolo. The proposed project would not physically divide a community because proposed project activities would only occur within the project site which is composed of land designated as open space. Therefore, there would be no impact and this issue is not discussed further.

Analysis Methodology

Evaluation of potential land use impacts is based on a review of documents pertaining to the project site, including the Yolo County General Plan. Any inconsistency of the project with land use and zoning code designations is an issue related to land use regulation rather than a physical environmental consequence of the project. Where the project could conflict with a land use plan or policy that was adopted specifically for the purposes of preventing or reducing an adverse environmental effect, such potential conflicts are evaluated as stand-alone environmental impacts within each topic area of the EIR. For example, the potential for project-related noise to exceed Yolo County General Plan standards is evaluated in Chapter 3.12, "Noise"; the potential for project-related facilities to conflict with agricultural land uses and Williamson Act contracts is evaluated in Chapter 3.3, "Agriculture and Forestry"; and the potential for the project to conflict with an adopted natural community conservation plan or habitat conservation plan is evaluated in Chapter 3.5, "Biological Resources". No comments were received during the public scoping period relating to land use and planning impacts from the proposed project.

Impact Analysis and Mitigation Measures

Impact 3.11.1: ***Conflict with Relevant Plans, Policies, and Zoning.***
The project would be consistent with the Yolo County General Plan, the CCRMP, and Yolo County zoning codes. Therefore, this impact would be ***less than significant****.*

DWR is not subject to local land use authority, but consistency with local plans and zoning are discussed for informational purposes. The proposed project falls within the Yolo County General Plan but would not require any re-zoning. Consistent with the County General Plan goals and policies, post-project land use within the project site would be the same as current conditions and, therefore, would be compatible with adjacent land uses. Further, the proposed project would improve flood protection of adjacent land uses.

The CCRMP covers a small section of the western portion of the project site. The proposed project would meet the management goals of the CCRMP to protect agricultural and off-channel mining operations, and nearby communities from the effects of flooding. Additionally, the proposed project would meet the CCRMP goal of channel modifications and in-channel work to improve flood flow conveyance in Cache Creek.

Because the project would not conflict with any relevant plans, policies, or zoning adopted for the purpose of avoiding or mitigating an environmental effect, this impact would be **less than significant**.

Mitigation Measure: No mitigation required.

Residual Significant Impacts

The project would not result in residual significant impacts related to land use or planning.

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3.12 Noise

This section provides an overview of the existing noise conditions within the project vicinity, identifies the regulatory framework for noise, and analyzes potential noise impacts from proposed project implementation.

3.12.1 Environmental Setting

Sound is the mechanical energy of a vibrating object transmitted by pressure waves through a liquid or gaseous medium, such as air. Noise is defined as sound that is unwanted (loud, unexpected, or annoying). Excessive exposure to noise can result in adverse physical and psychological responses (e.g., hearing loss and other health effects, anger, and frustration); interfere with sleep, speech, and concentration; or diminish the quality of life.

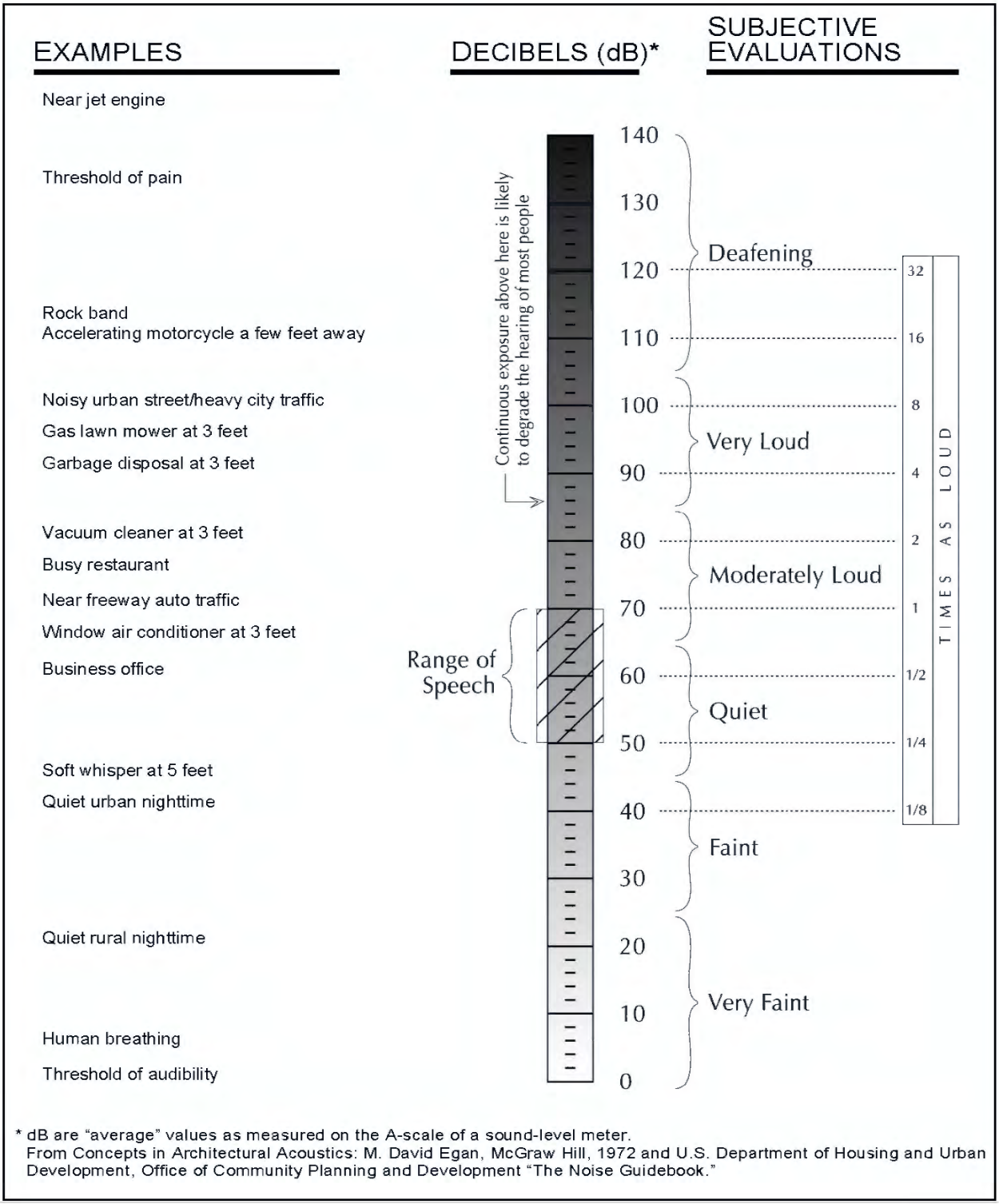
Sound levels usually are measured and expressed in decibels (dB), with 0 dB being the lowest threshold of hearing. Decibel levels range from 0 to 140; 20 to 30 dB for a quiet rural night is considered a faint noise level, approximately 75 dB for a busy restaurant is considered moderately loud; and 100 dB for a busy street or highway is considered very loud (**Figure 3.12-1**). Noise levels can be reduced (attenuated) by distance depending on the ground type, intervening obstacles, and other factors (FTA 2018). Localized noise sources that are grouped closely together attenuate greatly with distance at a rate of approximately 6 dB per doubling of distance. Line sources such as vehicles passing along a roadway attenuate less than localized noise sources with distance at a rate of 3 to 6 dBs per doubling of distance (FTA 2018). In addition to distance, noise can attenuate based on the type of ground between the noise source and the receiver. Soft ground such as loose soils tend to attenuate more than hard ground such as very compacted soils. Ground attenuation can be as much as 5 dB over several hundred feet. Lastly, obstacles such as hills and buildings between a noise source and a receptor can provide noise reduction that varies greatly based on the level of shielding and material providing shielding.

Groundborne vibration is energy transmitted in waves through the ground. Vibration attenuates at a rate of approximately 50 percent for each doubling of distance from the source.

Noise Descriptors

The perceived loudness of sounds depends on many factors, including sound pressure level and frequency content. However, within the usual range of environmental sound levels, perception of loudness is relatively predictable, and can be approximated through frequency filtering using the standardized A-weighting network. A-weighted sound levels represent the noise at a receiver perceived by the human ear (FTA 2018). There is a strong correlation between A-weighted sound levels (dB expressed as dBA) and community response to noise. For this reason, the A-weighted sound level has become the standard descriptor for environmental noise assessment. All noise levels reported in this section are in terms of A-weighting. Community noise is commonly described in terms of “ambient” or all-encompassing noise levels in a given environment. The noise descriptors most often used to describe noise in the environment are defined below.

- **L_{max} (*Maximum Noise Level*):** The maximum instantaneous noise level during a specific period of time. The L_{max} may also be referred to as the peak noise level.



Source: Egan 1988

Figure 3.12-1. Decibel Scale and Common Noise Sources

- **L_{eq} (*Equivalent Noise Level*):** The average noise level. The instantaneous noise levels during a specific period of time in dBA are converted to relative energy values. From the sum of the relative energy values, an average energy value is calculated, which is then converted back to dBA to determine the $L_{eq.}$ In noise environments determined by major noise events, such as aircraft overflights, the L_{eq} value is heavily influenced by the magnitude and number of single events that produce high noise levels.
- **L_{dn} (*Day-Night Average Noise Level*):** The 24-hour L_{eq} with a 10-dBA "penalty" for noise events that occur during the noise-sensitive hours between 10 p.m. and 7 a.m. In other words, 10 dBA is "added" to noise events that occur in the nighttime hours, and this generates a higher reported noise level when determining compliance with noise standards. The L_{dn} attempts to account for the fact that noise during this specific period of time is a potential source of disturbance with respect to normal sleeping hours.
- **Community Noise Equivalent Level (*CNEL*)** – The energy-average of the A-weighted sound levels occurring over a 24-hour period, with penalties of 10 dB and 5 dB, applied to A-weighted sound levels occurring during the nighttime hours (10 p.m. to 7 a.m.) and the evening hours (7 p.m. to 10 p.m.) respectively,. The CNEL is similar to L_{dn}—it is usually within 1 dB of the L_{dn}—and for all intents and purposes, the two measurements are interchangeable. Because it is easier to compute and of more common use, the L_{dn} is used as the long-term noise measurement in this evaluation.[1]

Groundborne Vibration

Vibration is an oscillatory motion that can be described in terms of displacement, velocity, or acceleration. Vibration is typically described by its peak and root-mean-square amplitudes. The root-mean-square value can be considered an average value over a given time interval. The peak vibration velocity is the same as the "peak particle velocity" (PPV), generally presented in units of inches per second. PPV is the maximum instantaneous positive or negative peak of the vibration signal and is generally used to assess the potential for damage to buildings and structures. The root-mean-square amplitude is typically used to assess human annoyance caused by vibration.

Noise Generation

The project site is in a predominantly rural area surrounded by agricultural production and is not frequently subject to high noise or vibration levels. The western extent of the project site is located within the unincorporated community of Yolo and is approximately two miles north of the City of Woodland. The primary existing noise sources near the project site include agricultural activities, vehicular traffic, and low amounts of noise from adjacent residences. Agricultural activities can generate sound levels similar to construction equipment but are typically dispersed and intermittent in nature. Typical noise levels from tractors as measured at a distance of 50 feet range from about 78 dBA to 106 dBA L_{max} (maximum A-weighted sound level), with an average of about 84 dBA L_{max} (Yolo County 2009). Major highways and

[1] L_{dn} and CNEL values rarely differ by more than 1 dB. L_{dn} and CNEL values are considered equivalent as a matter of practice, and this assessment treats them as such.

roadways which generate noise and vibrations near the project site include Interstate 5 (I-5), State Route (SR) 113, and County Road 102.

Noise Receptors

Land uses adjacent to the project site consist primarily of agricultural production with scattered rural residences. Additionally, the Laugenour School (temporarily closed) and the Cache Creek High School are located approximately 0.06-mile and 0.11-mile west of the project site, respectively (Google Maps 2023). Land uses defined by federal, State, and local regulations as noise-sensitive vary slightly but typically include schools, hospitals, rest homes, places of worship, long-term care facilities, mental care facilities, residences, convalescent (nursing) homes, hotels, certain parks, and other similar land uses. The Caltrans Technical Noise Supplement (Caltrans 2013) defines a noise receiver or receptor as "any natural or artificial sensor that can perceive, register, or be affected by sound, such as a human ear, or a microphone." There are several rural residential properties located within close vicinity of the project site. Most residences are located approximately between 200 and 1,100 feet from the project site. However, segments of the levee where construction would occur are located adjacent to 7 residences, with some backyards directly adjacent to the toe of the levee.

3.12.2 Regulatory Setting

Federal Plans, Policies, Regulations, and Laws

U.S. Environmental Protection Agency

The EPA Office of Noise Abatement and Control was established to coordinate Federal noise control activities. The Office of Noise Abatement and Control established guidelines in response to the Federal Noise Control Act of 1972 to identify and address the effects of noise on public health and welfare, and the environment. **Table 3.12-1** summarizes EPA's recommended guidelines for noise levels considered safe for community exposure (EPA 1974). The yearly average L_{eq} for a person seeking to avoid hearing loss over their lifetime should not exceed 70 dB. To minimize interference and annoyance, noise levels should not exceed 55 dB L_{dn} in outdoor activity areas and 45 dB L_{dn} in residential structures.

Table 3.12-1. Summary of United States Environmental Protection Agency Recommended Noise Level Standards

Effect	Sound Level	Area
Hearing loss	$L_{eq()} \leq 70$ dB	All areas
Interference with and annoyance during outdoor activities	$L_{dn} \leq 55$ dB	Outdoor areas of residences and farms, and other areas where people spend widely varying amounts of time or where quiet is a basis for use
Interference with and annoyance during outdoor activities	$L_{eq(24)} \leq 55$ dB	Outdoor areas where people spend limited amounts of time, such as school yards and playgrounds
Interference with and annoyance during indoor activities	$L_{dn} \leq 45$ dB	Indoor residential areas
Interference with and annoyance during indoor activities	$L_{eq(24)} \leq 45$ dB	Other indoor areas with human activities, such as schools

Notes: dB = decibels; L_{dn} = day-night average level; $L_{eq}(24)$ = equivalent noise level (the sound energy averaged over a 24-hour period)

Source: U.S. Environmental Protection Agency 1974:3

Federal Transit Administration

The Federal Transit Administration (FTA) has developed guidelines for assessing the significance of vibration produced by transportation sources and construction activity. To address human response (annoyance) to groundborne vibration, FTA has established maximum-acceptable vibration thresholds for different land uses. These guidelines recommend 72 vibration dB for residential uses and buildings where people normally sleep when the source of vibrations is frequent in nature, see **Table 3.7-2**. (FTA 2018).

Table 3.12-2. Ground-borne Vibration Impact Criteria for General Assessment (VdB re 1 micro-inch/second)

Land Use Category	Frequent Events[a]	Occasional Events[b]	Infrequent Events[c]
Category 1: Buildings where vibration would interfere with interior operations.	65[d]	65[d]	65[d]
Category 2: Residences and buildings where people normally sleep.	72	75	80
Category 3: Institutional land uses with primarily daytime uses.	75	78	83

Notes:

VdB = vibration decibels referenced to 1 microinch per second and based on the root mean square velocity amplitude.

[a] "Frequent Events" is defined as more than 70 vibration events of the same source per day.

[b] "Occasional Events" is defined as between 30 and 70 vibration events of the same source per day.

[c] "Infrequent Events" is defined as fewer than 30 vibration events of the same source per day.

[d] This criterion is based on levels that are acceptable for most moderately sensitive equipment such as optical microscopes. Vibration-sensitive manufacturing or research would require detailed evaluation to define acceptable vibration levels.

Source: FTA 2018

State Plans, Policies, Regulations, Laws

California Department of Transportation

In 2013, the California Department of Transportation (Caltrans) published the *Transportation and Construction Vibration Manual*.The manual provides general guidance on vibration issues associated with construction and operation of projects in relation to human perception and structural damage. **Table 3.7-3** presents recommendations for levels of vibration that could result in damage to structures exposed to continuous vibration.

Table 3.12-3. Caltrans Recommendations Regarding Levels of Vibration Exposure

Effect on Buildings	PPV (in/sec)
Architectural damage and possible minor structural damage	0.4 - 0.6
Risk of architectural damage to normal dwelling houses	0.2
Virtually no risk of architectural damage to normal buildings	0.1
Recommended upper limit of vibration to which ruins and ancient monuments should be subjected	0.08
Vibration unlikely to cause damage of any type	0.006 - 0.019

Notes: in/sec = inches per second; PPV = peak particle velocity

Source: Caltrans 2020

Regional and Local Plans, Policies, Regulations, and Ordinances

DWR is not subject to local regulations unless expressly authorized by the Legislature. Local plans, policies, regulations, and ordinances potentially relevant to the proposed project are addressed in this section for informational purposes because they may be relevant to certain responsible agencies.

Yolo County Code

To date a Yolo County noise ordinance has not been adopted; however, the County relies on the State Office of Noise Control Guidelines when considering new outdoor noise sources. These standards are included in the Yolo County 2030 Countywide General Plan and are used to provide guidance for new development projects.

Yolo County 2030 Countywide General Plan

The Yolo County General Plan includes policies related to construction noise and vibration effects and also includes some compatibility standards for new land uses. Although these compatibility standards are not directly applicable to the construction noise that would be generated by the project under consideration, they provide useful context for acceptable noise levels.

GOAL HS-7: Noise Compatibility. Protect people from the harmful effects of excessive noise.

Action HS-A64: Require the preparation of a noise analysis/acoustical study, including recommendations for attenuation, for all proposed projects which may result in potentially significant noise impacts to nearby sensitive land uses.

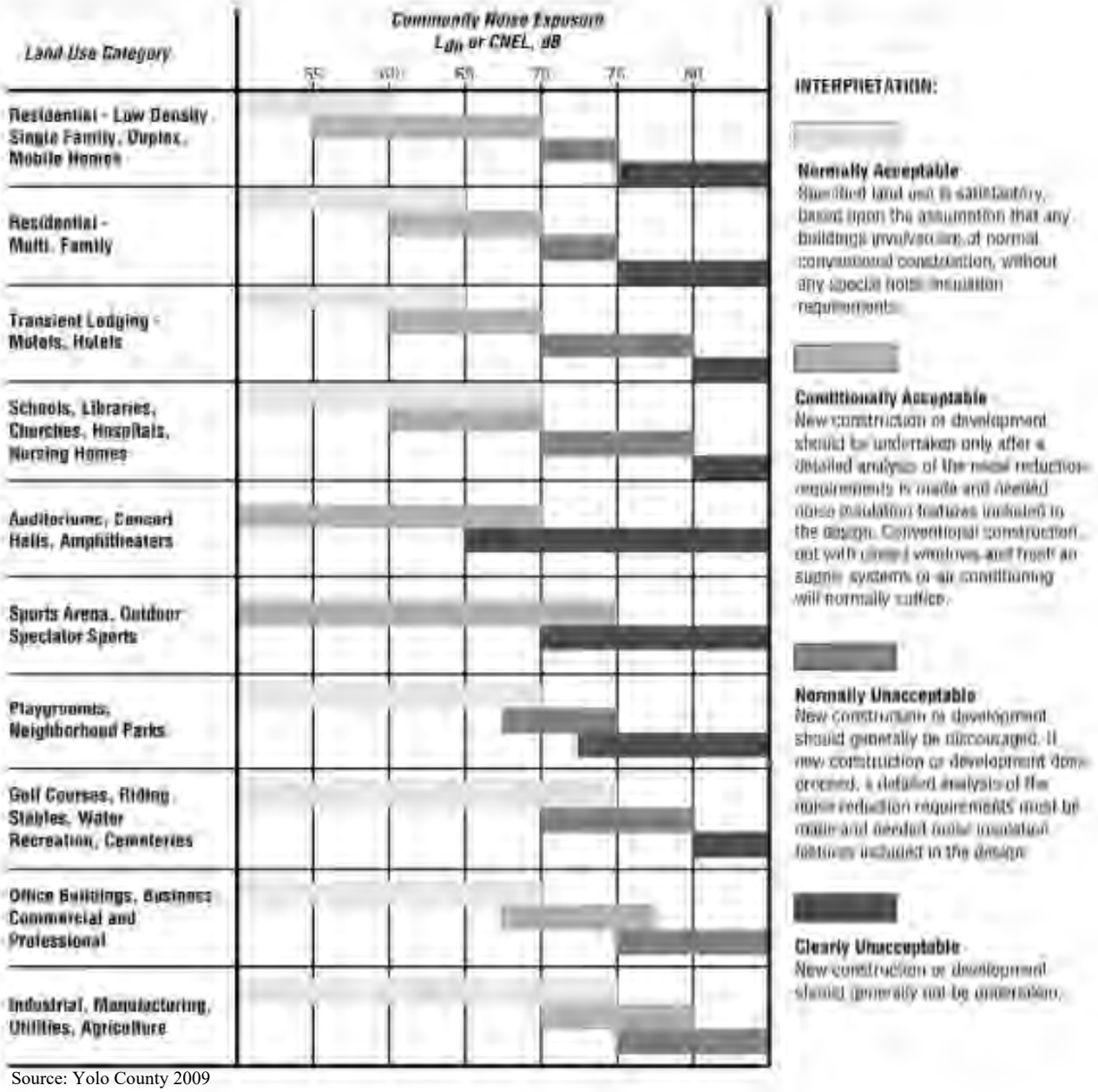
Action HS-A65: Require a noise analysis/acoustical study, with recommendations for attenuation, for all proposed development within noise-impacted areas that may reasonably be expected to be exposed to levels that exceed the appropriate Noise Compatibility Guidelines standards.

Action HS-A74: Where feasible, utilize alternative road surfacing materials that minimize vehicle noise.

Noise Standards

The General Plan establishes Exterior Noise Standards, or Noise Compatibility Guidelines describes the exterior noise standards (excluding airport noise sources) recommended by the State for new development projects according to land use. The guidelines define noise in terms of L_{dn}, with outdoor L_{dn} described by four primary categories: normally acceptable, conditionally acceptable, normally unacceptable, and clearly unacceptable. The noise compatibility guidelines describing the exterior noise standards as recommended by the State for new development projects according to land use are shown in **Figure 3.12-2**. For development of residential land use, an ambient noise level of up to 60 dBA Ldn is considered "Normally Acceptable" for single family or duplex-style residential land uses. Noise levels of up to 70 dBA Ldn are considered "Conditionally Acceptable" for single-family homes, where new development should only be undertaken after a detailed analysis of the noise reduction requirements is made, and needed

noise insulation features are included in the design. In addition to these compatibility guidelines, the General Plan also references state regulations restricting "interior noise levels attributable to exterior sources …[to]… 45 dBA [Ldn or CNEL] in any habitable room." These are the only noise significance thresholds available that can reasonably be applied to the proposed project construction activities in the County.



Source: Yolo County 2009

Figure 3.12-2. Noise Compatibility Guidelines

3.12.3 Environmental Impacts and Mitigation Measures

Thresholds of Significance

The thresholds for determining the significance of noise impacts for this analysis are based on the environmental checklist in Appendix G of the State CEQA Guidelines, as amended. A significant impact related to noise issues would occur if the project would:

- generate 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 in other applicable local, State, or Federal standards;
- generate excessive groundborne vibration or groundborne noise levels; or
- 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 2 miles of a public airport or public use airport, expose people residing or working in the project area to excessive noise levels.

Yolo County relies on the State Office of Noise Control Guidelines when considering new outdoor noise sources. Given that the project does not fall into any of the listed categories provided in this Guidance, the standard for residential land development, which states ambient noise level of up to 60 dBA Ldn is considered "Normally Acceptable," is being used for the proposed project.

The following vibration thresholds have been applied to the proposed project and are based on Caltrans guidance for determining structural impacts from vibration to structures and FTA's recommended criteria for limiting annoyance from groundborne vibration. The project would have a significant impact from groundborne vibration or groundborne noise levels if it were to result in:

- exceeding 0.2 inch per second PPV, or
- resulting in infrequent (defined as fewer than 30 vibration events of the same source per day) events over 80 VdB within 75 feet of construction activity.

Issues Not Discussed Further

Expose people residing or working in the project area to excessive noise levels generated by airports. The project site is located more than 2 miles from the nearest airport or private airstrip. Therefore, the project activities would not expose people to excess noise levels due to the proximity to a public airport or private airstrip and no impact would occur. No impact would occur, and this issue is not discussed further in this EIR.

Analysis Methodology

The calculation of potential construction noise and vibration impacts was based on methodology developed by the FTA *Transit Noise and Vibration Impact Assessment Manual* (2018), the Caltrans *Transportation and Construction Vibration Manual* (2018) and construction noise criteria from applicable local guidance (such as local general plan documents). Based on anticipated construction equipment types and methods of operation, as detailed in Chapter 2

"Project Description," construction noise levels for the construction process associated with the proposed project were calculated (*see* Appendix B "Air Quality and GHG Emissions Modeling" for more information on assumptions of construction equipment use). These anticipated noise levels were compared to significance criteria to determine whether significant impacts are anticipated to occur during construction. Where significant noise impacts are identified, mitigation measures have been identified to reduce noise impacts.

The magnitude of construction noise and vibration impacts at sensitive land uses depends on the type of construction activity, the noise and vibration levels generated by various pieces of construction equipment, and the distance between the activity and sensitive land uses. For this analysis, noise levels were calculated for the closest sensitive receptors, which are those residences located within 25 feet of the project site. The calculations used for this analysis include distance attenuation (6 dB per doubling of distance) and attenuation from ground absorption for both hard ground and soft ground (1 to 2 dB per doubling of distance) (FTA 2018). Additionally, *Appendix A*: *Best Practices for Calculating Estimated Shielding for Use in the Roadway Construction Noise Model* within the *FHWA Roadway Construction Noise Model User Guide* was used to determine the most applicable shielding attenuation rates for the proposed project. The appendix states that if a noise source is completely enclosed or completely shielded with a solid barrier located close to the source, the attenuation rate is 8 dBA (FHWA 2006). Therefore, an additional 8dBA attenuation rate was applied for sediment removal construction activities within the channel of the creek. This analysis uses a conservative approach and presents impacts of the most noise-generating improvements located in the nearest vicinity to sensitive land uses. No comments were received in response to the NOP or scoping meeting relating to noise from the proposed project.

Impact Analysis and Mitigation Measures

Impact 3.12.1: ***Substantial Increase in Ambient Noise Levels from Construction Activities.***

Project construction would result in the 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 applicable standards of other agencies. Therefore, this impact would be ***significant****.*

Construction of the proposed project would result in a temporary increase in ambient noise levels in the vicinity of this project site, including nearby residential properties, in excess of local ordinances. Noise would be generated from use of heavy-duty equipment operating at the site, use of heavy-duty trucks for hauling of materials to and from the site, workers commuting, and use of staging areas. While Yolo County does not have an adopted noise ordinance that addresses construction-related noise, the Yolo County General Plan establishes exterior noise standards as recommended by the State for new development projects according to land use (Figure 3.12-2). Even though the proposed project is not a development project, the following threshold is used because no specific threshold exists in Yolo County defined specifically for the activities required for construction of the proposed project. For the development of residential land use, an ambient noise level of up to 60 dBA Ldn is considered "Normally Acceptable."

Construction activities associated with the project would occur during daylight hours. Typical construction equipment noise levels are shown in **Table 3.12-4**. Additionally, **Tables 3.12-5** and **3.12-6** show estimated noise levels for construction activities associated with both levee embankment and sediment removal activities. Sediment removal construction activities would generate reduced noise levels due to the natural shielding that is present on the construction site. Additionally, use of noise barriers/shielding, would result in reduced noise levels during levee embankment construction activities as shown in **Table 3.12-6**.

Table 3.12-4. Construction Equipment Noise Levels

Equipment Type[1]	dBA at 50 feet
Backhoe	80
Compactor	82
Dozer	85
Loader	80
Grader	85
Trucks	84

Notes: dBA = weighted decibels at 50 feet

[1] All noise levels based on equipment fitted with properly maintained and operational noise control devices, per manufacturers specifications

Source: FTA 2018

Table 3.12-5. Noise Levels during Unmitigated Levee Embankment Construction Activities

Distance Between Source and Receiver (feet)	Calculated 1-Hour L_{eq} Sound Level (dBA)
50	85
100	77
200	69
300	65
400	62
500	59
1,000	51
1,500	47
2,000	43
3,000	40

Note: L_{eq} = equivalent noise level; dBA = weighted decibels

These calculations do not include the effect, if any, of local shielding from walls, topography, or other barriers which may reduce sounds levels further.

Source: Calculated by GEI Consultants, 2023.

Table 3.12-6. Noise Levels during Sediment Removal and Mitigated Levee Embankment Construction Activities

Distance Between Source and Receiver (feet)	Calculated 1-Hour L_{eq} Sound Level (dBA)
50	77
100	69
200	61
300	57
400	54
500	51
1,000	43
1,500	39
2,000	35
3,000	32

Note: L_{eq} = equivalent noise level; dBA = weighted decibels
These calculations do not include the effect, if any, of local shielding from walls, topography, or other barriers which may reduce sounds levels further.
Source: Calculated by GEI Consultants, 2023.

The closest sensitive receptors to the project site include single family residences located as close as 25 feet from proposed haul routes and construction areas. Based on the anticipated construction activities and associated noise levels, applicable thresholds (i.e.,60 dBA L_{dn}) would be exceeded where levee embankment construction activity would occur within approximately 450 feet of existing sensitive land uses, and when sediment removal construction activities would occur within approximately 220 feet if existing sensitive land uses. Considering that construction activities could occur as close or even closer than 50 feet to residences in some cases, noise levels experienced at nearby receptors could be as high as 77 to 85 dBA L_{eq}. Given that the Yolo County General Plan states a normally acceptable noise level of 60 dBA Ldn, there is the potential for noise above applicable thresholds at sensitive receptors at distances of up to 450 feet during levee embankment construction activities and up to 220 feet during sediment removal construction activities. This would have a **significant** impact. The following mitigation measures have been identified to address this impact.

Mitigation Measure 3.12.1a: Implement Measures to Reduce Construction Noise and Vibration Effects

DWR shall require construction contractors to implement measures during construction activities to avoid and minimize construction noise and vibration effects on sensitive receptors. Prior to the start of construction, DWR with its construction contractor, and a qualified acoustical professional, shall prepare a noise control plan to identify feasible measures to reduce construction noise, when necessary. The measures in the plan would apply to construction activities within 450 feet of a sensitive receptor, including, but not limited to, residences. The noise control plan shall be consistent with the Yolo County General Plan. These measures may include, but are not limited to, the following:

- Provide written notice to residents within 450 feet of the construction zone, advising them of the estimated construction schedule. This written notice would be provided

within 1 week to 1 month of the start of construction activities within 450 ft of the location.

- Display notices with information including, but not limited to, contractor contact telephone number(s) and proposed construction dates and times in a conspicuous manner, such as on construction site fences.
- Schedule the loudest and most intrusive construction activities during daytime hours (7:00 a.m. to 7:00 p.m.) Monday through Friday, when feasible.
- Ensure that construction activities are phased such that no one location/receptor is exposed to construction noise for more than 12 months.
- If the construction zone is within 450 feet of a sensitive receptor, place temporary barriers between stationary noise equipment and noise sensitive receptors to block noise transmission, when feasible, or take advantage of existing barrier features, such as existing terrain or structures, when and where feasible.
- Require that construction equipment be equipped with factory-installed muffling devices, and that all equipment be operated and maintained in good working order to minimize noise generation.
- Locate stationary noise-generating equipment as far as practicable from sensitive receptors.
- Limit unnecessary engine idling (i.e., more than 5 minutes) as required by State air quality regulations.
- Employ equipment that is specifically designed for low noise emission levels, when feasible.
- Employ equipment that is powered by electric or natural gas engines, as opposed to those powered by gasoline fuel or diesel, when feasible.
- If the construction zone is within 450 feet of a sensitive receptor, place temporary barriers between stationary noise equipment and noise sensitive receptors to block noise transmission, when feasible, or take advantage of existing barrier features, such as existing terrain or structures, where possible.
- Locate construction staging areas as far as practicable from sensitive receptors.
- Design haul routes to avoid sensitive receptors, to the extent practical.

Timing: Before and during project construction activities

Responsibility: DWR

Significance after Mitigation: Implementing Mitigation Measures 3.12.1 would reduce construction-related noise generation and vibration to the extent feasible by requiring the preparation of a noise control plan, implementing feasible best management practices such as placing noise barriers between the construction site and nearby residence, and notifying sensitive users of excessive noise generation during the day. Use of noise barriers would reduce noise generation at sensitive receptors during levee embankment work and would reduce the radius for

which noise would be generated over the applicable county threshold to 220 feet. However, it is still possible that noise levels could exceed significance thresholds, such as for construction activities occurring within 220 ft of a sensitive receptor. No further mitigation measures are feasible to further reduce construction-related noise impacts. Since construction noise exceeding the L_{dn} thresholds could still be generated during the daytime after implementation of all feasible mitigation measures, this impact would be **significant and unavoidable**.

Impact 3.12.2: ***Generation of excessive groundborne vibration or groundborne noise levels.***
Project construction would result in the generation of an increase in groundborne vibration that could exceed established thresholds. Therefore, this impact would be ***significant****.*

Operation of heavy-duty construction equipment creates seismic waves that radiate along the surface of the earth and downward into the earth. The surface waves can be felt as vibrations. **Table 3.12-7** shows the vibration source levels for the highest vibration generating construction equipment likely to be used during construction of the proposed project. The highest level of vibration would likely come from a vibratory compactor/roller.

Table 3.12-7. Vibration Source Levels for Construction Equipment

Equipment Type	PPV at 25 feet
Vibratory roller	0.210
Large bulldozer	0.089
Loaded trucks	0.076
Small bulldozer	0.003

Notes: PPV = peak particle vibrations
Sources: FTA 2018

In accordance with Caltrans' guidance for determining impacts from vibration to structures (i.e., vibration levels that exceed 0.2 inch per second PPV) and based on reference vibration levels and standard attenuation rates for a vibratory compactor, vibration from heavy-duty equipment would be a potential issue if structures were located within 25 feet of construction activity. For purposes of this analysis, movement of loaded haul trucks was conservatively considered to produce a vibration level of approximately 86 VdB (0.076-inch per second PPV at a distance of 25 feet [FTA 2018]). Regarding disturbance to sensitive land uses, construction equipment would exceed FTA-recommended criteria for infrequent events (i.e., 80 VdB) within 75 feet of construction activity. Sensitive receptors near the project site are located as close as 25 feet, and therefore, the use of heavy-duty construction equipment would exceed the FTA threshold for sensitive land uses and would result in a **significant** impact to nearby residential receptors.

The following mitigation has been identified to address this impact.

Mitigation Measure 3.12.2: Implement Measures to Reduce Construction Vibration Effects

DWR shall require construction contractors to implement measures during construction activities to avoid and minimize construction vibration effects on sensitive receptors.

- To the extent feasible and practicable, the primary construction contractors shall employ vibration-reducing construction practices such that vibration from construction complies with applicable noise-level rules and regulations that apply to the work, including the vibration standards established for construction vibration-sources by the applicable agencies (Yolo County), depending on the jurisdictional location of the affected receptor(s), and the Caltrans *Transportation and Construction Vibration Guidance Manual*, which identifies maximum vibration levels of 0.2 to 0.5-inch per second PPV for minimizing damage to structures. Project construction specifications would require the contractor to limit vibrations to less than 0.2-inch per second PPV, and less than 72 vibration velocity level in decibel scale (VdB) within 50 feet at any building. If construction would occur within 50 feet of any occupied building, the contractor shall prepare a vibration control plan prior to construction. The plan shall include measures to limit vibration, including but not limited to the following:
  - Numerical thresholds above which the contractor shall be required to document vibration sources and implement measures to reduce vibration, and above which work would be required to stop for consideration of alternative construction methods.
  - Avoid vibratory rollers and packers near sensitive areas to the maximum extent practicable.
  - Route heavily loaded trucks away from residential streets, if possible. If no alternatives are available, select streets with the fewest homes.
  - A voluntary pre- and post-construction survey shall be conducted to assess the existing condition of structures prior to construction and potential architectural/structural damage induced by levee construction vibration at each structure within 100 feet of construction activities, including staging areas. The survey shall include visual inspection of the structures that could be affected and documentation of structures by means of photographs and video. This documentation shall be reviewed with the individual owners prior to any construction activities. Post-construction monitoring of structures would be performed to identify (and repair, if necessary) damage, if any, from construction activities. Any construction-related damage would be documented with photographs and video. This documentation would be reviewed with the individual property owners.
  - Place vibration monitoring equipment between work areas and buildings or sensitive receptors. Vibration monitors shall be operational at all times during the performance of construction activities. The contractor shall monitor and record vibrations continuously.

Timing: Before and during construction

Responsibility: DWR

Significance after Mitigation: Implementing Mitigation Measure 3.12.2 would reduce construction-related vibrations to the extent feasible by requiring the preparation of a vibration control plan, implementing feasible best management practices such as routing heavy loaded trucks away from sensitive receptors and limiting the use of vibratory rollers and packers near sensitive receptors. Additionally, a pre- and post- construction survey would be conducted to assess the existing condition of structures prior to construction and potential architectural/structural damage induced by levee construction vibration at each structure within 100 feet of construction activities, including staging areas. However, it is still possible that vibration levels would exceed significance thresholds if groundborne vibration occurs within 75 feet of sensitive land uses and limiting or avoiding high vibration equipment near residences would not be feasible. Because there are no further mitigation measures feasible to further reduce construction-related vibration impacts and construction vibration levels would likely exceed the FTA thresholds during the daytime after implementation of all feasible mitigation measures, this impact would be **significant and unavoidable**.

Residual Significant Impacts

Construction of the project would exceed noise standards during construction activities and Caltrans and FTAs guidance for determining impacts from vibration to structures and human response (annoyance). During construction, mitigation measures would be implemented to reduce noise within 450 feet of sensitive receptors and vibrations within 75 feet of sensitive receptors, but construction noise and vibrations may still exceed applicable thresholds and therefore may not be reduced to a less-than significant level. Therefore, there could be residual **significant and unavoidable** impacts related to construction-related noise and vibrations.

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3.13 Recreation

This section describes water- and land-based recreational resources on and adjacent to the proposed project, summarizes applicable regulations, and analyzes potential project impacts related to recreation. Sources used to develop this analysis include planning documents such as the Yolo County General Plan Open Space Element, Parks and Open Space Master Plan, and Bicycle Transportation Plan, among others.

3.13.1 Environmental Setting

Yolo County Parks subdivides the County into sub-areas for parks. The project site is within the Yolo Flatlands, Creeks, & Urban Sub-Area covering the central part of Yolo County, containing large, open agricultural lands, with a few County parks and open space facilities (Yolo County 2006). The project site is designated as public open space which includes the recreational uses provided by Cache Creek and levee system. In addition, the project site is in proximity to County-managed park facilities. Recreational areas and opportunities in and near the project site are described below and displayed in **Figure 3.13.1**.

Open Space

Open space areas are generally categorized as large natural areas with few improvements. Their retained or restored natural conditions are for purposes of visual quality, buffer areas, potentially agricultural activities (if compatible), and passive recreation (Yolo County 2006). The proposed project site is entirely designated as public open space available for many recreational uses such as hiking, birding, wildlife viewing, and fishing. Access to the open spaces within the project site, including Cache Creek, is limited due to the surrounding privately-owned agricultural lands and residential properties. Cache Creek provides wildlife habitat that is enjoyed by recreators within the project site for activities such as walking, fishing, bird watching, and wildlife viewing. Kayaking and rafting are popular activities by recreationists in the northern reaches of Cache Creek (California Whitewater, 2024). However, within the project site, watercraft sports are uncommon due to lack of continuous water flow throughout the year.

Parks

Yolo County manages regional and community parks and open space areas encompassing approximately 1,400 acres (Yolo County 2018a). The nearest County-managed parks, which provide the best access for recreational uses, are approximately three miles upstream from the project site and include Cache Creek Nature Preserve (Preserve), Wild Wings Park and Wild Wings Golf Club (Yolo County 2018b). The Preserve is a 130-acre complex of wetlands, oak woodlands, grasslands, and creek side lands that provides approximately 1.5 miles of trails and supports recreational uses such as walking, wildlife viewing, and bird watching. Wild Wings Park is a 17-acre open space and creek access park in the residential community. Wild Wings Golf Club borders the park and is an 82-acre nine-hole golf course. Nelsons Grove Park, managed by the Youth Men's Christian Association (YMCA), is a 12-acre park located 0.3-mile south of the Project site along CR 99E. Nelsons Grove offers archery facilities, a playground, a pavilion, and campfire pit with seating (YMCA 2024).

Bicycle Facilities

Yolo County's flat terrain, mild climate, and relatively short distances between cities offers favorable conditions for bicycling. The Yolo County Bicycle Transportation Master Plan estimates, from 2010 U.S. Census Bureau American Community Survey data, that 2,024 residents in the unincorporated County commute to work via bicycle (Yolo County 2013).

There are five bikeways in unincorporated Yolo County, constructed as either Class I or Class II widths standards (Yolo County 2013). A Class I bikeway, also known as a bike path, is a trail separated from roads or streets with a minimum paved width of eight feet. A Class II bikeway, also known as a bike lane, is the paved edge of a wide street or road, marked by white stripes with a minimum width of four feet, except where adjacent to on-street parking (Yolo County 2013). The only bikeway near the project site is the Class II bike lane along CR 102 from Knights Landing to the eastern portion of Woodland and ending near Davis. This bike lane passes over the eastern portion of the project site at CR 102 (Figure 3.13.1) (Yolo County 2013).

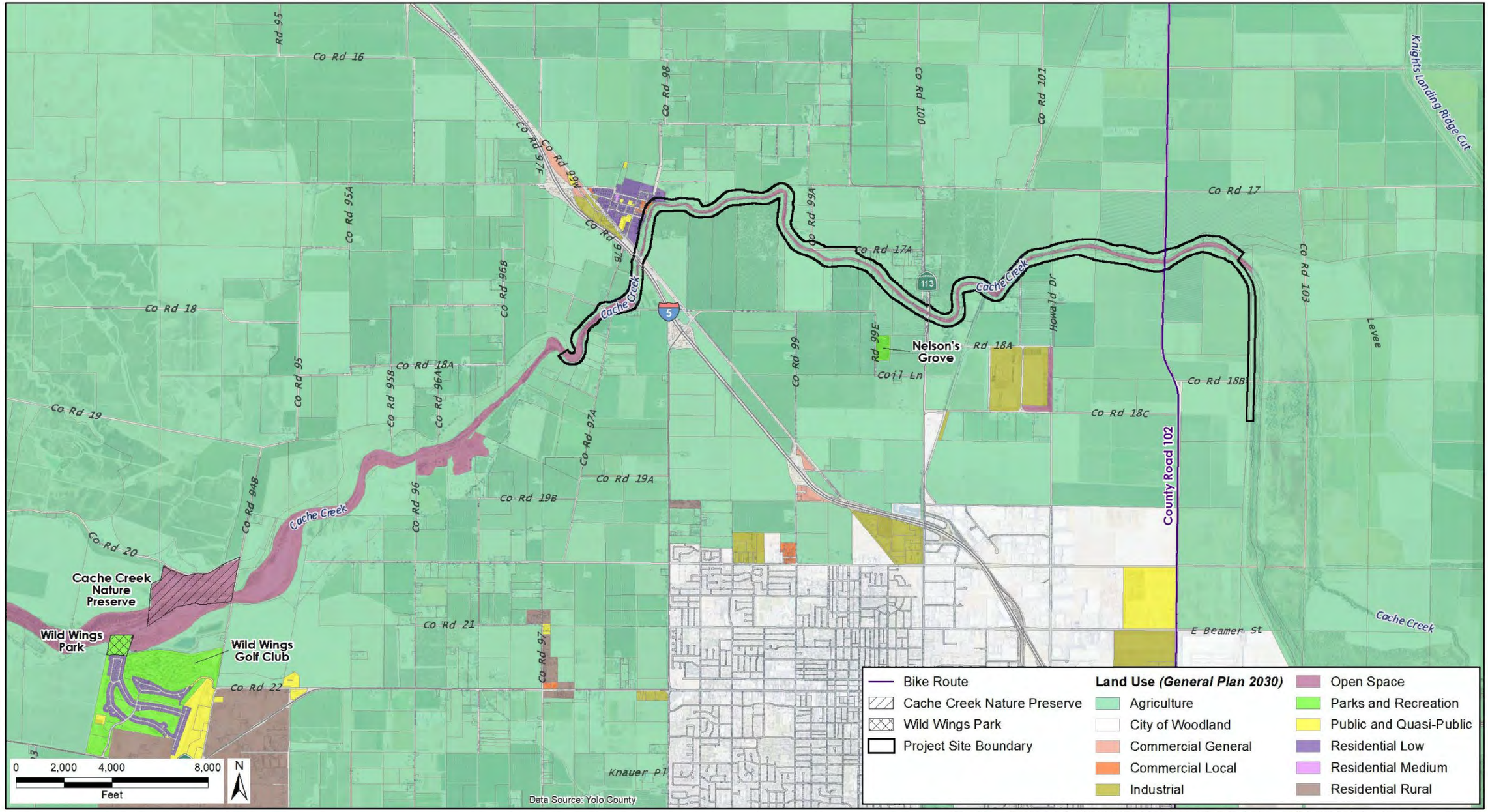

Figure Source: GEI Consultants 2024

Figure 3.13.1 Recreational Features and Land Uses in the Project Area

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3.13.2 Regulatory Setting

Federal Plans, Policies, Regulations, and Laws

No Federal plans, policies, regulations, or laws to recreation apply to the proposed project.

State Plans, Policies, Regulations, Laws

No State plans, policies, regulations, or law related to recreation apply to the proposed project.

Regional and Local Plans, Policies, Regulations, and Ordinances

DWR is not subject to local regulations unless expressly authorized by the Legislature. Local plans, policies, regulations, and ordinances potentially relevant to the proposed project are addressed in this section for informational purposes because they may be relevant to certain responsible agencies.

Yolo County General Plan

The following goal and policies from the Conservation and Open Space Element of the Yolo County General Plan could be relevant to the recreational resources within the proposed project site for certain responsible agencies (Yolo County 2009).

Goal CO-1: Natural Open Space. Provide a diverse, connected, and accessible network of open space, to enhance natural resources and their appropriate use.

Policy CO-1.23: Increase public access and recreational uses along waterways wherever feasible, particularly Cache Creek, Lower Putah Creek, the Yolo Bypass, and the Sacramento River.

Policy CO-1.26: Support improved access for bank fishing.

Yolo County Parks and Open Space Master Plan

The Yolo County Parks and Open Space Master Plan provides information and guidance for management, use, and development of Yolo County parks and open spaces. The management and operation policy that may be relevant to review of the proposed project by certain responsible agencies is listed below (Yolo County 2006).

M&O P-3. Compatible recreation and agriculture interface. Management and operation of County parks and open space areas near agricultural operation and rural residences shall be conducted to minimize conflicts and maximize compatibility.

3.13.3 Environmental Impacts and Mitigation Measures

Thresholds of Significance

The thresholds for determining the significance of impacts for this analysis are based on the environmental checklist in Appendix G of the CEQA Guidelines, as amended. Implementing the project would have a significant impact on recreation if it would:

- 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; or
- include recreational facilities or require the construction or expansion of recreational facilities that might have an adverse physical effect on the environment.

In addition, implementing the project would result in a significant impact on recreational resources if it would:

- substantially degrade recreational experiences.

Issues Not Discussed Further

Increase in Use of Recreational Facilities. The project site does not support built recreational facilities or provide formal access to any of the parks in the project vicinity. After construction, the existing uses permitted by Yolo County would continue at the present level of service and access to the site would remain unchanged. Therefore, there would be no impact on the use of recreational facilities and this issue is not discussed further.

Construction or Expansion of Recreational Facilities. The project would not facilitate or require the construction or expansion of recreational facilities. Therefore, there would be no impact, and this issue is not discussed further.

Analysis Methodology

The evaluation of potential impacts on recreation relies on the review of existing recreational uses in the project site and vicinity and possible effects to these recreational uses during project construction. No comments were received in response to the NOP or scope meeting relating to impacts on recreational resources from the proposed project.

Impact Analysis and Mitigation Measures

Impact 3.13.1: ***Temporary Impacts on Existing Recreation Activities.*** *The project site is designated as open space and supports various recreational uses. The proposed project would result in short-term and temporary limits to access to the creek and adjacent areas during the construction period and impacts would be* ***less than significant****.*

The proposed project construction activities would occur approximately between April 15 and October 1, beginning in 2025 at the earliest over the course of two construction seasons. Construction activities would include construction of earthen ramps for heavy vehicles to access the channel, vegetation clearing, sediment excavation, and raising levees in several reaches on each bank. These activities would temporarily impact recreational use within and adjacent to the project site, including walking, birding, and wildlife viewing. Access to the project site and adjacent areas for recreational use would be restored after construction activities are completed. There would be no anticipated closures to the bike lane along CR 102 during construction; however, construction traffic could temporarily impact bicyclists traveling this route. This impact would be temporary and would not prohibit the use of the bike lane. Construction activities would not impact nearby recreational parks or open spaces located outside of the

project site, such as Wild Wings Parks or the Preserve. Therefore, impacts on recreation would be **less than significant**.

Residual Significant Impacts

There would be no residual significant impacts resulting from the proposed project.

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3.14 Transportation

This section discusses existing transportation and circulation in the project vicinity, describes applicable regulations, and analyzes potential project impacts related to short- and long-term impacts of the project on transportation and circulation.

3.14.1 Environmental Setting

The project site is located in unincorporated Yolo County, with a portion of the western extent of the project site located in the community of Yolo. The project vicinity has a rural, agricultural character dominated by orchards and row crops. Interstate 5 (I-5), local roads, and transportation facilities for other available modes of travel in the project vicinity are described below.

Highway and Road Definitions

Yolo County is served by a system of State highways and county roads. The State highway system consists of both controlled-access freeways and conventional highways. The County roadway system comprises major roads, collector roads, and local residential streets. Each type of facility is described within the Yolo County 2030 General Plan and is summarized below.

- **Freeway:** A multilane, divided highway with a minimum of two lanes in each direction and access provided at interchanges.
- **Conventional Highway:** A roadway with limited access and few cross streets generally along high-volume corridors that connect cities or unincorporated communities.
- **Major Road:** In Yolo County, a divided highway with a center median. A 110-foot right-of-way is designated, with a 64-foot pavement section in rural areas and an 86-foot section (capable of providing on street parking) in urban areas. Both sections provide four through-travel lanes and a center median.
- **Local Residential Street:** In Yolo County, a street constructed within a 40-foot pavement section, with on-street parking. A 28-foot pavement standard is used in rural areas.

Regional Roadways

Regional access to the project site is provided by the following facilities:

- **I-5** is an important north/south freeway route that in Yolo County primarily provides for the transportation of goods by trucks. Woodland is the primary trucking center for the agricultural and warehousing industry along I-5 and generates high truck traffic during the harvest seasons. From the Sacramento County line to the Colusa County line, I-5 is a four-lane freeway and provides connections to the communities of Dunnigan, Zamora, and Yolo (Yolo County 2009a). Caltrans reports that average daily traffic volumes on I-5 are approximately 33,700 at County Road 99, West Street, located approximately 1.80 miles south of the project site (Caltrans 2017).
- **State Route 113** provides a link for agricultural and commercial traffic to reach I-5 and I-80. The segment between Davis and Woodland is a four-lane freeway that terminates at I-5. SR

113 continues from I-5 in Woodland as a two-lane conventional highway north to the town of Knights Landing and beyond into Sutter County.

Local Roadways

Local roads primarily provide service to adjacent land uses and connect with other local and county roads. Local roads are typically developed as two-lane undivided roadways (Yolo County 2009b). Local access to the project site is provided via Cacheville Road, County Roads 17A, 18A, 97B, 99A, 100B, 102, Howard Drive, East Kentucky Avenue, and North East Street.

Bicycle Facilities

The *County of Yolo Bicycle Transportation Plan* (Yolo County 2013) indicates the closest bicycle facility to the project site is a Class II bicycle lane (a bike lane within a paved edge of a wide street or road, delineated by white stripes) along a portion of County Road 102; this bicycle lane ends at the intersection of County Road 102 and Interstate 113, in Knights Landing.

Airports

The Sacramento International Airport is a major commercial airport owned by Sacramento County and located approximately 6.5 miles east of the project site. The airport is served by 14 major carriers and one commuter airline, with over 150 scheduled departures daily. The airport has two parallel runways, each 8,600 feet long. (Sacramento County 2010). The project site is located outside of the Sacramento International Airport Influence Area (SACOG 2013).

Transit

The Yolo County Transportation District (YCTD) operates YOLOBUS, which serves the residents of Yolo County and provides regional, intercity, and local fixed-route services throughout the County in addition to commuter route service to Sacramento County and the Sacramento International Airport (Yolo County 2023). None of the fixed-route bus services pass near the project site.

3.14.2 Regulatory Setting

Federal Plans, Policies, Regulations, and Laws

No federal plans, policies, regulations, or laws related to transportation/traffic apply to the project.

United States Department of Transportation Regulations on Hazardous Materials

The United States Department of Transportation governs the transport of chemicals and hazardous materials under CFR Title 49, which stipulates the types of containers, labeling, and other restrictions that must be used to move such material on interstate highways.

State Plans, Policies, Regulations, Laws

Other than CEQA, no State plans, policies, regulations, or laws related to transportation/traffic apply to the project.

Regional and Local Plans, Policies, Regulations, and Ordinances

DWR is not subject to local regulations unless expressly authorized by the Legislature. Local plans, policies, regulations, and ordinances potentially relevant to the proposed project are addressed in this section for informational purposes because they may be relevant to certain responsible agencies.

Yolo County Bicycle Transportation Plan

The purpose of the Yolo County Bicycle Transportation Plan is to formulate a long-range, comprehensive, and consistent policy guide for achieving a countywide bikeway network, and list current priorities for bicycle facility development. The plan sets forth goals and policies for bicycle facilities in the unincorporated county in response to identified needs. The plan provides a viable system of bike routes that when constructed will encourage and promote more bicycle riding. Because of the uncertainty of funding, this plan does not contain funding or construction schedules. Specific policies and suggested actions are described, and routes are prioritized as guides for future action. (Yolo County 2013).

Yolo County General Plan

The following goals and policies from the Yolo County 2030 Countywide General Plan related to transportation are relevant to the proposed project (Yolo County 2009a):

GOAL CI-1: Comprehensive and Coordinated Transportation System. Plan, develop and maintain a comprehensive, coordinated transportation system to ensure the opportunity for safe, efficient and convenient movement of persons and goods.

Policy CI-1.10: Coordinate with appropriate entities to maintain the following as primary routes for emergency evacuation from Yolo County:

- Interstate 5 – North towards Redding and east into Sacramento.
- Interstate 80 – East into Sacramento and west toward Solano County and the San Francisco Bay Area.
- Interstate 505 – South to the junction of E/WB Interstate 80.
- State Route 16 – West from Woodland into the Capay Valley and then north into Colusa County.
- State Route 45 – North from Knights Landing into Colusa County.
- State Route 84 – South from West Sacramento into Solano County with one crossing east into Sacramento County across the Sacramento River.
- State Route 113/County Road 102 – North from Woodland into Sutter County and south from Davis into Solano County.
- State Route 128 – West from Winters into Napa County.

- County Road 22 – East from Woodland into West Sacramento and then into Sacramento at two locations across the Sacramento River.
- County Road 98 – South from Woodland into Solano County.

Policy CI-3.18: Ensure adequate access for emergency vehicles.

3.14.3 Environmental Impacts and Mitigation Measures

Thresholds of Significance

The thresholds for determining the significance of impacts for this analysis are based on the environmental checklist in Appendix G of the State CEQA Guidelines, as amended. A significant impact related to transportation and circulation issues would occur if the project would:

- Conflict with a program, plan, ordinance or policy addressing the circulation system, including transit, roadway, bicycle and pedestrian facilities;
- Conflict or be inconsistent with State CEQA Guidelines Section 15064.3, subdivision (b);
- Substantially increase hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment); or
- Result in inadequate emergency access.

Issues Not Discussed Further

Conflict with a Program, Plan, Ordinance, or Policy Addressing the Circulation System. The proposed project would not alter the compatibility of uses served by the roadway network since the project would not result in a permanent increase in vehicular traffic or other modes of transportation. Furthermore, the project would not conflict with any programs, plans, ordinances, or policies addressing the circulation system in Yolo County, which includes transit, roadway, bicycle, or pedestrian facilities. Therefore, there would be no impact from the project and this issue is not discussed further in this EIR.

Increase Hazards Due to Geometric Design Features. The project would not include construction of new roadways or modification of existing roadways. The project would have no impact. Therefore, this impact is not discussed further.

Analysis Methodology

The project would not introduce any new land uses or activities to the area that would generate long-term increases in traffic volumes; therefore, the following analysis focuses on impacts from construction. As stated previously in Chapter 2, "Project Description," operations and maintenance activities are covered under separate CEQA documentation and approval and, therefore, are not analyzed in this section. Additionally, operation and maintenance are considered part of the environmental baseline.

Evaluation of the potential impacts of the proposed project on transportation was based on a review of planning documents pertaining to the project area, particularly the County of Yolo

2030 Countywide General Plan (Yolo County 2009a) and the County of Yolo 2030 Countywide General Plan Environmental Impact Report (Yuba County 2009b).

VMT Evaluation

The purpose of SB 743 was focused on reducing long-term VMT to help achieve the state's GHG reduction targets and, this type of VMT analysis is not focused on evaluating temporary construction-related trips. Even though one particular project may generate a large number of construction trips, the number of construction-generated VMT for an individual project is temporary when compared to the total annual operational VMT in a jurisdiction generated by residential, commercial, industrial, and office uses.

In the absence of an adopted policy with impact thresholds relevant to the project, project impacts on transportation and traffic are evaluated based on a qualitative approach and relies on the Yolo County's transportation guidelines, the guidelines published by OPR in its Technical Advisory on Evaluating Transportation Impacts in CEQA (OPR 2018), Caltrans Memorandum titled "Transportation Impact Analysis and CEQA Significance Determinations for Projects on the State Highway System" (Caltrans 2020), and review of the above mentioned planning documents pertaining to the project area. Estimates of vehicle miles traveled (VMT) from project construction activities were obtained from the CalEEMod model.

Additionally, comments received during the public scoping period include general concerns of access to public roadways and crossing private properties to enter major highways during project construction. These comments are addressed in the impact analysis below.

Impact Analysis and Mitigation Measures

Impact 3.14.1: ***Temporary Increase in Vehicle Miles Traveled During Construction.*** *Construction traffic impacts would be temporary, and traffic would return to pre-project conditions following completion of construction activities. Therefore, this impact would be* ***less than significant****.*

The proposed project would generate a temporary increase in VMT during the construction period from mobilization and demobilization of construction equipment, materials deliveries, off hauling of sediment and vegetation debris, and worker vehicle trips. Daily worker commutes and hauling trips would generate the most trips. Up to 10 construction workers would be present at any given time and would most likely come from the local workforce in the Sacramento area and outlying communities. Construction workers would generate approximately 3,600 truck trips, resulting in approximately 76,500 VMT from total workers trips over the 2-year construction period. Additionally, over the construction period, the project would generate approximately 23,030 truck trips, resulting in approximately 389,216 VMT from hauling materials to-and-from the site, and approximately 8,740 on-site truck trips. Therefore, the project would generate an average of 104 trips per workday, which would occur over an approximately 10-hour workday. Equipment staging areas would be located inside the north levee setback area at the corner of County Road 17A and County Road 99A, and outside levee areas. No reduction in VMT from the proposed project is possible since trips would be generated solely for construction activities. VMT generated from the proposed project would be temporary during the construction period and would cease following completion of construction and, therefore, impacts would be **less**

than significant. Other impacts associated with additional VMT generated by the proposed project are evaluated in Section 3.4, "Air Quality," and Section 3.8, "Greenhouse Gas Emissions."

Impact 3.14.2: ***Result in Inadequate Emergency Access During Construction.*** *Construction-related vehicle trips would slightly increase traffic on local roadways, but this temporary increase would not affect emergency access and response times. These impacts would be* ***less than significant****.*

Emergency access through the project site and vicinity is provided via I-5, SR 113, and County Road 102. Project construction would not require any road closures during the 2-year construction phase. Emergency access would be maintained throughout the project site and vicinity at the same level as the existing conditions. Haul trucks and construction equipment would travel along these roadways to deliver materials to the site and off-haul sediment and vegetation debris. These uses of I-5, SR 113, and County Road 102 could temporarily slow traffic speeds but would not impede emergency vehicles traveling along these roadways. Temporarily impeding access to emergency vehicles along affected emergency access routes could affect response times for emergency response providers during the project's construction phase. However, in the case of an emergency, construction vehicles would move aside and halt providing adequate access to emergency providers. Therefore, this impact is considered **less than significant**.

Residual Significant Impacts

The project would not result in residual significant impacts related to transportation.

3.15 Tribal Cultural Resources

This section discusses Tribal cultural resources (TCR) as defined by PRC Section 21074 as

1) sites, features, places, cultural landscapes, sacred places, and objects with cultural value to a California Native American Tribe that are listed or determined to be eligible for listing in the National Register of Historic Places (NRHP), California Register of Historical Resources (CRHR), or local historic register; or
2) Resources a lead agency determines, in its discretion, are Tribal cultural resources using criteria set forth in subdivision (c) of section 5024.1 of the historical register, considering the significance of the resource to a CA Tribe and supported by substantial evidence.

3.15.1 Environmental Setting

The geology and natural environment of the project site and surrounding area is discussed in other sections of Chapter 3, and more specific information regarding precontact and ethnographic context can be found in Section 3.6, "Cultural Resources."

3.15.2 Regulatory Setting

Section 3.6 contains a discussion of the CRHR which is relevant to this section.

Assembly Bill 52

Assembly Bill (AB) 52, effective on July 1, 2015, amended CEQA and added sections relating to Native American consultation and TCRs. California PRC Section 21084.2 provides that a project with an effect that may cause a substantial adverse change in the significance of a TCR may have a significant effect on the environment. California PRC Section 21080.3.1 (b) requires the lead agency (in this case, DWR) to begin consultation with California Native American Tribes that are traditionally and culturally affiliated with the geographic area of the project if the Tribe requests the lead agency, in writing, to be informed by the lead agency through formal notification of projects that are proposed in that geographic area and the Tribe subsequently requests consultation. California PRC Section 21084.3 states that "public agencies shall, when feasible, avoid damaging effects to any Tribal cultural resource."

AB 52 explicitly recognizes "that California Native American Tribes may have expertise with regard to their Tribal history and practices, which concern the Tribal cultural resources with which they are traditionally and culturally affiliated. Because the California Environmental Quality Act calls for a sufficient degree of analysis, Tribal knowledge about the land and Tribal cultural resources at issue should be included in environmental assessments for projects that may have a significant impact on those resources." AB 52 and California PRC Section 21080.3.1 and Section 21080.3.2 therefore include requirements for meaningful consultation with culturally and geographically affiliated Tribes to identify TCRs and to develop avoidance or mitigation, as appropriate.

California Natural Resources Agency Tribal Consultation Policy

The California Natural Resources Tribal Consultation Policy was adapted in 2012 with the purpose of the policy to ensure effective government-to-government consultation between the Natural Resources Agency, its departments, and California Native American Tribes. The goal of the policy is for Tribes to provide meaningful input in the development of regulations, rules, programs, plans, property decisions, and activities that may affect Tribal communities.

Department of Water Resources Tribal Engagement Policy

Effective March 8, 2016, DWR adopted the Tribal Engagement Policy to strengthen DWR's commitment to improving communication, collaboration, and consultation with California Native American Tribes. Consistent with Executive Order B-10-11, the California Natural Resources Agency Tribal Consultation Policy, and AB 52, the Tribal Engagement Policy includes the following principles to achieve early and meaningful Tribal engagement with California Native American Tribes:

- Establish meaningful dialogue between DWR and California Tribes early in planning for CEQA projects to ensure that DWR's Tribal outreach efforts are consistent with mandated Tribal consultation policies, and to ensure that California Tribes know how information from consultation affected DWR's decision-making process;
- Establish guidelines to share information between DWR and California Tribes, while protecting their confidential information to the fullest extent of the law;
- Consult with California Tribes to identify and protect TCRs where feasible, and to develop treatment and mitigation plans to mitigate for impacts on TCRs and cultural places;
- Develop criteria in communication plans and grant funding decisions for all applicable DWR programs that will facilitate Tribal participation;
- Provide cultural competency training for DWR executives, managers, supervisors, and staff on Tribal engagement and consultation practices to recognize that California Tribes have distinct cultural, spiritual, environmental, economic, public health interests, and traditional ecological knowledge about California's natural resources; and
- Enable California Tribes to manage and act as caretakers of TCRs.

3.15.3 Environmental Impacts and Mitigation Measures

Thresholds of Significance

Significance criteria are based on Appendix G of the State CEQA Guidelines. Implementing the proposed project would result in a significant impact related to TCRs if it would:

- Cause a substantial adverse change in the significance of a Tribal Cultural Resource, as defined in PRC Section 21074.

3.15.4 Analysis Methodology

Analysis of potential project impacts on TCRs is based on results of records searches, a field survey, communication with the California Native American Heritage Commission (NAHC), and consultation with Native American Tribes, as described below.

Comments submitted in response to the NOP were reviewed for relevance to the impact analysis and mitigation measure development. A comment was received over concern whether an attempt was made to communicate with the Yocha Dehe Wintun Nation Tribe. This comment is addressed in the Native American Consultation and Identification section below. NAHC provided comments related to AB 52 and cultural resources assessments. Prior to receiving their letter, NAHC and other cultural resource information sources, including local Native American Tribes, had been contacted, as recommended by NAHC and described below.

Native American Consultation and Identification of TCRs

GEI archaeologists contacted the NAHC requesting a search of their Sacred Lands File (SLF). In their response, the NAHC stated the SLF search had no results, though that does not preclude the presence of sacred sites to Native American Tribes in the area. The NAHC also provided a list of Native American Tribal representatives and individuals who may have knowledge regarding cultural resources within the project site.

The NAHC letter response is provided in **Appendix D**.

Tribes listed in the NAHC response include the following:

- Cachil Dehe Band of Wintun Indians of the Colusa Indian Community;
- Cortina Rancheria – Kletsel Dehe Band of Wintun Indians;
- Shingle Springs Band of Miwok Indians (Shingle Springs);
- United Auburn Indian Community of the Auburn Rancheria (UAIC);
- Wilton Rancheria; and
- Yocha Dehe Wintun Nation

Pursuant to AB 52, Tribal consultation letters were sent to Shingle Springs, UAIC, Wilton Rancheria, Yocha Dehe Wintun Nation, and Ione Band of Miwok Indians on July 21, 2023. Pursuant to DWR's Tribal Engagement Policy, letters were sent on July 21, 2023, to the Cachil Dehe Band of Wintun Indians and the Cortina Rancheria – Kletsel Dehe Band of Wintun Indians that offered initiation of formal consultation.

DWR received one request for consultation from Wilton Rancheria. Below is a summary of correspondence:

- On July 25, 2023, DWR received Wilton Rancheria's intent to consult on the project via email. DWR acknowledged and responded to the letter of intent on August 8, 2023. No consultation meeting was held.
- In addition, on October 8, 2024 DWR sent a letter to the Wilton Rancheria providing updates on the proposed project and requesting a consultation meeting.
- On October 17, 2024, DWR received Wilton Rancheria's response requesting to defer this project to the Yocha Dehe Wintun Nation.

On October 24, 2024, DWR sent a letter via email to Yocha Dehe Wintun Nation to confirm receipt of the AB 52 Tribal consultation letter and confirm interest to consult on the project. No response has been received to date.

As of the date of publication of this Draft EIR, DWR has received one response from Wilton Rancheria. DWR is committed to ongoing consultation consistent with DWR's *Tribal Engagement Policy*. Based on preliminary analysis and communication with traditionally and culturally affiliated Tribes, no Tribal cultural resources have been identified. It is possible that TCRs may be identified through ongoing consultation with Tribes, or by Tribal representatives or monitors through inadvertent discoveries protocols during project implementation.

3.15.5 Impact Analysis and Mitigation Measures

Impact 3.15.1: ***Substantial Adverse Change in the Significance of a Tribal Cultural Resource, as Defined in PCR Section 21074.***

It is possible Tribal cultural resources are present on the project site. If encountered during project-related, ground-disturbing activities, these resources could be substantially impacted. This would be a ***significant impact*** *to Tribal cultural resources.*

The cultural resources inventory and evaluation study prepared for the project did not identify any potential TCRs in the project site from the SLF search conducted by the NAHC or from communication with Native American Tribal representatives. Nevertheless, there are a number of Native American archaeological sites in and near the project site which may be potential TCRs, one of which may represent the ethnographic/historic-era Patwin village of *Churup*. In addition, due to the generally moderate to high archaeological sensitivity of the project site, there is a heightened potential to encounter TCRs within the project site below ground surface. It is also possible that one or more potential TCRs will be identified through further communication with affiliated Native American Tribal representatives. Therefore, the project could have a ***significant impact*** to TCRs. The following mitigation measures have been identified to address this impact.

Mitigation Measure 3.15.1a: Implement Mitigation Measure 3.6.2a, "Worker Environmental Awareness Program (WEAP) Training for Cultural and Tribal Resources."

Please refer to Section 3.6, "Cultural Resources," Impact 3.6.2 for full text of this mitigation measure.

Timing: Prior to and during construction activities.

Responsibility: DWR.

Mitigation Measure 3.15.1b: Implement Mitigation Measure 3.6.2b, "Cultural Monitoring Plan."

Please refer to Section 3.6, "Cultural Resources," Impact 3.6.2 for full text of this mitigation measure.

Timing: Prior to and during construction activities.

Responsibility: DWR.

Mitigation Measure 3.15.1c: Implement Mitigation Measure 3.6.2c, "In the Event that Archaeological or Tribal Cultural Resources are Discovered during Construction, Implement Procedures to Evaluate, Avoid, and Minimize Effects."

Please refer to Section 3.6, "Cultural Resources," Impact 3.6.2 for full text of this mitigation measure.

Timing: Prior to and during construction activities.

Responsibility: DWR.

Significance after Mitigation: Implementation of Mitigation Measures 3.15.1a, 3.15.1b, and 3.15.1c would reduce potentially significant construction-related impacts on TCRs to a **less than significant** level by requiring WEAP training for all construction personnel, preparation and implementation of Archaeological and Tribal Monitoring Plan, and implementing actions to avoid, protect, or conserve resources in consultation with culturally affiliated Tribes.

Impact 3.15.2: ***Substantial Impacts to Unknown Human Burials Pursuant to the Provisions of California Health and Safety Code (CHSC) Section 7050.5-7055.***
There are no known human burials within the project site but encountering unanticipated human burials or remains is possible during any construction project. Therefore, the project could result in a ***significant impact*** *to unknown human burials or remains.*

The cultural resources inventory and evaluation study prepared for the proposed project did not identify any human burials or remains in the project site, however, encountering unanticipated human burials or remains is possible during any construction project, and particularly during ground disturbing construction projects in or near Native American sites. Consultation with affiliated Tribes may identify additional concerns related to unknown human burials within the project site. Therefore, the project could result in a **significant impact** to unknown human burials or remains. The following mitigation measures have been identified to address this impact.

Mitigation Measure 3.15.2a: Implement Mitigation Measure 3.6.2a, "WEAP" Training for Cultural and Tribal Resources."

Please refer to Section 3.6, "Cultural Resources," Impact 3.6.2 for full text of this mitigation measure.

Timing: Prior to and during construction activities.

Responsibility: DWR.

Mitigation Measure 3.15.2b: Implement Mitigation Measure 3.6.2b, "Cultural Monitoring Plan."

Please refer to Section 3.6, "Cultural Resources," Impact 3.6.2 for full text of this mitigation measure.

Timing: Prior to and during construction activities.

Responsibility: DWR.

Mitigation Measure 3.15.2c: Implement Mitigation Measure 3.6.3c, "Additional Mitigation Measures if Human Remains are Encountered."

Please refer to Section 3.6, "Cultural Resources," Impact 3.6.3 for full text of this mitigation measure.

Timing: During construction activities.

Responsibility: DWR.

Timing: Prior to and during construction activities.

Responsibility: DWR.

Significance after Mitigation: Implementation of Mitigation Measures 3.15.2a, 3.15.2b, and 3.15.2c would reduce potentially significant construction-related impacts on an historical or archaeological resource to a **less than significant** level by requiring preparation and implementation of a Cultural Monitoring and Communication Plan and a Resource Treatment Plan and implementing actions to avoid, protect, or conserve resources in consultation with culturally affiliated Tribes.

Residual Significant Impacts

The proposed project would not result in residual significant impacts related to cultural resources or TCRs.

Chapter 4. Other CEQA-Required Sections

4.1 Growth-inducing Impacts

State CEQA Guidelines Section 15126.2[e] requires an examination of the direct and indirect impacts of a proposed project, including the potential of the project to induce growth leading to changes in land use patterns, population densities, and related impacts on environmental resources. Specifically, CEQA states that the EIR shall:

Discuss the ways in which the proposed project could foster economic or population growth, or the construction of additional housing, either directly or indirectly, in the surrounding environment. Included in these are projects which would remove obstacles to population growth (a major expansion of a wastewater treatment plant might, for example, allow for more construction in service areas). Increases in the population may tax existing community service facilities, requiring construction of new facilities that could cause significant environmental effects. Also, discuss the characteristics of some projects which may encourage and facilitate other activities that could significantly affect the environment, either individually or cumulatively. It must not be assumed that growth in any area is necessarily beneficial, detrimental, or of little significance to the environment.

Direct growth inducement would result if a project involves construction of new housing. Indirect growth inducement would result, for instance, if implementing a project would result in:

- substantial new permanent employment opportunities (e.g., commercial, industrial, or governmental enterprises);
- substantial short-term employment opportunities (e.g., construction employment) that indirectly would stimulate the need for additional housing and services to support the new temporary employment demand; and/or
- Removal of an obstacle to additional growth and development, such as removing a constraint on a required public utility or service (e.g., construction of a major sewer line with excess capacity through an undeveloped area).

Local land use decisions are within the jurisdiction of Yolo County, which has adopted a general plan consistent with State law. The Yolo County 2030 Countywide General Plan (Yolo County 2009), as amended provides the overall framework for growth and development in the City and County, respectively. The project site does not include any developed uses, and the land on which construction would occur is not designated for developed use by the County.

Because the proposed project would not involve housing construction, it would not directly induce growth. Project construction would generate temporary and short-term employment; however, those construction jobs are anticipated to be filled from the existing local employment pool, and they would not indirectly result in a population increase or induce growth by creating permanent new jobs. Furthermore, the project would not involve constructing businesses or extending roadways or other infrastructure and would not indirectly induce population growth. Consequently, the proposed project would not induce growth leading to changes in land use patterns and population densities and related impacts on environmental resources.

4.2 Significant and Unavoidable Environmental Impacts

State CEQA Guidelines Section 15216.2(c) requires an EIR to include a discussion of any significant environmental impacts that cannot be avoided if the project is implemented. Chapter 3, "Environmental Setting, Impacts, and Mitigation Measures," provides a detailed analysis of all significant and potentially significant environmental impacts related to implementing the proposed project; identifies feasible mitigation measures, where available and practicable, that could avoid or reduce these significant and potentially significant impacts; and presents a determination whether these mitigation measures would fully reduce these impacts to less than significant levels. In addition, significant cumulative impacts resulting from the combined effects of the project and past, present, and reasonably foreseeable related projects are discussed in Chapter 5, "Cumulative Impacts." If a specific impact cannot be fully reduced to a less than significant level with implementation of all feasible mitigation, it is considered a significant and unavoidable adverse impact. After implementation of all feasible and available mitigation measures, the following impacts were determined to be significant and unavoidable for the proposed project:

- Impact 3.4.1, "Conflict with Applicable Air Quality Plan from Construction Activities."
- Impact 3.4.2, "Result in Cumulatively Considerable Net Increase of Any Criteria Pollutant from Construction Activities."
- Impact 3.12.1, "Substantial Increase in Ambient Noise Levels."
- Impact 3.12.2, "Generation of excessive groundborne vibration or groundborne noise levels."

The rationale for these conclusions and lack of available and feasible mitigation measures is described in Chapter 3.4, "Air Quality," Chapter 3.12, "Noise," and Chapter 5, "Cumulative Analysis."

4.3 Significant Irreversible Environmental Changes

The State CEQA Guidelines Section 15126.2[d] requires a discussion of the significant irreversible environmental changes that a project would cause. The irreversible and irretrievable commitment of resources is the permanent loss of resources for future or alternative purposes. Irreversible and irretrievable resources are those that cannot be recovered or recycled, or those that are consumed or reduced to unrecoverable forms. Implementing the proposed project would

result in the irreversible and irretrievable commitment of energy and resources during project construction, including:

- Construction materials, including such resources as soil and rock;
- Small area of land contiguous to existing levees that is committed to minor expansion of levee footprints; and
- Energy is expended in the form of electricity, gasoline, diesel fuel, and oil for construction equipment and transportation vehicles that would be needed for project construction.

The use of these nonrenewable resources is expected to account for only a small portion of the region's resources and would not affect the availability of these resources for other needs in the region. Project construction activities would not result in inefficient use of energy or natural resources and would follow BMPs from DWR's Greenhouse Gas Emissions Reduction Plan, which includes energy-reduction guidelines.

4.4 Impacts of Mitigation Measures

State CEQA Guidelines Section 15126.4(a)(1)(D) requires a discussion of any significant effects that may be caused by mitigation measures, although the discussion shall be in less detail than the discussion of significant effects of the project as proposed.

Mitigation measures proposed in this EIR are intended to mitigate significant and potentially significant impacts that could occur as a result of implementing the proposed project. Some mitigation measures could result in additional environmental impacts. However, the mitigation measures proposed in this EIR are typically standard mitigation measures that have been implemented for similar projects throughout California with success and without any known or identified related significant impacts. None include any substantial, adverse impacts on the physical environment. Therefore, implementing the mitigation measures proposed in this EIR would have minimal environmental impacts and would not result in significant or potentially significant impacts.

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Chapter 5. Cumulative Impacts

5.1 Approach to the Cumulative Impact Analysis

As defined in State CEQA Guidelines Section 15355, a cumulative impact is an environmental impact that is created as a result of the combination of implementing the project together with other projects causing related impacts. CEQA requires that an EIR discuss cumulative impacts of a project when the project's incremental effect is cumulatively considerable (State CEQA Guidelines Section 15130[a]). "Cumulatively considerable" means that the incremental effects of an individual project are considerable when viewed in connection with the effects of past, current, and probable future projects (State CEQA Guidelines Section 15065[a][3]). If an incremental effect is not cumulatively considerable, then the lead agency does not need to consider that effect significant and must briefly describe the reason why (State CEQA Guidelines Section 15130[a]).

State CEQA Guidelines Section 15130(b) states that the discussion of cumulative impacts need not provide as much detail as the discussion of the effects attributable to the project. The level of detail should be guided by what is practical and reasonable. The following elements are necessary for an adequate discussion of significant cumulative impacts (State CEQA Guidelines Section 15130[b]):

- A list of past, present, and probable future projects producing related or cumulative impacts, including, if necessary, those projects outside the control of the lead agency; or a summary of projections contained in an adopted general plan or related planning document, or in a prior environmental document which has been adopted or certified, which described or evaluated regional or areawide conditions contributing to the cumulative impact;
- A defined geographic scope of the area affected by the cumulative effect and a reasonable explanation for the identified geographic limits;
- A summary of expected environmental effects that might be produced by those projects with specific reference to additional information stating where that information is available; and
- A reasonable analysis of the cumulative impacts of the relevant projects. An EIR shall examine reasonable, feasible options for mitigating or avoiding the project's contribution to any significant or potentially significant cumulative effects.

This cumulative impact analysis includes the following four components:

Description of the geographic scope of potential cumulative impacts (Subsection 5.1.1, "Geographic Scope of Cumulative Impacts").

Context for the cumulative impact analysis, including a broad overview of Cache Creek and surrounding habitat and recreational facilities; this establishes the cumulative context upon

which the project would interact with past, present, and probable future projects (Subsection 5.1.2, "Cumulative Context").

Summary of past, present, and probable future (reasonably foreseeable) projects included in the cumulative analysis (Subsection 5.1.3, "Projects Considered in Cumulative Impact Analysis").

Cumulative impact analyses (Section 5.2, "Cumulative Impact Analysis by Topic Area").

5.1.1 Geographic Scope of Cumulative Impact Analysis

CEQA Guidelines indicate that lead agencies "should define the geographic scope of the area affected by the cumulative effect" (CCR Section 15130[b][3]). Although the geographic scope of the area affected by cumulative impact varies by topic, it consists of the following two geographic areas:

Project Site—an approximate 9-mile reach of lower Cache Creek that includes its levees and bordering riparian vegetation (see Figure 2-2, "Regional Project Location"), where all project components would be implemented.

Project Vicinity and Region—generally the project vicinity and region shown in Figure 2-2, "Project Site," which is the scale of some resource impacts when considered in a cumulative context, such as air quality and climate change (see topic-specific geographic areas below).

5.1.2 Cumulative Context

The project includes in-channel sediment removal, which includes removing overlying vegetated areas, and small levee raises along an approximately 9-mile reach of Cache Creek. Project impacts generally include temporary, short-term construction impacts, with some longer-term benefits/impacts on hydrology and biological resources. Based on the types of long-term impacts that would result from implementing the proposed project, the cumulative analysis focuses on other projects and programs with similar activities and impacts along Cache Creek and in the project vicinity.

The geographic scope of the area affected by the project for each of the topics addressed in the EIR would include the following:

- Aesthetics – local (project site) and immediate vicinity
- Agricultural and Forestry Resources – immediate vicinity of project
- Air Quality – regional (SVAB)
- Biological Resources – local (project site) and regional
- Cultural Resources (archaeological and historical) -local (project site) and regional
- Geology, Soils, and Paleontological Resources – local (project site) and regional
- Greenhouse Gas Emissions – regional and global
- Hazards and Hazardous Materials – local (project site) and nearby construction projects

- Hydrology and Water Quality – local (drainage systems affected by and downstream of the project site) and regional (Sacramento River and Sacramento-San Joaquin River Delta [Delta])
- Land Use and Planning – local (project site) and regional.
- Noise – local (project site, vicinity, and adjacent access routes during construction activities) and regional (transport network for truck haul routes during construction)
- Recreation – local (project site) and regional
- Transportation – local (roadways in immediate vicinity of the project site and along access routes during construction activities) and regional (transportation network for truck haul routes during construction)
- Tribal Cultural Resources – local (project site) and regional

5.1.3 Projects Considered in Cumulative Impact Analysis

This cumulative impact analysis includes past, present, and probable future flood risk reduction and other related projects that could impact resources affected by the project. The criteria used to identify individual projects for consideration in this cumulative impact analysis are defined below.

- The project would have an effect on a portion of the physical environment that could also be affected by the proposed project (i.e. interact on a cumulative basis spatially and/or temporally).
- Sufficiently detailed information about the project is available to allow meaningful cumulative analysis without speculation.
- The project was recently completed or is actively under development (i.e., an identified project sponsor/lead agency is actively pursuing project development or construction; and the project is "reasonably foreseeable" given other considerations, such as the site suitability, funding and economic viability, and regulatory limitations/requirements).

If a related project met all these criteria, then it was considered reasonably foreseeable and was included in the cumulative impact analysis. It was then determined whether the proposed project could cause a cumulatively considerable incremental contribution to an overall significant cumulative impact on each resource from all related projects listed below and the proposed project.

Many past and present projects and activities have occurred and are occurring in the project site, vicinity, and region. The effects of the past and present projects have strongly influenced existing conditions, and some past projects are still affecting resources potentially affected by the project. Past and present projects and activities have contributed on a cumulative basis to the existing environment within the general project area via various mechanisms, such as the following:

- Population growth and associated development of socioeconomic resources and infrastructure;

- Conversion of natural vegetation to agricultural and developed land uses, and subsequent conversion or restoration of some agricultural lands to developed or natural lands;
- Alteration of riverine hydrologic and geomorphic processes by flood risk reduction, water supply management, and other activities; and
- Introduction of nonnative plant and animal species.

Several major past, present, and probable future projects are considered in the cumulative impact analysis (referred to as related projects). The related projects described below have affected resources in the project site, vicinity, and region and some projects have additional elements planned for development in the future; however, future elements of these projects did not always meet the specified criteria for inclusion in the cumulative impact analysis.

5.1.3.1 Environmental Permitting for Operations and Maintenance

The Environmental Permitting for Operation and Maintenance (EPOM) Project is a DWR project that covers the operation and maintenance (O&M) of certain facilities of the federal flood control projects within the Central Valley of California. Continuous maintenance and proper operation of flood control facilities are critical for obtaining the benefits (e.g. flood protection) of federal flood control projects and maintaining eligibility for federal disaster relief programs. Specifically, DWR's Flood Maintenance and Operations Branch (FMO) conducts ongoing maintenance activities on levees, within channels, and on appurtenant structures that are part of the Sacramento River Flood Control Project (SRFCP) and Middle Creek Project in Lake County, components of the SPFC. Maintenance is conducted in accordance with standards and requirements of federal and State laws and regulations as well as applicable USACE O&M manuals and design profiles. The goal of the maintenance is to meet the requirements of State and federal law, regulations, and to continue the useful life of the SRFCP facilities and provide for public safety and proper functioning of flood control facilities in accordance with their original design.

Within FMO, two maintenance yards, the Sutter and Sacramento Maintenance Yards, are responsible for the State's maintenance. More specifically, maintenance activities include but are not limited to: (1) levee maintenance to ensure serviceability in times of floods (e.g., rodent abatement and damage repair, vegetation management, erosion repair, toe drain and pressure relief well repair levee crown and access road maintenance, unauthorized encroachment removal, stability berm reconstruction, and fencing/levee protection); (2) channel maintenance (e.g., sediment removal, debris/obstruction and wild growth removal, vegetation management, and channel and bank scour repair); (3) flood control structure maintenance and repair (e.g., pumping plants, weirs and outfall gates, and bridge maintenance and repair; and pipe/culvert repair, replacement, and abandonment); and (4) data collection. The project allows the continuation of these maintenance activities within the regulatory limitations imposed by the required permits of state and federal agencies.

5.1.3.2 Huff's Corner Levee Raise and Channel Reconfiguration Project

The Huff's Corner Levee Raise and Channel Reconfiguration Project is a project that includes raising a 2,700-foot section of the "Huff's Corner" levee system. Huff's Corner is a small reach of levee on the right bank of Cache Creek extending approximately 2,700-feet upstream from I-5, north of Woodland, in unincorporated Yolo County. To meet the required design elevation criteria, the levee base was widened on the landside by approximately 12 to 15 feet. The project included a revised operations and maintenance easement corridor extending an additional 15 feet beyond the new landside toe of the levee. The project also resulted in removal of a vegetated island that has accumulated adjacent to the levee within lower Cache Creek. Sediment from the island was removed and hauled off-site from the left-side secondary creek channel. Vegetation that was stabilizing the midchannel island was also removed. A sacrificial terrace was constructed along the right bank, which will reduce flow velocity against the bank and the levee, and direct creek flow towards the center of the channel. Both components of the project started construction concurrently in 2022. The project also involved some pre-construction activities in 2021, such as vegetation removal, general site preparation, and utility relocations, in advance of major construction activities. This project was completed in 2023.

5.1.3.3 2017 Cache Creek Area Plan Update

The Cache Creek Area Plan ([CCAP]; Baseline Environmental Consulting 2017) is a rivershed management plan adopted by Yolo County in 1996 that regulates off-channel mining and in-channel restoration along the lower Cache Creek corridor. The CCAP area encompasses 28,130 acres within unincorporated Yolo County along the 14.5-mile length of lower Cache Creek, extending generally from west of the Capay Dam to the west to the Town of Yolo to the east. The CCAP is comprised of the Off-Channel Mining Plan, the Cache Creek Resources Management Plan, and the Cache Creek Improvement Program.

This 2017 CCAP Update was prepared, to reflect changing conditions in the creek, analysis of monitoring data collected as a part of the program, new regulatory requirements, and clarifications and corrections since 1996. This update is a mandated part of the adopted CCAP. The CCAP is based on the concept of adaptive management and relies on ongoing detailed monitoring, analysis, and reevaluation.

The key proposed changes in the update identified as potentially impacting the environment include:

1. Increasing of the in-channel material removal limit from 210,000 tons to 690,800 tons annually;

2. Identification of an additional 1,188 acres within the planning area to be rezoned to add the Sand and Gravel Reserve Overlay (SGRO) zone, which allows for future possible aggregate mining; and

3. Extension of the plan horizon year to 2068.

5.1.3.4 2017 Storm Damage DWR Emergency Rehabilitation Project (2017 SDDER)

A series of storms struck Northern California from early January to March 2017. As a result of these storms, several levees in the Central Valley sustained significant damage. Levees at multiple sites were damaged to such an extent that the flood control performance of the levees was likely compromised, and thus, there was a very high likelihood of failure during the next high-water event. Failure of any of the levees would result in catastrophic flooding, property damage, and loss of life within the area protected by the levee. Therefore, an emergency rehabilitation program was needed to make the necessary levee repairs prior to the 2017/2018 winter season. In response, DWR implemented the 2017 Storm Damage DWR Emergency Rehabilitation Program at several critical rehabilitation sites (NOAA 2018). The project is authorized and sponsored by DWR's Division of Flood Management (now, Division of Flood Operations), Flood Maintenance and Operations Branch. Repair activities were completed at 55 sites in the Sacramento Basin and 8 sites in the San Joaquin Basin. The total length of levee repairs is not expected to exceed 15,000 linear feet. This project is still ongoing with 4 sites under repair in 2024 and 7 sites planned in 2025. This project is estimated to be completed in 2026.

5.1.3.5 2023 Storm Damage DWR Emergency Rehabilitation Project (2023 SDDER)

Due to stormwater damage to the levee system in 2023, DWR addressed 7 temporary emergency repairs prior to the 2023-24 flood season to flood risk management facilities where erosion repair is critical to the health and safety of communities that are protected from flooding. An additional 4 DWR permanent repairs are planned for 2025. A total of two sites (one permanent, one temporary) within Yolo County will be covered by this project. Repairs to erosion sites will cover approximately 18,000 feet of levees and are estimated to be completed in 2027.

5.1.3.6 Cache Creek North Levee Setback Project

The Cache Creek North Levee Setback project near the Town of Yolo addressed critical erosion damage on the left bank of Cache Creek at Levee Miles (LMs) 3.9 and 4.2, which threatened the stability of the existing levee (CVFPB 2013). The project setback levee at LM 3.9 is approximately 1,285 feet long and was placed approximately 180 feet from the existing levee. The levee setback at LM 4.2 is approximately 717 feet long and was placed approximately 75 feet from the existing levee. Erosion repairs were also made at LMs 2.8 and 3.4. Setting the levee back from the creek benefited fish and other wildlife by creating additional floodplain for stream-shading riparian trees and other vegetation. Construction was completed in 2013.

5.1.3.7 Delta Conveyance Project

The existing State Water Project (SWP) Delta water conveyance facilities, which include Clifton Court Forebay and the Banks Pumping Plant in the south Delta, enable DWR to divert water and lift it into the California Aqueduct. The proposed Delta Conveyance Project would construct and operate new conveyance facilities in the Delta that would add to the existing SWP infrastructure (ICF 2022). New intake facilities as points of diversion would be in the north Delta along the Sacramento River between Freeport and the confluence with Sutter Slough. The new conveyance

facilities would include a tunnel to convey water from the new intakes to the existing Banks Pumping Plant and potentially the Federal Jones Pumping Plant in the south Delta. The new facilities would provide an alternate location for diversion of water from the Delta and would be operated in coordination with the existing south Delta pumping facilities, resulting in a system also known as "dual conveyance" because there would be two complementary methods to divert and convey water. New facilities proposed for the Delta Conveyance Project include, but are not limited to, the following:

- Intake facilities on the Sacramento River
- Tunnel reaches and tunnel shafts
- Forebays
- Pumping plant
- South Delta Conveyance Facilities

Under the project, the new north Delta facilities would be sized to convey up to 6,000 cfs of water from the Sacramento River to the SWP facilities in the south Delta (with alternatives of different flow rates). DWR would operate the proposed north Delta facilities and the existing south Delta facilities in compliance with all State and Federal regulatory requirements and would not reduce DWR's current ability to meet standards in the Delta to protect biological resources and water quality for beneficial uses. Operations of the conveyance facilities are proposed to increase DWR's ability to capture water during high flow events. DWR approved the project and certified the EIR and is in the process of completing environmental permitting before construction can begin.

5.1.3.8 Lookout Slough Tidal Habitat Restoration and Flood Improvement Project

The Lookout Slough Tidal Habitat Restoration and Flood Improvement Project is in the Cache Slough region, one of the key areas in the Delta with elevations favorable for maintaining tidal habitats for the endangered Delta smelt (ESA 2020). The project will restore approximately 3,000 acres of tidal wetland, creating habitat that is beneficial to native fish and wildlife. Lookout Slough is adjacent to additional tidal habitat restoration efforts being implemented by DWR, including Yolo Flyway Farms and Lower Yolo Ranch, which creates a contiguous tidal wetland restoration complex spanning 16,000 acres in the Cache Slough region.

In addition to the restoration of important tidal wetland habitat, the project includes multi-benefits to meet objectives of the Central Valley Flood Protection Plan to reduce flood risk. The project includes construction of a new setback levee along the west and north edges of the site to allow for breaching the existing Yolo Bypass West Levee along Shag Slough. The new setback levee will provide 100-year flood risk reduction with additional height to provide resiliency for additional water level increases due to climate change and sea level rise. Breaching and degrading the existing levees will restore historical tidal influence on the site, providing food web and other benefits to Delta smelt and increasing seasonal floodplain rearing habitat for salmonids. The project is under construction and expected to be completed in 2024.

5.1.3.9 Lower Elkhorn Basin Levee Setback Project

The Lower Elkhorn Basin Levee Setback (LEBLS), led by DWR, will lower the flood stage in the upper Yolo Bypass and the Sacramento River (GEI 2018). The LEBLS project will increase flood conveyance by setting back the east levee of the Yolo Bypass, from I-5 and the Sacramento Bypass, as well as the north levee of the Sacramento Bypass between the Yolo Bypass setback and the Sierra Northern Railway embankment. An approximate 1-foot reduction in flood stage at the I Street Bridge (along the Sacramento River) during a 100-year flood event will be achieved through the total approximate setback distances of 1,500 to 1,800 feet. A greater than 1-foot reduction in flood stage may be achieved during a 200-year flood event.

The increase in floodplain availability will increase water supply resiliency within the region, as well as provide fisheries and wildlife habitat, with 1,100 acres of additional inundation area. Modest increases to other sensitive habitats on the margins of the floodplain will also be achieved at project completion. This project began construction in 2020 and is expected to be completed in 2024 with areas of planned restoration to continue for several more years.

5.1.3.10 Sacramento River Flood Control Project

The SRFCP is a collection of levees, navigation waterways, overflow weirs, pumping plants, and bypass channels that help reduce the risk of flooding to communities and agricultural lands in the Sacramento Valley and the Delta (USACE 2016). Located along the Sacramento River from Elder Creek (near Tehama), to its confluence with the San Joaquin River in the Delta (near Collinsville), the project has approximately 980 miles of levees (about 650 miles of which are part of the Federally authorized project) protecting more than 2.3 million people within 50 communities, 1 million acres of land, and nearly $38 billion worth of infrastructure. Project elements are also located along a number of tributaries, sloughs, and bypass channels including the Feather River, American River, Sutter Bypass, and Yolo Bypass.

5.1.3.11 Upper Swanston Ranch, Inc. Irrigation and Fish Passage Improvement Project

The project consists of modifying structures within the Tule Canal to avoid fish entrainment (DWR 2023). There is an existing water diversion structure located at the junction of Tule Canal and an interior drainage. The Tule Canal is the main drainage canal in the Yolo Bypass and is located near the eastern margin of the bypass. There is an existing seasonal agricultural crossing spanning west to east across the Tule Canal that is used during low-flow months for moving farming equipment east and west, and the existing water diversion pump moves water from the drainage canal to the water system in the north. The drainage canal, being open to the Tule Canal, is currently a fish entrainment risk that would be ameliorated by installing a new fish-friendly water intake structure within Tule Canal. The project would install a new pump station site west of Tule Canal that would pull water from the proposed water intake screens through two 36-inch pipes that extend back to the pump station before sending the water through one 48-inch buried irrigation pipe beneath a fallow rice field to an existing holding reservoir to the north; installing new power pole(s). The project would also install a new splash board riser, one fish-friendly flap culvert pipe, and backfill at the existing east–west diversion point, to create a barrier to fish entry from Tule Canal. The water held in the holding reservoir would be available for diversion north from the reservoir for use in irrigated fields. The existing pump would remain

in operation, although the potential for fish entrainment would be eliminated by this project. This project is expected to be constructed in four phases between 2024 and 2026.

5.1.3.12 Woodland Flood Risk Management Project

This project would provide flood system improvements to reduce the risks to public health and safety, property, and infrastructure for the City of Woodland along the south side of Cache Creek (State of California 2021). The proposed improvements would include installation of an approximately 5.5-mile-long earthen levee and a drainage channel along Woodland's northeastern boundary to redirect overland flood flows to the CCSB and the City's North Drainage canal. The project would also construct an inlet weir in the existing CCSB west levee to allow flood flow conveyance into the CCSB; degrade of 3,000 feet of the CCSB training levee to improve sediment distribution within the CCSB; construct elevated crossings or closure structures where the proposed levee crosses existing roads or railroad tracks; and install culverts at road and railroad crossing for flood flow conveyance to the proposed drainage channel. This project is expected to be constructed soon.

5.1.3.13 Yolo Bypass Cache Slough Master Plan

The Yolo Bypass Cache Slough (YBCS) Partnership (a group of 15 agencies) is proposing to implement a program to coordinate numerous related projects in the Yolo Bypass over the next 25 years to provide essential flood conveyance capacity in the Yolo Bypass while improving its resiliency, reliability, and adaptability to climate change; enhancing aquatic and terrestrial species habitats; and preserving agricultural land and economic values (CVFPB 2022). The Master Plan includes projects that are under construction or completed (including the Lower Elkhorn Basin Levee Setback and the Sacramento Weir and Bypass Widening), as well as potential future projects. Projects that are being considered for future implementation under the YBCS Partnership Master Plan include: widening the Fremont Weir and widening the Upper Yolo Bypass by constructing setback levees along the east side of the Bypass in the Upper Elkhorn Basin; constructing fix-in-place improvements to the existing levees in various locations along the west and east sides of the Upper Yolo Bypass; habitat restoration and drainage improvement projects throughout the Yolo Bypass, changes to the Cache Creek Settling Basin; degrading the step levees at the north end of Liberty Island; and raising and strengthening the levees along the west side of the Lower Yolo Bypass. The phasing and implementation dates of these projects have not been defined.

5.1.3.14 Yolo Bypass Wildlife Area Habitat and Drainage Improvement Project

The Yolo Bypass Wildlife Area Habitat (YBWA) and Drainage Improvement Project includes the following five components (Douglas Environmental 2017):

- Project Component 1 – Rice Corner Drainage Improvements: Includes the replacement of the culverts and parallel road crossings at the Rice Corner with a single precast concrete bridge. This Project component also includes improving the drainage channel located north and northwest of the Rice Corner Road crossing. Construction of this component was completed in August 2020.

- Project Component 2 – Green's Lake Modifications: To ensure water within Green's Lake does not flow into the South Davis Drain when it is being used to drain the YBWA, two weir boxes with gates are proposed to be installed near the terminus of the lake's drainage channel and directly west of the 4-Risers facility. This component also includes excavation and vegetation clearing around the perimeter of Green's Lake; improvement of the gravel road along the eastern bank of the lake; and improving the gravel road that extends north from the South Davis Drain along the east bank of the lake to its northern tip. Construction of this component was planned to be completed in 2022.
- Project Component 3 – Drainage Improvements at the "Y": Includes removing the two parallel road crossings over the South Davis Drain at the "Y" and replacing them with a single precast concrete (i.e., con-span) bridge. An existing pump station that is used to irrigate the rice fields and wetlands surrounding the "Y" road crossings is located within the South Davis Drain directly northwest of the "Y" road crossings. This pump station is proposed to be relocated to the northern drainage channel directly north of the new bridge. Project Component 3 also includes culvert and channel improvements in two separate areas of the YBWA. In the road crossing that is located 2,270 feet directly north of the "Y" road crossings, culvert improvements are proposed to be installed to improve flow between the northern channel discussed in Project Component 1 and the extension of that channel extending south to the "Y" road crossings. Channel improvements are also proposed to be made in the southern portion of a channel that is located approximately halfway between the "Y" road crossings and the Rice Corner road crossings. Construction of this component was completed in August 2020.
- Project Component 4 – New Cross Canal Pump Station and Road Improvements: Includes installing a new water pump directly west of Parking Lot H and directly north of the Cross Canal; replacing two existing 36-inch concrete pipes that connect the Cross Canal to the drainage channel extending directly north with 36-inch high-density polyethylene pipes; and improving the roadway to the west and north of the proposed new pump station and sump. Construction of this component was planned to be completed in 2022.
- Project Component 5 – Parker Pond Improvements: Includes excavating a segment of the southern edge of the pond to create a sump or low area within the pond that would accommodate a new water lift station and would expand the pond's water storage capacity. Construction of this component was completed in August 2020.

5.2 Cumulative Impact Analysis by Topic Area

5.2.1 Aesthetics

Related projects that are located within view of the project site are not expected to be constructed concurrently with the proposed project; therefore, short-term cumulative impacts would be less than significant. Long-term cumulative impacts could be significant because the recently completed Huff's Corner project site upstream of the proposed project is still in the early stages of revegetation growth but will only result in a temporary impact on the visual character of the nearby reaches of Cache Creek within the same time period of construction activities or post-construction revegetation of the proposed project. The proposed project would temporarily impact the visual character of Cache Creek and its immediate vicinity during construction

activities. The project's permanent visual impacts would be less than significant because areas where vegetation would be removed would still largely remain out of view due to the depth of sedimentation removal areas from public viewpoints and adjacent mature vegetation on the creek banks. Further, other project components would not substantially alter the visual character of the area, as described in Section 3.2, "Aesthetics." The aesthetics of the area would not be substantially degraded from the proposed project and the proposed project would result in a less than considerable contribution to cumulative impacts on visual resources. Therefore, this cumulative impact is less than significant.

5.2.2 Agriculture and Forestry Resources

The related projects would result in a net benefit through the YBCS Master Plan and other commitments. Lookout Slough Tidal Habitat Restoration and Flood Improvement Project, LEBLS, and SRFCP, and Upper Swanston Ranch, Inc. Irrigation and Fish Passage Improvement Project are all projects in the cumulative list that have anticipated impacts to agricultural resources of their respective project sites. However, in the cases of SRFCP and Upper Swanston Ranch, impacts would be beneficial to agricultural resources through increased flood risk reduction. Similarly, while upwards of 1,400 acres of current agricultural land is being converted into tidal habitat for the Lookout Slough project, mitigation for this impact included improvements to affected landowners' nearby agricultural lands, including agricultural infrastructure and improvements that ultimately increase the current agricultural productivity of the land despite overall land loss. Finally, while the LEBLS project had significant and unavoidable impacts on agricultural resources, this project also belongs to the suite of projects included in the YBCS Master Plan. The YBCS Master Plan, while not a specific project, would create a framework for protecting areas of native woodland and agricultural resources for the projects within its boundaries (spanning portions of Sacramento, Yolo, and Solano counties). Further, there are no forestry resources on or near the project site or the projects included in the cumulative list of projects analyzed.

Agricultural and forestry resources of the area would not be substantially degraded from the proposed project and the proposed project would result in a less than considerable contribution to cumulative impacts on either agricultural or forestry resources. Therefore, this cumulative impact is less than significant.

5.2.3 Air Quality

Yolo County is classified as nonattainment for the 1-hours and 8-hour ozone, and 24-hour $PM_{2.5}$ national standard and attainment or unclassified for all other national standards. Yolo County is classified as nonattainment for the 1-hour and 8-hour ozone standards, 24-hour and annual arithmetic mean PM_{10} State standard and classified as attainment or unclassified for all remaining State standards. By their very nature, air quality impacts are cumulative. The region's nonattainment status is a result of past and present development, and the YSAQMD has developed its significance thresholds to ensure that future air emissions support successful implementation of the YSAQMD's attainment plans. Although implementation of Mitigation Measure 3.4-1 would reduce project emissions and impacts on air quality, impacts relative to fugitive dust emissions would be significant and unavoidable. Because the project would exceed the YSAQMD's thresholds of significance for criteria pollutants, specifically PM_{10}, the project

would result in a considerable contribution to a significant cumulative impact on air quality within the SVAB. Implementation of mitigation measures would not reduce the project's contribution, and the cumulative impact would be significant and unavoidable.

5.2.4 Biological Resources

The proposed project in combination with related projects would result in impacts on special-status wildlife, migratory and movement corridors and nursery sites, and local ordinances and policies, as analyzed for the specific resources in Section 3.4, "Biological Resources." Because most of the related projects in the cumulative list focus on activities to reduce flood risk and do not cut off access to migratory/movement corridors or nursery sites, and the YBCS Master Plan projects would contribute to enhancing local native wildlife habitat, including wildlife corridors and nursery sites, cumulative impacts on these particular resources would be less than significant.

Most of the related projects focus on activities reducing flood risk and would not have significant long-term impacts on wildlife in the geographic setting, and therefore, cumulative impacts on these biological resources would be less than significant. Those related projects that directly impact biological resources (Lookout Slough Tidal Habitat Restoration and Flood Improvement Project, Upper Swanston Ranch, Inc. Irrigation and Fish Passage Improvement Project, etc.), do so with the aim of *improving* habitat for biological resources in the long term with only temporary impacts to biological resources occurring during construction activities. In addition, projects within the YBCS Master Plan would contribute in part to enhancing local native wildlife habitat, particularly for special-status species. The proposed project would have potentially significant impacts related to special-status wildlife, riparian habitat, and Federally and State-protected waters. Implementation of Mitigation Measures 3.5.1a, 3.5.1b, 3.5.1c, 3.5.3a, 3.5.3b, 3.5.4, 3.5.5a, 3.5.5b, 3.5.5c, 3.5.6a, 3.5.7, 3.5.9a, 3.5.9b, and 3.5.10 as described in Section 3.4, "Biological Resources," would reduce the project's contribution to impacts on special-status species and sensitive habitats to less than significant. Therefore, the proposed project would result in a less than considerable contribution to cumulative impacts on special-status wildlife, riparian habitat, or Federally and State-protected waters. Therefore, this cumulative impact is less than significant.

5.2.5 Cultural Resources

The proposed project and related projects could result in impacts on cultural resources during ground disturbing activities. This could result in a significant cumulative impact on cultural resources. Six previously identified archaeological resources were identified during the records search within or partially intersecting the project site. In addition, 11 historic era-built environment resources are located in or adjacent to the project site. Detailed descriptions of cultural resources were provided for the proposed project in Section 3.6, "Cultural Resources." Archaeological and historic-era built environment resources may potentially be impacted by the project; however, implementation of Mitigation Measures 3.6.2a, 3.6.2b, 3.6.2c, 3.6.3, and 3.6.4 would reduce impacts to cultural resources to less-than significant-levels. Through the implementation of these mitigation measures, the proposed project would not substantially impact cultural resources. Therefore, the proposed project would result in a less than

considerable contribution to cumulative impacts on cultural resources. This cumulative impact is less than significant.

5.2.6 Geology, Soils, and Paleontological Resources

The geographic scope of cumulative impacts related to geology, soils, and paleontological resources is limited to areas within and adjacent to the project area. Geologic, soil, and paleontological related impacts are generally site-specific and depend on local geologic and soil conditions and the potential for a project to create an adverse effect that could result in impacts related to geology, soils, and paleontological resources.

Cumulative impacts related to geology, soils, and paleontological resources could occur if the project and related projects conduct concurrent activities that directly or indirectly cause substantial adverse effects analyzed in Section 3.7, "Geology, Soils, and Paleontological Resources." The related projects that exist within and adjacent to the project site could combine with the proposed project's impacts to result in significant cumulative impacts. Because California is seismically active, all projects in the project region could expose people and structures to adverse effects associated with earthquakes including seismic ground shaking and seismic-related ground failure. Cumulative projects also could be located on unstable soils, have soils incapable of adequately supporting alternative waste disposal systems, or contain unique paleontological resources or unique geologic features. Further, site-specific geotechnical studies required by State and local regulations would determine how cumulative projects could be designed to minimize exposure of people and structures to these potential impacts. Cumulative projects, as well as all projects in the region would be required to adhere to current building standards with seismic design criteria that incorporates the most current understanding of geotechnical and seismic hazards such that loss, damage, injury or death would be minimized.

As described and analyzed in Section 3.7, "Geology, Soils, and Paleontological Resources," the proposed project would not result in impacts regarding soil suitability for septic systems or alternative wastewater disposal systems, would not be located on unique geologic features, and would not result in the destruction of unique paleontological resources during operation and maintenance. The project would result in less-than-significant impacts regarding adverse effects from rupture of known earthquake faults, seismic ground shaking, liquefaction, subsidence, soil instability, landslides, or expansive soils. The project's impacts related to temporary substantial soil erosion or loss of topsoil from construction would also be less-than-significant with implementation of Mitigation Measure 3.7.1. Additionally, the project's impact on paleontological resources would be less than significant due to the underlying geologic material at the project site. Therefore, the project's contribution to cumulative impacts would be less than cumulatively considerable. Therefore, this cumulative impact is less than significant.

5.2.7 Greenhouse Gas Emissions

Climate change is a global phenomenon and any increase in GHG emissions has the potential to contribute to the greenhouse effect and climate change. However, planning for responsible GHG emissions and reductions to achieve even very aggressive goals for GHG emissions reductions allows for responsible allocation of GHG emissions to projects.

DWR prepared its GGERP to address the potential contributions of projects to cumulative GHG impacts. The thresholds of significance used to analyze the project's GHG impacts were adopted by DWR to further its goals of reducing GHG emissions to 60 percent below 1990 levels by 2030 and to achieve carbon neutrality by 2045. DWR's GGERP and goals were adopted to ensure that DWR achieves sufficient reductions in GHG emissions to enable the State to reach its broader GHG reduction goals. Based on the analysis provided in the GGERP and the demonstration that the proposed project is consistent with the Inventory and Calculation of Greenhouse Gas Emissions (see Appendix B), DWR, as lead agency, has determined the proposed project's incremental contribution to the cumulative impact of increasing atmospheric levels of GHGs would be less than cumulatively considerable. Therefore, this cumulative impact is less than significant.

5.2.8 Hazards and Hazardous Materials

Health and safety impacts associated with the past or current uses of a project site usually occur on a project-by-project basis and are generally limited to the specific project site during time of project implementation. As described in Section 3.9, "Hazards and Hazardous Materials," project construction would require handling of small quantities of hazardous materials used in construction equipment (e.g., fuels, oils, lubricants) and could result in accidental spills of these materials. However, permits regulate the use, handling, and storage of these materials, and the project and all related cumulative projects would be required to comply with Federal, State, regional, and local regulatory standards to avoid inadvertent releases or spills of hazardous waste or materials from storage, use, disposal, or transport of hazardous materials. Because the proposed project is not located directly adjacent to concurrent cumulative projects, cumulative impacts from hazards or hazardous materials would not combine and the cumulative impact would be less than significant. Further, implementation of Mitigation Measure 3.9.1 would require BMPs to reduce the project's potentially significant short-term construction impacts to a less-than-significant level. Neither the project nor related projects would introduce new developed uses; therefore, these projects would have no cumulative impact on any airport operations. Similarly, because none of the related projects would include substantial construction activities near the project site concurrent with the proposed project, there would be no significant cumulative impact related to emergency response or evacuation plans. Therefore, this cumulative impact is less than significant.

5.2.9 Hydrology and Water Quality

The geographic scope for potential cumulative impacts to water quality includes the Cache Creek watershed, the CCSB, the Yolo Bypass, Sacramento Valley – Yolo Groundwater Subbasin, the Sacramento River and the Delta. Cumulative hydrology and water quality impacts could occur if the related projects conduct concurrent activities that directly or indirectly cause substantial adverse effects analyzed in Section 3.10, "Hydrology and Water Quality."

Most related projects could result in cumulative impacts on hydrology, water quality, or groundwater, depending on their location, proposed construction activities and use of BMPs, and proposed operational activities. However, many cumulative impacts to hydrology and water quality associated with construction activities would be minimized with adherence to requirements of Federal, State, and local water quality regulations, including the NPDES

Construction General Stormwater Permit. Conditions of the Construction General Permit would be tailored to each project to be sufficient to maintain water quality within the identified cumulative setting (e.g., watersheds), Sacramento Valley – Yolo Groundwater Subbasin, and/or the Delta. As described and analyzed in Section 3.10, "Hydrology and Water Quality," the proposed project could result in significant impacts on water quality during construction. However, implementation of Mitigation Measure 3.10.1 would reduce project impacts to less than significant because a SWPPP and BMPs specifically designed to control erosion, and sedimentation would be implemented and a SPCCP and other measures specifically designed to prevent water contamination would be implemented.

The project site is in the Sacramento Valley – Yolo Groundwater Subbasin, a high priority basin, and cumulative impacts related to groundwater in this basin may be significant. The project would not result in any changes resulting in the obstruction or reduction of water percolation such that potential groundwater recharge on the project site would be affected. Because the project would neither use groundwater nor reduce the available groundwater recharge, the project would not contribute to a significant cumulative impact on groundwater levels or groundwater basin management in the region.

The implementation of related flood risk reduction projects including the YBCS Master Plan, are, as a group, aimed at improving the overall flood capacity of the Yolo Bypass, ensuring protection from long term effects of climate change including severe storms and drought. Therefore, the related projects would likely provide a net benefit to hydrology and water quality within the wider Yolo Bypass/Cache Slough Complex and ultimately where that water ends up in the Delta. The proposed project would result in benefits to the change in hydrology within Cache Creek resulting in increased flows and raised levees to reduce the risk of flooding during the design flood flow of the channel (i.e., 30,000 cfs). Additionally, the proposed project would not result in an increase in erosion or sedimentation from construction or post-construction conditions downstream of the CCSB. Therefore, the proposed project would result in a less than considerable contribution to cumulative impacts on hydrology and water quality associated with construction activities.

5.2.10 Land Use and Planning

Related flood risk reduction projects would have no impact on land use or zoning designations. While others in the list and some projects within the suite of YBCS Master Plan boundaries may impact land use or zoning designations, effects involving adopted land use plans or policies and zoning are project-specific and generally would not combine to result in significant cumulative impacts. Further, the proposed project would result in less-than-significant impacts on existing adopted land use and zoning designations or result in any changes to land use and planning. Therefore, there would be no cumulative impact.

5.2.11 Noise

Noise and vibration are localized issues in that noise/vibration levels attenuate (i.e., decrease) with increasing distance from the source. Therefore, only projects adjacent to the project area and generating noise or vibrations at the same time would have the potential to add to anticipated project-generated noise and vibration from the project and result in a cumulative noise or

vibration impact. The related projects would not overlap in time with the proposed project, occur well beyond the distance of noise and vibration attenuations from each other, or not result in substantial noise (e.g., constructed restoration projects). For the reasons listed above, project-generated noise levels during construction activities would not combine with related projects and there would be no cumulative impact related to noise and vibrations.

5.2.12 Recreation

Recreational facilities/opportunities in the cumulative setting include other reaches of Cache Creek, the Cache Creek Nature Preserve, Wild Wings Park, and a Class II bike lane (along CR 102 from Knights Landing to the eastern portion of Woodland and ending in Davis) and many more recreational opportunities throughout the region. These recreational facilities and others in the region could be affected by the related projects and the proposed project if they would affect the use of existing recreational facilities at concurrent times which could result in the degradation of recreational facilities. This would be considered a significant cumulative impact. However, the related projects would generally increase recreational opportunities in the region and are anticipated to not affect recreational opportunities concurrently with implementation of the proposed project. Project-related construction activities could result in temporary and short-term changes in the availability of recreational activities, as described in Section 3.13, "Recreation." Pedestrian access to Cache Creek levees would be temporarily closed during construction activities. However, these areas would be open to recreation following project completion, and therefore, the project would not result in a permanent or long-term impact on recreational opportunities. Recreational opportunities within the project site and vicinity would not be substantially degraded and the proposed project would result in a less than considerable contribution to cumulative impacts on recreational opportunities. Therefore, this cumulative impact is less than significant.

5.2.13 Transportation

The geographic scope of potential cumulative impacts related to transportation and traffic includes local and regional roadways. Potential transportation and traffic-related impacts of the project would be restricted to the two-year construction period of the project. Cumulative transportation and traffic impacts could occur if the project and related projects involve concurrent activities that would result in the impacts analyzed in Section 3.14, "Transportation." The proposed project would have temporary, less-than-significant impacts related to increased traffic volumes, emergency access, and alternative transportation modes. These impacts would occur during project construction, and none of the related projects are expected to be under construction concurrently with the project. Transportation within the area would not be substantially degraded from the proposed project and the proposed project would result in a less than considerable contribution to cumulative impacts on transportation. Therefore, this cumulative impact is less than significant.

5.2.14 Tribal Cultural Resources

The proposed project and related projects could result in impacts on TCRs in the region considered for each of the Native American Tribes identified in Section 3.15, "Tribal Cultural Resources." This is considered a significant cumulative impact. Pursuant to AB 52, Tribal consultation letters were sent to Shingle Springs, UAIC, Wilton Rancheria, Yocha Dehe Wintun

Nation, and Ione Band of Miwok Indians on July 21, 2023. In addition, DWR Tribal Policy letters that offered initiation of formal consultation were sent to the Cachil Dehe Band of Wintun Indians and the Cortina Rancheria – Kletsel Dehe Band of Wintun Indians on July 21, 2023. No TCRs are currently known within the project site based on the SLF search by the NAHC or through preliminary communication with affiliated Tribes. It is possible that TCRs may be identified through ongoing consultation with Tribes, or by Tribal representatives or monitors during implementation of the proposed project. However, implementation of Mitigation Measures 3.15.1a, 3.15.1b, 3.15.1c, 3.15.2a, 3.15.2b, and 3.15.2c would reduce any impacts of the proposed project to a less than significant, and the proposed project would not result in any considerable contribution to cumulative impacts on tribal cultural resources. Therefore, this cumulative impact is less than significant.

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Chapter 6. Alternatives

This chapter describes alternatives to the proposed project and compares the environmental impacts of those alternatives. Alternatives that were considered but rejected are also presented. This chapter presents information to meet CEQA requirements regarding project objectives, the alternatives development and analysis process, alternatives considered but dismissed from further evaluation, alternatives selected for further evaluation, and the comparative effects of the selected alternatives relative to the proposed project. The alternatives evaluated further in this chapter are the No-Project Alternative and Alternative 1: Modification of Excavated Channel Areas Downstream of Highway 113. As required under CCR Section 15126.6(e) of the CEQA Guidelines, an environmentally superior alternative is identified and addressed at the end of this chapter.

6.1 California Environmental Quality Act Requirements

CCR Section 15126.6[a] of the CEQA Guidelines requires that an EIR (1) describe a range of reasonable alternatives to a proposed project, or to the location of the project, which would feasibly attain most of the basic project objectives but would avoid or substantially lessen any of the significant effects of the project; and (2) evaluate the comparative merits of the alternatives. An EIR need not consider every conceivable alternative to a proposed project but must consider a reasonable range of potentially feasible alternatives that will foster informed decision making and public participation.

The proposed project would be developed to meet DWR's public safety and maintenance responsibilities with the following objectives:

- restore the capacity of the Cache Creek channel along the project reach to provide 3 ft of freeboard during the original design flow of 30,000 cfs;
- implement the goals of the Central Valley Flood Protection Plan by reducing flood risk to local rural and urban areas;
- implement a combination of actions such as sediment removal along with vegetation removal, and raising levees to efficiently and cost effectively restore channel capacity;
- improve levees to not exceed the original design parameters to the extent possible; and,
- conduct project activities in a manner that minimizes impacts to riparian habitat and other sensitive biological resources.

The range of alternatives required to be evaluated in an EIR is governed by a "rule of reason" that requires the EIR to set forth only those alternatives necessary to permit a reasoned choice. The EIR need examine in detail only those alternatives that the lead agency determines could feasibly attain most of the basic project objectives, taking into account factors that include site suitability; economic viability; availability of infrastructure; general plan consistency; other

plans or regulatory limitations; jurisdictional boundaries; and whether the project proponent can reasonably acquire, control, or otherwise have access to the alternative site (CEQA Guidelines CCR Section 15126.6[f]). CEQA does not require alternatives to be evaluated at the same level of detail as the proposed project.

The State CEQA Guidelines recommend that an EIR briefly describe the rationale for selecting the alternatives to be discussed, identify any alternatives that were considered by the lead agency but were rejected as infeasible, and briefly explain the reasons underlying the lead agency's determination (CEQA Guidelines CCR Section 15126.6[c]).

An EIR must also evaluate a "no-project" alternative, which represents "what would be reasonably expected to occur in the foreseeable future if the project were not approved, based on current plans and consistent with available infrastructure and community services" (CEQA Guidelines CCR Section 15126.6[e][2]).

6.2 Alternatives Considered but Rejected from Further Analysis

During the conceptual design of the project, several alternatives were considered but rejected for further analysis. Some alternatives considered were rejected early-on including setback levees that would result in large scale construction activities and substantially greater impacts than the proposed project. Other alternatives considered in more detail included:

- **CCSB Training Levee Removal.** This alternative would result in the removal or degrading the CCSB Training Levee to increase the area where flood flows could disperse downstream of the proposed project. Degrading the CCSB Training Levee would result in the Cache Creek channel barely contain the 26,500 cfs flood – the flood event that occurred in February 2019, where overtopping occurred at two locations. Because the predicted water surface elevation would be hazardously close to the existing levee heights at 26,500 cfs, the channel would have nearly zero freeboard at three critical locations and deficits in design freeboard along levees identified for rehabilitation. Further, the required design flow of 30,000 cfs would result in overtopping at the locations identified for levee raises. Therefore, this alternative was rejected from further consideration because it does not meet the most basic objective of the project to restore the capacity of the Cache Creek channel along the project reach to provide 3 feet of freeboard during the original design flow of 30,000 cfs.
- **CCSB Training Channel Vegetation Removal.** This alternative would include removal of vegetation along the CCSB Training Channel to increase flows through the reach of Cache Creek downstream of the proposed project. For the same reasons described above for degrading the CCSB Training Levee, this alternative would result in overtopping between the 26,500 cfs event and the design flow of 30,000 cfs. Therefore, this alternative was rejected from further consideration because it does not meet the most basic objective of the project to restore the capacity of the Cache Creek channel along the project reach to provide 3 feet of freeboard during the original design flow of 30,000 cfs.
- **Cache Creek Complete Vegetation Removal.** This alternative would result in removing all vegetation within the approximately 9-mile-long project reach of Cache Creek to increase

flows through the channel without conducting sediment removal within the channel. This alternative would result in overtopping between 26,500 cfs and the design flow of 30,000 cfs as freeboard along the 9-mile reach of the creek would not contain flows above 26,500 cfs. Therefore, this alternative was rejected from further consideration because it does not meet the most basic objective of the project to restore the capacity of the Cache Creek channel along the project reach to provide 3 feet of freeboard during the original design flow of 30,000 cfs.

- **Cache Creek Minor Sediment Removal.** This alternative would result in the removal of a reduced amount of sediment within the low flow portion of the Cache Creek channel in the 9-mile reach of the proposed project to increase the capacity of the channel to convey flood flows downstream to the CCSB. Selective sediment removal in the low flow portion of the channel would convey flows better than current conditions but would not restore freeboard and 3 feet of freeboard required above the 26,500 cfs event to prevent overtopping and flooding. Therefore, this alternative was rejected from further consideration because it does not meet the most basic objective of the project to restore the capacity of the Cache Creek channel along the project reach to provide 3 feet of freeboard during the original design flow of 30,000 cfs.
- **Cache Creek Major Sediment Removal.** This alternative would include the excavation of soil to widen the low flow channel and would include excavations of banks along the same 9-mile-long channel project reach of Cache Creek. No levee raising would occur with this alternative. In addition, this alternative would be designed to contain flooding at the most vulnerable locations by decreasing the local water surface elevation by increasing conveyance in the reaches just downstream of identified vulnerability locations; reaches that would not contain the design flood and suffer overtopping. These modifications would also remove extensive swaths of riparian vegetation, contributing to the improved conveyance. This would be achieved through a combination of excavating sediment and removing the vegetation from the bank. The cut locations were selected by considering:
  - Islands and undulations identified in the channel bottom profile;
  - Overbanks on the inside channel curve that are prone to aggradation;
  - Transitions from wide to narrower channel sections;
  - The narrowest reaches of Cache Creek (width from levee to levee); and
  - Hydraulic constraints due to the existing Hwy 113 and CR 102 bridges.
- Excavation locations were selected to avoid infringing the waterside levee toe road and levee prism. This included avoiding areas with limited overbank width (often prone to erosion if located on the outside channel curve). This scenario would result in much more sediment being excavated and removed than the proposed project. In addition, this alternative would not raise levees along the same stretches of creek bank as the proposed project. Although this scenario would satisfy the required channel conveyance capacity of 30,000 cfs, this alternative would not meet the required freeboard of 3 feet and would result in a significant increase in impacts related to construction activities to remove a significantly higher quantity of excavated soil and result in removal of significantly more riparian habitat than the proposed project. Therefore, this alternative was rejected from further consideration as it does not meet the criteria required by CEQA to reduce impacts of the proposed project.

- **Different Location of Rehabilitation Along Cache Creek.** The purpose of the project is to improve the flow capacity within the project reach of the Cache Creek channel where sediment has deposited and built up over time, reducing channel capacity, and to rehabilitate adjacent levees to their original design heights where they have subsided. These areas are included in the reach of Cache Creek identified under the proposed project and under the previously described and rejected alternatives. As such, no alternative composed of different locations of channel and levee rehabilitation would meet the project objectives. Therefore, no offsite locations were considered for further analysis.

6.3 Alternatives Evaluated Further

6.3.1 No-Project Alternative

The No-Project Alternative is the existing conditions at the time the NOP was published (August 7, 2023), as modified by what would be reasonably expected to occur in the foreseeable future if the project is not approved. Under the No-Project Alternative, DWR would not conduct any work to address existing issues related to the reduction of flood flow conveyance capacity within Cache Creek within the project reach, including sediment removal and raising levees that have reduced in height due to ongoing subsidence. This reach of Cache Creek provides conveyance of flows from the upper watershed, including releases from Cache Creek dam, and local precipitation events into the downstream areas of the CCSB and beyond into the Yolo Bypass. Under the No-Project Alternative, the risk of flooding would continue to be high, and overtopping would occur when flows are equivalent to those that occurred during the February 2019 flood event (26,500 cfs). In addition, conditions would likely only get worse as sediment continues to build up within the channel and decrease flow conveyance capacity, leading to potentially more flooding events under flows less than 26,500 cfs. Resulting future flooding under this alternative could result in environmental impacts related to flooding of residences, businesses, agricultural lands, and commercial properties with potential to release hazardous materials from storage areas and erode soil from adjacent lands into neighboring areas and drainages. In addition, environmental effects from flood fighting and restoration of damaged areas could result in an increase in environmental impacts compared to the proposed project.

Aesthetics

Under the No-Project Alternative, the visual character of the project site would remain the same as under existing conditions. There would be no short-term, temporary impact from heavy equipment operation during project construction and no long-term impact of vegetation removal, as described for the proposed project in Section 3.2, “Aesthetics.” However, resulting future flooding under this alternative could result in environmental impacts related to flooding of residences, businesses, agricultural lands, and commercial properties would erode soil from adjacent lands into neighboring areas and drainages and result in damage of the visual character of the area surrounding the creek. Although a significant adverse impact has been identified, CEQA does not require mitigation for impacts of the No-Project Alternative; therefore, no mitigation is provided. Therefore, impacts would be **significant and unavoidable**.

Agriculture and Forestry

Under the No-Project Alternative, agricultural and forestry resources on the project site would remain the same as under existing conditions. This alternative would avoid any conflicts with agricultural operations, as described for the proposed project in Section 3.3, "Agriculture and Forestry." However, resulting future flooding under this alternative could result in environmental impacts related to flooding of agricultural lands that would erode soil from adjacent lands into neighboring areas and drainages and result in damage of agricultural lands surrounding the creek. Although a significant adverse impact has been identified, CEQA does not require mitigation for impacts of the No-Project Alternative; therefore, no mitigation is provided. Therefore, impacts would be **significant and unavoidable**.

Air Quality

Under the No-Project Alternative, there would be no short-term, temporary use of heavy equipment during project construction or maintenance activities and no associated pollutant emissions, as described for the proposed project in Section 3.4, "Air Quality." However, resulting future flooding under this alternative could result in environmental impacts related to flooding of residences, businesses, agricultural lands, and commercial properties resulting in efforts to clean and restore areas flooded to previous conditions. This would require emergency response using heavy equipment with potential to exceed air quality emissions thresholds. Although a significant adverse impact has been identified, CEQA does not require mitigation for impacts of the No-Project Alternative; therefore, no mitigation is provided. Therefore, impacts would be **significant and unavoidable**.

Biological Resources

The No-Project Alternative would avoid all impacts of the proposed project described in Section 3.5, "Biological Resources" including significant impacts, because no construction activities would occur. Therefore, there would be no potential for significant construction-related impacts on all special-status and nesting birds, special-status fish, or Federally and State-protected waters. There also would be no permanent removal of riparian vegetation. However, resulting future flooding under this alternative could result in environmental impacts related to flooding of habitats and erode soil from adjacent lands into neighboring areas and drainages. Although a significant adverse impact has been identified, CEQA does not require mitigation for impacts of the No-Project Alternative; therefore, no mitigation is provided. Therefore, impacts would be **significant and unavoidable**.

Cultural Resources

The No-Project Alternative would avoid all potential impacts on cultural resources described in Section 3.6, "Cultural Resources," for the proposed project because no construction activities would occur. Therefore, there would be no potential for significant impacts on previously unidentified historical resources, archaeological resources, or human remains. However, resulting future flooding under this alternative could result in environmental impacts related to flooding of residences, businesses, and would erode soil from adjacent lands into neighboring areas and drainages and result in potential damage of cultural resources. Although a significant adverse impact has been identified, CEQA does not require mitigation for impacts of the No-

Project Alternative; therefore, no mitigation is provided. Therefore, impacts would be **significant and unavoidable**.

Geology, Soils, and Paleontological Resources

The No-Project Alternative would avoid all construction impacts of the proposed project related to geology, soils, and paleontological resources, as described in Section 3.7, "Geology, Soils, and Paleontological Resources," including significant impacts. However, under the No-Project Alternative, potential future flood events could result in erosion from overtopping along areas adjacent the creek. These on-going impacts would continue to be significant. Although a significant adverse impact has been identified, CEQA does not require mitigation for impacts of the No-Project Alternative; therefore, no mitigation is provided. This impact would be **significant and unavoidable**.

Greenhouse Gas Emissions

Under the No-Project Alternative, there would be no short-term, temporary use of heavy equipment during project construction activities and no associated GHG emissions, as described for the proposed project in Section 3.8, "Greenhouse Gas Emissions." However, resulting future flooding under this alternative could result in environmental impacts related to flooding of residences, businesses, agricultural lands, and commercial properties resulting in efforts to clean and restore areas flooded to previous conditions. This would require emergency response using heavy equipment with potential to exceed air quality emissions thresholds, including GHG emissions. Although a significant adverse impact has been identified, CEQA does not require mitigation for impacts of the No-Project Alternative; therefore, no mitigation is provided. Therefore, impacts would be **significant and unavoidable**.

Hazards and Hazardous Materials

Under the No-Project Alternative, there would be no short-term, temporary use of heavy equipment during project construction activities and no associated potential accidental spills of hazardous materials, as described for the proposed project in Section 3.9, "Hazards and Hazardous Materials." However, resulting future flooding under this alternative could result in environmental impacts related to flooding of residences, businesses, agricultural lands, and commercial properties resulting in the release of stored hazardous materials within flooded areas. Although a significant adverse impact has been identified, CEQA does not require mitigation for impacts of the No-Project Alternative; therefore, no mitigation is provided. Therefore, impacts would be **significant and unavoidable**.

Hydrology and Water Quality

Under the No-Project Alternative, there would be no short-term, temporary use of heavy equipment during project construction activities and no associated potential water quality impacts from sedimentation or accidental spills of hazardous materials associated with construction activities, as described for the proposed project in Section 3.10, "Hydrology and Water Quality." However, there also would be no long-term beneficial impacts on water quality and the ability of the proposed project reach to accommodate required design flood flows and levee freeboard from reducing flood risk in the areas adjacent to Cache Creek. In addition,

existing risk of future flooding, erosion, and water quality impacts would persist. These on-going impacts would continue to be significant. Although a significant adverse impact has been identified, CEQA does not require mitigation for impacts of the No-Project Alternative; therefore, no mitigation is provided. This impact would be **significant and unavoidable**.

Land Use and Planning

Under the No-Project Alternative, no Important Farmland would be removed, as described for the proposed project in Section 3.11, "Land Use and Planning." However, resulting future flooding under this alternative could result in environmental impacts related to flooding of agricultural lands resulting in significant change to the use of those agricultural lands affected by erosion and potential release of hazards and hazardous materials from commercial and residential properties and areas that store hazardous materials. Although a significant adverse impact has been identified, CEQA does not require mitigation for impacts of the No-Project Alternative; therefore, no mitigation is provided. Therefore, impacts would be **significant and unavoidable**.

Noise

Under the No-Project Alternative, there would be no short-term, temporary use of heavy equipment during project construction activities and no associated increase in ambient noise levels and groundborne vibration, as described for the proposed project in Section 3.12, "Noise." However, resulting future flooding under this alternative could result in environmental impacts related to flooding of residences, businesses, agricultural lands, and commercial properties resulting in efforts to clean and restore areas flooded to previous conditions. This would require emergency response using heavy equipment with potential to exceed noise thresholds. Although a significant adverse impact has been identified, CEQA does not require mitigation for impacts of the No-Project Alternative; therefore, no mitigation is provided. Therefore, impacts would be **significant and unavoidable**.

Recreation

Under the No-Project Alternative, there would be no temporary or permanent impacts on recreation use during construction activities, as described for the proposed project in Section 3.13, "Recreation." However, future flooding under this alternative could result in environmental impacts related to flooding of areas that provide recreational activities. Although a significant adverse impact has been identified, CEQA does not require mitigation for impacts of the No-Project Alternative; therefore, no mitigation is provided. Therefore, impacts would be **significant and unavoidable**.

Transportation

Under the No-Project Alternative, there would be no increase in traffic volumes associated with transport of personnel, equipment, and materials to the project site during project construction activities, as described for the proposed project in Section 3.14, "Transportation." However, future flooding under this alternative could result in environmental impacts related to flooding of roadways and other transportation facilities. Although a significant adverse impact has been identified, CEQA does not require mitigation for impacts of the No-Project Alternative; therefore, no mitigation is provided. Therefore, impacts would be **significant and unavoidable**.

Tribal Cultural Resources

The No-Project Alternative would avoid all potential impacts on TCRs as described in Section 3.15, "Tribal Cultural Resources" for the proposed project, because there would be no construction activities and associated impacts on previously unidentified historical resources, archaeological resources, human remains, or TCRs. However, resulting future flooding under this alternative could result in environmental impacts related to flooding of residences, businesses, and would erode soil from adjacent lands into neighboring areas and drainages and result in potential damage of tribal cultural resources. Although a significant adverse impact has been identified, CEQA does not require mitigation for impacts of the No-Project Alternative; therefore, no mitigation is provided. Therefore, impacts would be **significant and unavoidable**.

6.3.2 Alternative 1: Avoidance of Noise Sensitive Receptors Near Levee Raise Areas

Alternative 1 was developed to achieve the same level of flow capacity and levee freeboard for most Cache Creek segments with levee raises while avoiding construction activities within 450 feet of approximately 26 sensitive receptors (i.e., residences) to avoid significant and unavoidable impacts from noise. Specifically, Alternative 1 would be nearly the same as the proposed project, except without raising levees within 450 feet of the approximately 26 sensitive receptors, with most clustered in approximately 5 locations along both sides of the creek as shown on **Figures 6-1 through 6-14.** This alternative would not affect the sediment removal areas within the channel of the creek. This alternative would meet the majority of the project objectives presented previously, except for the objective of restoring the capacity of the Cache Creek channel along the project reach to provide 3 feet of freeboard during the original design flow of 30,000 cfs. Although the design flow has occurred very rarely, there is still a potential for overtopping of flows at the locations where levees would not be raised under this alternative.

Aesthetics

Aesthetic impacts under this alternative would be essentially the same as described for the proposed project in Section 3.2, "Aesthetics." There would be short-term, temporary impacts from heavy equipment during construction activities, and as for the proposed project, aesthetic impacts would remain **less than significant**. No mitigation is required.

Agriculture and Forestry

Impacts on agriculture during construction activities under this alternative would be slightly reduced compared to those described for the proposed project in Section 3.3, "Agriculture and Forestry," because the reduction in levee raise construction activities would avoid construction activities on some agricultural lands. Agriculture and forestry impacts would remain **less than significant**. No mitigation is required.

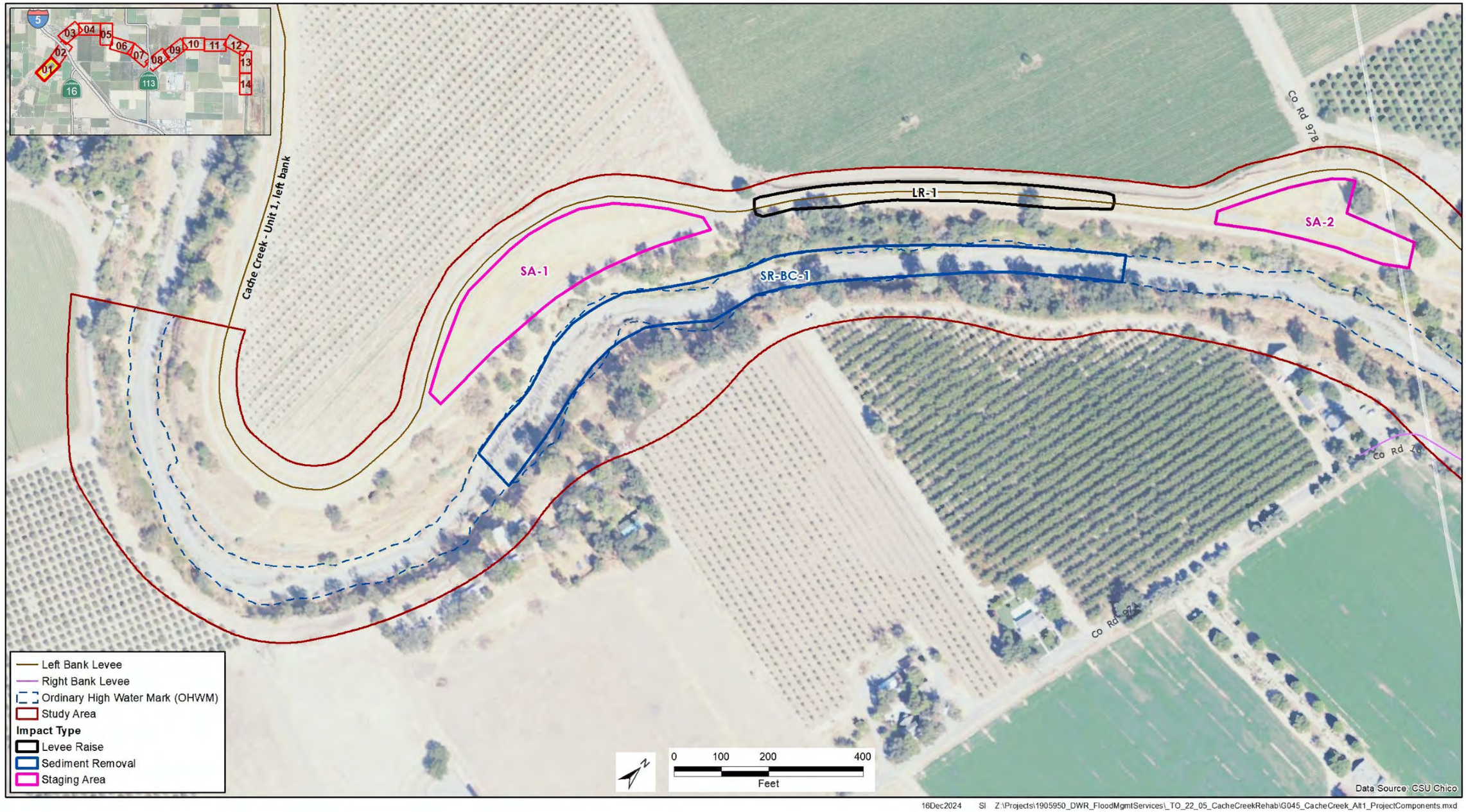


Figure 6-1. Alternative 1 Project Site

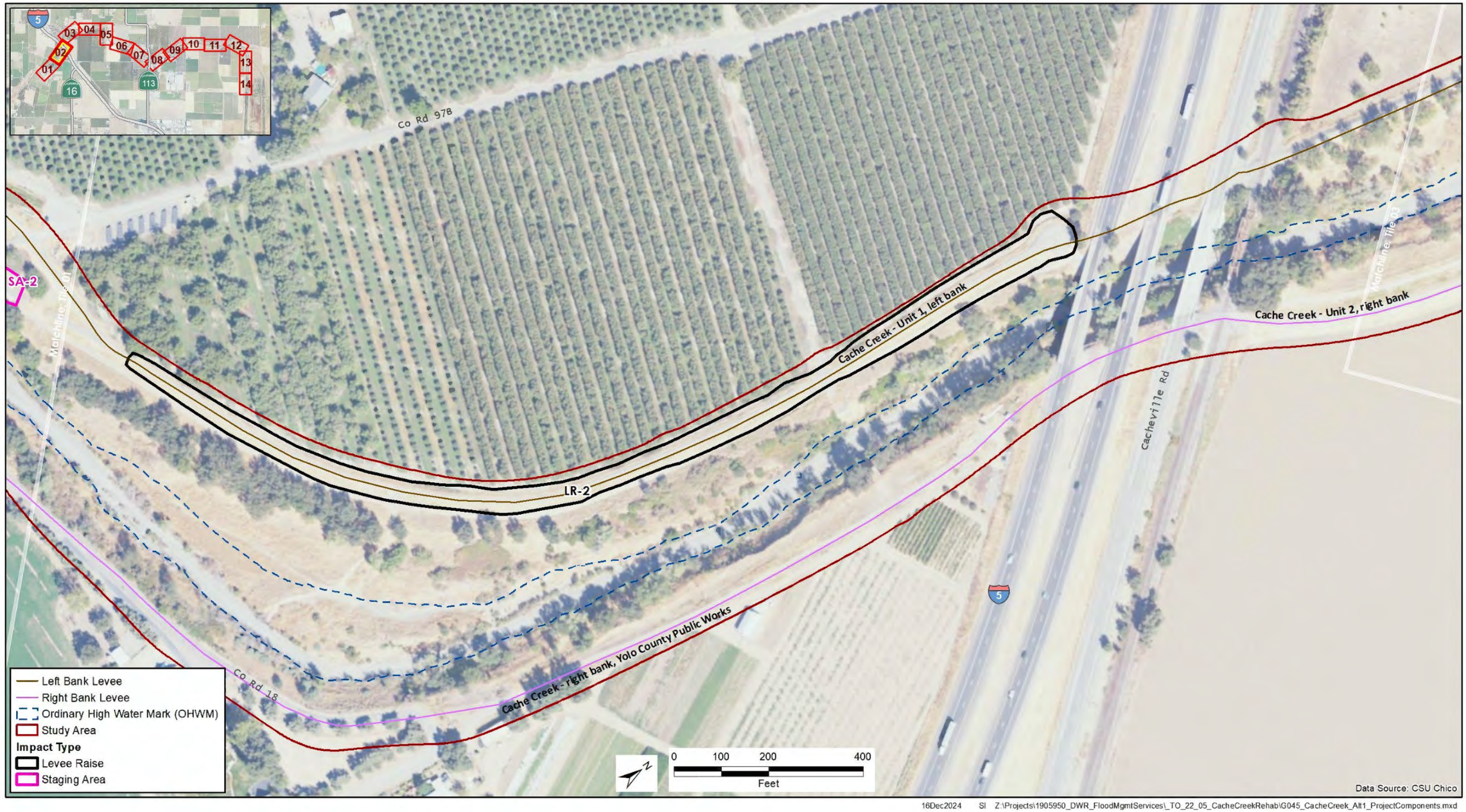


Figure 6-2. Alternative 1 Project Site (Continued)

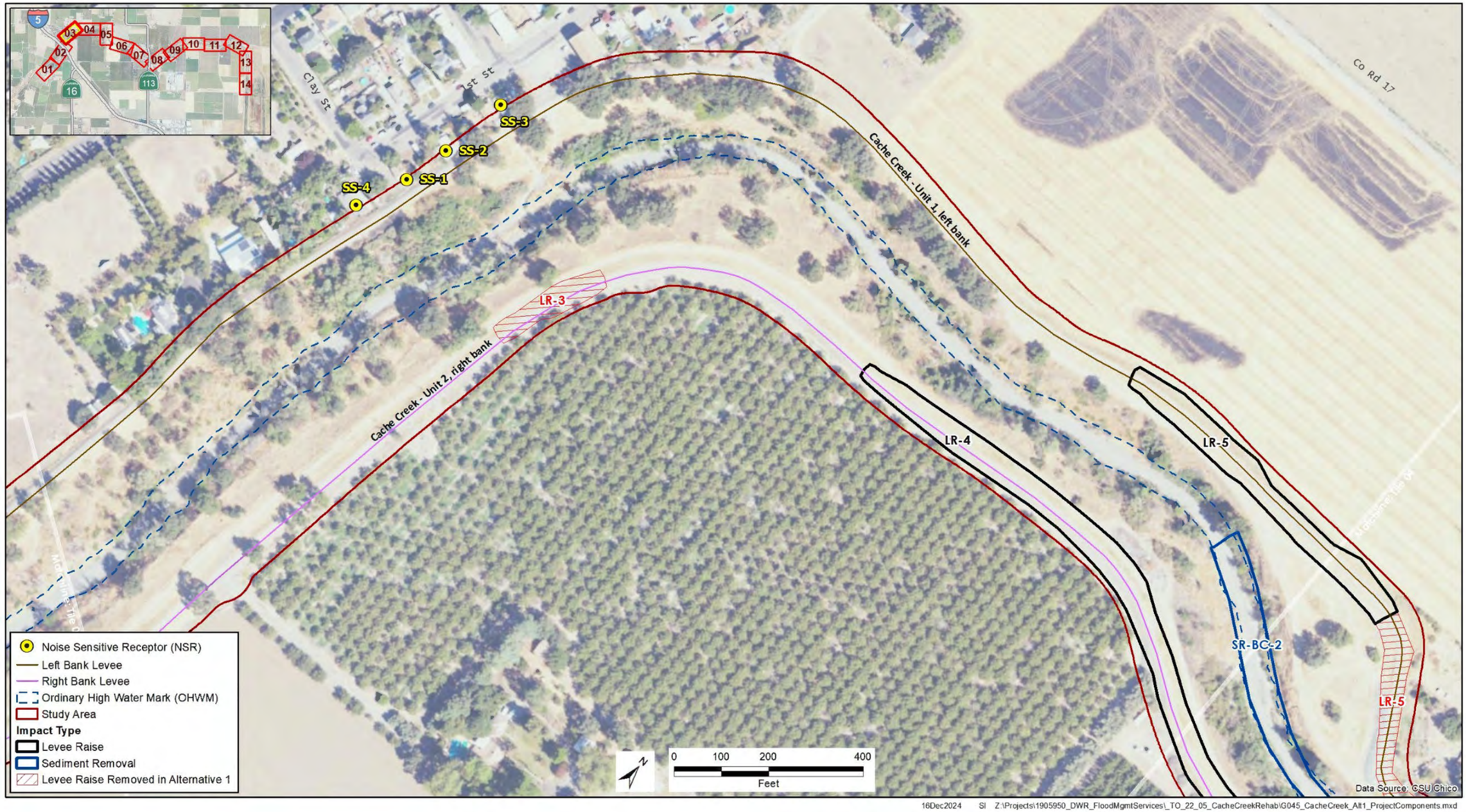


Figure 6-3. Alternative 1 Project Site (Continued)

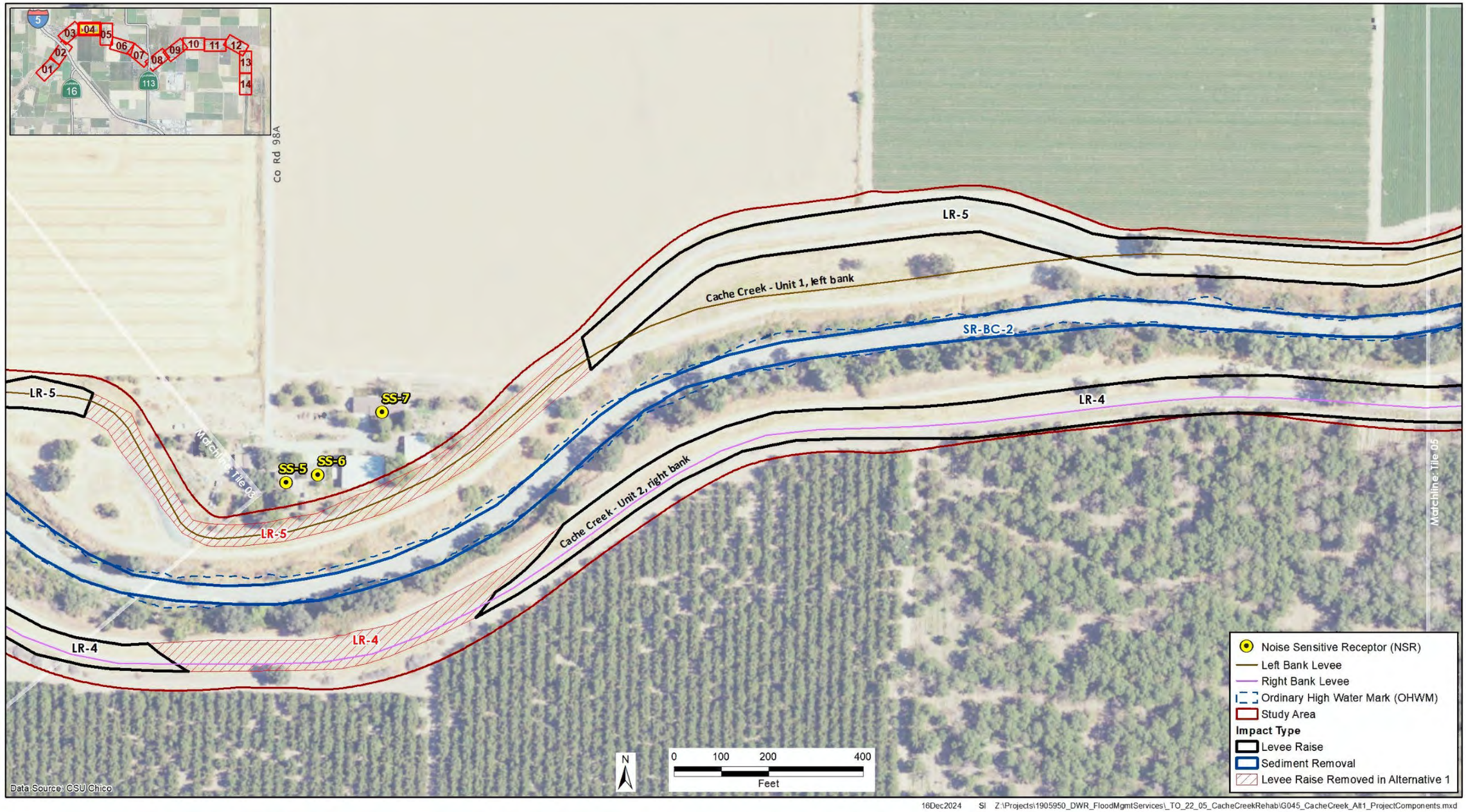


Figure 6-4. Alternative 1 Project Site (Continued)

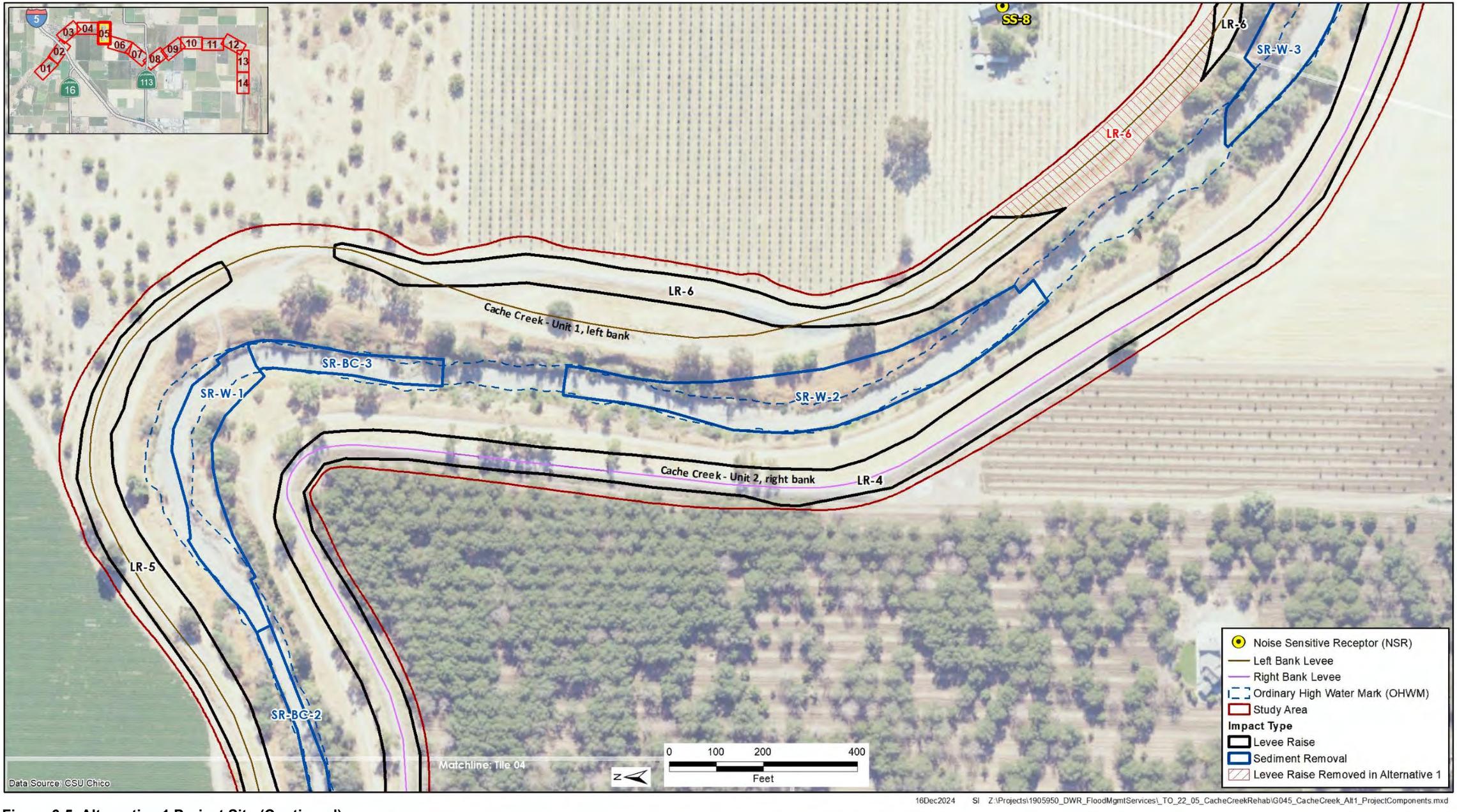


Figure 6-5. Alternative 1 Project Site (Continued)

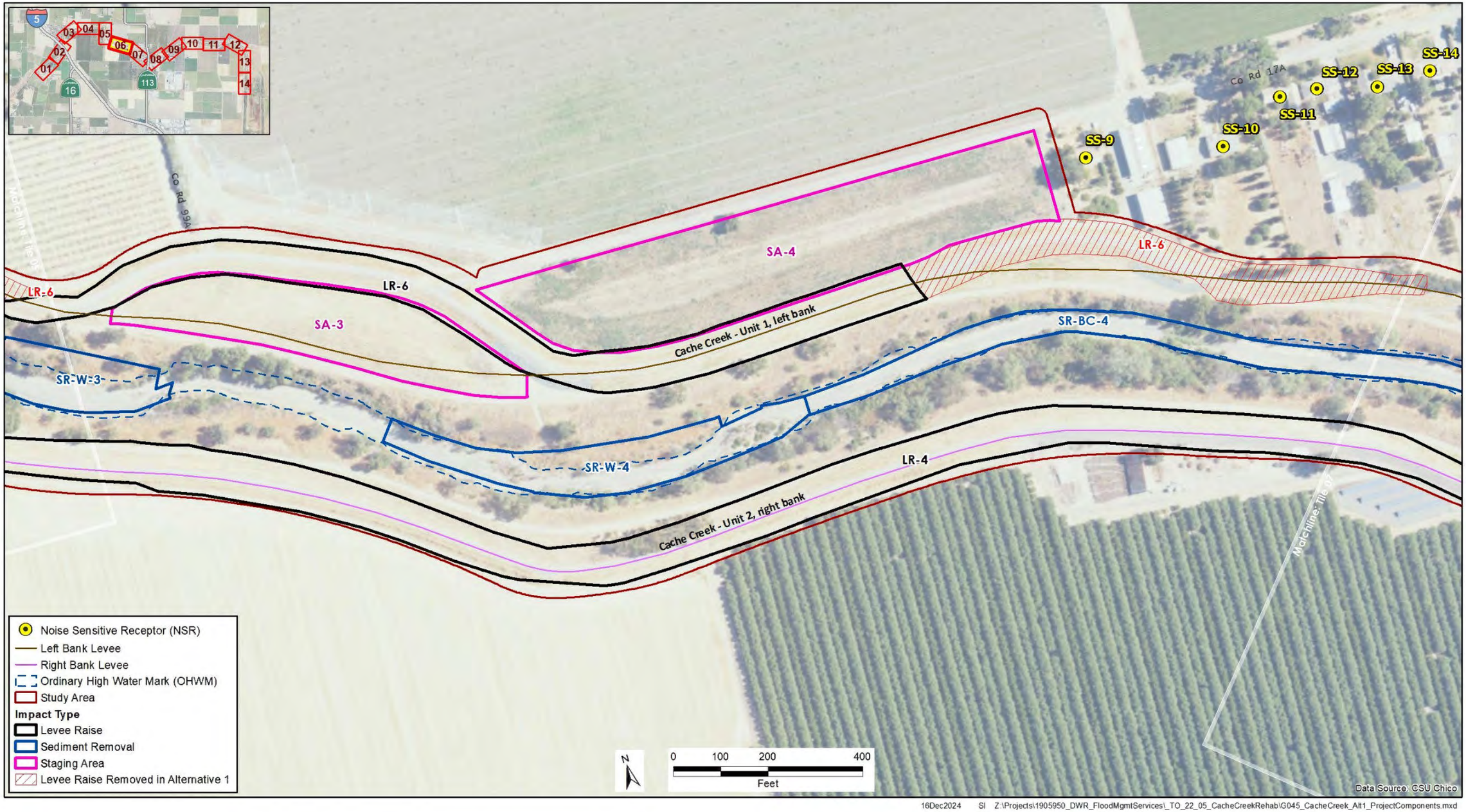
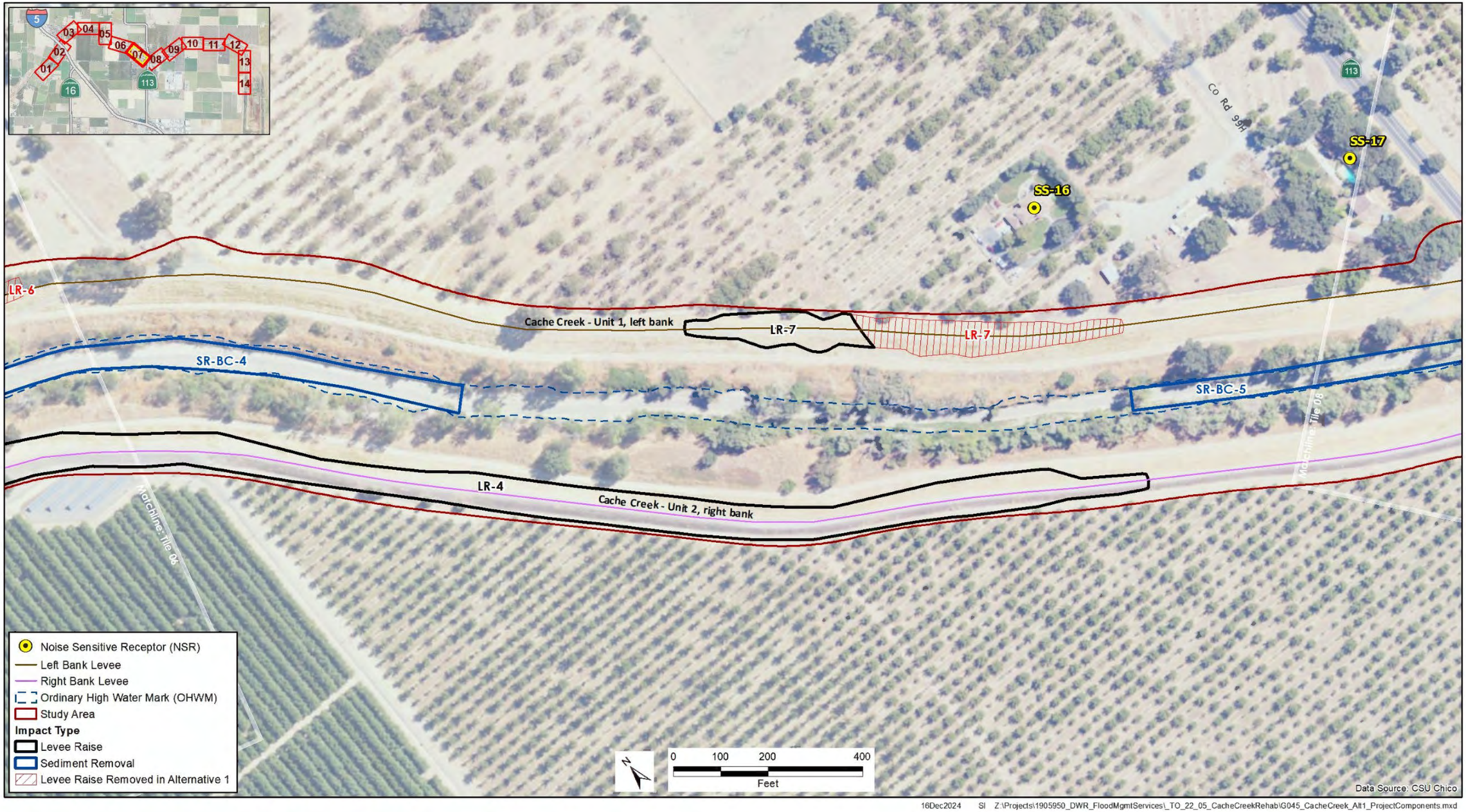


Figure 6-6. Alternative 1 Project Site (Continued)



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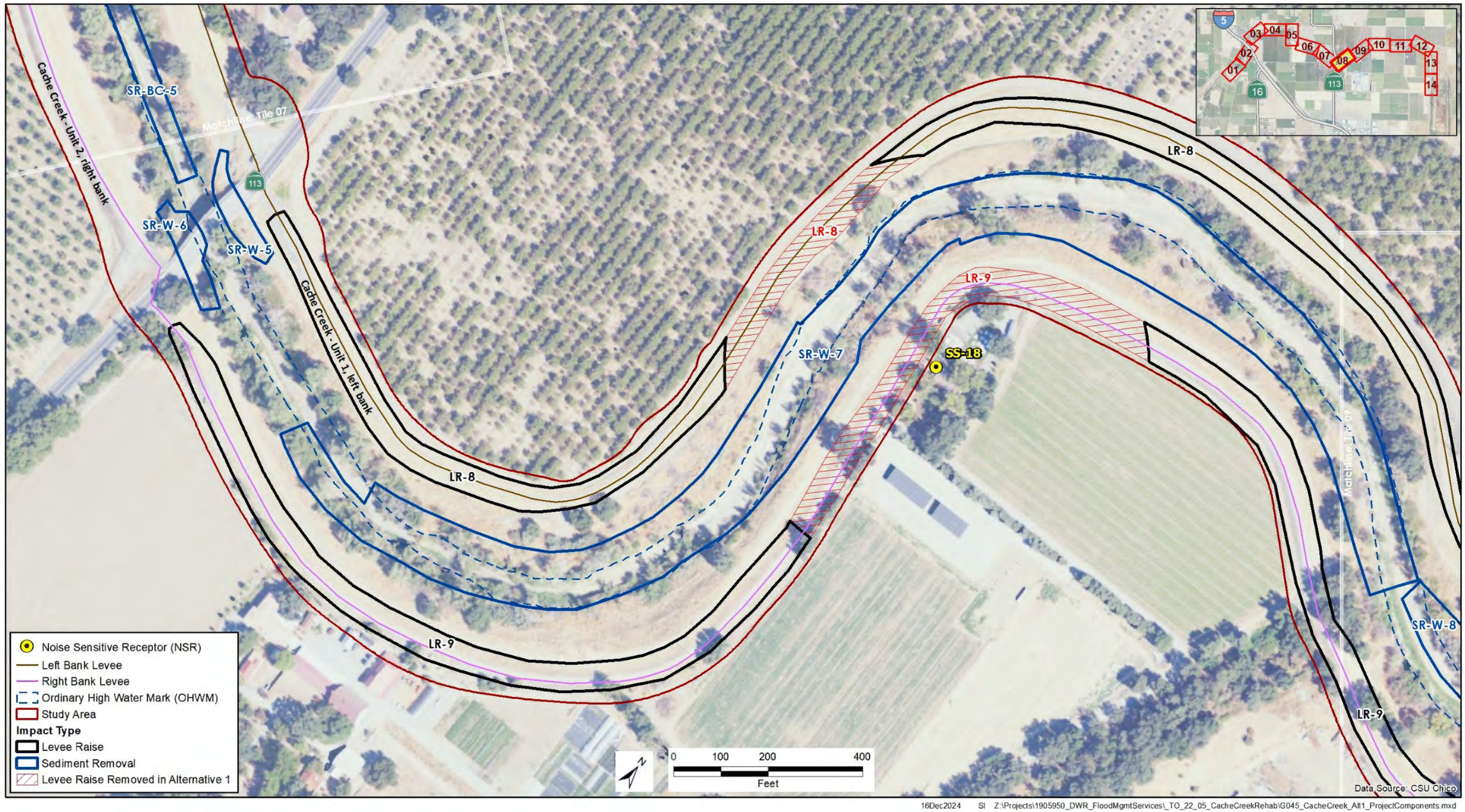

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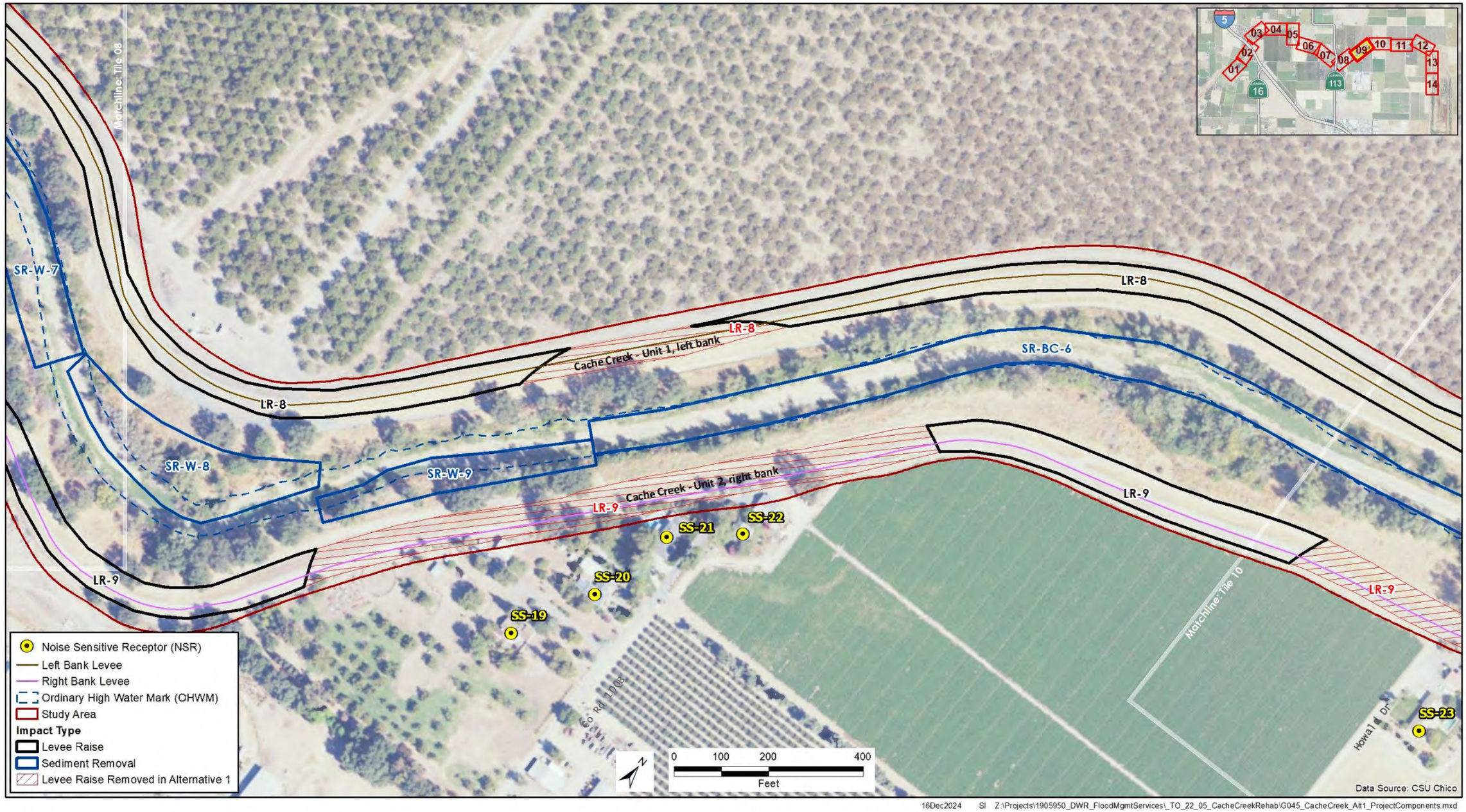

Figure 6-9. Alternative 1 Project Site (Continued)

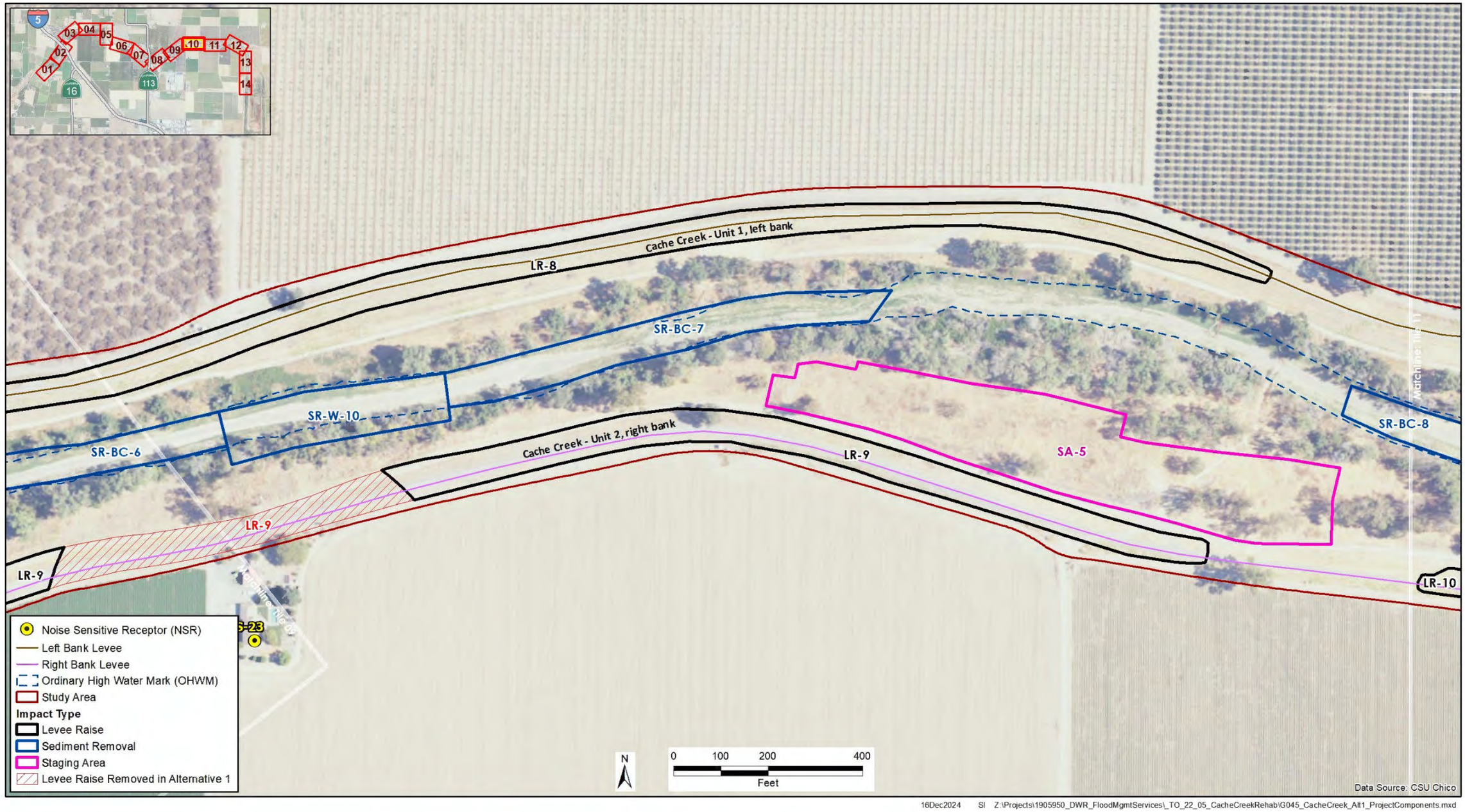

Figure 6-10. Alternative 1 Project Site (Continued)

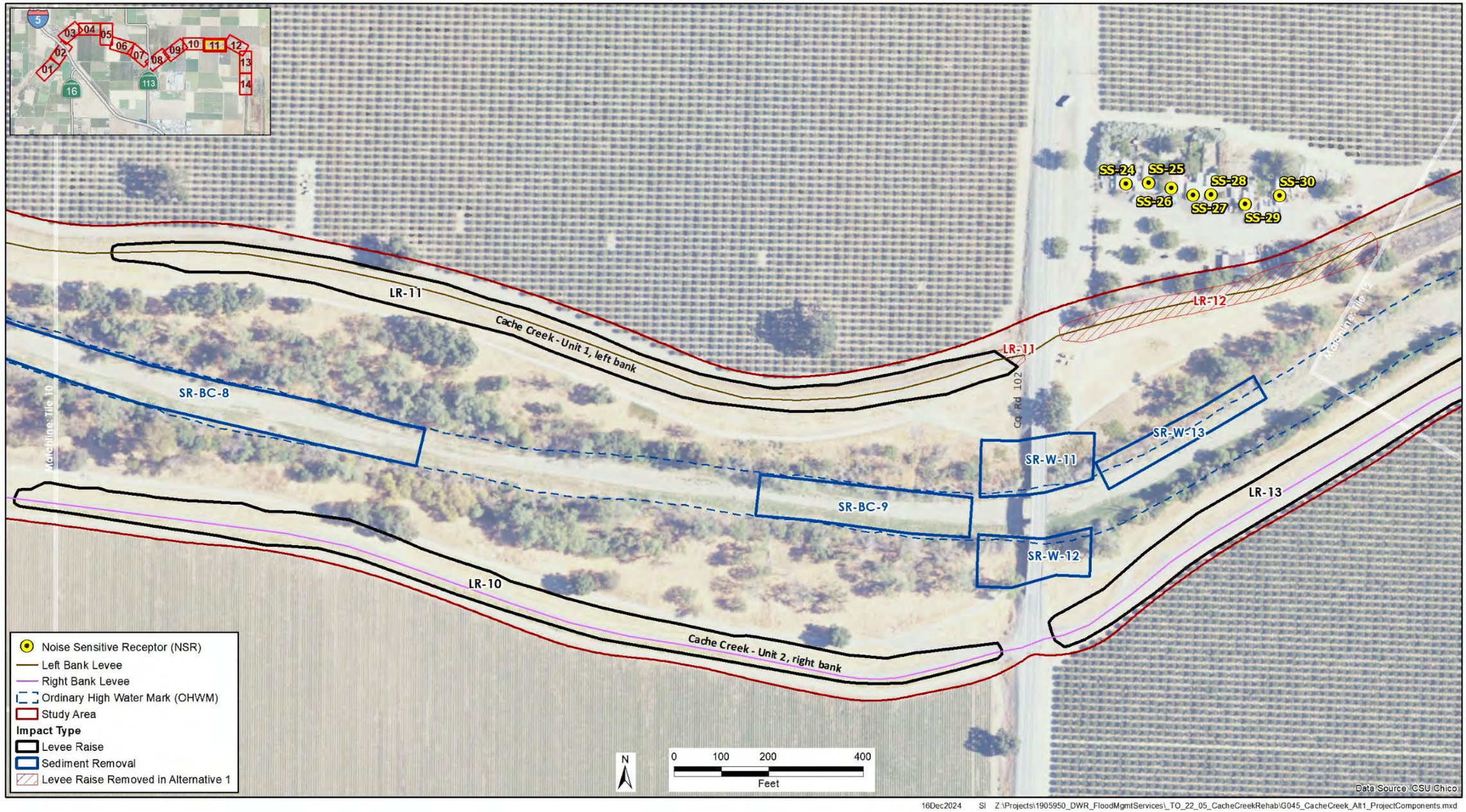

Figure 6-11. Alternative 1 Project Site (Continued)

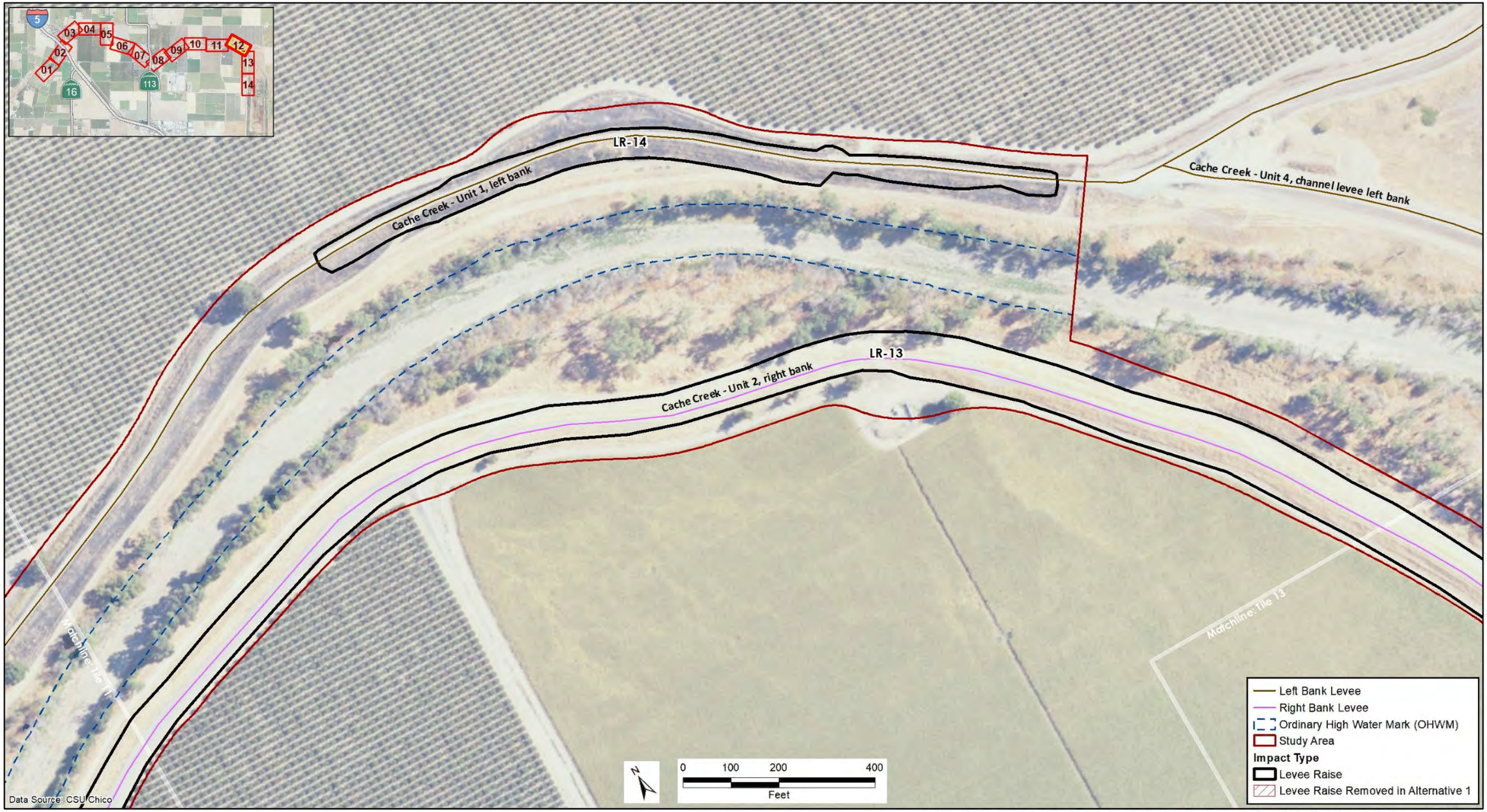

Figure 6-12. Alternative 1 Project Site (Continued)

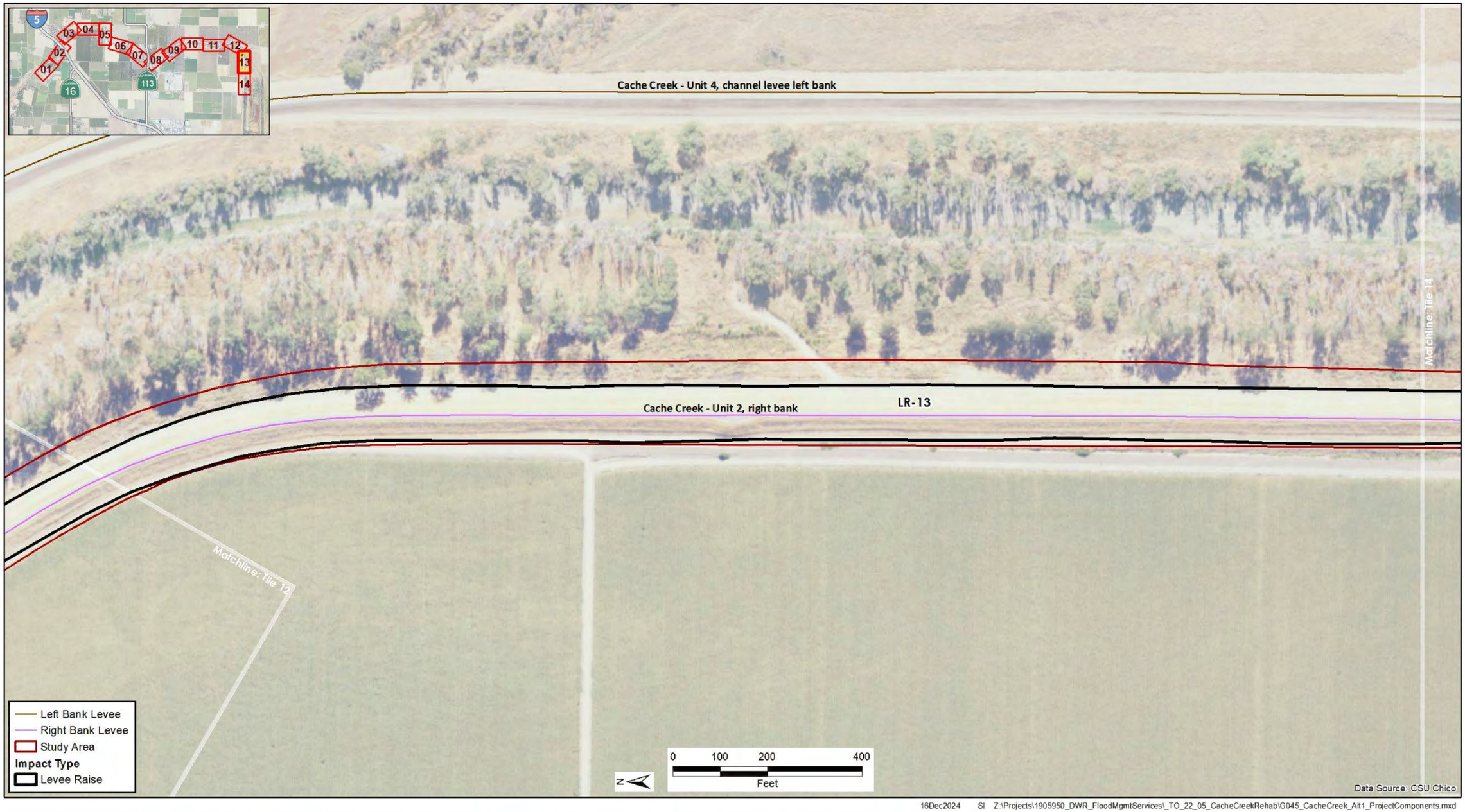

Figure 6-13. Alternative 1 Project Site (Continued)

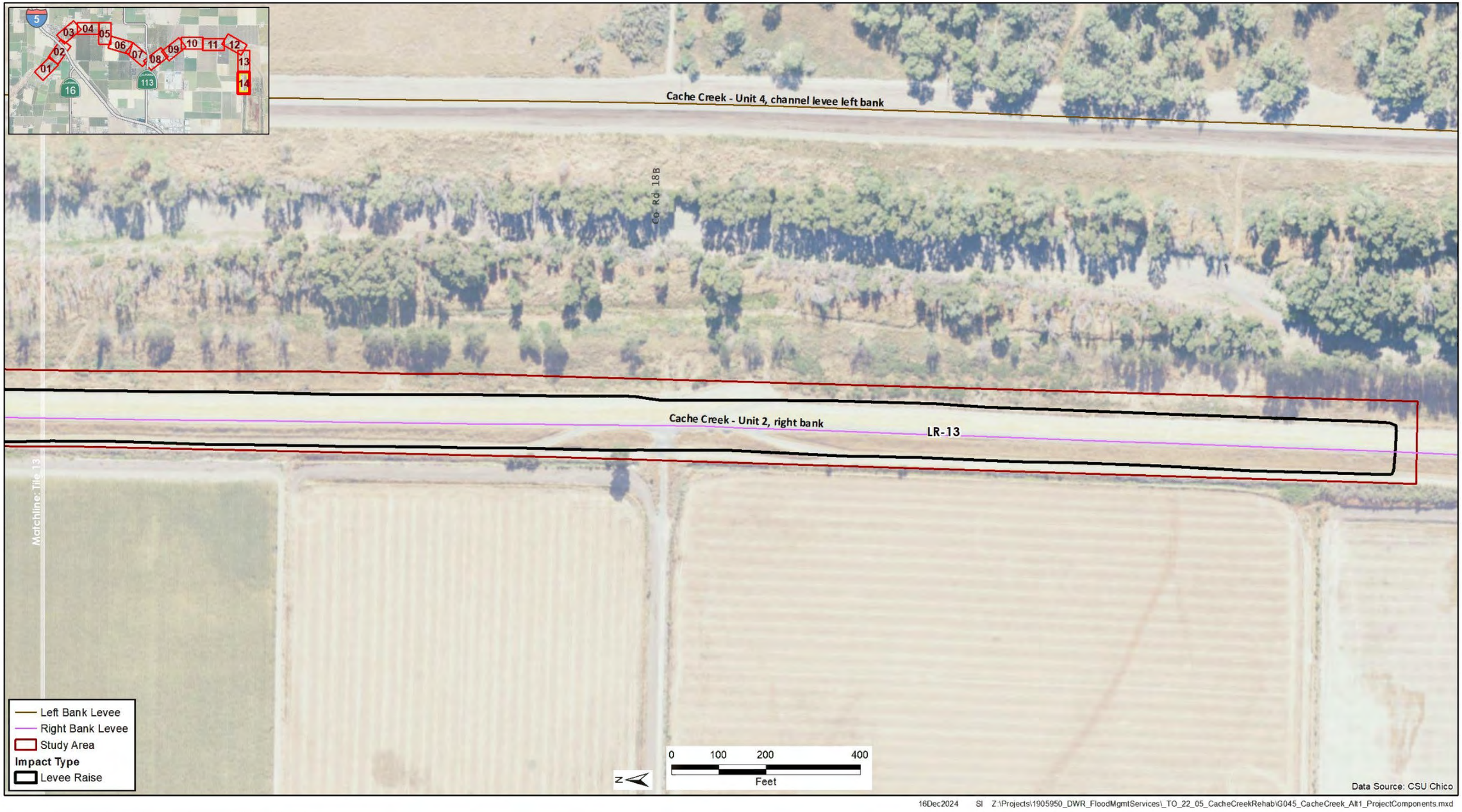

Figure 6-14. Alternative 1 Project Site (Continued)

Air Quality

Air quality impacts would be slightly reduced under this alternative compared to those described for the proposed project in Section 3.4, "Air Quality," because less construction activity would be required. Specifically, emissions would be slightly reduced from heavy equipment use and fugitive dust emissions from hauling on unpaved roads compared to the proposed project. However, all impact conclusions would remain the same as the proposed project under this alternative and would include the significant impact associated with exceeding YSAQMD's daily maximum fugitive dust emissions thresholds for construction activities. Mitigation for this significant impact would be the same as identified in Section 3.4, "Air Quality" for the proposed project, and significance after mitigation would be **significant and unavoidable**.

Biological Resources

Impacts on special-status species and habitat under this alternative would be slightly reduced compared to those described for the proposed project in Section 3.5, "Biological Resources," because ground disturbance and construction activities would not occur in areas of levee raise within 450 of sensitive noise receptors. However, Alternative 1 would not avoid impacts on Federal or State protected waters, and all impact conclusions would remain the same as the proposed project under this alternative and would include significant impacts. Mitigation measures for significant impacts would be the same as identified in Section 3.5 for the proposed project, and significance after mitigation would be **less than significant**. No additional mitigation would be required.

Cultural Resources

Potential impacts on cultural resources would be slightly reduced under this alternative compared to those described for the proposed project in Section 3.6, "Cultural Resources," because ground disturbance and construction activities would not occur in areas of levee raise within 450 feet of sensitive noise receptors. However, all impact conclusions would remain the same as the proposed project under this alternative and would include significant impacts. Mitigation measures for significant impacts would be the same as identified in Section 3.6 for the proposed project, and significance after mitigation would be **less than significant**. No additional mitigation would be required.

Geology, Soils, and Paleontological Resources

Impacts on geology, soils, and paleontological resources would be slightly reduced under this alternative compared to those described for the proposed project in Section 3.7, "Geology, Soils, and Paleontological Resources," because ground disturbance and construction activities would not occur in areas of levee raise within 450 feet of sensitive noise receptors. However, all impact conclusions would remain the same as the proposed project under this alternative and would include a significant impact related to erosion. Mitigation for this significant impact would be the same as identified in Section 3.7 for the proposed project, and significance after mitigation would be **less than significant**. No additional mitigation would be required.

Greenhouse Gas Emissions

GHG emissions would be slightly reduced under this alternative compared to those described for the proposed project in Section 3.8, "Greenhouse Gas Emissions," because less construction activity would be required. Specifically, emissions would be slightly reduced from heavy equipment use. However, all impact conclusions would remain the same as the proposed project under this alternative and would include a significant impact related to erosion. Mitigation for this significant impact would be the same as identified in Section 3.8 for the proposed project, and significance after mitigation would be **less than significant**. No additional mitigation would be required.

Hazards and Hazardous Materials

Impacts related to hazards and hazardous materials would be slightly reduced under this alternative compared to those described for the proposed project in Section 3.9, "Hazards and Hazardous Materials," because less construction activity would be required. This would slightly decrease the potential for construction-related accidental spills. All impact conclusions would remain the same as the proposed project under this alternative and would include a significant impact related to accidental spill of hazardous materials. Mitigation for this significant impact would be the same as identified in Section 3.9 for the proposed project, and significance after mitigation would be **less than significant**. No additional mitigation would be required.

Hydrology and Water Quality

Impacts on hydrology and water quality would be slightly reduced under this alternative compared to those described for the proposed project in Section 3.10, "Hydrology and Water Quality," because ground disturbance and construction activities would not occur in areas of levee raise within 450 of sensitive noise receptors. This would slightly decrease the potential for construction-related erosion and sedimentation and accidental spills. However, under this alternative the areas without levee raises would remain susceptible to potential overtopping during the design flow event at 30,000 cfs. All impact conclusions would remain the same as the proposed project under this alternative and would include a significant impact related to erosion and sedimentation and accidental spills of hazardous materials. Mitigation for this significant impact would be the same as identified in Section 3.10 for the proposed project, and significance after mitigation would be **less than significant**. No additional mitigation would be required.

Land Use and Planning

Land use and planning impacts under this alternative would be the same as described for the proposed project in Section 3.11, "Land Use," and impacts would be **less than significant**. No mitigation is required.

Noise

Noise impacts under this alternative would be reduced under this alternative compared to those described for the proposed project in Section 3.12, "Noise," because construction activities would not occur in areas of levee raise within 450 of sensitive noise receptors. There would be short-term, temporary impacts from heavy equipment use during excavation and raising levees, but noise sensitive receptors within 450 feet of levee raising identified for the proposed project

would be avoided by not raising levee segments. Implementing Mitigation Measure 3.12.1, "Implement Measures to Reduce Construction Noise and Vibration Effects" would reduce construction-related noise generation to the extent feasible and would reduce noise levels that could exceed significance thresholds within 450 feet of a sensitive receptor. Therefore, Alternative 1 would reduce impacts to less than significant with mitigation and this impact would no longer be significant and unavoidable. No additional mitigation would be required.

Recreation

Impacts on recreation under this alternative would be nearly the same as described for the proposed project in Section 3.13, "Recreation" even with not raising levees in the areas identified previously. Construction activities would include construction of earthen ramps for heavy vehicles to access the channel, vegetation clearing, sediment excavation, and raising levees in reaches on each bank. These activities would temporarily impact recreational use within and adjacent to the project site, including walking, birding, and wildlife viewing. Access to the project site and adjacent areas for recreational use would be restored after construction activities are completed. There would be no anticipated closures to the bike lane along CR 102 during construction; however, construction traffic could temporarily impact bicyclists traveling this route. This impact would be temporary and would not prohibit the use of the bike lane. Construction activities would not impact nearby recreational parks or open spaces located outside of the project site, such as Wild Wings Parks or the Preserve. Therefore, impacts on recreation from this alternative would be **less than significant**.

Transportation

Transportation impacts under this alternative would be the same as described for the proposed project in Section 3.14, "Transportation." The proposed project would generate a temporary increase in VMT during the construction period from mobilization and demobilization of construction equipment, materials deliveries, off hauling of sediment and vegetation debris, and worker vehicle trips. Daily worker commutes and hauling trips would generate the most trips. Only a slight reduction in VMT from slightly reduced construction activity compared with the proposed project as trips would be generated solely for construction activities. VMT generated from this alternative would be temporary during the construction period and would cease following completion of construction as under the proposed project. Temporarily impeding access to emergency vehicles along affected emergency access routes could affect response times for emergency response providers during the project's construction phase. However, in the case of an emergency, construction vehicles would move aside and halt to provide adequate access to emergency providers. These impacts would be **less than significant**. No additional mitigation would be required.

Tribal Cultural Resources

Potential impacts on cultural resources would be slightly reduced under this alternative compared to those described for the proposed project in Section 3.15, "Tribal Cultural Resources," because ground disturbance and construction activities would not occur in areas of levee raise within 450 of sensitive noise receptors. However, all impact conclusions would remain the same as the proposed project under this alternative and would include significant impacts. Mitigation measures for significant impacts would be the same as identified in Section 3.15 for the proposed

project, and significance after mitigation would be **less than significant**. No additional mitigation would be required.

6.4 Comparison of Impacts of the Alternatives

Table 6.1 summarizes the comparison of the relevant impacts of the alternatives, as described in the text that follows.

Table 6.1. Impact Conclusions for Alternatives Compared to the Proposed Project

Environmental Topic	Proposed Project	No-Project Alternative	Alternative 1
Aesthetics	LTS	SU	**LTS**
Agriculture and Forestry Resources	LTS	SU	LTS
Air Quality	SU	SU	**SU**
Biological Resources	LTSM	SU	**LTSM**
Cultural Resources	LTSM	SU	**LTSM**
Geology, Soils, and Paleontological Resources	LTSM	SU	**LTSM**
Greenhouse Gas Emissions	LTS	SU	**LTS**
Hazards and Hazardous Materials	LTSM	SU	**LTSM**
Hydrology and Water Quality	LTS	SU	LTS
Land Use and Planning	LTS	SU	LTS
Noise	SU	SU	**LTS**
Recreation	LTS	SU	**LTS**
Transportation	LTS	SU	**LTS**
Tribal Cultural Resources	LTSM	SU	**LTSM**
Overall Summary Comparison	**-**	**Less**	**Similar**

Notes: NI = no impact, LTS = less than significant, LTSM = less than significant with mitigation, SU = significant and unavoidable. Impacts in italics would be less than those of the proposed project. Impacts in bold would be greater.

6.4.1 No-Project Alternative

The No-Project Alternative would avoid the construction-related adverse impacts of the proposed project because no construction would occur, and the landscape of the project site would be unchanged. However, the benefits of the proposed project would not be realized. Therefore, the No-Project Alternative would have greater impacts than the proposed project on environmental resources related to on-going flooding such as significant impacts on soils, hydrology, and water quality. Although the No-Project Alternative would have none of the impacts of the proposed project, and existing conditions would remain unchanged, the substantial beneficial effects of the proposed project would not occur, and flooding would continue to occur.

6.4.2 Alternative 1: Avoidance of Noise Sensitive Receptors Near Levee Raise Areas

Alternative 1 would slightly decrease the construction footprint and construction equipment use because the segments of levees within 450 feet of sensitive noise receptors would not be raised. This would slightly decrease most impacts as compared to the proposed project. Although impacts from noise would be reduced to less than significant under this alternative reducing the impact conclusion under the proposed project from significant and unavoidable. Nearly all other impacts under this alternative would generally be slightly reduced under this alternative, and all impact conclusions identified in Chapter 3 for the proposed project would remain the same, and no significant or significant impacts, except for noise during construction, would be reduced to less than significant. However, this alternative does not meet the project objective of raising all sections of levees to an elevation that meets the freeboard and channel conveyance capacity of the original design which could result in overtopping where segments of levees are not raised and continued flood risk in those areas without levee raises.

6.5 Environmentally Superior Alternative

Based on the comparison of relevant impacts of the alternatives, as described in Section 6.3 and summarized in Table 6.1, the proposed project is considered to be the environmentally superior alternative among all alternatives.

The No-Project Alternative would not result in the significant construction-related impacts identified for the proposed project, including the significant and unavoidable impacts on air quality and noise (although all impacts are temporary and other significant impacts are less-than-significant with mitigation). More importantly, the No-Project Alternative would result in continued overtopping and associated local flooding, erosion, and water quality impacts that would be significant impacts. These long-term significant impacts of the No-Project Alternative are considered greater than the long-term significant and unavoidable impact of the temporary construction-related air quality and noise impacts.

Alternative 1 (Avoidance of Sensitive Noise Receptors Near Levee Raise Areas) would result in a decrease in noise impacts on sensitive noise receptors to less-than-significant levels. However, all other impacts would remain the same with a slight reduction in impact severity. Alternative 1 does not meet all the project objectives and would leave segments of levee at elevations below freeboard requirements at the design flow of 30,000 cfs and could result in future overtopping and continued flood risk during high flows in the channel at these locations where levee raises would not be constructed.

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Chrissy Burns.....Air Quality, Noise, Transportation

Ryan Snyder.....GIS

Val Yap .....Graphics

Marguerite Myers.....Word Processing

Chapter 8. References

Executive Summary

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Chapter 1. Introduction

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Chapter 2. Project Description

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Section 3.1. Approach to the Environmental Analysis

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Chapter 6. Alternatives to the Proposed Project

No references cited.

Chapter 7. Report Preparers

No references cited.

Appendix A. Notice of Preparation and Scoping Comments

DATE: August 7, 2023

TO: Interested Persons

FROM: Jeff Schuette, Senior Environmental Supervisor

RE: NOTICE OF PREPARATION OF AN ENVIRONMENTAL IMPACT REPORT AND SCOPING MEETING FOR THE CACHE CREEK CHANNEL AND LEVEE REHABILITATION PROJECT

COMMENT PERIOD

August 7, 2023 – September 5, 2023

DOCUMENT AVAILABILITY

Website: water.ca.gov/News/Public-Notices

SCOPING MEETING

In-Person Meeting on August 24, 2023; TIME: 5 p.m.

ADDRESS:
California Agricultural Museum
1958 Hays Lane
Woodland, CA 95776

Trustee and responsible agencies and members of the public are invited to attend and provide input on the scope of the EIR. Written comments regarding relevant issues may be submitted during the meetings.

INTRODUCTION

The California Department of Water Resources (DWR) is the Lead Agency for preparation of an Environmental Impact Report (EIR) for the Cache Creek Channel and Levee Rehabilitation Project (proposed project). The EIR to be prepared by DWR will evaluate potential significant environmental effects of construction of the proposed project. Written comments regarding the issues that should be covered in the EIR, including potential alternatives to the proposed project and the scope of the analysis, are invited.

The EIR for the proposed project is being prepared in compliance with the California Environmental Quality Act (CEQA). Consistent with the requirements of CEQA Guidelines section 15082, DWR as lead agency has issued this Notice of Preparation (NOP) to inform responsible agencies, the public, and trustee agencies of the decision to prepare an EIR. The

purpose of this NOP is to provide information describing the proposed project and its potential environmental effects for those who may wish to comment regarding the scope and content of the information to be included in the EIR. Agencies should comment on such information as it relates to their statutory responsibilities in connection with the project.

The EIR will provide an evaluation of potential environmental impacts associated with development of the proposed project. The proposed project location, description, and environmental issue areas that may be affected by the proposed project are described below. The EIR will evaluate potentially significant environmental impacts of the proposed project, on a direct, indirect, and cumulative basis; identify mitigation measures that may be feasible to lessen or avoid such impacts; and identify alternatives that may lessen one or more potentially significant impacts of the proposed project.

PROJECT BACKGROUND

Cache Creek drains an area of approximately 1,139 square miles in Lake, Colusa, and Yolo Counties. Cache Creek is a component of the Sacramento River Flood Control Project (SRFCP), serving as the sole discharge of the Cache Creek drainage basin into the Yolo Bypass. Cache Creek levees provide flood protection to the Town of Yolo, the City of Woodland, and the adjacent agricultural lands. The portion of Cache Creek within the SRFCP includes levees on both banks in the lower reach of the creek and the Cache Creek Settling Basin (CCSB), which was constructed to prevent the discharge of sediment into the Yolo Bypass downstream. Cache Creek's levees were constructed by the United States Army Corps of Engineers (USACE) in the 1960s to provide three feet of freeboard during a design flow of 30,000 cubic feet per second (cfs), a flow approximately equivalent to a 10-year storm event. Following their construction, USACE transferred responsibility of operations and maintenance of the levees to the State (Central Valley Flood Protection Board). Under California Water Code (CWC) section 8361, DWR, on behalf of the State, operates and maintains the levees.

Since then, sediment deposits and thick vegetation have accumulated in Cache Creek, combined with the effects of vertical ground displacement (i.e., subsidence), have reduced the overall flow capacity of the channel. Intermittent floods over several decades have continued to deposit new sediment throughout the channel. Hydraulic evaluation indicates there is a high likelihood that continued vertical displacement in the region contributes to deposition by decreasing the channel slope, which in turn decreases flood flow velocities. Constrictions due to sediment deposition, compounded by thick vegetation growth (woody and invasive) prevalent along the main channel, further reduce capacity to convey the design flood flow.

The reduced capacity in Cache Creek caused water to overtop both levees on February 27, 2019, despite flood flow measuring less than the conditions the levees were designed to contain. Because of the severe freeboard deficiencies on both levees along the project reach, the channel cannot safely contain the original design flows with required freeboard. The flood carrying capacity of Cache Creek must be restored to contain flood flows and protect adjacent communities.

PROJECT LOCATION/SETTING

DWR is proposing to restore the design flood conveyance capacity along an approximately nine-mile-long reach of Cache Creek (referred to as the project reach) by removing sediment along with vegetation and slightly raising levee elevations at selected locations. The project reach is located in unincorporated Yolo County near the Town of Yolo, approximately two miles

north of the City of Woodland and about 4.5 miles west of the Sacramento River, in Yolo County, as shown in Figure 1. The following transportation bridges cross Cache Creek (in order from upstream to downstream): Interstate 5 (I-5) southbound and northbound, County Road 99W, Union Pacific Railroad, State Route (SR) 113, and County Road 102. The upstream end of the project reach is approximately 1.6 miles west of the I-5 bridge. The downstream end of the project reach is at the terminus of a training levee where the channel extends into the CCSB.

PROJECT DESCRIPTION

PROJECT OBJECTIVES

The overall objective of the proposed project is to meet DWR's public safety and flood maintenance responsibilities. Objectives include:

- restore the capacity of the Cache Creek channel along the project reach to provide three feet of freeboard during the original design flow of 30,000 cfs;
- implement the goals of the Central Valley Flood Protection Plan by reducing flood risk to local urban and rural areas,
- implement a combination of actions such as sediment removal along with vegetation removal, and raising levees to efficiently and cost effectively restore channel capacity;
- improve levees to not exceed the original design parameters to the extent possible; and
- conduct project activities in a manner that minimizes impacts to riparian habitat and other sensitive biological resources.

PROJECT ELEMENTS

The proposed project would restore the original design flow and freeboard within the leveed area of Cache Creek. Specifically, DWR is proposing to: 1) remove sediment and vegetation from the channel; and, 2) slightly raise existing levee elevations. The overall schedule for construction of the proposed project is anticipated to begin in 2024 and proceed over two years to completion in 2026. Operation and maintenance (O&M) of the Cache Creek channel and flood infrastructure are covered under the existing Environmental Permitting for Operations and Maintenance Project EIR (State Clearinghouse Number (SCH #) 2015052035) that was approved and certified on January 5, 2018. Therefore, O&M will not be included in the analysis of impacts of the proposed project described in this NOP. The proposed project site boundary and elements are described below and are identified on **Figures 2**, **3**, and **4**.

Sediment Removal

DWR proposes to excavate approximately 200,000 cubic yards (cy) of sediment from Cache Creek to help restore the channel's capacity. No fill would be added to the main channel as part of the project. Areas where channel excavation would occur are shown in Figures 3 and 4. The typical depth of cuts would range from approximately 1 to 2 feet for limited removal and between 5 and 30 feet for sections of substantial removal. Typical side slopes on areas of removal would vary, targeting 2:1 slopes. To accommodate sediment removal, DWR would also remove vegetation within the channel at sediment removal locations.

Levee Improvements

DWR proposes to raise some of the levees on the east and west banks of Cache Creek up to 2.5 feet. Typical levee side slopes would be approximately 2:1 on the landside and 3:1 on the waterside. Some impacts to adjacent land may occur where the levee footprint must expand to meet the new height and additional rights-of-way may need to be acquired at these locations.

ENVIRONMENTAL EFFECTS AND SCOPE OF THE EIR

The EIR will analyze potentially significant impacts that could result from construction of the proposed project. Pursuant to section 15063(a) of the CEQA Guidelines, DWR has determined that an EIR is necessary, and an Initial Study has not been prepared for the proposed project. The EIR will evaluate the full range of environmental issues contemplated for consideration under CEQA and the CEQA Guidelines, as follows:

- **Aesthetics –** Temporary changes in views or visual character of the creek during construction and potential long-term changes from improvements to the creek and levee system.
- **Agriculture and Forestry Resources –** Potential conflict with agriculture operations near construction activities.
- **Air Quality –** Temporary, short-term increases in pollutant emissions associated with construction activities.
- **Biological Resources –** Short- and long-term effects on terrestrial and aquatic habitats, including riparian habitat, and special-status species.
- **Cultural Resources –** Potential disturbance or destruction of known or unknown historic or archaeological resources during construction.
- **Geology, Soils and Paleontology –** Temporary and short-term increases in erosion during construction and potential disturbance or destruction of known or unknown paleontological resources during construction.
- **Greenhouse Gas Emissions –** Temporary, short-term increases in greenhouse gas emissions associated with construction activities.
- **Hazards and Hazardous Materials –** Potential introduction of contaminants into water courses and exposure of construction workers to hazardous materials during construction activities.
- **Hydrology and Water Quality –** Potential short- and long-term transport of sediments and other pollutants into water courses and potential effects on flood conveyance and flood control.
- **Land Use and Planning –** Potential conflicts with land use plans and zoning designations.
- **Noise and Vibration** - Temporary and short-term increases in noise and vibration levels near sensitive receptors during construction.
- **Recreation –** Temporary and short-term disturbance of land-based recreational activities in areas adjacent to construction sites.
- **Transportation –**Temporary and short-term disruption of traffic or emergency access by

haul truck traffic during construction.

- **Tribal Cultural Resources –** Potential disturbance or destruction of known Tribal cultural resources during construction.
- **Utilities and Service Systems –** Temporary and short-term disruption of utilities within construction zones that require removal or relocation.
- **Wildfire –** Temporary, short-term increase in wildfire risk associated with construction activities.
- **Growth Inducement –** Potential for indirect growth inducement from flood protection improvements.
- **Cumulative Impacts –** Potential contribution to cumulative impacts from construction activities.

The following resource topics are not contemplated for evaluation in the EIR due to the determination by DWR that there will be no impacts:

- **Energy –** Project implementation would not include wasteful or unnecessary consumption of energy resources, because it would be required to meet air quality and greenhouse gas criteria that require the use of efficient equipment. The proposed project would be constructed within two field seasons using efficient equipment. Because the proposed project would not change operations and maintenance from existing conditions, it would cause no long-term impacts to energy resources and would not conflict with renewable energy or energy efficiency plans. Consequently, the proposed project would not have the potential to cause a potentially significant impact on energy resources.
- **Mineral Resources –** The project site is designated MRZ-1 in the Yolo County General Plan; an MRZ-1 designation means that adequate information indicates that no significant mineral deposits are present on the project site. Therefore, the proposed project would not result in the long-term loss of access to regionally or locally important deposits of mineral resources and would not preclude future mineral resource extraction.
- **Population and Housing –** The proposed project does not include housing or commercial development that would directly or indirectly induce population growth. Project construction would occur in an undeveloped area, would not displace people or housing, and would be completed by local construction workers that would not need temporary housing. Consequently, the proposed project would have no impact on population and housing.
- **Public Services –** The proposed project would not require any new or increased public services. Moreover, the proposed project would not affect existing public services. The proposed project would be constructed within flood control easements and undeveloped land that does not have public services that could be adversely affected. Consequently, the proposed project would not have the potential to cause a potentially significant impact on public services.

In addition, the EIR will identify and evaluate alternatives to the proposed project. The No-Project Alternative and at least one other alternative to the proposed project will be evaluated in the EIR in accordance with CEQA and the State CEQA Guidelines. DWR conducted preliminary evaluations of potential alternatives as part of the preliminary design process to develop the proposed project and is currently identifying feasible alternatives that could reduce at least one potentially significant impact of the proposed project.

SUBMITTING COMMENTS

Comments and suggestions as to the appropriate scope of analysis in the EIR are invited from all interested parties. Written comments or questions concerning the EIR for the proposed project should be directed to DWR at the following address by 5:00 p.m. on September 5, 2023. Please include the commenter's full name and address (verbal comments or questions will not be recorded or accepted into the EIR administrative record).

Mr. Jeff Schuette
Senior Environmental Scientist
California Department of Water Resources,
Flood Maintenance and Operations Branch (FMO)
3310 El Camino Avenue
Sacramento, CA 95821
Phone (916) 820-7693
Email: jeff.schuette@water.ca.gov

Figure 1. Cache Creek Regional Location

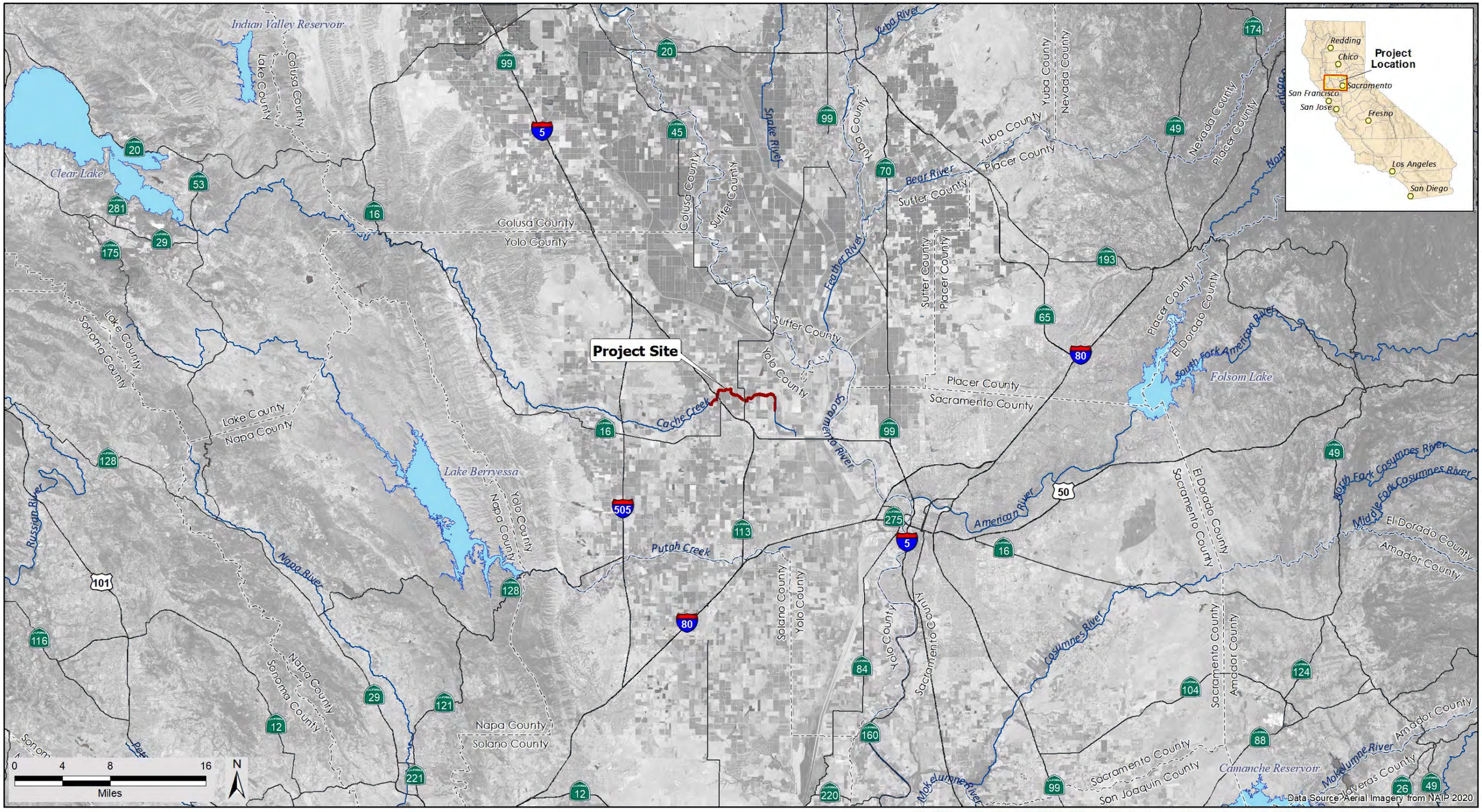


Figure 2. Project Site Overview

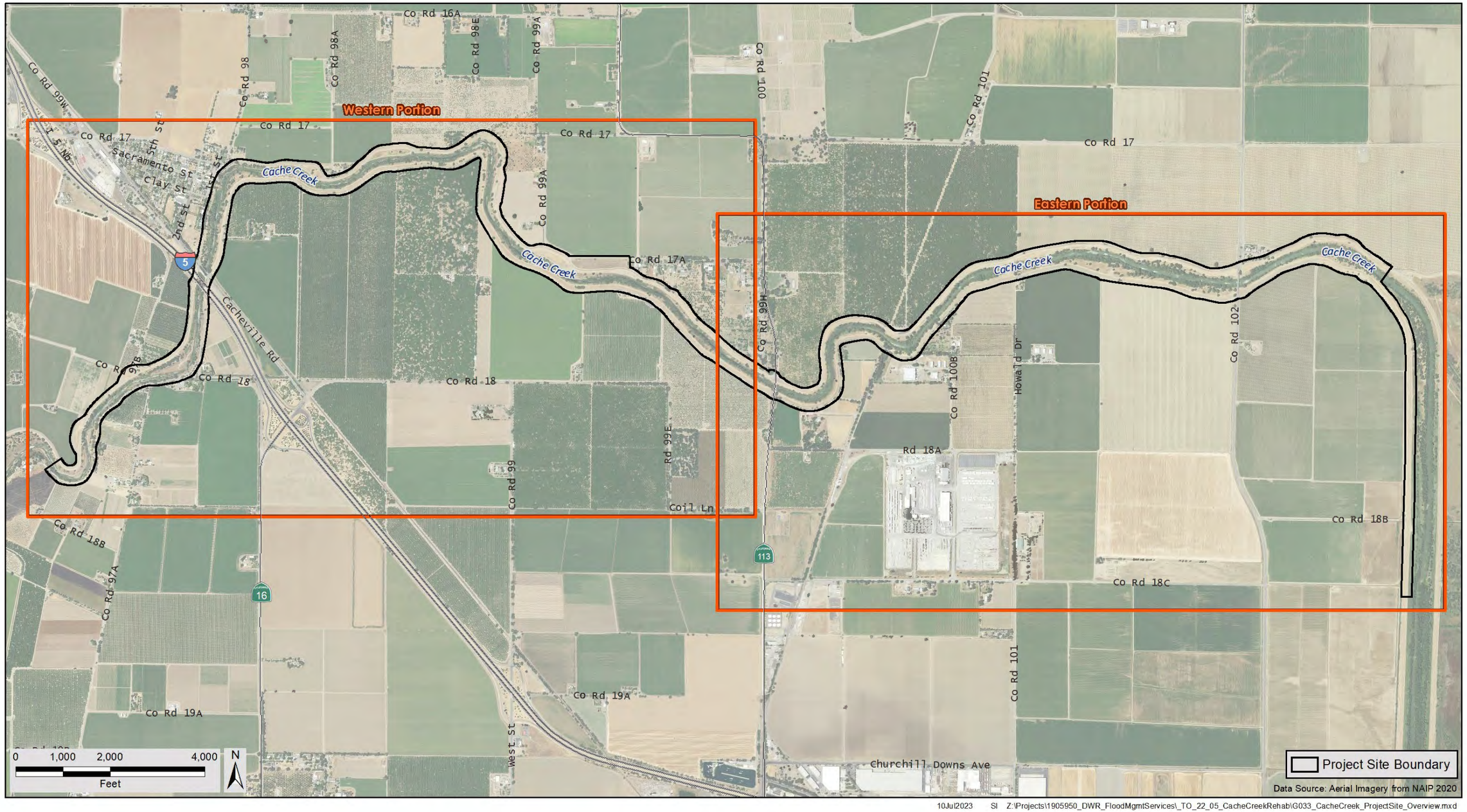


Figure 3. Western Portion of Proposed Project Site

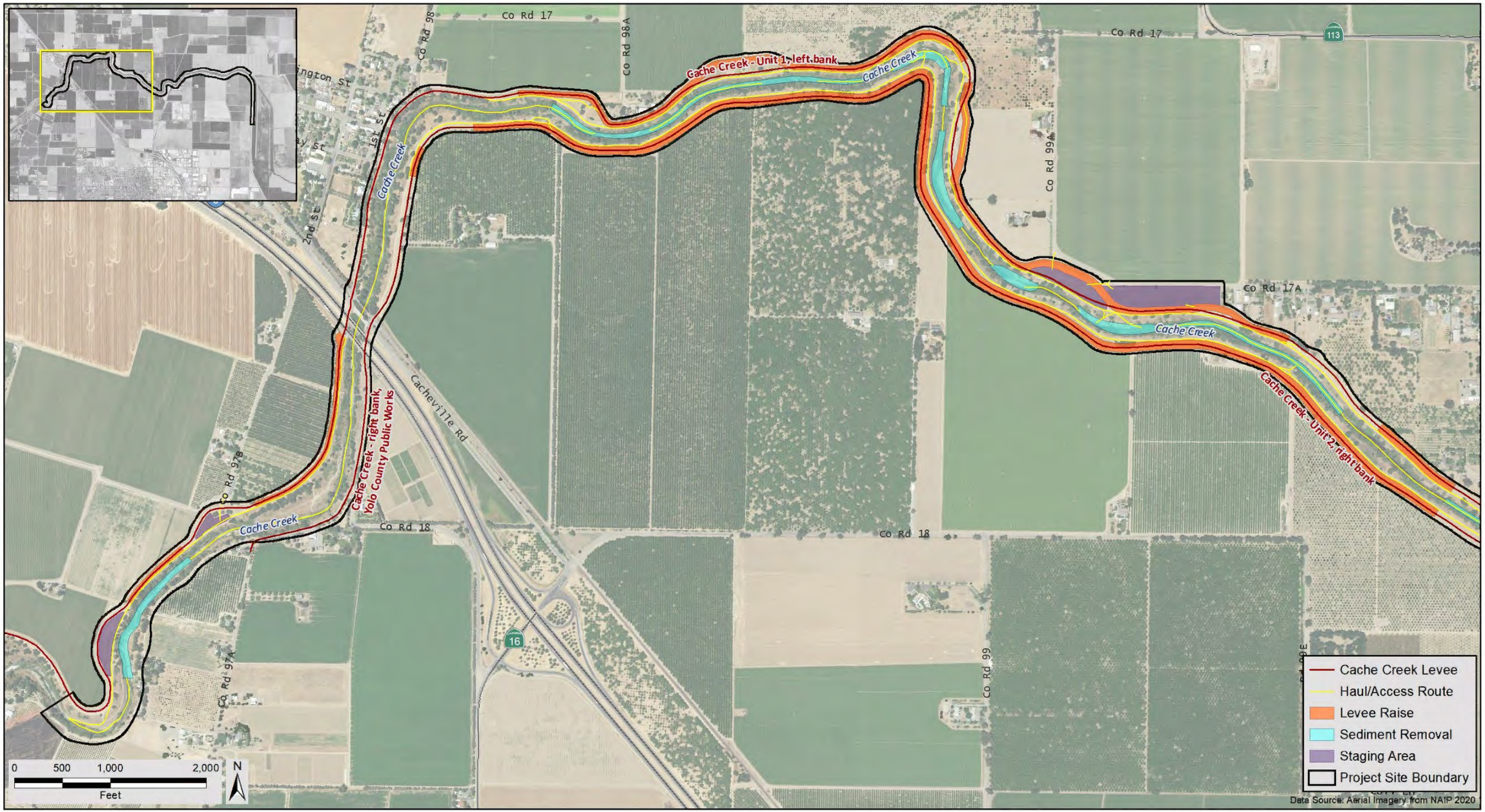
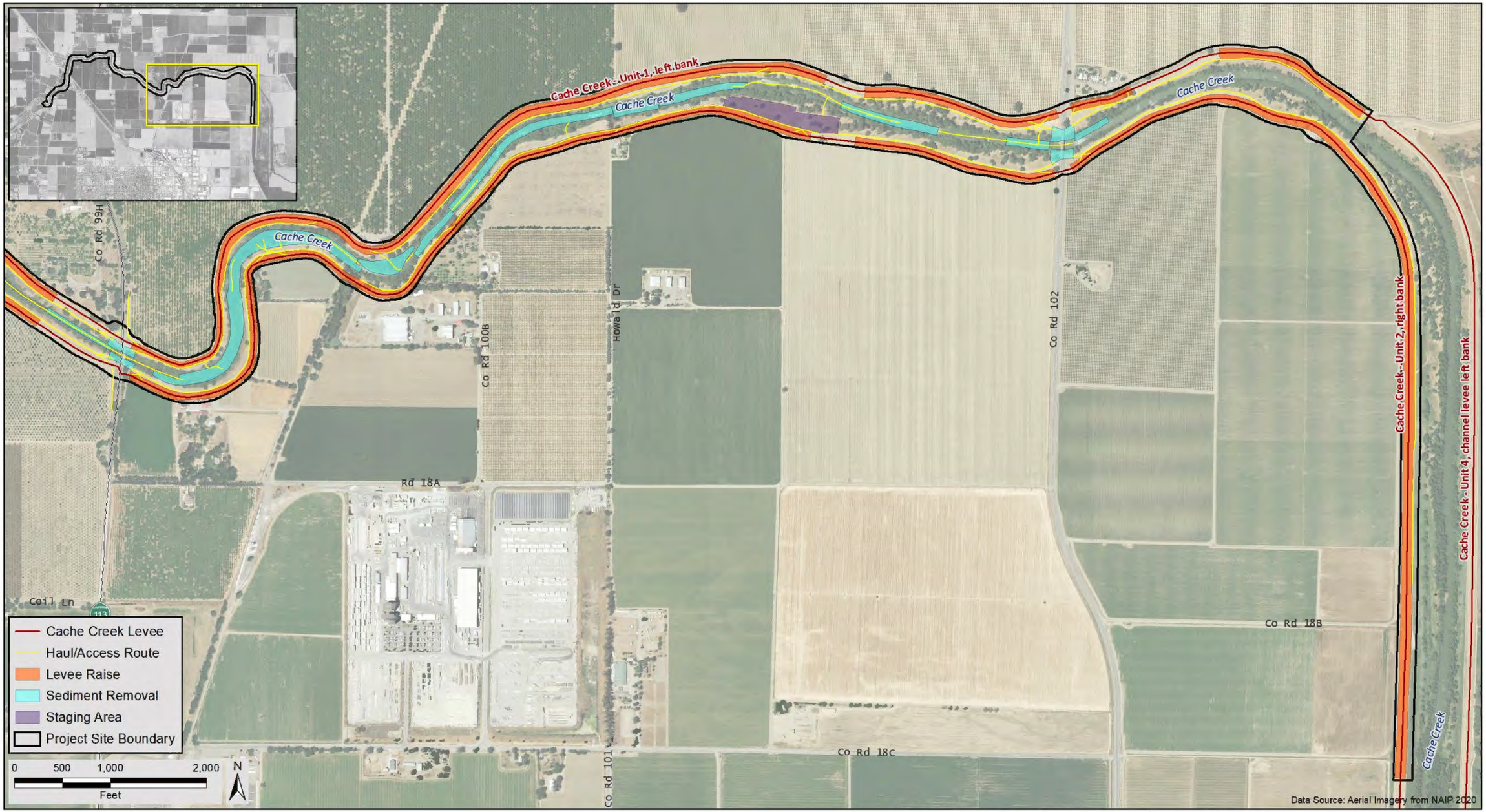


Figure 4. Eastern Portion of Proposed Project Site



Cache Creek Scoping Meeting (8/24/23)

20 attendees from the public

Public Comments

- Project Scope
    - Concern that the current geographic extent of the proposed project is insufficient to address the stated objectives
    - Concern that ongoing future maintenance isn't part of the project scope
    - Interest in whether the channel will be widened (it has narrowed over time)
    - Vegetation
        - Concern regarding the urgent need for clearing overgrowth of vegetation
        - Concern regarding vegetation management and which species will be removed, from which locations, etc.
        - Support for removing the tamarask plants that cross the creek (along with other invasive species)
    - Levees & Flooding
        - Concern regarding flooding impacts and environmental degradation from project activities.
        - Concern about the 30,000 cfs flood target and whether there is a way to protect against a greater flood risk due to changing climate and increased chance of big storm events.
        - Concern regarding potential impacts from raising the levees; unclear which levees will be raised, where and how high they will be raised.
        - Concern regarding the potential need for setback levees.
        - Interest in whether or not bank armoring will be required as the project moves forward.
    - Debris and Sediment
        - Concern regarding mercury in sediment from Cache Creek.
        - Concern regarding the final destination of the removed debris/sediment.
        - Interest in whether the removed sediment will be sold.
        - Frustration that last year debris was moved and left in piles which was then carried back downstream when water levels rose.
    - Land Easements
        - Concern regarding the potential need for land easements and potential impacts to property and crops.
        - Concern regarding if/how compensation will be made for lost land/property/crops.
    - Staging Area
        - Concern about how the staging area will be used and its impact to neighboring properties. None
        - Concern that the staging area property was sold because the owner was told it was going to be in the way of a setback levee.
        - General access concerns for project activities (e.g. access on 97B and whether or not it will be used as a hauling area, transporting materials out of the creek and reaching Interstate 5 will have to go through properties).
- Process
    - Interest in learning more about the CEQA approval/decision-making process
        - Lack of clarity around who makes the decision at DWR to approve the CEQA analysis and greenlight the project and what criteria is used.
    - Concern regarding timely notification of public meetings (especially for land owners who reside further away).
    - Concern that the project team has not visited the site and therefore lacks firsthand knowledge and is making decisions remotely.

- Concern regarding how the project is being funded, whether the project is fully funded and associated risks to the project start date/timeline to completion.

Comment Form

Cache Creek Channel and Levee Rehabilitation Project Scoping Meeting

California Agricultural Museum
1958 Hays Lane, Woodland, CA 95776
Thursday, August 24, 2023
5:00 p.m. – 6:45 p.m.

Name: Sally OLIVER **Affiliation:** ~~Farmer~~ Resident 91 yrs. Yolo Co.

Email Address: OSOKia@Gmail.com

☒ **Yes**, I would like to be added to the mailing list and I have provided my email address above.

Comment:

The Cache Creek Channel & Levee Rehabilitation is needed.

It will not be effective without removal of the sediment build up at the Sink of Cache Creek.

? what State Agency is responsible for the Dam and the sediment buildup, laden with mercury, at the Sink of Cache Creek.

What Criteria will the State use to determine Tree removal that covers the bottom-Channel.

Please return your comment card to the facilitation team today or email to jeff.schuette@water.ca.gov by 5:00 p.m. on September 5, 2023.

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State of California – Natural Resources Agency
DEPARTMENT OF FISH AND WILDLIFE
North Central Region
1701 Nimbus Road, Suite A
Rancho Cordova, CA 95670-4599
916-358-2900
wildlife.ca.gov

GAVIN NEWSOM, Governor
CHARLTON H. BONHAM, Director

August 28, 2023

Jeff Schuette
Senior Environmental Supervisor
Flood Maintenance and Operations Brance
Department of Water Resources
3310 El Camino Ave., Room 140
Sacramento, CA 95821
jeff.schuette@water.ca.gov

SUBJECT: CACHE CREEK CHANNEL AND LEVEE REHABILITATION PROJECT - NOTICE OF PREPARATION
SCH# 2023080108

Dear Jeff Schuette:

The California Department of Fish and Wildlife (CDFW) received and reviewed the Notice of Preparation of an Environmental Impact Report (EIR) from Department of Water Resources for the Cache Creek Channel and Levee Rehabilitation Project (Project) in Yolo County pursuant the California Environmental Quality Act (CEQA) statute and guidelines.[1]

Thank you for the opportunity to provide comments and recommendations regarding those activities involved in the Project that may affect California fish, wildlife, plants and their habitats. Likewise, we appreciate the opportunity to provide comments regarding those aspects of the Project that CDFW, by law, may need to exercise its own regulatory authority under the Fish and Game Code (Fish & G. Code).

CDFW ROLE

CDFW is California's Trustee Agency for fish and wildlife resources and holds those resources in trust by statute for all the people of the State (Fish & G. Code, §§ 711.7, subd. (a) & 1802; Pub. Resources Code, § 21070; CEQA Guidelines § 15386, subd. (a).). CDFW, in its trustee capacity, has jurisdiction over the conservation, protection, and management of fish, wildlife, native plants, and habitat necessary for biologically sustainable populations of those species (*Id.*, § 1802.). Similarly, for purposes of CEQA, CDFW provides, as available, biological expertise during public agency environmental

1 CEQA is codified in the California Public Resources Code in section 21000 et seq. The "CEQA Guidelines" are found in Title 14 of the California Code of Regulations, commencing with section 15000.

5 September 2023

Jeff Schuette
Department of Water Resources
3310 El Camino Avenue
Sacramento, CA 95821
jeff.schuette@water.ca.gov

COMMENTS TO REQUEST FOR REVIEW FOR THE NOTICE OF PREPARATION FOR THE DRAFT ENVIRONMENTAL IMPACT REPORT, CACHE CREEK CHANNEL AND LEVEE REHABILITATION PROJECT, SCH#2023080108, YOLO COUNTY

Pursuant to the State Clearinghouse's 4 August 2023 request, the Central Valley Regional Water Quality Control Board (Central Valley Water Board) has reviewed the *Request for Review for the Notice of Preparation for the Draft Environmental Impact Report* for the Cache Creek Channel and Levee Rehabilitation Project, located in Yolo County.

Our agency is delegated with the responsibility of protecting the quality of surface and groundwaters of the state; therefore our comments will address concerns surrounding those issues.

I. Regulatory Setting

Basin Plan

The Central Valley Water Board is required to formulate and adopt Basin Plans for all areas within the Central Valley region under Section 13240 of the Porter-Cologne Water Quality Control Act. Each Basin Plan must contain water quality objectives to ensure the reasonable protection of beneficial uses, as well as a program of implementation for achieving water quality objectives with the Basin Plans. Federal regulations require each state to adopt water quality standards to protect the public health or welfare, enhance the quality of water and serve the purposes of the Clean Water Act. In California, the beneficial uses, water quality objectives, and the Antidegradation Policy are the State's water quality standards. Water quality standards are also contained in the National Toxics Rule, 40 CFR Section 131.36, and the California Toxics Rule, 40 CFR Section 131.38.

The Basin Plan is subject to modification as necessary, considering applicable laws, policies, technologies, water quality conditions and priorities. The original Basin Plans were adopted in 1975, and have been updated and revised periodically as required, using Basin Plan amendments. Once the Central Valley Water Board has adopted a Basin Plan amendment in noticed public hearings, it must be approved by

the State Water Resources Control Board (State Water Board), Office of Administrative Law (OAL) and in some cases, the United States Environmental Protection Agency (USEPA). Basin Plan amendments only become effective after they have been approved by the OAL and in some cases, the USEPA. Every three (3) years, a review of the Basin Plan is completed that assesses the appropriateness of existing standards and evaluates and prioritizes Basin Planning issues. For more information on the *Water Quality Control Plan for the Sacramento and San Joaquin River Basins*, please visit our website:
http://www.waterboards.ca.gov/centralvalley/water_issues/basin_plans/

Antidegradation Considerations

All wastewater discharges must comply with the Antidegradation Policy (State Water Board Resolution 68-16) and the Antidegradation Implementation Policy contained in the Basin Plan. The Antidegradation Implementation Policy is available on page 74 at:
https://www.waterboards.ca.gov/centralvalley/water_issues/basin_plans/sacsjr_201805.pdf

In part it states:

Any discharge of waste to high quality waters must apply best practicable treatment or control not only to prevent a condition of pollution or nuisance from occurring, but also to maintain the highest water quality possible consistent with the maximum benefit to the people of the State.

This information must be presented as an analysis of the impacts and potential impacts of the discharge on water quality, as measured by background concentrations and applicable water quality objectives.

The antidegradation analysis is a mandatory element in the National Pollutant Discharge Elimination System and land discharge Waste Discharge Requirements (WDRs) permitting processes. The environmental review document should evaluate potential impacts to both surface and groundwater quality.

II. Permitting Requirements

Construction Storm Water General Permit

Dischargers whose project disturb one or more acres of soil or where projects disturb less than one acre but are part of a larger common plan of development that in total disturbs one or more acres, are required to obtain coverage under the General Permit for Storm Water Discharges Associated with Construction and Land Disturbance Activities (Construction General Permit), Construction General Permit Order No. 2009-0009-DWQ. Construction activity subject to this permit includes clearing, grading, grubbing, disturbances to the ground, such as stockpiling, or excavation, but does not include regular maintenance activities performed to restore the original line, grade, or capacity of the facility. The Construction General Permit requires the development and implementation of a Storm Water Pollution Prevention Plan (SWPPP). For more information on the Construction General Permit, visit the State Water Resources Control Board website at:

http://www.waterboards.ca.gov/water_issues/programs/stormwater/constpermits.shtml

Clean Water Act Section 404 Permit

If the project will involve the discharge of dredged or fill material in navigable waters or wetlands, a permit pursuant to Section 404 of the Clean Water Act may be needed from the United States Army Corps of Engineers (USACE). If a Section 404 permit is required by the USACE, the Central Valley Water Board will review the permit application to ensure that discharge will not violate water quality standards. If the project requires surface water drainage realignment, the applicant is advised to contact the Department of Fish and Game for information on Streambed Alteration Permit requirements. If you have any questions regarding the Clean Water Act Section 404 permits, please contact the Regulatory Division of the Sacramento District of USACE at (916) 557-5250.

Clean Water Act Section 401 Permit – Water Quality Certification

If an USACE permit (e.g., Non-Reporting Nationwide Permit, Nationwide Permit, Letter of Permission, Individual Permit, Regional General Permit, Programmatic General Permit), or any other federal permit (e.g., Section 10 of the Rivers and Harbors Act or Section 9 from the United States Coast Guard), is required for this project due to the disturbance of waters of the United States (such as streams and wetlands), then a Water Quality Certification must be obtained from the Central Valley Water Board prior to initiation of project activities. There are no waivers for 401 Water Quality Certifications. For more information on the Water Quality Certification, visit the Central Valley Water Board website at: https://www.waterboards.ca.gov/centralvalley/water_issues/water_quality_certification/

Waste Discharge Requirements – Discharges to Waters of the State

If USACE determines that only non-jurisdictional waters of the State (i.e., "non-federal" waters of the State) are present in the proposed project area, the proposed project may require a Waste Discharge Requirement (WDR) permit to be issued by Central Valley Water Board. Under the California Porter-Cologne Water Quality Control Act, discharges to all waters of the State, including all wetlands and other waters of the State including, but not limited to, isolated wetlands, are subject to State regulation. For more information on the Waste Discharges to Surface Water NPDES Program and WDR processes, visit the Central Valley Water Board website at:https://www.waterboards.ca.gov/centralvalley/water_issues/waste_to_surface_water/

Projects involving excavation or fill activities impacting less than 0.2 acre or 400 linear feet of non-jurisdictional waters of the state and projects involving dredging activities impacting less than 50 cubic yards of non-jurisdictional waters of the state may be eligible for coverage under the State Water Resources Control Board Water Quality Order No. 2004-0004-DWQ (General Order 2004-0004). For more information on the General Order 2004-0004, visit the State Water Resources Control Board website at:

https://www.waterboards.ca.gov/board_decisions/adopted_orders/water_quality/2004/wqo/wqo2004-0004.pdf

Dewatering Permit

If the proposed project includes construction or groundwater dewatering to be discharged to land, the proponent may apply for coverage under State Water Board General Water Quality Order (Low Threat General Order) 2003-0003 or the Central Valley Water Board's Waiver of Report of Waste Discharge and Waste Discharge Requirements (Low Threat Waiver) R5-2018-0085. Small temporary construction dewatering projects are projects that discharge groundwater to land from excavation activities or dewatering of underground utility vaults. Dischargers seeking coverage under the General Order or Waiver must file a Notice of Intent with the Central Valley Water Board prior to beginning discharge.

For more information regarding the Low Threat General Order and the application process, visit the Central Valley Water Board website at: http://www.waterboards.ca.gov/board_decisions/adopted_orders/water_quality/2003/wqo/wqo2003-0003.pdf

For more information regarding the Low Threat Waiver and the application process, visit the Central Valley Water Board website at: https://www.waterboards.ca.gov/centralvalley/board_decisions/adopted_orders/waivers/r5-2018-0085.pdf

Limited Threat General NPDES Permit

If the proposed project includes construction dewatering and it is necessary to discharge the groundwater to waters of the United States, the proposed project will require coverage under a National Pollutant Discharge Elimination System (NPDES) permit. Dewatering discharges are typically considered a low or limited threat to water quality and may be covered under the General Order for *Limited Threat Discharges to Surface Water* (Limited Threat General Order). A complete Notice of Intent must be submitted to the Central Valley Water Board to obtain coverage under the Limited Threat General Order. For more information regarding the Limited Threat General Order and the application process, visit the Central Valley Water Board website at: https://www.waterboards.ca.gov/centralvalley/board_decisions/adopted_orders/general_orders/r5-2016-0076-01.pdf

NPDES Permit

If the proposed project discharges waste that could affect the quality of surface waters of the State, other than into a community sewer system, the proposed project will require coverage under a National Pollutant Discharge Elimination System (NPDES) permit. A complete Report of Waste Discharge must be submitted with the Central Valley Water Board to obtain a NPDES Permit. For more information regarding the NPDES Permit and the application process, visit the Central Valley Water Board website at: https://www.waterboards.ca.gov/centralvalley/help/permit/

If you have questions regarding these comments, please contact me at (916) 464-4684 or Peter.Minkel2@waterboards.ca.gov.

Peter Minkel

Peter Minkel
Engineering Geologist

cc: State Clearinghouse unit, Governor's Office of Planning and Research, Sacramento

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review efforts, focusing specifically on projects and related activities that have the potential to adversely affect fish and wildlife resources.

CDFW may also act as a Responsible Agency under CEQA. (Pub. Resources Code, § 21069; CEQA Guidelines, § 15381.) CDFW expects that it may need to exercise regulatory authority as provided by the Fish and Game Code. As proposed, for example, the Project may be subject to CDFW's lake and streambed alteration regulatory authority. (Fish & G. Code, § 1600 et seq.) Likewise, to the extent implementation of the Project as proposed may result in "take" as defined by State law of any species protected under the California Endangered Species Act (CESA) (Fish & G. Code, § 2050 et seq.), the project proponent may seek related take authorization as provided by the Fish and Game Code.

PROJECT DESCRIPTION SUMMARY

The Project site is located in unincorporated Yolo County, near the Town of Yolo, approximately two miles north of the City of Woodland and about 4.5 miles west of the Sacramento River. The Project will be located between approximately 38.716111, -121.817653 and 38.708308, -121.716569.

The Project consists of conducting sediment removal, vegetation removal, and raising of levees along 9-12 miles of Cache Creek to return the creek to its previous capacity.

COMMENTS AND RECOMMENDATIONS

CDFW offers the comments and recommendations presented below to assist the Department of Water Resources (DWR) in adequately identifying and/or mitigating the Project's significant, or potentially significant, impacts on biological resources. The comments and recommendations are also offered to enable CDFW to adequately review and comment on the proposed Project with respect to impacts on biological resources. CDFW recommends that the forthcoming EIR address the following:

Project Description

The Project description should include the whole action as defined in the CEQA Guidelines § 15378 and should include appropriate detailed exhibits disclosing the Project area including temporary impacted areas such as equipment stage area, spoils areas, adjacent infrastructure development, staging areas and access and haul roads if applicable.

As required by § 15126.6 of the CEQA Guidelines, the EIR should include an appropriate range of reasonable and feasible alternatives that would attain most of the basic Project objectives and avoid or minimize significant impacts to resources under CDFW's jurisdiction.

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Assessment of Biological Resources

Section 15125(c) of the CEQA Guidelines states that knowledge of the regional setting of a project is critical to the assessment of environmental impacts and that special emphasis should be placed on environmental resources that are rare or unique to the region. To enable CDFW staff to adequately review and comment on the Project, the EIR should include a complete assessment of the flora and fauna within and adjacent to the Project footprint, with emphasis on identifying rare, threatened, endangered, and other sensitive species and their associated habitats. CDFW recommends the EIR specifically include:

1. An assessment of all habitat types located within the Project footprint, and a map that identifies the location of each habitat type. CDFW recommends that floristic, alliance- and/or association-based mapping and assessment be completed following, *The Manual of California Vegetation*, second edition (Sawyer 2009). Adjoining habitat areas should also be included in this assessment where site activities could lead to direct or indirect impacts offsite. Habitat mapping at the alliance level will help establish baseline vegetation conditions.

2. A general biological inventory of the fish, amphibian, reptile, bird, and mammal species that are present or have the potential to be present within each habitat type onsite and within adjacent areas that could be affected by the Project. CDFW recommends that the California Natural Diversity Database (CNDDB), as well as previous studies performed in the area, be consulted to assess the potential presence of sensitive species and habitats. A nine United States Geologic Survey 7.5-minute quadrangle search is recommended to determine what may occur in the region, larger if the Project area extends past one quad (see *Data Use Guidelines* on the Department webpage www.wildlife.ca.gov/Data/CNDDB/Maps-and-Data). Please review the webpage for information on how to access the database to obtain current information on any previously reported sensitive species and habitat, including Significant Natural Areas identified under Chapter 12 of the Fish and Game Code, in the vicinity of the Project. CDFW recommends that CNDDB Field Survey Forms be completed and submitted to CNDDB to document survey results. Online forms can be obtained and submitted at: https://www.wildlife.ca.gov/Data/CNDDB/Submitting-Data.

   Please note that CDFW's CNDDB is not exhaustive in terms of the data it houses, nor is it an absence database. CDFW recommends that it be used as a starting point in gathering information about the *potential presence* of species within the general area of the Project site. Other sources for identification of species and habitats near or adjacent to the Project area should include, but may not be limited to, State and federal resource agency lists, California Wildlife Habitat Relationship System, California Native Plant Society Inventory, agency

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contacts, environmental documents for other projects in the vicinity, academics, and professional or scientific organizations.

3. A complete and recent inventory of rare, threatened, endangered, and other sensitive species located within the Project footprint and within offsite areas with the potential to be affected, including California Species of Special Concern and California Fully Protected Species (Fish & G. Code § § 3511, 4700, 5050, and 5515). Species to be addressed should include all those which meet the CEQA definition (CEQA Guidelines § 15380). The inventory should address seasonal variations in use of the Project area and should not be limited to resident species. The EIR should include the results of focused species-specific surveys, completed by a qualified biologist and conducted at the appropriate time of year and time of day when the sensitive species are active or otherwise identifiable. Species-specific surveys should be conducted in order to ascertain the presence of species with the potential to be directly, indirectly, on or within a reasonable distance of the Project activities. CDFW recommends DWR rely on survey and monitoring protocols and guidelines available at: www.wildlife.ca.gov/Conservation/Survey-Protocols. Alternative survey protocols may be warranted; justification should be provided to substantiate why an alternative protocol is necessary. Acceptable species-specific survey procedures should be developed in consultation with CDFW and the U.S. Fish and Wildlife Service, where necessary. Some aspects of the Project may warrant periodic updated surveys for certain sensitive taxa, particularly if the Project is proposed to occur over a protracted time frame, or in phases, or if surveys are completed during periods of drought or deluge.

4. A thorough, recent (within the last two years), floristic-based assessment of special-status plants and natural communities, following CDFW's *Protocols for Surveying and Evaluating Impacts to Special Status Native Plant Populations and Natural Communities* (see www.wildlife.ca.gov/Conservation/Plants).

5. Information on the regional setting that is critical to an assessment of environmental impacts, with special emphasis on resources that are rare or unique to the region (CEQA Guidelines § 15125[c]).

Analysis of Direct, Indirect, and Cumulative Impacts to Biological Resources

The EIR should provide a thorough discussion of the Project's potential direct, indirect, and cumulative impacts on biological resources. To ensure that Project impacts on biological resources are fully analyzed, the following information should be included in the EIR:

1. The EIR should define the threshold of significance for each impact and describe the criteria used to determine whether the impacts are significant (CEQA Guidelines, § 15064, subd. (f)). The EIR must demonstrate that the

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significant environmental impacts of the Project were adequately investigated and discussed and it must permit the significant effects of the Project to be considered in the full environmental context.

2. A discussion of potential impacts from lighting, noise, human activity, and wildlife-human interactions created by Project activities especially those adjacent to natural areas, exotic and/or invasive species occurrences, and drainages. The EIR should address Project-related changes to drainage patterns and water quality within, upstream, and downstream of the Project site, including: volume, velocity, and frequency of existing and post-Project surface flows; polluted runoff; soil erosion and/or sedimentation in streams and water bodies; and post-Project fate of runoff from the Project site.

3. A discussion of potential indirect Project impacts on biological resources, including resources in areas adjacent to the Project footprint, such as nearby public lands (e.g., National Forests, State Parks, etc.), open space, adjacent natural habitats, riparian ecosystems, wildlife corridors, and any designated and/or proposed reserve or mitigation lands (e.g., preserved lands associated with a Conservation or Recovery Plan, or other conserved lands).

4. A cumulative effects analysis developed as described under CEQA Guidelines section 15130. The EIR should discuss the Project's cumulative impacts to natural resources and determine if that contribution would result in a significant impact. The EIR should include a list of present, past, and probable future projects producing related impacts to biological resources or shall include a summary of the projections contained in an adopted local, regional, or statewide plan, that consider conditions contributing to a cumulative effect. The cumulative analysis shall include impact analysis of vegetation and habitat reductions within the area and their potential cumulative effects. Please include all potential direct and indirect Project-related impacts to riparian areas, wetlands, wildlife corridors or wildlife movement areas, aquatic habitats, sensitive species and/or special-status species, open space, and adjacent natural habitats in the cumulative effects analysis.

Mitigation Measures for Project Impacts to Biological Resources

The EIR should include appropriate and adequate avoidance, minimization, and/or mitigation measures for all direct, indirect, and cumulative impacts that are expected to occur as a result of the construction and long-term operation and maintenance of the Project. CDFW also recommends the environmental documentation provide scientifically supported discussion regarding adequate avoidance, minimization, and/or mitigation measures to address the Project's significant impacts upon fish and wildlife and their habitat. For individual projects, mitigation must be roughly proportional to the level of impacts, including cumulative impacts, in accordance with the provisions of CEQA (Guidelines § § 15126.4(a)(4)(B), 15064, 15065, and 16355). In order for

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mitigation measures to be effective, they must be specific, enforceable, and feasible actions that will improve environmental conditions. When proposing measures to avoid, minimize, or mitigate impacts, CDFW recommends consideration of the following:

1. *Fully Protected Species*: Several Fully Protected Species (Fish & G. Code § 3511) have the potential to occur within or adjacent to the Project area, including, but not limited to: white-tailed kite (*Elanus leucurus*). Project activities described in the EIR should be designed to completely avoid any fully protected species that have the potential to be present within or adjacent to the Project area. If fully protected species cannot be completely avoided, the Project should obtain incidental take coverage for all species that have the potential to be present within or adjacent to the Project Area[2]. CDFW also recommends the EIR fully analyze potential adverse impacts to fully protected species due to habitat modification, loss of foraging habitat, and/or interruption of migratory and breeding behaviors. CDFW recommends that DWR include in the analysis how appropriate avoidance, minimization and mitigation measures will reduce indirect impacts to fully protected species.

2. *Species of Special Concern*: Several Species of Special Concern (SSC) have the potential to occur within or adjacent to the Project area, including, but not limited to: Western pond turtle (*Actinemys marmorata*); Tricolored blackbird (*Agelaius tricolor*); Burrowing Owl (*Athene cunicularia*); Mountain Plover (*Chardarius montanus*); Pallid Bat (*Antrozous pallidus*); American badger (*Taxidea taxus*). Project activities described in the EIR should be designed to avoid any SSC that have the potential to be present within or adjacent to the Project area. CDFW also recommends that the EIR fully analyze potential adverse impacts to SSC due to habitat modification, loss of foraging habitat, and/or interruption of migratory and breeding behaviors. CDFW recommends DWR include in the analysis how appropriate avoidance, minimization and mitigation measures will reduce impacts to SSC.

3. *Sensitive Plant Communities*: Several sensitive plant communities have the potential to occur within or adjacent to the Project area, including, but not limited to: palmate-bracted bird's-beak (*Chloropyron palmatum*); San Joaquin spearscale (*Extriplex joaquinana*); brittlescale (*Atriplex depressa*). CDFW considers sensitive plant communities to be imperiled habitats having both local and regional significance. Plant communities, alliances, and associations with a statewide ranking of S-1, S-2, S-3, and S-4 should be considered sensitive and declining at the local and regional level. These ranks can be obtained by querying the CNDDB and are included in *The Manual of California Vegetation* (Sawyer 2009). The EIR should include measures to fully avoid and otherwise

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2 CDFW may only issue incidental take permits for specified projects if certain conditions are satisfied per SB 147.

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protect sensitive plant communities from Project-related direct and indirect impacts.

4. *Native Wildlife Nursey Sites:* CDFW recommends the EIR fully analyze potential adverse impacts to native wildlife nursey sites, including but not limited to bat maternity roosts. Based on review of Project materials, aerial photography, and observation of the site from public roadways, the Project site contains potential nursery site habitat for structure and tree roosting bats and is near potential foraging habitats. Bats are considered non-game mammals and are afforded protection by state law from take and/or harassment, (Fish & G. Code, § 4150; Cal. Code of Regs, § 251.1). CDFW recommends that the EIR fully identify the Project's potential impacts to native wildlife nursery sites, and include appropriate avoidance, minimization and mitigation measures to reduce impacts or mitigate any potential significant impacts to bat nursery sites.

5. *Mitigation*: CDFW considers adverse Project-related impacts to sensitive species and habitats to be significant to both local and regional ecosystems, and the EIR should include mitigation measures for adverse Project-related impacts to these resources. Mitigation measures should emphasize avoidance and reduction of Project impacts. For unavoidable impacts, onsite habitat restoration, enhancement, or permanent protection should be evaluated and discussed in detail. If onsite mitigation is not feasible or would not be biologically viable and therefore not adequately mitigate the loss of biological functions and values, offsite mitigation through habitat creation and/or acquisition and preservation in perpetuity should be addressed.

   The EIR should include measures to perpetually protect the targeted habitat values within mitigation areas from direct and indirect adverse impacts in order to meet mitigation objectives to offset Project-induced qualitative and quantitative losses of biological values. Specific issues that should be addressed include restrictions on access, proposed land dedications, long-term monitoring and management programs, control of illegal dumping, water pollution, increased human intrusion, etc.

6. *Habitat Revegetation/Restoration Plans*: Plans for restoration and revegetation should be prepared by persons with expertise in the regional ecosystems and native plant restoration techniques. Plans should identify the assumptions used to develop the proposed restoration strategy. Each plan should include, at a minimum: (a) the location of restoration sites and assessment of appropriate reference sites; (b) the plant species to be used, sources of local propagules, container sizes, and seeding rates; (c) a schematic depicting the mitigation area; (d) a local seed and cuttings and planting schedule; (e) a description of the irrigation methodology; (f) measures to control exotic vegetation on site; (g) specific success criteria; (h) a detailed monitoring program; (i) contingency measures should the success criteria not be met; and (j) identification of the

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party responsible for meeting the success criteria and providing for conservation of the mitigation site in perpetuity. Monitoring of restoration areas should extend across a sufficient time frame to ensure that the new habitat is established, self-sustaining, and capable of surviving drought.

CDFW recommends that local onsite propagules from the Project area and nearby vicinity be collected and used for restoration purposes. Onsite seed collection should be appropriately timed to ensure the viability of the seeds when planted. Onsite vegetation mapping at the alliance and/or association level should be used to develop appropriate restoration goals and local plant palettes. Reference areas should be identified to help guide restoration efforts. Specific restoration plans should be developed for various Project components as appropriate. Restoration objectives should include protecting special habitat elements or re-creating them in areas affected by the Project. Examples may include retention of woody material, logs, snags, rocks, and brush piles. Fish and Game Code sections 1002, 1002.5 and 1003 authorize CDFW to issue permits for the take or possession of plants and wildlife for scientific, educational, and propagation purposes. Please see our website for more information on Scientific Collecting Permits at www.wildlife.ca.gov/Licensing/Scientific-Collecting#53949678-regulations-.

7. *Nesting Birds:* Please note that it is the Project proponent's responsibility to comply with all applicable laws related to nesting birds and birds of prey. Migratory non-game native bird species are protected by international treaty under the federal Migratory Bird Treaty Act (MBTA) of 1918, as amended (16 U.S.C. 703 *et seq.*). CDFW implemented the MBTA by adopting the Fish and Game Code section 3513. Fish and Game Code sections 3503, 3503.5 and 3800 provide additional protection to nongame birds, birds of prey, their nests and eggs. Sections 3503, 3503.5, and 3513 of the Fish and Game Code afford protective measures as follows: section 3503 states that it is unlawful to take, possess, or needlessly destroy the nest or eggs of any bird, except as otherwise provided by the Fish and Game Code or any regulation made pursuant thereto; section 3503.5 states that is it unlawful to take, possess, or destroy any birds in the orders Falconiformes or Strigiformes (birds-of-prey) or to take, possess, or destroy the nest or eggs of any such bird except as otherwise provided by the Fish and Game Code or any regulation adopted pursuant thereto; and section 3513 states that it is unlawful to take or possess any migratory nongame bird as designated in the MBTA or any part of such migratory nongame bird except as provided by rules and regulations adopted by the Secretary of the Interior under provisions of the MBTA.

   Potential habitat for nesting birds and birds of prey is present within the Project area. The Project should disclose all potential activities that may incur a direct or indirect take to nongame nesting birds within the Project footprint and its vicinity. Appropriate avoidance, minimization, and/or mitigation measures to avoid take

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must be included in the EIR.

CDFW recommends the EIR include specific avoidance and minimization measures to ensure that impacts to nesting birds or their nests do not occur. Project-specific avoidance and minimization measures may include, but not be limited to: Project phasing and timing, monitoring of Project-related noise (where applicable), sound walls, and buffers, where appropriate. The EIR should also include specific avoidance and minimization measures that will be implemented should a nest be located within the Project site. In addition to larger, protocol level survey efforts (e.g., Swainson's hawk surveys) and scientific assessments, CDFW recommends a final preconstruction survey be required no more than three (3) days prior to vegetation clearing or ground disturbance activities, as instances of nesting could be missed if surveys are conducted earlier.

8. *Moving out of Harm's Way:* The Project is anticipated to result in the clearing of natural habitats that support native species. To avoid direct mortality, DWR should state in the EIR a requirement for a qualified biologist with the proper handling permits, will be retained to be onsite prior to and during all ground- and habitat-disturbing activities. Furthermore, the EIR should describe that the qualified biologist with the proper permits may move out of harm's way special-status species or other wildlife of low or limited mobility that would otherwise be injured or killed from Project-related activities, as needed. The EIR should also describe qualified biologist qualifications and authorities to stop work to prevent direct mortality of special-status species. CDFW recommends fish and wildlife species be allowed to move out of harm's way on their own volition, if possible, and to assist their relocation as a last resort. It should be noted that the temporary relocation of onsite wildlife does not constitute effective mitigation for habitat loss.

9. *Translocation of Species*: CDFW generally does not support the use of relocation, salvage, and/or transplantation as the sole mitigation for impacts to rare, threatened, or endangered species as these efforts are generally experimental in nature and largely unsuccessful. Therefore, the EIR should describe additional mitigation measures utilizing habitat restoration, conservation, and/or preservation, in addition to avoidance and minimization measures, if it is determined that there may be impacts to rare, threatened, or endangered species.

The EIR should incorporate mitigation performance standards that would ensure that impacts are reduced to a less-than-significant level. Mitigation measures proposed in the EIR should be made a condition of approval of the Project. Please note that obtaining a permit from CDFW by itself with no other mitigation proposal may constitute mitigation deferral. CEQA Guidelines section 15126.4, subdivision (a)(1)(B) states that formulation of mitigation measures should not be deferred until some future time. To

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avoid deferring mitigation in this way, the EIR should describe avoidance, minimization and mitigation measures that would be implemented should the impact occur.

California Endangered Species Act

CDFW is responsible for ensuring appropriate conservation of fish and wildlife resources including threatened, endangered, and/or candidate plant and animal species, pursuant to CESA. CDFW recommends that a CESA Incidental Take Permit (ITP) be obtained if the Project has the potential to result in "take" (Fish & G. Code § 86 defines "take" as "hunt, pursue, catch, capture, or kill, or attempt to hunt, pursue, catch, capture, or kill") of State-listed CESA species, either through construction or over the life of the Project.

State-listed species with the potential to occur in the area include, but are not limited to: Swainson's hawk (*Buteo swainsoni*); Tricolored blackbird (*Agelaius tricolor*).

The EIR should disclose the potential of the Project to take State-listed species and how the impacts will be avoided, minimized, and mitigated. Please note that mitigation measures that are adequate to reduce impacts to a less-than significant level to meet CEQA requirements may not be enough for the issuance of an ITP. To facilitate the issuance of an ITP, if applicable, CDFW recommends the EIR include measures to minimize and fully mitigate the impacts to any State-listed species the Project has potential to take. CDFW encourages early consultation with staff to determine appropriate measures to facilitate future permitting processes and to engage with the U.S. Fish and Wildlife Service and/or National Marine Fisheries Service to coordinate specific measures if both State and federally listed species may be present within the Project vicinity.

Native Plant Protection Act

The Native Plant Protection Act (Fish & G. Code §1900 *et seq*.) prohibits the take or possession of State-listed rare and endangered plants, including any part or product thereof, unless authorized by CDFW or in certain limited circumstances. Take of State-listed rare and/or endangered plants due to Project activities may only be permitted through an ITP or other authorization issued by CDFW pursuant to California Code of Regulations, Title 14, section 786.9 subdivision (b).

Lake and Streambed Alteration Program

The EIR should identify all perennial, intermittent, and ephemeral rivers, streams, lakes, other hydrologically connected aquatic features, and any associated biological resources/habitats present within the entire Project footprint (including utilities, access and staging areas). The environmental document should analyze all potential temporary, permanent, direct, indirect and/or cumulative impacts to the above-mentioned features and associated biological resources/habitats that may occur

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because of the Project. If it is determined the Project will result in significant impacts to these resources the EIR shall propose appropriate avoidance, minimization and/or mitigation measures to reduce impacts to a less-than-significant level.

Section 1602 of the Fish and Game Code requires an entity to notify CDFW prior to commencing any activity that may do one or more of the following:

1. Substantially divert or obstruct the natural flow of any river, stream or lake;

2. Substantially change or use any material from the bed, channel or bank of any river, stream, or lake; or

3. Deposit debris, waste or other materials where it may pass into any river, stream or lake.

Please note that "any river, stream or lake" includes those that are episodic (i.e., those that are dry for periods of time) as well as those that are perennial (i.e., those that flow year-round). This includes ephemeral streams and watercourses with a subsurface flow. It may also apply to work undertaken within the flood plain of a body of water.

If upon review of an entity's notification, CDFW determines that the Project activities may substantially adversely affect an existing fish or wildlife resource, a Lake and Streambed Alteration (LSA) Agreement will be issued which will include reasonable measures necessary to protect the resource. CDFW's issuance of an LSA Agreement is a "project" subject to CEQA (see Pub. Resources Code 21065). To facilitate issuance of an LSA Agreement, if one is necessary, the EIR should fully identify the potential impacts to the lake, stream, or riparian resources, and provide adequate avoidance, mitigation, and monitoring and reporting commitments. Early consultation with CDFW is recommended, since modification of the Project may avoid or reduce impacts to fish and wildlife resources. Notifications for projects involving (1) sand, gravel or rock extraction, (2) timber harvesting operations, or (3) routine maintenance operations must be submitted using paper notification forms. All other LSA Notification types must be submitted online through CDFW's Environmental Permit Information Management System (EPIMS). For more information about EPIMS, please visit https://wildlife.ca.gov/Conservation/Environmental-Review/EPIMS. More information about LSA Notifications, paper forms and fees may be found at https://www.wildlife.ca.gov/Conservation/Environmental-Review/LSA.

Please note that other agencies may use specific methods and definitions to determine impacts to areas subject to their authorities. These methods and definitions often do not include all needed information for CDFW to determine the extent of fish and wildlife resources affected by activities subject to Notification under Fish and Game Code section 1602. Therefore, CDFW does not recommend relying solely on methods developed specifically for delineating areas subject to other agencies' jurisdiction (such

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as United States Army Corps of Engineers) when mapping lakes, streams, wetlands, floodplains, riparian areas, etc. in preparation for submitting a Notification of an LSA. CDFW relies on the lead agency environmental document analysis when acting as a responsible agency issuing an LSA Agreement. CDFW recommends lead agencies coordinate with us as early as possible, since potential modification of the proposed Project may avoid or reduce impacts to fish and wildlife resources and expedite the Project approval process.

The following information will be required for the processing of an LSA Notification and CDFW recommends incorporating this information into any forthcoming CEQA document(s) to avoid subsequent documentation and Project delays:

1. Mapping and quantification of lakes, streams, and associated fish and wildlife habitat (e.g., riparian habitat, freshwater wetlands, etc.) that will be temporarily and/or permanently impacted by the Project, including impacts from access and staging areas. Please include an estimate of impact to each habitat type.

2. Discussion of specific avoidance, minimization, and mitigation measures to reduce Project impacts to fish and wildlife resources to a less-than-significant level. Please refer to section 15370 of the CEQA Guidelines.

Based on review of Project materials, aerial photography and observation of the site from public roadways, the Project site supports Cache Creek and its associated riparian habitat. CDFW recommends the EIR fully identify the Project's potential impacts to the stream and/or its associated vegetation and wetlands.

ENVIRONMENTAL DATA

CEQA requires that information developed in environmental impact reports and negative declarations be incorporated into a database, which may be used to make subsequent or supplemental environmental determinations (Pub. Resources Code, § 21003, subd. (e)). Accordingly, please report any special-status species and natural communities detected during Project surveys to CNDDB. The CNNDB field survey form can be found at the following link: https://www.wildlife.ca.gov/Data/CNDDB/Submitting-Data. The completed form can be submitted online or mailed electronically to CNDDB at the following email address: CNDDB@wildlife.ca.gov.

FILING FEES

The Project, as proposed, would have an effect on fish and wildlife, and assessment of filing fees is necessary. Fees are payable upon filing of the Notice of Determination by DWR and serve to help defray the cost of environmental review by CDFW. Payment of the fee is required in order for the underlying project approval to be operative, vested, and final. (Cal. Code Regs, tit. 14, § 753.5; Fish & G. Code § 711.4; Pub. Resources Code, § 21089.)

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CONCLUSION

Pursuant to Public Resources Code sections 21092 and 21092.2, CDFW requests written notification of proposed actions and pending decisions regarding the Project. Written notifications shall be directed to: California Department of Fish and Wildlife North Central Region, 1701 Nimbus Road, Rancho Cordova, CA 95670.

CDFW appreciates the opportunity to comment on the Notice of Preparation of the EIR for the Cache Creek Channel and Levee Rehabilitation Project and recommends that DWR address CDFW's comments and concerns in the forthcoming EIR. CDFW personnel are available for consultation regarding biological resources and strategies to minimize impacts.

If you have any questions regarding the comments provided in this letter, or wish to schedule a meeting and/or site visit, please contact Annalise Metzger, Environmental Scientist at 916-358-1097 or annalise.metzger@wildlife.ca.gov.

Sincerely,

DocuSigned by:
Tanya Sheya
1ABC45303752499...

Tanya Sheya
Environmental Program Manager

ec: Jennifer Rippert, Acting Senior Environmental Scientist (Supervisory)
jennifer.rippert@wildlife.ca.gov
Annalise Metzger, Environmental Scientist
annalise.metzger@wildlife.ca.gov
Department of Fish and Wildlife

Office of Planning and Research, State Clearinghouse, Sacramento

Literature Cited

Sawyer, J. O., T. Keeler-Wolf, and J. M. Evens. 2009. A Manual of California Vegetation, 2nd ed. California Native Plant Society Press, Sacramento, California. http://vegetation.cnps.org/

From: Mark Miller
To: Schuette, Jeff@DWR
Subject: DWR CACHE CREEK CHANNEL AND LEVEE REHABILITATION PROJECT ENVIRONMENTAL IMPACT REPORT NOTICE OF PREPARATION
Date: Tuesday, September 5, 2023 2:26:17 PM
Attachments: image001.png

You don't often get email from mark.miller@cityofwoodland.org. Learn why this is important

Hi Jeff,
Hope you are doing well. Please find my comment below,

Commenter's Full Name: Mark Miller
Address: 300 First Street, Woodland, CA
Comment: As mentioned in the Project Background, there is expected to be "continued vertical displacement" in the region. What is the State's plan to address future vertical displacement of the Cache Creek levees?

Cheers,

Mark Miller | Associate Engineer
Community Development Dept.
300 First St., Woodland, CA 95695
Office: 530.661.5968
Mobile: 530.212.0177

CENTER for LAND-BASED LEARNING
40140 BEST RANCH ROAD, WOODLAND, CA 95776

Aug 30, 2023

Mr. Jeff Schuette
Senior Environmental Scientist
California Department of Water Resources,
Flood Maintenance and Operations Branch (FMO)
3310 El Camino Avenue
Sacramento, CA 95821

RE: Cache Creek Channel and Levee Rehabilitation Project NOP

Dear Mr. Schuette,

The Center for Land-Based Learning (CLBL) appreciates the opportunity to comment on the Notice of Preparation (NOP) of an EIR for the Cache Creek Channel and Levee Rehabilitation Project.

CLBL is a non-profit organization with headquarters located at Maples Farm (40140 Best Ranch Road, Woodland). We have a long term lease with Clark Pacific LLC for 30 acres of farmland immediately adjacent to the project site. We operate a working farm at this location to support our California Farm Academy Programs. These programs include a new farmer training program, a farm business incubator program, and an apprenticeship program for farm managers. Our high school youth programs offer workforce development opportunities in both sustainable agriculture and natural resources careers. Finally, our Farm and Climate Program conducts research, restores habitat, and promotes carbon farming to sequester CO2 and other greenhouse gasses in agricultural soils.

Our concerns with the proposed project are twofold: 1) the farmland we lease is adjacent to the levees that will be impacted by the project, and, 2) our interest in healthy riparian habitat on Cache Creek. Indeed, we were in the process of planning a riparian restoration project for a ¼ mile stretch of Cache Creek when we first learned of the DWR channel and levee project.

Please consider the following comments as you prepare the EIR:

The Center for Land-Based Learning would like to see specific objectives for habitat preservation and restoration in the EIR. We are interested in removing invasive species and restoring native habitat on the ¼ mile section of Cache Creek that borders our headquarters and stand willing to partner with DWR on restoration efforts on other sections as well. Given that the existing habitat will be impacted by the proposed project, it would be efficient and effective to plan for post-project restoration now rather than waiting for the project to be completed. .

Specifically, one of the project objectives as stated in the NOP is to “conduct project activities in a manner that minimizes impacts to riparian habitat and other sensitive biological resources.” The EIR should specify what measures will be taken to protect the existing habitat and individual species of concern. For example, we know that Swainson’s Hawks frequently nest in tall trees on Cache Creek. Swainson’s hawks are listed as threatened under the California Endangered Species Act. What type of nest surveys will be performed and will tall trees be protected? There is also considerable habitat for the Valley Elderberry Longhorn Beetle, which is a federally listed threatened species. What measures will be taken to protect individual elderberry shrubs and to ensure the habitat remains intact post-project?

In addition to paying attention to individual imperiled species, it is important to recognize that the habitat along Cache Creek is an important wildlife corridor for many common wildlife species in the agricultural landscape. In the last two years, our wildlife cameras have documented the habitat being used by bobcats, coyotes, mule deer, skunks, otters, raccoons, opossums, and rabbits. We’ve even found a black bear carcass along the banks. Project activities need to take into account the impact on animal movements before and after construction.

When considering vegetation removal, it is important to distinguish between native riparian habitat and invasive species. The two invasive plant species of greatest concern are giant reed (*Arundo donax*) and tamarisk (*Tamarix* spp.). Removal and treatment of these species should be prioritized, even if they are above the channel. Since vegetation removal and heavy equipment are part of this project, it seems prudent to use the opportunity to treat these invasive species. Controlling these species to the maximum extent possible will reduce future infestations and will preserve channel flow in the future.

LANDBASEDLEARNING.ORG · 530.795.1520 · FAX 530-795-4687

Comment on Cache Creek Channel and Levee Rehabilitation Project Scoping Meeting

Name: Rex Dufour Affiliation: National Center for Appropriate Technology (NCAT/ATTRA).

Email Address: rexd@ncat.org

This approach of sediment removal seems identical to in-stream gravel mining, which lowers the streambed, providing an opportunity for more erosion and more sediment to be carried downstream. . In addition, the riparian area ecology is decimated, including fish, bird, and mammal habitat. Cache Creek should be restored to a natural state close to what it was prior to European settlement. This will allow slower water flow and provide for more infiltration of water into the water table.

With reference to the levee raising, the NOP states “some impacts to adjacent land may occur where the levee footprint must expand to meet the new height and additional rights-of-way may need to be acquired at these locations.” It is very important that DWR notify affected landowners as soon as possible about how the levee work will impact our operations. For example, CLBL has installed a native plant hedgerow and is planning a second one along farm fields along the south side of the levee - literally, at the toe of the levee. How will the levee work impact these plantings and will we be compensated if vegetation on the farm side of the levee is impacted?

Finally, the NOP states that DWR is including “Tribal Cultural Resources” as part of the scope of the EIR, specifically “potential destruction or disturbance of known Tribal cultural resources during construction.” I recently had a meeting with one of the Yocha Dehe Wintun Nation Tribal Officers, Mia Durham, and asked her if she knew of this Project, she did not. She was very concerned that the Tribe had not yet been notified of this Project, and of course wanted to ensure that their Cultural Resources Team were notified and part of the planning and EIR process. As we have worked very closely with Yocha Dehe Wintun Nation and their leadership for over 15 years, we ask that you prioritize the communication with their staff and Tribal Officers as soon as possible.

Thank you for considering these issues during the CEQA process.

Sincerely,

Mary Kimball, CEO
Center for Land-Based Learning

Appendix B. Air Quality and Greenhouse Gas Emissions Modeling Data

Cache Creek Rehab 14 cy haul trips Detailed Report

Table of Contents

1. Basic Project Information

1.1. Basic Project Information

Data Field	Value
Project Name	Cache Creek Rehab 14 cy haul trips
Construction Start Date	4/15/2024
Lead Agency	Department of Water Resources
Land Use Scale	Project/site
Analysis Level for Defaults	County
Windspeed (m/s)	3.60
Precipitation (days)	26.8
Location	38.69995571009619, -121.70599808162316
County	Yolo
City	Unincorporated
Air District	Yolo/Solano AQMD
Air Basin	Sacramento Valley
TAZ	326
EDFZ	4
Electric Utility	Pacific Gas & Electric Company
Gas Utility	Pacific Gas & Electric
App Version	2022.1.1.26

1.2. Land Use Types

Land Use Subtype	Size	Unit	Lot Acreage	Building Area (sq ft)	Landscape Area (sq ft)	Special Landscape Area (sq ft)	Population	Description
User Defined Linear	9.00	Mile	34.0	0.00	0.00	—	—	Flood Protection Features

1.3. User-Selected Emission Reduction Measures by Emissions Sector

Sector	#	Measure Title
Construction	C-2*	Limit Heavy-Duty Diesel Vehicle Idling
Construction	C-6	Use Diesel Particulate Filters
Construction	C-10-A	Water Exposed Surfaces
Construction	C-10-C	Water Unpaved Construction Roads
Construction	C-11	Limit Vehicle Speeds on Unpaved Roads
Construction	C-12	Sweep Paved Roads

* Qualitative or supporting measure. Emission reductions not included in the mitigated emissions results.

2. Emissions Summary

2.1. Construction Emissions Compared Against Thresholds

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

Un/Mit.	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily,Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	9.75	7.88	83.7	69.2	0.14	3.53	421	425	3.26	58.6	61.9	—	17,759	17,759	0.83	1.21	16.2	18,156
Mit.	9.75	7.88	83.7	69.2	0.14	0.64	347	348	0.60	41.3	41.9	—	17,759	17,759	0.83	1.21	16.2	18,156
% Reduced	—	—	—	—	—	82%	18%	18%	82%	30%	32%	—	—	—	—	—	—	—
Daily,Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	3.06	2.43	27.1	21.3	0.05	1.04	238	239	0.96	29.3	30.2	—	6,894	6,894	0.31	0.57	0.21	7,071
Mit.	3.06	2.43	27.1	21.3	0.05	0.21	180	180	0.20	20.2	20.4	—	6,894	6,894	0.31	0.57	0.21	7,071
% Reduced	—	—	—	—	—	80%	24%	24%	80%	31%	32%	—	—	—	—	—	—	—
Average Daily (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	2.52	2.03	21.1	17.5	0.04	0.85	126	127	0.77	17.1	17.9	—	5,068	5,068	0.23	0.37	2.17	5,186
Mit.	2.52	2.03	21.1	17.5	0.04	0.16	107	107	0.14	12.5	12.6	—	5,068	5,068	0.23	0.37	2.17	5,186
% Reduced	—	—	—	—	—	81%	15%	16%	82%	27%	29%	—	—	—	—	—	—	—
Annual (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	0.46	0.37	3.85	3.19	0.01	0.16	23.0	23.1	0.14	3.12	3.26	—	839	839	0.04	0.06	0.36	859
Mit.	0.46	0.37	3.85	3.19	0.01	0.03	19.5	19.5	0.03	2.28	2.30	—	839	839	0.04	0.06	0.36	859
% Reduced	—	—	—	—	—	81%	15%	16%	82%	27%	29%	—	—	—	—	—	—	—
Exceeds (Daily Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Threshol d	—	—	—	—	—	—	—	80.0	—	—	—	—	—	—	—	—	—	—
Unmit.	Yes	—	—	—	—	Yes	—	Yes	—	Yes	—	—	—	—	—	—	—	—
Mit.	Yes	—	—	—	—	Yes	—	Yes	—	Yes	—	—	—	—	—	—	—	—
Exceeds (Average Daily)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Threshol d	—	—	—	—	—	—	—	80.0	—	—	—	—	—	—	—	—	—	—
Unmit.	Yes	—	—	—	—	Yes	—	Yes	—	Yes	—	—	—	—	—	—	—	—
Mit.	Yes	—	—	—	—	Yes	—	Yes	—	Yes	—	—	—	—	—	—	—	—

Un/Mit.	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Exceeds (Annual)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Threshol d	—	10.0	10.0	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	—	No	No	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Mit.	—	No	No	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

2.2. Construction Emissions by Year, Unmitigated

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

Year	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily - Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2024	9.75	7.88	83.7	69.2	0.14	3.53	421	425	3.26	58.6	61.9	—	17,759	17,759	0.83	1.21	16.2	18,156
2025	6.20	5.01	51.3	43.2	0.10	2.10	313	315	1.91	42.3	44.2	—	12,219	12,219	0.54	0.86	11.6	12,502
Daily - Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2024	3.06	2.43	27.1	21.0	0.05	1.04	208	209	0.96	26.4	27.3	—	6,565	6,565	0.31	0.56	0.21	6,738
2025	3.02	2.41	26.2	21.3	0.05	1.02	238	239	0.92	29.3	30.2	—	6,894	6,894	0.30	0.57	0.21	7,071
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2024	1.78	1.42	15.6	12.3	0.03	0.62	100	101	0.57	13.2	13.8	—	3,654	3,654	0.17	0.29	1.81	3,748
2025	2.52	2.03	21.1	17.5	0.04	0.85	126	127	0.77	17.1	17.9	—	5,068	5,068	0.23	0.37	2.17	5,186
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2024	0.33	0.26	2.85	2.25	0.01	0.11	18.3	18.4	0.10	2.41	2.51	—	605	605	0.03	0.05	0.30	620
2025	0.46	0.37	3.85	3.19	0.01	0.16	23.0	23.1	0.14	3.12	3.26	—	839	839	0.04	0.06	0.36	859

2.3. Construction Emissions by Year, Mitigated

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

Year	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily - Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2024	9.75	7.88	83.7	69.2	0.14	0.64	347	348	0.60	41.3	41.9	—	17,759	17,759	0.83	1.21	16.2	18,156
2025	6.20	5.01	51.3	43.2	0.10	0.39	268	269	0.34	31.3	31.6	—	12,219	12,219	0.54	0.86	11.6	12,502
Daily - Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2024	3.06	2.43	27.1	21.0	0.05	0.21	173	173	0.20	19.5	19.7	—	6,565	6,565	0.31	0.56	0.21	6,738
2025	3.02	2.41	26.2	21.3	0.05	0.21	180	180	0.17	20.2	20.4	—	6,894	6,894	0.30	0.57	0.21	7,071
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2024	1.78	1.42	15.6	12.3	0.03	0.12	83.3	83.4	0.11	9.61	9.72	—	3,654	3,654	0.17	0.29	1.81	3,748
2025	2.52	2.03	21.1	17.5	0.04	0.16	107	107	0.14	12.5	12.6	—	5,068	5,068	0.23	0.37	2.17	5,186
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2024	0.33	0.26	2.85	2.25	0.01	0.02	15.2	15.2	0.02	1.75	1.77	—	605	605	0.03	0.05	0.30	620
2025	0.46	0.37	3.85	3.19	0.01	0.03	19.5	19.5	0.03	2.28	2.30	—	839	839	0.04	0.06	0.36	859

3. Construction Emissions Details

3.1. Aggregate Base Road (2024) - Unmitigated

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

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	3.06	2.57	24.7	20.9	0.03	1.13	—	1.13	1.04	—	1.04	—	3,392	3,392	0.14	0.03	—	3,404
Dust From Material Movement	—	—	—	—	—	—	13.7	13.7	—	6.80	6.80	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.17	0.14	1.35	1.15	< 0.005	0.06	—	0.06	0.06	—	0.06	—	186	186	0.01	< 0.005	—	187
Dust From Material Movement	—	—	—	—	—	—	0.75	0.75	—	0.37	0.37	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Roa d Equipment	0.03	0.03	0.25	0.21	< 0.005	0.01	—	0.01	0.01	—	0.01	—	30.8	30.8	< 0.005	< 0.005	—	30.9
Dust From Material Movement	—	—	—	—	—	—	0.14	0.14	—	0.07	0.07	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.14	0.05	2.21	0.89	0.01	0.03	75.8	75.8	0.03	7.63	7.65	—	1,537	1,537	0.09	0.24	3.26	1,614
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.01	< 0.005	0.13	0.05	< 0.005	< 0.005	3.85	3.85	< 0.005	0.39	0.39	—	84.3	84.3	< 0.005	0.01	0.08	88.4
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	< 0.005	< 0.005	0.02	0.01	< 0.005	< 0.005	0.70	0.70	< 0.005	0.07	0.07	—	14.0	14.0	< 0.005	< 0.005	0.01	14.6

3.2. Aggregate Base Road (2024) - Mitigated

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

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	3.06	2.57	24.7	20.9	0.03	0.17	—	0.17	0.16	—	0.16	—	3,392	3,392	0.14	0.03	—	3,404
Dust From Material Movement	—	—	—	—	—	—	5.34	5.34	—	2.65	2.65	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road	0.17	0.14	1.35	1.15	< 0.005	0.01	—	0.01	0.01	—	0.01	—	186	186	0.01	< 0.005	—	187
Dust From Material Movement	—	—	—	—	—	—	0.29	0.29	—	0.15	0.15	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.03	0.03	0.25	0.21	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	30.8	30.8	< 0.005	< 0.005	—	30.9
Dust From Material Movement	—	—	—	—	—	—	0.05	0.05	—	0.03	0.03	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.14	0.05	2.21	0.89	0.01	0.03	75.8	75.8	0.03	7.63	7.65	—	1,537	1,537	0.09	0.24	3.26	1,614
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.01	< 0.005	0.13	0.05	< 0.005	< 0.005	3.85	3.85	< 0.005	0.39	0.39	—	84.3	84.3	< 0.005	0.01	0.08	88.4

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road	0.17	0.14	1.35	1.15	< 0.005	0.01	—	0.01	0.01	—	0.01	—	186	186	0.01	< 0.005	—	187
Dust From Material Movement	—	—	—	—	—	—	0.29	0.29	—	0.15	0.15	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.03	0.03	0.25	0.21	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	30.8	30.8	< 0.005	< 0.005	—	30.9
Dust From Material Movement	—	—	—	—	—	—	0.05	0.05	—	0.03	0.03	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.14	0.05	2.21	0.89	0.01	0.03	75.8	75.8	0.03	7.63	7.65	—	1,537	1,537	0.09	0.24	3.26	1,614
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.01	< 0.005	0.13	0.05	< 0.005	< 0.005	3.85	3.85	< 0.005	0.39	0.39	—	84.3	84.3	< 0.005	0.01	0.08	88.4
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

3.3. Clearing and Grubbing (2024) - Unmitigated

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

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	2.77	2.32	22.7	19.0	0.03	1.05	—	1.05	0.97	—	0.97	—	3,077	3,077	0.12	0.02	—	3,087
Dust From Material Movement	—	—	—	—	—	—	13.1	13.1	—	6.74	6.74	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.15	0.13	1.25	1.04	< 0.005	0.06	—	0.06	0.05	—	0.05	—	169	169	0.01	< 0.005	—	169
Dust From Material Movement	—	—	—	—	—	—	0.72	0.72	—	0.37	0.37	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.03	0.02	0.23	0.19	< 0.005	0.01	—	0.01	0.01	—	0.01	—	27.9	27.9	< 0.005	< 0.005	—	28.0
Dust From Material Movement	—	—	—	—	—	—	0.13	0.13	—	0.07	0.07	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	< 0.005	< 0.005	0.04	0.01	< 0.005	< 0.005	1.11	1.11	< 0.005	0.11	0.11	—	30.0	30.0	< 0.005	< 0.005	0.07	31.5
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.06	0.06	< 0.005	0.01	0.01	—	1.65	1.65	< 0.005	< 0.005	< 0.005	1.73

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	< 0.005	—	0.27	0.27	< 0.005	< 0.005	< 0.005	0.29

3.4. Clearing and Grubbing (2024) - Mitigated

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

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	2.77	2.32	22.7	19.0	0.03	0.16	—	0.16	0.15	—	0.15	—	3,077	3,077	0.12	0.02	—	3,087
Dust From Material Movement	—	—	—	—	—	—	5.11	5.11	—	2.63	2.63	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.15	0.13	1.25	1.04	< 0.005	0.01	—	0.01	0.01	—	0.01	—	169	169	0.01	< 0.005	—	169
Dust From Material Movement	—	—	—	—	—	—	0.28	0.28	—	0.14	0.14	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.03	0.02	0.23	0.19	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	27.9	27.9	< 0.005	< 0.005	—	28.0
Dust From Material Movement	—	—	—	—	—	—	0.05	0.05	—	0.03	0.03	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	< 0.005	< 0.005	0.04	0.01	< 0.005	< 0.005	1.11	1.11	< 0.005	0.11	0.11	—	30.0	30.0	< 0.005	< 0.005	0.07	31.5
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.06	0.06	< 0.005	0.01	0.01	—	1.65	1.65	< 0.005	< 0.005	< 0.005	1.73
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Worker	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	< 0.005	—	0.27	0.27	< 0.005	< 0.005	< 0.005	0.29

3.5. Tree and Brush Removal (2024) - Unmitigated

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

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.28	0.24	2.40	3.83	0.01	0.11	—	0.11	0.10	—	0.10	—	581	581	0.02	< 0.005	—	583
Dust From Material Movement	—	—	—	—	—	—	0.04	0.04	—	0.01	0.01	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.02	0.01	0.13	0.21	< 0.005	0.01	—	0.01	0.01	—	0.01	—	31.8	31.8	< 0.005	< 0.005	—	31.9
Dust From Material Movement	—	—	—	—	—	—	< 0.005	< 0.005	—	< 0.005	< 0.005	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	< 0.005	< 0.005	0.02	0.04	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	5.27	5.27	< 0.005	< 0.005	—	5.29
Dust From Material Movement	—	—	—	—	—	—	< 0.005	< 0.005	—	< 0.005	< 0.005	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.17	0.05	2.80	1.02	0.01	0.04	80.0	80.0	0.04	8.07	8.11	—	2,163	2,163	0.12	0.34	4.68	2,271
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.01	< 0.005	0.16	0.06	< 0.005	< 0.005	4.06	4.06	< 0.005	0.41	0.41	—	119	119	0.01	0.02	0.11	124

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	< 0.005	< 0.005	0.03	0.01	< 0.005	< 0.005	0.74	0.74	< 0.005	0.07	0.08	—	19.6	19.6	< 0.005	< 0.005	0.02	20.6

3.6. Tree and Brush Removal (2024) - Mitigated

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

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.28	0.24	2.40	3.83	0.01	0.02	—	0.02	0.01	—	0.01	—	581	581	0.02	< 0.005	—	583
Dust From Material Movement	—	—	—	—	—	—	0.02	0.02	—	< 0.005	< 0.005	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.02	0.01	0.13	0.21	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	31.8	31.8	< 0.005	< 0.005	—	31.9
Dust From Material Movement	—	—	—	—	—	—	< 0.005	< 0.005	—	< 0.005	< 0.005	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	< 0.005	< 0.005	0.02	0.04	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	5.27	5.27	< 0.005	< 0.005	—	5.29
Dust From Material Movement	—	—	—	—	—	—	< 0.005	< 0.005	—	< 0.005	< 0.005	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.17	0.05	2.80	1.02	0.01	0.04	80.0	80.0	0.04	8.07	8.11	—	2,163	2,163	0.12	0.34	4.68	2,271
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.01	< 0.005	0.16	0.06	< 0.005	< 0.005	4.06	4.06	< 0.005	0.41	0.41	—	119	119	0.01	0.02	0.11	124
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	< 0.005	< 0.005	0.03	0.01	< 0.005	< 0.005	0.74	0.74	< 0.005	0.07	0.08	—	19.6	19.6	< 0.005	< 0.005	0.02	20.6

3.7. In-Channel Sediment - Year 2 (2025) - Unmitigated

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

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	2.52	2.11	19.8	17.1	0.03	0.85	—	0.85	0.78	—	0.78	—	3,039	3,039	0.12	0.02	—	3,049
Dust From Material Movement	—	—	—	—	—	—	13.2	13.2	—	6.74	6.74	—	—	—	—	—	—	—
Onsite truck	0.01	< 0.005	0.17	0.08	< 0.005	< 0.005	36.8	36.8	< 0.005	3.67	3.67	—	95.1	95.1	0.01	0.02	0.20	100.0
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	2.52	2.11	19.8	17.1	0.03	0.85	—	0.85	0.78	—	0.78	—	3,039	3,039	0.12	0.02	—	3,049
Dust From Material Movement	—	—	—	—	—	—	13.2	13.2	—	6.74	6.74	—	—	—	—	—	—	—
Onsite truck	0.01	< 0.005	0.18	0.08	< 0.005	< 0.005	36.8	36.8	< 0.005	3.67	3.67	—	95.3	95.3	0.01	0.02	0.01	99.9
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	1.17	0.98	9.23	7.95	0.01	0.40	—	0.40	0.36	—	0.36	—	1,415	1,415	0.06	0.01	—	1,420
Dust From Material Movement	—	—	—	—	—	—	6.13	6.13	—	3.14	3.14	—	—	—	—	—	—	—
Onsite truck	< 0.005	< 0.005	0.08	0.04	< 0.005	< 0.005	15.9	15.9	< 0.005	1.59	1.59	—	44.3	44.3	< 0.005	0.01	0.04	46.5
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.21	0.18	1.68	1.45	< 0.005	0.07	—	0.07	0.07	—	0.07	—	234	234	0.01	< 0.005	—	235
Dust From Material Movement	—	—	—	—	—	—	1.12	1.12	—	0.57	0.57	—	—	—	—	—	—	—
Onsite truck	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	2.90	2.90	< 0.005	0.29	0.29	—	7.34	7.34	< 0.005	< 0.005	0.01	7.71
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.05	0.05	0.04	0.90	0.00	0.00	36.6	36.6	0.00	3.67	3.67	—	177	177	< 0.005	0.01	0.68	179
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.23	0.07	3.92	1.36	0.02	0.06	122	122	0.04	12.3	12.3	—	3,207	3,207	0.16	0.51	7.06	3,370
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.05	0.04	0.06	0.64	0.00	0.00	36.6	36.6	0.00	3.67	3.67	—	157	157	< 0.005	0.01	0.02	159

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.22	0.06	4.23	1.38	0.02	0.06	122	122	0.04	12.3	12.3	—	3,208	3,208	0.16	0.51	0.18	3,364
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.02	0.02	0.02	0.31	0.00	0.00	15.8	15.8	0.00	1.58	1.58	—	75.2	75.2	< 0.005	< 0.005	0.14	76.2
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.11	0.03	1.93	0.64	0.01	0.03	52.5	52.5	0.02	5.30	5.32	—	1,494	1,494	0.07	0.24	1.42	1,568
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.06	0.00	0.00	2.88	2.88	0.00	0.29	0.29	—	12.5	12.5	< 0.005	< 0.005	0.02	12.6
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.02	0.01	0.35	0.12	< 0.005	0.01	9.58	9.58	< 0.005	0.97	0.97	—	247	247	0.01	0.04	0.23	260

3.9. In-Channel Sediment - Year 2 (2025) - Mitigated

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

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	2.52	2.11	19.8	17.1	0.03	0.13	—	0.13	0.12	—	0.12	—	3,039	3,039	0.12	0.02	—	3,049
Dust From Material Movement	—	—	—	—	—	—	5.13	5.13	—	2.63	2.63	—	—	—	—	—	—	—
Onsite truck	0.01	< 0.005	0.17	0.08	< 0.005	< 0.005	9.28	9.28	< 0.005	0.93	0.93	—	95.1	95.1	0.01	0.02	0.20	100.0
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Roa d Equipment	2.52	2.11	19.8	17.1	0.03	0.13	—	0.13	0.12	—	0.12	—	3,039	3,039	0.12	0.02	—	3,049
Dust From Material Movement	—	—	—	—	—	—	5.13	5.13	—	2.63	2.63	—	—	—	—	—	—	—
Onsite truck	0.01	< 0.005	0.18	0.08	< 0.005	< 0.005	9.28	9.28	< 0.005	0.93	0.93	—	95.3	95.3	0.01	0.02	0.01	99.9
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	1.17	0.98	9.23	7.95	0.01	0.06	—	0.06	0.05	—	0.05	—	1,415	1,415	0.06	0.01	—	1,420
Dust From Material Movement	—	—	—	—	—	—	2.39	2.39	—	1.22	1.22	—	—	—	—	—	—	—
Onsite truck	< 0.005	< 0.005	0.08	0.04	< 0.005	< 0.005	4.00	4.01	< 0.005	0.40	0.40	—	44.3	44.3	< 0.005	0.01	0.04	46.5
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Roa d Equipment	0.21	0.18	1.68	1.45	< 0.005	0.01	—	0.01	0.01	—	0.01	—	234	234	0.01	< 0.005	—	235
Dust From Material Movement	—	—	—	—	—	—	0.44	0.44	—	0.22	0.22	—	—	—	—	—	—	—
Onsite truck	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	0.73	0.73	< 0.005	0.07	0.07	—	7.34	7.34	< 0.005	< 0.005	0.01	7.71
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.05	0.05	0.04	0.90	0.00	0.00	36.6	36.6	0.00	3.67	3.67	—	177	177	< 0.005	0.01	0.68	179
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.23	0.07	3.92	1.36	0.02	0.06	122	122	0.04	12.3	12.3	—	3,207	3,207	0.16	0.51	7.06	3,370
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.05	0.04	0.06	0.64	0.00	0.00	36.6	36.6	0.00	3.67	3.67	—	157	157	< 0.005	0.01	0.02	159

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.22	0.06	4.23	1.38	0.02	0.06	122	122	0.04	12.3	12.3	—	3,208	3,208	0.16	0.51	0.18	3,364
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.02	0.02	0.02	0.31	0.00	0.00	15.8	15.8	0.00	1.58	1.58	—	75.2	75.2	< 0.005	< 0.005	0.14	76.2
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.11	0.03	1.93	0.64	0.01	0.03	52.5	52.5	0.02	5.30	5.32	—	1,494	1,494	0.07	0.24	1.42	1,568
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.06	0.00	0.00	2.88	2.88	0.00	0.29	0.29	—	12.5	12.5	< 0.005	< 0.005	0.02	12.6
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.02	0.01	0.35	0.12	< 0.005	0.01	9.58	9.58	< 0.005	0.97	0.97	—	247	247	0.01	0.04	0.23	260

3.10. In-channel Sediment Removal - Year 1 (2024) - Unmitigated

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

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Roa d Equipment	2.76	2.32	22.5	18.9	0.03	0.98	—	0.98	0.90	—	0.90	—	3,039	3,039	0.12	0.02	—	3,050
Dust From Material Movement	—	—	—	—	—	—	13.2	13.2	—	6.74	6.74	—	—	—	—	—	—	—
Onsite truck	0.01	< 0.005	0.17	0.08	< 0.005	< 0.005	36.8	36.8	< 0.005	3.67	3.68	—	96.9	96.9	0.01	0.02	0.20	102
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Roa d Equipment	2.76	2.32	22.5	18.9	0.03	0.98	—	0.98	0.90	—	0.90	—	3,039	3,039	0.12	0.02	—	3,050
Dust From Material Movement	—	—	—	—	—	—	13.2	13.2	—	6.74	6.74	—	—	—	—	—	—	—
Onsite truck	0.01	< 0.005	0.18	0.08	< 0.005	< 0.005	36.8	36.8	< 0.005	3.67	3.68	—	97.0	97.0	0.01	0.02	0.01	102
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Roa d Equipment	1.28	1.08	10.5	8.79	0.01	0.46	—	0.46	0.42	—	0.42	—	1,416	1,416	0.06	0.01	—	1,420
Dust From Material Movement	—	—	—	—	—	—	6.13	6.13	—	3.14	3.14	—	—	—	—	—	—	—
Onsite truck	0.01	< 0.005	0.08	0.04	< 0.005	< 0.005	15.9	15.9	< 0.005	1.59	1.59	—	45.2	45.2	< 0.005	0.01	0.04	47.4
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Roa d Equipment	0.23	0.20	1.91	1.60	< 0.005	0.08	—	0.08	0.08	—	0.08	—	234	234	0.01	< 0.005	—	235
Dust From Material Movement	—	—	—	—	—	—	1.12	1.12	—	0.57	0.57	—	—	—	—	—	—	—
Onsite truck	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	2.90	2.90	< 0.005	0.29	0.29	—	7.48	7.48	< 0.005	< 0.005	0.01	7.84
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.05	0.05	0.05	0.96	0.00	0.00	36.6	36.6	0.00	3.67	3.67	—	180	180	0.01	0.01	0.74	183
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Hauling	0.25	0.07	4.07	1.42	0.02	0.06	122	122	0.06	12.3	12.3	—	3,267	3,267	0.18	0.51	7.12	3,430
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.05	0.04	0.06	0.68	0.00	0.00	36.6	36.6	0.00	3.67	3.67	—	160	160	< 0.005	0.01	0.02	162
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.24	0.07	4.37	1.42	0.02	0.06	122	122	0.06	12.3	12.3	—	3,268	3,268	0.18	0.51	0.18	3,424
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.02	0.02	0.02	0.33	0.00	0.00	15.8	15.8	0.00	1.58	1.58	—	76.7	76.7	< 0.005	< 0.005	0.15	77.7
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.11	0.03	1.99	0.67	0.01	0.03	52.5	52.5	0.03	5.30	5.33	—	1,522	1,522	0.08	0.24	1.43	1,596
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.06	0.00	0.00	2.88	2.88	0.00	0.29	0.29	—	12.7	12.7	< 0.005	< 0.005	0.02	12.9
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.02	0.01	0.36	0.12	< 0.005	0.01	9.58	9.58	0.01	0.97	0.97	—	252	252	0.01	0.04	0.24	264

3.11. In-channel Sediment Removal - Year 1 (2024) - Mitigated

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

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Roa d Equipment	2.76	2.32	22.5	18.9	0.03	0.15	—	0.15	0.14	—	0.14	—	3,039	3,039	0.12	0.02	—	3,050
Dust From Material Movement	—	—	—	—	—	—	5.13	5.13	—	2.63	2.63	—	—	—	—	—	—	—
Onsite truck	0.01	< 0.005	0.17	0.08	< 0.005	< 0.005	9.28	9.28	< 0.005	0.93	0.93	—	96.9	96.9	0.01	0.02	0.20	102
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Roa Equipment	2.76	2.32	22.5	18.9	0.03	0.15	—	0.15	0.14	—	0.14	—	3,039	3,039	0.12	0.02	—	3,050
Dust From Material Movement	—	—	—	—	—	—	5.13	5.13	—	2.63	2.63	—	—	—	—	—	—	—
Onsite truck	0.01	< 0.005	0.18	0.08	< 0.005	< 0.005	9.28	9.28	< 0.005	0.93	0.93	—	97.0	97.0	0.01	0.02	0.01	102
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Roa d Equipment	1.28	1.08	10.5	8.79	0.01	0.07	—	0.07	0.06	—	0.06	—	1,416	1,416	0.06	0.01	—	1,420
Dust From Material Movement	—	—	—	—	—	—	2.39	2.39	—	1.22	1.22	—	—	—	—	—	—	—
Onsite truck	0.01	< 0.005	0.08	0.04	< 0.005	< 0.005	4.00	4.01	< 0.005	0.40	0.40	—	45.2	45.2	< 0.005	0.01	0.04	47.4
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Roa d Equipment	0.23	0.20	1.91	1.60	< 0.005	0.01	—	0.01	0.01	—	0.01	—	234	234	0.01	< 0.005	—	235
Dust From Material Movement	—	—	—	—	—	—	0.44	0.44	—	0.22	0.22	—	—	—	—	—	—	—
Onsite truck	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	0.73	0.73	< 0.005	0.07	0.07	—	7.48	7.48	< 0.005	< 0.005	0.01	7.84
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.05	0.05	0.05	0.96	0.00	0.00	36.6	36.6	0.00	3.67	3.67	—	180	180	0.01	0.01	0.74	183
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.25	0.07	4.07	1.42	0.02	0.06	122	122	0.06	12.3	12.3	—	3,267	3,267	0.18	0.51	7.12	3,430
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.05	0.04	0.06	0.68	0.00	0.00	36.6	36.6	0.00	3.67	3.67	—	160	160	< 0.005	0.01	0.02	162

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.24	0.07	4.37	1.42	0.02	0.06	122	122	0.06	12.3	12.3	—	3,268	3,268	0.18	0.51	0.18	3,424
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.02	0.02	0.02	0.33	0.00	0.00	15.8	15.8	0.00	1.58	1.58	—	76.7	76.7	< 0.005	< 0.005	0.15	77.7
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.11	0.03	1.99	0.67	0.01	0.03	52.5	52.5	0.03	5.30	5.33	—	1,522	1,522	0.08	0.24	1.43	1,596
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.06	0.00	0.00	2.88	2.88	0.00	0.29	0.29	—	12.7	12.7	< 0.005	< 0.005	0.02	12.9
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.02	0.01	0.36	0.12	< 0.005	0.01	9.58	9.58	0.01	0.97	0.97	—	252	252	0.01	0.04	0.24	264

3.12. Embankment Rising (2025) - Unmitigated

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

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Roa d Equipment	3.23	2.71	24.8	22.8	0.04	1.16	—	1.16	1.06	—	1.06	—	3,962	3,962	0.16	0.03	—	3,975
Dust From Material Movement	—	—	—	—	—	—	14.2	14.2	—	6.86	6.86	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Roa d Equipment	1.15	0.97	8.82	8.11	0.01	0.41	—	0.41	0.38	—	0.38	—	1,411	1,411	0.06	0.01	—	1,416
Dust From Material Movement	—	—	—	—	—	—	5.07	5.07	—	2.44	2.44	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Roa d Equipment	0.21	0.18	1.61	1.48	< 0.005	0.08	—	0.08	0.07	—	0.07	—	234	234	0.01	< 0.005	—	234
Dust From Material Movement	—	—	—	—	—	—	0.92	0.92	—	0.45	0.45	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.16	0.06	2.54	1.05	0.01	0.03	90.3	90.3	0.02	9.08	9.10	—	1,739	1,739	0.10	0.28	3.71	1,828
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.06	0.02	0.95	0.38	< 0.005	0.01	29.8	29.8	0.01	3.00	3.01	—	620	620	0.03	0.10	0.57	650
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.01	< 0.005	0.17	0.07	< 0.005	< 0.005	5.44	5.44	< 0.005	0.55	0.55	—	103	103	0.01	0.02	0.09	108

3.13. Embankment Rising (2025) - Mitigated

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

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Roa d Equipment	3.23	2.71	24.8	22.8	0.04	0.17	—	0.17	0.16	—	0.16	—	3,962	3,962	0.16	0.03	—	3,975
Dust From Material Movement	—	—	—	—	—	—	5.55	5.55	—	2.68	2.68	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Roa d Equipment	1.15	0.97	8.82	8.11	0.01	0.06	—	0.06	0.06	—	0.06	—	1,411	1,411	0.06	0.01	—	1,416
Dust From Material Movement	—	—	—	—	—	—	1.98	1.98	—	0.95	0.95	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Roa d Equipment	0.21	0.18	1.61	1.48	< 0.005	0.01	—	0.01	0.01	—	0.01	—	234	234	0.01	< 0.005	—	234
Dust From Material Movement	—	—	—	—	—	—	0.36	0.36	—	0.17	0.17	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.16	0.06	2.54	1.05	0.01	0.03	90.3	90.3	0.02	9.08	9.10	—	1,739	1,739	0.10	0.28	3.71	1,828
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.06	0.02	0.95	0.38	< 0.005	0.01	29.8	29.8	0.01	3.00	3.01	—	620	620	0.03	0.10	0.57	650

Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.01	< 0.005	0.17	0.07	< 0.005	< 0.005	5.44	5.44	< 0.005	0.55	0.55	—	103	103	0.01	0.02	0.09	108

3.14. Hydroseeding (2025) - Unmitigated

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

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.22	0.18	1.76	2.13	< 0.005	0.10	—	0.10	0.10	—	0.10	—	321	321	0.01	< 0.005	—	322
Dust From Material Movement	—	—	—	—	—	—	0.00	0.00	—	0.00	0.00	—	—	—	—	—	—	—
Onsite truck	0.01	< 0.005	0.11	0.04	< 0.005	< 0.005	29.4	29.4	< 0.005	2.94	2.94	—	72.9	72.9	< 0.005	0.01	< 0.005	76.4
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	< 0.005	< 0.005	0.04	0.05	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	7.03	7.03	< 0.005	< 0.005	—	7.05
Dust From Material Movement	—	—	—	—	—	—	0.00	0.00	—	0.00	0.00	—	—	—	—	—	—	—
Onsite truck	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.60	0.60	< 0.005	0.06	0.06	—	1.60	1.60	< 0.005	< 0.005	< 0.005	1.68
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	1.16	1.16	< 0.005	< 0.005	—	1.17
Dust From Material Movement	—	—	—	—	—	—	0.00	0.00	—	0.00	0.00	—	—	—	—	—	—	—
Onsite truck	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.11	0.11	< 0.005	0.01	0.01	—	0.26	0.26	< 0.005	< 0.005	< 0.005	0.28
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

3.15. Hydroseeding (2025) - Mitigated

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

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Roa d Equipment	0.22	0.18	1.76	2.13	< 0.005	0.02	—	0.02	0.01	—	0.01	—	321	321	0.01	< 0.005	—	322
Dust From Material Movement	—	—	—	—	—	—	0.00	0.00	—	0.00	0.00	—	—	—	—	—	—	—
Onsite truck	0.01	< 0.005	0.11	0.04	< 0.005	< 0.005	7.42	7.42	< 0.005	0.74	0.74	—	72.9	72.9	< 0.005	0.01	< 0.005	76.4
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Roa d Equipment	< 0.005	< 0.005	0.04	0.05	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	7.03	7.03	< 0.005	< 0.005	—	7.05
Dust From Material Movement	—	—	—	—	—	—	0.00	0.00	—	0.00	0.00	—	—	—	—	—	—	—
Onsite truck	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.15	0.15	< 0.005	0.02	0.02	—	1.60	1.60	< 0.005	< 0.005	< 0.005	1.68
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Roa d Equipment	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	1.16	1.16	< 0.005	< 0.005	—	1.17
Dust From Material Movement	—	—	—	—	—	—	0.00	0.00	—	0.00	0.00	—	—	—	—	—	—	—
Onsite truck	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.03	0.03	< 0.005	< 0.005	< 0.005	—	0.26	0.26	< 0.005	< 0.005	< 0.005	0.28
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

3.16. Potholing (2024) - Unmitigated

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

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Roa d Equipment	0.25	0.21	1.97	2.16	< 0.005	0.13	—	0.13	0.12	—	0.12	—	321	321	0.01	< 0.005	—	322
Dust From Material Movement	—	—	—	—	—	—	0.00	0.00	—	0.00	0.00	—	—	—	—	—	—	—
Onsite truck	0.01	< 0.005	0.11	0.04	< 0.005	< 0.005	29.4	29.4	< 0.005	2.94	2.94	—	74.2	74.2	< 0.005	0.01	0.16	77.9
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Roa d Equipment	< 0.005	< 0.005	0.02	0.02	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	3.52	3.52	< 0.005	< 0.005	—	3.53
Dust From Material Movement	—	—	—	—	—	—	0.00	0.00	—	0.00	0.00	—	—	—	—	—	—	—
Onsite truck	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.30	0.30	< 0.005	0.03	0.03	—	0.81	0.81	< 0.005	< 0.005	< 0.005	0.85
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Roa d Equipment	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	0.58	0.58	< 0.005	< 0.005	—	0.58
Dust From Material Movement	—	—	—	—	—	—	0.00	0.00	—	0.00	0.00	—	—	—	—	—	—	—
Onsite truck	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.05	0.05	< 0.005	0.01	0.01	—	0.13	0.13	< 0.005	< 0.005	< 0.005	0.14
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

3.17. Potholing (2024) - Mitigated

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

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Roa d Equipment	0.25	0.21	1.97	2.16	< 0.005	0.02	—	0.02	0.02	—	0.02	—	321	321	0.01	< 0.005	—	322
Dust From Material Movement	—	—	—	—	—	—	0.00	0.00	—	0.00	0.00	—	—	—	—	—	—	—
Onsite truck	0.01	< 0.005	0.11	0.04	< 0.005	< 0.005	7.42	7.42	< 0.005	0.74	0.74	—	74.2	74.2	< 0.005	0.01	0.16	77.9
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Roa d Equipment	< 0.005	< 0.005	0.02	0.02	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	3.52	3.52	< 0.005	< 0.005	—	3.53
Dust From Material Movement	—	—	—	—	—	—	0.00	0.00	—	0.00	0.00	—	—	—	—	—	—	—
Onsite truck	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.08	0.08	< 0.005	0.01	0.01	—	0.81	0.81	< 0.005	< 0.005	< 0.005	0.85
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Roa d Equipment	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	0.58	0.58	< 0.005	< 0.005	—	0.58
Dust From Material Movement	—	—	—	—	—	—	0.00	0.00	—	0.00	0.00	—	—	—	—	—	—	—
Onsite truck	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	< 0.005	—	0.13	0.13	< 0.005	< 0.005	< 0.005	0.14
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

4. Operations Emissions Details

4.10. Soil Carbon Accumulation By Vegetation Type

4.10.1. Soil Carbon Accumulation By Vegetation Type - Unmitigated

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

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

4.10.2. Above and Belowground Carbon Accumulation by Land Use Type - Unmitigated

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

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

4.10.3. Avoided and Sequestered Emissions by Species - Unmitigated

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

Species	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Sequest ered	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Remove d	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Sequestered	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Remove d	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Sequestered	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Remove d	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.10.4 Soil Carbon Accumulation By Vegetation Type - Mitigated

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

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

4.10.5. Above and Belowground Carbon Accumulation by Land Use Type - Mitigated

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

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

4.10.6. Avoided and Sequestered Emissions by Species - Mitigated

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

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

Species	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Removed	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Sequestered	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Removed	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Sequestered	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Remove	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

5. Activity Data

5.1. Construction Schedule

Phase Name	Phase Type	Start Date	End Date	Days Per Week	Work Days per Phase	Phase Description
Aggregate Base Road	Linear, Grubbing & Land Clearing	4/15/2024	5/7/2024	6.00	20.0	—
Clearing and Grubbing	Linear, Grubbing & Land Clearing	4/15/2024	5/7/2024	6.00	20.0	—
Tree and Brush Removal	Linear, Grubbing & Land Clearing	4/15/2024	5/7/2024	6.00	20.0	—
In-Channel Sediment - Year 2	Linear, Grading & Excavation	4/15/2025	10/29/2025	6.00	170	—
In-channel Sediment Removal - Year 1	Linear, Grading & Excavation	4/15/2024	10/29/2024	6.00	170	—
Embankment Rising	Linear, Drainage, Utilities, & Sub-Grade	4/15/2025	9/12/2025	6.00	130	—
Hydroseeding	Linear, Drainage, Utilities, & Sub-Grade	10/4/2025	10/13/2025	6.00	8.00	—
Potholing	Linear, Drainage, Utilities, & Sub-Grade	4/15/2024	4/18/2024	6.00	4.00	—

5.2. Off-Road Equipment

5.2.1. Unmitigated

Phase Name	Equipment Type	Fuel Type	Engine Tier	Number per Day	Hours Per Day	Horsepower	Load Factor
Aggregate Base Road	Plate Compactors	Diesel	Average	2.00	8.00	8.00	0.43
Aggregate Base Road	Rubber Tired Dozers	Diesel	Average	2.00	8.00	367	0.40
Aggregate Base Road	Graders	Diesel	Average	1.00	8.00	148	0.41
Clearing and Grubbing	Rubber Tired Dozers	Diesel	Average	2.00	8.00	367	0.40
Clearing and Grubbing	Other Construction Equipment	Diesel	Average	1.00	8.00	82.0	0.42
Tree and Brush Removal	Tractors/Loaders/Back hoes	Diesel	Average	2.00	8.00	84.0	0.37
In-Channel Sediment - Year 2	Rubber Tired Dozers	Diesel	Average	2.00	8.00	367	0.40
In-Channel Sediment - Year 2	Excavators	Diesel	Average	2.00	8.00	36.0	0.38
In-channel Sediment Removal - Year 1	Excavators	Diesel	Average	2.00	8.00	36.0	0.38

Phase Name	Equipment Type	Fuel Type	Engine Tier	Number per Day	Hours Per Day	Horsepower	Load Factor
In-channel Sediment Removal - Year 1	Rubber Tired Dozers	Diesel	Average	2.00	8.00	367	0.40
Embankment Rising	Plate Compactors	Diesel	Average	2.00	8.00	8.00	0.43
Embankment Rising	Rubber Tired Dozers	Diesel	Average	2.00	8.00	367	0.40
Embankment Rising	Graders	Diesel	Average	2.00	8.00	148	0.41
Hydroseeding	Other Construction Equipment	Diesel	Average	1.00	8.00	82.0	0.42
Potholing	Other Construction Equipment	Diesel	Average	1.00	8.00	82.0	0.42

5.2.2. Mitigated

Phase Name	Equipment Type	Fuel Type	Engine Tier	Number per Day	Hours Per Day	Horsepower	Load Factor
Aggregate Base Road	Plate Compactors	Diesel	Average	2.00	8.00	8.00	0.43
Aggregate Base Road	Rubber Tired Dozers	Diesel	Average	2.00	8.00	367	0.40
Aggregate Base Road	Graders	Diesel	Average	1.00	8.00	148	0.41
Clearing and Grubbing	Rubber Tired Dozers	Diesel	Average	2.00	8.00	367	0.40
Clearing and Grubbing	Other Construction Equipment	Diesel	Average	1.00	8.00	82.0	0.42
Tree and Brush Removal	Tractors/Loaders/Back hoes	Diesel	Average	2.00	8.00	84.0	0.37
In-Channel Sediment - Year 2	Rubber Tired Dozers	Diesel	Average	2.00	8.00	367	0.40
In-Channel Sediment - Year 2	Excavators	Diesel	Average	2.00	8.00	36.0	0.38
In-channel Sediment Removal - Year 1	Excavators	Diesel	Average	2.00	8.00	36.0	0.38
In-channel Sediment Removal - Year 1	Rubber Tired Dozers	Diesel	Average	2.00	8.00	367	0.40
Embankment Rising	Plate Compactors	Diesel	Average	2.00	8.00	8.00	0.43
Embankment Rising	Rubber Tired Dozers	Diesel	Average	2.00	8.00	367	0.40
Embankment Rising	Graders	Diesel	Average	2.00	8.00	148	0.41
Hydroseeding	Other Construction Equipment	Diesel	Average	1.00	8.00	82.0	0.42
Potholing	Other Construction Equipment	Diesel	Average	1.00	8.00	82.0	0.42

5.3. Construction Vehicles

5.3.1. Unmitigated

Phase Name	Trip Type	One-Way Trips per Day	Miles per Trip	Vehicle Mix
Aggregate Base Road	—	—	—	—
Aggregate Base Road	Worker	0.00	0.00	LDA,LDT1,LDT2
Aggregate Base Road	Vendor	0.00	0.00	HHDT,MHDT
Aggregate Base Road	Hauling	43.0	9.63	HHDT
Aggregate Base Road	Onsite truck	0.00	0.00	HHDT
Clearing and Grubbing	—	—	—	—
Clearing and Grubbing	Worker	0.00	0.00	LDA,LDT1,LDT2
Clearing and Grubbing	Vendor	0.00	0.00	HHDT,MHDT
Clearing and Grubbing	Hauling	0.50	16.5	HHDT
Clearing and Grubbing	Onsite truck	—	—	HHDT
Tree and Brush Removal	—	—	—	—
Tree and Brush Removal	Worker	0.00	0.00	LDA,LDT1,LDT2
Tree and Brush Removal	Vendor	0.00	0.00	HHDT,MHDT
Tree and Brush Removal	Hauling	36.0	16.5	HHDT
Tree and Brush Removal	Onsite truck	—	—	HHDT
In-channel Sediment Removal - Year 1	—	—	—	—
In-channel Sediment Removal - Year 1	Worker	10.0	22.5	LDA,LDT1,LDT2
In-channel Sediment Removal - Year 1	Vendor	0.00	0.00	HHDT,MHDT
In-channel Sediment Removal - Year 1	Hauling	42.0	21.5	HHDT
In-channel Sediment Removal - Year 1	Onsite truck	5.00	5.00	HHDT
Embankment Rising	—	—	—	—
Embankment Rising	Worker	0.00	0.00	LDA,LDT1,LDT2
Embankment Rising	Vendor	0.00	0.00	HHDT,MHDT
Embankment Rising	Hauling	55.0	8.63	HHDT
Embankment Rising	Onsite truck	0.00	0.00	HHDT

Phase Name	Trip Type	One-Way Trips per Day	Miles per Trip	Vehicle Mix
Hydroseeding	—	—	—	—
Hydroseeding	Worker	0.00	0.00	LDA,LDT1,LDT2
Hydroseeding	Vendor	0.00	0.00	HHDT,MHDT
Hydroseeding	Hauling	0.00	0.00	HHDT
Hydroseeding	Onsite truck	2.00	10.0	HHDT
Potholing	—	—	—	—
Potholing	Worker	0.00	0.00	LDA,LDT1,LDT2
Potholing	Vendor	0.00	0.00	HHDT,MHDT
Potholing	Hauling	0.00	0.00	HHDT
Potholing	Onsite truck	2.00	10.0	HHDT
In-Channel Sediment - Year 2	—	—	—	—
In-Channel Sediment - Year 2	Worker	10.0	22.5	LDA,LDT1,LDT2
In-Channel Sediment - Year 2	Vendor	0.00	0.00	HHDT,MHDT
In-Channel Sediment - Year 2	Hauling	42.0	21.5	HHDT
In-Channel Sediment - Year 2	Onsite truck	5.00	5.00	HHDT

5.3.2. Mitigated

Phase Name	Trip Type	One-Way Trips per Day	Miles per Trip	Vehicle Mix
Aggregate Base Road	—	—	—	—
Aggregate Base Road	Worker	0.00	0.00	LDA,LDT1,LDT2
Aggregate Base Road	Vendor	0.00	0.00	HHDT,MHDT
Aggregate Base Road	Hauling	43.0	9.63	HHDT
Aggregate Base Road	Onsite truck	0.00	0.00	HHDT
Clearing and Grubbing	—	—	—	—
Clearing and Grubbing	Worker	0.00	0.00	LDA,LDT1,LDT2
Clearing and Grubbing	Vendor	0.00	0.00	HHDT,MHDT
Clearing and Grubbing	Hauling	0.50	16.5	HHDT
Clearing and Grubbing	Onsite truck	—	—	HHDT

Phase Name	Trip Type	One-Way Trips per Day	Miles per Trip	Vehicle Mix
Tree and Brush Removal	—	—	—	—
Tree and Brush Removal	Worker	0.00	0.00	LDA,LDT1,LDT2
Tree and Brush Removal	Vendor	0.00	0.00	HHDT,MHDT
Tree and Brush Removal	Hauling	36.0	16.5	HHDT
Tree and Brush Removal	Onsite truck	—	—	HHDT
In-channel Sediment Removal - Year 1	—	—	—	—
In-channel Sediment Removal - Year 1	Worker	10.0	22.5	LDA,LDT1,LDT2
In-channel Sediment Removal - Year 1	Vendor	0.00	0.00	HHDT,MHDT
In-channel Sediment Removal - Year 1	Hauling	42.0	21.5	HHDT
In-channel Sediment Removal - Year 1	Onsite truck	5.00	5.00	HHDT
Embankment Rising	—	—	—	—
Embankment Rising	Worker	0.00	0.00	LDA,LDT1,LDT2
Embankment Rising	Vendor	0.00	0.00	HHDT,MHDT
Embankment Rising	Hauling	55.0	8.63	HHDT
Embankment Rising	Onsite truck	0.00	0.00	HHDT
Hydroseeding	—	—	—	—
Hydroseeding	Worker	0.00	0.00	LDA,LDT1,LDT2
Hydroseeding	Vendor	0.00	0.00	HHDT,MHDT
Hydroseeding	Hauling	0.00	0.00	HHDT
Hydroseeding	Onsite truck	2.00	10.0	HHDT
Potholing	—	—	—	—
Potholing	Worker	0.00	0.00	LDA,LDT1,LDT2
Potholing	Vendor	0.00	0.00	HHDT,MHDT
Potholing	Hauling	0.00	0.00	HHDT
Potholing	Onsite truck	2.00	10.0	HHDT
In-Channel Sediment - Year 2	—	—	—	—
In-Channel Sediment - Year 2	Worker	10.0	22.5	LDA,LDT1,LDT2

Phase Name	Trip Type	One-Way Trips per Day	Miles per Trip	Vehicle Mix
In-Channel Sediment - Year 2	Vendor	0.00	0.00	HHDT,MHDT
In-Channel Sediment - Year 2	Hauling	42.0	21.5	HHDT
In-Channel Sediment - Year 2	Onsite truck	5.00	5.00	HHDT

5.4. Vehicles

5.4.1. Construction Vehicle Control Strategies

Non-applicable. No control strategies activated by user.

5.5. Architectural Coatings

Phase Name	Residential Interior Area Coated (sq ft)	Residential Exterior Area Coated (sq ft)	Non-Residential Interior Area Coated (sq ft)	Non-Residential Exterior Area Coated (sq ft)	Parking Area Coated (sq ft)

5.6. Dust Mitigation

5.6.1. Construction Earthmoving Activities

Phase Name	Material Imported (Cubic Yards)	Material Exported (Cubic Yards)	Acres Graded (acres)	Material Demolished (sq. ft.)	Acres Paved (acres)
Aggregate Base Road	12,000	0.00	34.0	0.00	—
Clearing and Grubbing	0.00	120	34.0	0.00	—
Tree and Brush Removal	0.00	10,000	34.0	0.00	—
In-Channel Sediment - Year 2	0.00	100,000	17.0	0.00	—
In-channel Sediment Removal - Year 1	0.00	100,000	17.0	0.00	—
Embankment Rising	100,000	0.00	34.0	0.00	—
Hydroseeding	0.00	0.00	34.0	0.00	—
Potholing	0.00	0.00	34.0	0.00	—

5.6.2. Construction Earthmoving Control Strategies

Non-applicable. No control strategies activated by user.

5.7. Construction Paving

Land Use	Area Paved (acres)	% Asphalt
User Defined Linear	34.0	100%

5.8. Construction Electricity Consumption and Emissions Factors

kWh per Year and Emission Factor (lb/MWh)

Year	kWh per Year	CO2	CH4	N2O
2024	0.00	204	0.03	< 0.005

5.18. Vegetation

5.18.1. Land Use Change

5.18.1.1. Unmitigated

Vegetation Land Use Type	Vegetation Soil Type	Initial Acres	Final Acres

5.18.1.2. Mitigated

Vegetation Land Use Type	Vegetation Soil Type	Initial Acres	Final Acres

5.18.1. Biomass Cover Type

5.18.1.1. Unmitigated

Biomass Cover Type	Initial Acres	Final Acres

5.18.1.2. Mitigated

Biomass Cover Type	Initial Acres	Final Acres

5.18.2. Sequestration

5.18.2.1. Unmitigated

Tree Type	Number	Electricity Saved (kWh/year)	Natural Gas Saved (btu/year)

5.18.2.2. Mitigated

Tree Type	Number	Electricity Saved (kWh/year)	Natural Gas Saved (btu/year)

6. Climate Risk Detailed Report

6.1. Climate Risk Summary

Cal-Adapt midcentury 2040–2059 average projections for four hazards are reported below for your project location. These are under Representation Concentration Pathway (RCP) 8.5 which assumes GHG emissions will continue to rise strongly through 2050 and then plateau around 2100.

Climate Hazard	Result for Project Location	Unit
Temperature and Extreme Heat	27.4	annual days of extreme heat
Extreme Precipitation	4.60	annual days with precipitation above 20 mm
Sea Level Rise	0.00	meters of inundation depth
Wildfire	0.00	annual hectares burned

Temperature and Extreme Heat data are for grid cell in which your project are located. The projection is based on the 98th historical percentile of daily maximum/minimum temperatures from observed historical data (32 climate model ensemble from Cal-Adapt, 2040–2059 average under RCP 8.5). Each grid cell is 6 kilometers (km) by 6 km, or 3.7 miles (mi) by 3.7 mi.
Extreme Precipitation data are for the grid cell in which your project are located. The threshold of 20 mm is equivalent to about ¾ an inch of rain, which would be light to moderate rainfall if received over a full day or heavy rain if received over a period of 2 to 4 hours. Each grid cell is 6 kilometers (km) by 6 km, or 3.7 miles (mi) by 3.7 mi.
Sea Level Rise data are for the grid cell in which your project are located. The projections are from Radke et al. (2017), as reported in Cal-Adapt (Radke et al., 2017, CEC-500-2017-008), and consider inundation location and depth for the San Francisco Bay, the Sacramento-San Joaquin River Delta and California coast resulting different

increments of sea level rise coupled with extreme storm events. Users may select from four scenarios to view the range in potential inundation depth for the grid cell. The four scenarios are: No rise, 0.5 meter, 1.0 meter, 1.41 meters Wildfire data are for the grid cell in which your project are located. The projections are from UC Davis, as reported in Cal-Adapt (2040–2059 average under RCP 8.5), and consider historical data of climate, vegetation, population density, and large (> 400 ha) fire history. Users may select from four model simulations to view the range in potential wildfire probabilities for the grid cell. The four simulations make different assumptions about expected rainfall and temperature are: Warmer/drier (HadGEM2-ES), Cooler/wetter (CNRM-CM5), Average conditions (CanESM2), Range of different rainfall and temperature possibilities (MIROC5). Each grid cell is 6 kilometers (km) by 6 km, or 3.7 miles (mi) by 3.7 mi.

6.2. Initial Climate Risk Scores

Climate Hazard	Exposure Score	Sensitivity Score	Adaptive Capacity Score	Vulnerability Score
Temperature and Extreme Heat	N/A	N/A	N/A	N/A
Extreme Precipitation	N/A	N/A	N/A	N/A
Sea Level Rise	N/A	N/A	N/A	N/A
Wildfire	N/A	N/A	N/A	N/A
Flooding	N/A	N/A	N/A	N/A
Drought	N/A	N/A	N/A	N/A
Snowpack Reduction	N/A	N/A	N/A	N/A
Air Quality Degradation	N/A	N/A	N/A	N/A

The sensitivity score reflects the extent to which a project would be adversely affected by exposure to a climate hazard. Exposure is rated on a scale of 1 to 5, with a score of 5 representing the greatest exposure.
The adaptive capacity of a project refers to its ability to manage and reduce vulnerabilities from projected climate hazards. Adaptive capacity is rated on a scale of 1 to 5, with a score of 5 representing the greatest ability to adapt.
The overall vulnerability scores are calculated based on the potential impacts and adaptive capacity assessments for each hazard. Scores do not include implementation of climate risk reduction measures.

6.3. Adjusted Climate Risk Scores

Climate Hazard	Exposure Score	Sensitivity Score	Adaptive Capacity Score	Vulnerability Score
Temperature and Extreme Heat	N/A	N/A	N/A	N/A
Extreme Precipitation	N/A	N/A	N/A	N/A
Sea Level Rise	N/A	N/A	N/A	N/A
Wildfire	N/A	N/A	N/A	N/A
Flooding	N/A	N/A	N/A	N/A
Drought	N/A	N/A	N/A	N/A
Snowpack Reduction	N/A	N/A	N/A	N/A
Air Quality Degradation	N/A	N/A	N/A	N/A

The sensitivity score reflects the extent to which a project would be adversely affected by exposure to a climate hazard. Exposure is rated on a scale of 1 to 5, with a score of 5 representing the greatest exposure.
The adaptive capacity of a project refers to its ability to manage and reduce vulnerabilities from projected climate hazards. Adaptive capacity is rated on a scale of 1 to 5, with a score of 5 representing the greatest ability to adapt.
The overall vulnerability scores are calculated based on the potential impacts and adaptive capacity assessments for each hazard. Scores include implementation of climate risk reduction measures.

6.4. Climate Risk Reduction Measures

7. Health and Equity Details

7.1. CalEnviroScreen 4.0 Scores

The maximum CalEnviroScreen score is 100. A high score (i.e., greater than 50) reflects a higher pollution burden compared to other census tracts in the state.

Indicator	Result for Project Census Tract
Exposure Indicators	—
AQ-Ozone	52.0
AQ-PM	23.9
AQ-DPM	17.2
Drinking Water	56.4
Lead Risk Housing	19.4
Pesticides	85.9
Toxic Releases	70.1
Traffic	11.2
Effect Indicators	—
CleanUp Sites	23.5
Groundwater	69.7
Haz Waste Facilities/Generators	76.4
Impaired Water Bodies	83.0
Solid Waste	63.7
Sensitive Population	—
Asthma	60.1
Cardio-vascular	70.0
Low Birth Weights	36.1
Socioeconomic Factor Indicators	—
Education	54.8
Housing	12.3
Linguistic	46.5
Poverty	28.2
Unemployment	30.9

7.2. Healthy Places Index Scores

The maximum Health Places Index score is 100. A high score (i.e., greater than 50) reflects healthier community conditions compared to other census tracts in the state.

Indicator	Result for Project Census Tract
Economic	—
Above Poverty	64.91723341
Employed	14.74400103
Median HI	—
Education	—
Bachelor's or higher	58.84768382
High school enrollment	100
Preschool enrollment	63.55703837
Transportation	—
Auto Access	62.47914795
Active commuting	59.36096497
Social	—
2-parent households	62.33799564
Voting	67.66328757
Neighborhood	—
Alcohol availability	88.48967022
Park access	26.52380341
Retail density	6.634158861
Supermarket access	18.96573848
Tree canopy	8.841267804
Housing	—

Indicator	Result for Project Census Tract
Homeownership	82.38162453
Housing habitability	91.76183755
Low-inc homeowner severe housing cost burden	66.85486975
Low-inc renter severe housing cost burden	94.49505967
Uncrowded housing	56.87155139
Health Outcomes	—
Insured adults	68.95932247
Arthritis	0.0
Asthma ER Admissions	44.3
High Blood Pressure	0.0
Cancer (excluding skin)	0.0
Asthma	0.0
Coronary Heart Disease	0.0
Chronic Obstructive Pulmonary Disease	0.0
Diagnosed Diabetes	0.0
Life Expectancy at Birth	96.8
Cognitively Disabled	22.1
Physically Disabled	33.4
Heart Attack ER Admissions	33.8
Mental Health Not Good	0.0
Chronic Kidney Disease	0.0
Obesity	0.0
Pedestrian Injuries	47.2

Indicator	Result for Project Census Tract
Physical Health Not Good	0.0
Stroke	0.0
Health Risk Behaviors	—
Binge Drinking	0.0
Current Smoker	0.0
No Leisure Time for Physical Activity	0.0
Climate Change Exposures	—
Wildfire Risk	0.0
SLR Inundation Area	0.0
Children	41.8
Elderly	65.5
English Speaking	67.8
Foreign-born	34.1
Outdoor Workers	53.4
Climate Change Adaptive Capacity	—
Impervious Surface Cover	89.3
Traffic Density	13.3
Traffic Access	23.0
Other Indices	—
Hardship	28.8
Other Decision Support	—
2016 Voting	70.5

7.3. Overall, Health & Equity Scores

Metric	Result for Project Census Tract
CalEnviroScreen 4.0 Score for Project Location (a)	55.0
Healthy Places Index Score for Project Location (b)	61.0
Project Located in a Designated Disadvantaged Community (Senate Bill 535)	No
Project Located in a Low-Income Community (Assembly Bill 1550)	No
Project Located in a Community Air Protection Program Community (Assembly Bill 617)	No

a: The maximum CalEnviroScreen score is 100. A high score (i.e., greater than 50) reflects a higher pollution burden compared to other census tracts in the state.
b: The maximum Health Places Index score is 100. A high score (i.e., greater than 50) reflects healthier community conditions compared to other census tracts in the state.

7.4. Health & Equity Measures

No Health & Equity Measures selected.

7.5. Evaluation Scorecard

Health & Equity Evaluation Scorecard not completed.

7.6. Health & Equity Custom Measures

No Health & Equity Custom Measures created.

8. User Changes to Default Data

Screen	Justification
Construction: Construction Phases	Work schedule reflects most likely timing of activities.
Construction: Off-Road Equipment	General construction equipment that would be used for the project.
Construction: Trips and VMT	Represents most accurate construction activites.
Construction: On-Road Fugitive Dust	Percentage paved based on hauling data provided.
Construction: Dust From Material Movement	Hauling requirements for the proposed project.

Cache Creek Channel Rehab - Inventory and Calculation of Greenhouse Gas Emissions

Emissions from Construction Equipment

Line	Type of Equipment	Maximum Number per Day	Total Operation Days	Total Operation Hours[1]	Fuel Consumption Per Hour[2]	Total Fuel Consumption (gal. diesel)	CO_2e/gal diesel [3]	Total CO_2 Equivalent Emissions (metric tons)
1	Water Truck	2	340	5,440	4	21,760	0.010391	226
2	Mower	1	10	80	2.37	190	0.010391	2
3	Sheepfoot Compactor	2	130	2,080	4.94	10,275	0.010391	107
4	Drum Compactor	2	20	320	2.64	845	0.010391	9
5	Motor Grader	1	80	640	7.81	4,998	0.010391	52
6	Dozer	2	340	5,440	8.36	45,478	0.010391	473
7	Excavator	2	340	5,440	10.6	57,664	0.010391	599
8	Hydroseed Truck	1	8	64	7.55	483	0.010391	5
9	Pothole Vaccuum	1	4	32	7.55	242	0.010391	3
10	Service Truck	1	340	680	2.5	1,700	0.009010	15
18	**TOTAL**					**143,635**		**1,490**
19	[1] An 8-hour work day is assumed.							
20	[2] California Air Resource Board Offroad 2007 Emissions Inventory fuel consumption factors							
21	[3] World Resources Institute-Mobile combustion CO_2 emissions tool, June 2003 Version 1.2							
22								
23	**Emissions from Transportation of Construction Workforce**							
24	**Average Number of Workers per Day**	**Total Number of Workdays**	**Average Distance Travelled (round trip)**	**Total Miles Travelled**	**Average Passenger Vehicle Fuel Efficiency[4]**	**Total Fuel Consumption (gal. gasoline)**	**CO_2e/gal Gasoline [3]**	**Total CO_2 Equivalent Emissions (metric tons)**
	10	340	50	170,000	21	8,173	0.00901	74
25	**TOTAL**							**74**
26	[4] United States Environmental Protection Agency. 2008. Light-Duty Automotive Technology and Fuel Economy Trends: 1975 through 2008. [EPA420-R-08-015]							
27	Emissions from Transportation of Construction Materials							
28 29	**Trip Type**	**Total Number of Trips**	**Average Trip Distance**	**Total Miles Travelled**	**Average Semi-truck Fuel Efficiency**	**Total Fuel Consumption (gal. diesel)**	**CO_2e/gal Diesel [3]**	**Total CO_2 Equivalent Emissions (metric tons)**
30	Mobilization/ Demob	38	25	1,900	6	316.67	0.01039	3.3
31	Delivery	34,016	32	907,550	6	151,258	0.01039	1,571.8
32	Spoils	6	30	180	6	30	0.01039	0.3
33	**TOTAL**							**1,575**
34								
35	**Construction Electricity Emissions**							

Line	Type of Equipment	Maximum Number per Day	Total Operation Days	Total Operation Hours[1]	Fuel Consumption Per Hour[2]	Total Fuel Consumption (gal. diesel)	CO_2e/gal diesel [3]	Total CO_2 Equivalent Emissions (metric tons)
36			MWh of electricity	$mtCO2_e$/ MWh[5]	CO_2 e emissions			
37	Electricity Needed		0	0.310	0			
38	[5] eGRID2010 Version 1.0, February 2011 (Year 2007 data) *CAMX-WECC sub-region* .							
39								
40	**Total Construction Activity Emissions**				3,139.2	(from lines 18, 25, 33, and 37)		
41	**Total Years of Construction**				2			
42	**Expected Start Date of Construction**				April 15, 2024			
43								
44	**Estimated Project Useful life**			20	Years			
45	**Average Annual Total GHG Emissions**[7]			**156.96**	**MT CO_2 equivalents**			
46	[7]short-term construction emissions amortized over life of project							

Appendix C. Biological Resources Data

C.1 Biological Resources Technical Report

Biological Technical Report

Cache Creek Channel and Levee Rehabilitation Project

Prepared for:
Department of Water Resources

May 2023

Prepared by:

GEI Consultants
Consulting Engineers and Scientists

Biological Technical Report

Cache Creek Channel and Levee Rehabilitation Project

Prepared for:

California Department of Water Resources
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May 2023

Project No. 1905950 TO 22-05

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List of Abbreviations

BMP	best management practice
CCSB	Cache Creek Settling Basin
CDFW	California Department of Fish and Wildlife
CESA	California Endangered Species Act
CFGC	California Fish and Game Code
CFR	Code of Federal Regulation
cfs	cubic feet per second
CNDDB	California Natural Diversity Database
CNPS	California Native Plant Society
CRPR	California Rare Plant Rank
CWA	Clean Water Act
DWR	California Department of Water Resources
EPA	Environmental Protection Agency
ESA	Federal Endangered Species Act
ft	feet
GEI	GEI Consultants, Inc.
HCP	Habitat Conservation Plan
I-5	Interstate 5
IPaC	Information for Planning and Conservation
MBTA	Migratory Bird Treaty Act
NCCP	Natural Community Conservation Plan
NMFS	National Marine Fisheries Service
Porter-Cologne Act	Porter-Cologne Water Quality Control Act
project	Cache Creek Channel and Levee Rehabilitation Project
project reach/ project site	9-mile-long reach of Cache Creek where project activities would occur
RWQCB	Regional Water Quality Control Board
SRFCP	Sacramento River Flood Control Project
study area	project site and adjacent areas
USACE	United States Army Corps of Engineers
USC	United States Code
USFWS	United States Fish and Wildlife Service
USGS	United States Geological Survey
VELB	valley elderberry longhorn beetle

1. Introduction

On behalf of the California Department of Water Resources (DWR), GEI Consultants, Inc. (GEI) has prepared this biological technical report for the Cache Creek Channel and Levee Rehabilitation Project (project).

1.1 Project Location and Background

The project site extends along an approximate 9-mile-long reach of Cache Creek (referred to as the project reach). The project reach is located along the town of Yolo, 2 miles north of the City of Woodland and about 4.5 miles west of the Sacramento River, in Yolo County (**Figure 1**). Cache Creek levees provide flood protection to the town of Yolo, the City of Woodland, and the adjacent agricultural lands.

Several bridges cross Cache Creek (in order from upstream to downstream): Interstate 5 (I-5) southbound and northbound, County Road 99W, Union Pacific Railroad, State Route 113, and County Road 102. The upstream end of the project reach is approximately 1.6 miles west of the I-5 bridge. The downstream end of the project reach is at the terminus of a training levee where the channel extends into the Cache Creek Settling Basin (CCSB), as shown in **Figure 2**.

The left bank (north) levee begins approximately 240 feet (ft) east of County Road 96B and continues to the entrance of the CCSB. The right bank (south) levee begins approximately 0.5 mile upstream of I-5 and becomes the west levee of CCSB. The width of the channel from levee to levee varies from approximately 250 to 650 ft between I-5 and County Road 102. The channel widens to approximately 950 ft in the upstream reach near County Road 96B and the stream bed width varies from 20 to 100 ft. Overbank widths vary from approximately 20 to 100+ ft on either side and exceed 500 ft at the upstream end of the project. The difference in elevation between the channel bottom and the overbanks is as much as 35 ft in places.

Cache Creek drains an area of approximately 1,139 square miles in Lake, Colusa, and Yolo Counties. Cache Creek is a component of the Sacramento River Flood Control Project (SRFCP), serving as the sole discharge of the Cache Creek drainage basin into the Yolo Bypass. The portion of SRFCP enveloping Cache Creek is comprised of levees on both banks in the lower reach of both the creek itself and the CCSB, which was constructed to prevent deposition of sediment into the Yolo Bypass downstream. Cache Creek's levees were constructed by the United States Army Corps of Engineers (USACE) in the 1960s to provide 3 ft of freeboard during a design flow of 30,000 cubic ft per second (cfs); a flow equivalent to a 10-year storm event. Following their construction, USACE transferred ownership/jurisdiction of the levees to the State of California. Typical levee design along the main reach of the creek consisted of 3:1 (horizontal:vertical) side slopes on the waterside and 2:1 slopes on the landside, with a 12-ft-wide gravel crown. There are toe roads along the levees' bases that provide access for that provide access for maintenance vehicles and activities.

Figure 1. Regional Location of Study Area

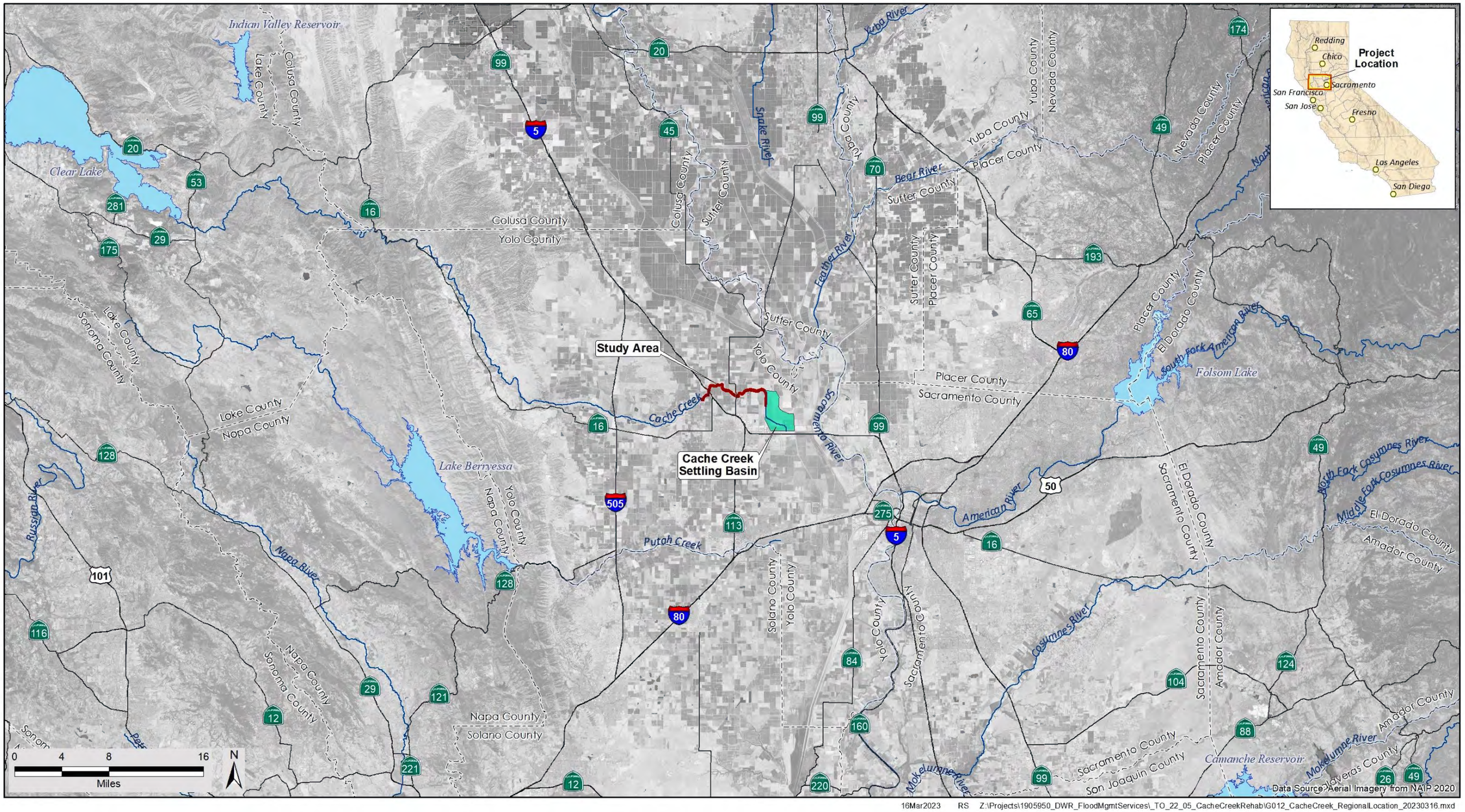

Figure 2. Location of Study Area


Co Rd 97B
Clay St
Sacramento St
1st St
Jackson St
Co Rd 98
Casa Linda Ln
2nd St
Co Rd 17
Co Rd 98A
Cacheville Rd
Matchline: Tile 2a
Matchline: Tile 2c
5
16
113
2a
2b
2c
2d
2e
2f
2g
Site Visit Meeting Location
Staging Area
Study Area
0
200
400
800
Feet
Data Source: DWR FMO; NAIP 2020; USACE 2020; USGS
16Mar2023 SI Z:\Projects\1905950_DWR_FloodMgmtServices_TO_22_05_CacheCreekRehab\G003_CacheCreek_Study_Area_DetailMB_20230316.mxd

16Mar2023 SI Z:\Projects\1905950_DWR_FloodMgmtServices_TO_22_05_CacheCreekRehab\G003_CacheCreek_Study_Area_DetailMB_20230316.mxd


Co Rd 17A
113
Co Rd 99H
Matchline: Tile 2e
Matchline: Tile 2c
460+00
440+00
420+00
Site Visit Meeting Location
Site Visit Meeting Location
Staging Area
Study Area
Co Rd 18
Rd 99E
5
16
113
2a
2b
2c
2d
2e
2f
2g
0
200
400
800
Feet
N
Data Source: DWR FMO; NAIP 2020; USACE 2020; USGS
16Mar2023 SI Z:\Projects\1905950_DWR_FloodMgmtServices_TO_22_05_CacheCreekRehab\G003_CacheCreek_Study_Area_DetailMB_20230316.mxd


Matchline: Tile 2d
Staging Area 2
Matchline: Tile 2f
Co Rd 100B
Howald Dr
Site Visit Meeting Location
Staging Area
Study Area
0 200 400 800
Feet
Data Source: DWR FMO; NAIP 2020; USACE 2020; USGS
16Mar2023 SI Z:\Projects\1905950_DWR_FloodMgmtServices_TO_22_05_CacheCreekRehab\G003_CacheCreek_Study_Area_DetailMB_20230316.mxd

16Mar2023 SI Z:\Projects\1905950_DWR_FloodMgmtServices_TO_22_05_CacheCreekRehab\G003_CacheCreek_Study_Area_DetailMB_20230316.mxd


240+00
220+00
200+00
Co Rd 18
Matchline: Tile 2f
Site Visit Meeting Location
Staging Area
Study Area
5
16
113
2a
2b
2c
2d
2e
2f
2g
0
200
400
800
Feet
N
Data Source: DWR FMO; NAIP 2020; USACE 2020; USGS
16Mar2023 SI Z:\Projects\1905950_DWR_FloodMgmtServices_TO_22_05_CacheCreekRehab\G003_CacheCreek_Study_Area_Detail\MB_20230316.mxd

The channel of Cache Creek was modified in 1993 when the USACE expanded the CCSB. The Cache Creek training channel and levees were realigned when the western perimeter of the CCSB was moved approximately 0.45 mile west. USACE also removed sediment and reshaped the low flow channel starting at County Road 102, continuing to the new centerline of the training channel.

Vertical ground displacement has caused significant changes in Cache Creek's topography compared to construction conditions in the 1960s. Upstream of County Road 102, levees are up to 7 ft lower than the as-constructed crown elevations. Survey data reveals pronounced undulations in both levee profiles, adding to freeboard concerns at localized reaches. Similarly, the thalweg is up to 18 ft lower than the design invert, indicating that continual incision and other erosion is occurring in addition to ground displacement. The existing channel profile is markedly less steep than what is depicted on the original design profile.

Sediment deposits and thick vegetation in Cache Creek, combined with the effects of vertical ground displacement, have reduced the overall flow capacity of the channel. Intermittent floods over several decades have continued to deposit new sediment throughout the channel. Modeling indicated there is a high likelihood that continued vertical displacement in the region contributes to deposition by decreasing the channel slope, which in turn decreases flood flow velocities. Constrictions due to sediment deposition, compounded by woody vegetation prevalent along the main channel, further reduce capacity to pass the design flow specifications.

The reduced capacity in Cache Creek caused water to overtop both levees on February 27, 2019, despite flood flow measuring less than the conditions the levees were designed to contain. There are severe freeboard deficiencies on both levees along the project reach, and the channel will not safely contain the original design flows. The flood carrying capacity of Cache Creek must be restored to contain higher flows and protect adjacent communities.

In 2019 and 2020, DWR performed routine maintenance to repair the damaged levees and improve channel capacity, by resurfacing and elevating the levee crown at the overtopped sections, degrading retired "spur" levees to increase capacity along setback areas, and removing non-native vegetation in the main channel and over channel banks. The Cache Creek hydraulic model was updated in January 2021, after the latest routine maintenance, and illustrates that overtopping and freeboard issues remain at the original design flow of 30,000 cfs. However, minor reductions to water surface elevations demonstrated an improvement in overall conveyance.

To meet DWR's public safety and maintenance responsibilities, the project is being developed with the following objectives:

- Restore the capacity of the Cache Creek channel along the project reach to provide 3 ft of freeboard during the original design flow of 30,000 cfs.

- Implement a combination of actions, such as vegetation removal, sediment removal, and levee raising, to efficiently and cost effectively restore channel capacity.

- Levee improvements shall not exceed the original design parameters to the extent possible.

- Minimize impacts to sensitive environmental resources and surrounding land uses.

1.2 Purpose

DWR is evaluating levee improvement activities within the approximate 1.47-square-mile project site where potential surface disturbance is anticipated to occur. This report summarizes an evaluation of biological resources in the project site, which includes an appropriate buffer to encompass potential suitable nesting/breeding habitats for special-status species in the area. This biological resource evaluation identifies sensitive natural habitats in the project site and evaluates the project area, in addition to a general suitability to support special-status species based on existing conditions. This report identifies potential biological constraints that may affect potential project siting, suggests additional biological resource investigations that should be conducted, and recommends measures to avoid or minimize impacts of project implementation in accordance with State and federal laws and regulations.

2. Methodology

2.1 Literature and Database Review

Before conducting the reconnaissance survey, GEI biologists reviewed existing database searches to compile information on special-status plants, wildlife, and sensitive biological resources. Special-status plant species, special-status wildlife species, and sensitive habitats that may occur in the project site and adjacent areas (study area) were determined, in part, by reviewing natural resource agency databases, literature, and other relevant sources. The following information sources were reviewed:

- United States Geological Survey (USGS) *Woodland, California* 7.5-minute topographic quadrangle
- Aerial photographs of the study area and vicinity
- National Resource Conservation Service Soil Survey, *Yolo County* (NRCS 2020)
- United States Fish and Wildlife Service (USFWS) Information for Planning and Consultation (IPaC) species list generator of endangered and threatened species that may occur in the vicinity of the study area (USFWS 2023a) (**Attachment A**)
- USFWS Critical Habitat Mapper (USFWS 2023b)
- National Oceanic and Atmospheric Administration's National Marine Fisheries Service (NMFS) fish habitat mapper (NOAA 2022)
- California Department of Fish and Wildlife's (CDFW) California Natural Diversity Database (CNDDB) plant and wildlife records for Woodland, California and twelve surrounding 7.5-minute quadrangles (CDFW 2022a) (**Attachment A**)
- California Native Plant Society (CNPS) online Inventory of Rare and Endangered Plants records for the *Woodland, California* and twelve surrounding quadrangles (CDFW 2022) (**Attachment A**)
- CDFW California Wildlife Habitat Relationships System (CDFW 2023a)
- CDFW Sensitive Natural Community List (CDFW 2022b)
- CDFW Special Animals List (CDFW 2023b) and State and Federally Listed Endangered, and Rare Plants of California (CDFW 2022c)
- USFWS National Wetlands Inventory (USFWS 2022)
- *Jepson Manual* (Baldwin et. al. 2012)

- Calflora (Calflora 2022)Yolo County Habitat Conservation Plan/Natural Community Conservation Plan (Yolo HCP/NCCP; ICF 2018)

2.2 Field Survey

A field survey of the study area was conducted by GEI biologists Sarah Norris and Devin Barry on March 17, 18, and 19, 2022. Weather conditions encountered during the survey were clear skies with winds between 2-5 miles per hour. The temperature ranged from approximately 61-75 degrees Fahrenheit. The survey focused on identifying vegetation communities, including invasive plant species, and evaluating potential for special-status species to occur on or adjacent to the study area. The study area is the area in which project activities (i.e., vegetation removal, sediment removal, and levee raises) would occur, as well as directly adjacent areas within a 20-foot buffer of the project boundary. While typically a study area buffer would be larger, there is limited ability to survey beyond this buffer as this particular study area closely abuts the property lines of private residence and agricultural parcels to both the north and south of Cache Creek. Some notes were taken of bird activity, particularly raptors, outside of this buffer where surveyors were able to visually scan tall tree canopies and open skies. However, detailed vegetation identification in these areas was not possible.

Habitat types were initially evaluated using aerial maps provided by DWR and then field verified. Land cover types were classified based on the descriptions provided by CDFW's California Wildlife Habitat Relationship types (as adapted from Mayer and Laudenslayer's 1988 *A Guide to Wildlife Habitats*) (CDFW 2023c). Where applicable, vegetation assemblages were described to the alliance level based on the descriptions provided in the California Natural Community List (CDFW 2022d), which is adapted from the technical approach and vegetation alliance classification system described in *A Manual of California Vegetation* (Sawyer et al. 2009). Representative photos are included in **Attachment B**.

Habitat for special-status plants were systematically evaluated based on a number of factors, including presence or absence of potential habitat where each species is known to occur, suitability to each habitat condition present in the study area, and proximity to other recorded occurrences as described below in **Section 4.2**, "Special-status Species." The same methodology was applied to special-status-wildlife. Specifically, potential habitats for amphibians and reptiles were surveyed by visually scanning riparian areas within and immediately adjacent to the study area for suitable conditions, such as water depth, emergent wetland vegetation, pooled water, and upland refugia. Habitat surveys for mammals focused on an assessment of potential burrow habitat within or adjacent to the study area. Any burrows were inspected for signs (i.e., positive results including tracks, feathers, pellets, prey remains, animal scat, etc.) of western burrowing owl (*Athene cunicularia*). Structures and other human-made features, such as the bridges located within the study area, were inspected for evidence of wildlife use, including bats. Trees and shrubs along the riparian woodland were surveyed for suitable raptor and passerine nesting sites and for evidence of current or past nesting activity. Trees situated greater than a 200-ft distance beyond the study area were visually scanned with binoculars for large stick nests from within the study area to determine

potential suitability for special-status raptor species. Grassland located on the levee slopes were surveyed on foot to determine suitability for special-status wildlife species.

2.3 Definitions

2.3.1 Special-Status Species

Special-status species are plants and animals that fall into any of the following categories:

- taxa (i.e., taxonomic categories or groups) that are officially listed, candidates for listing, or proposed for listing by the Federal government or the State of California as endangered, threatened, or rare;
- taxa that meet the criteria for listing;
- wildlife identified by CDFW as species of special concern;
- plants considered by CDFW to be “rare, threatened, or endangered in California;”
- species listed as Fully Protected under the California Fish and Game Code (CFGC); or
- taxa afforded protection under local or regional planning documents.

Plant taxa are assigned by CDFW to one of the following six California Rare Plant Ranks (CRPRs):

- CRPR 1A—Plants presumed to be extinct in California;
- CRPR 1B—Plants that are rare, threatened, or endangered in California and elsewhere;
- CRPR 2A—Plants that are presumed extirpated in California, but are more common elsewhere;
- CRPR 2B—Plants that are rare, threatened, or endangered in California but are more common elsewhere;
- CRPR 3—Plants about which more information is needed (a review list); or
- CRPR 4—Plants of limited distribution (a watch list).

All plants with a CRPR are considered “special plants” by CDFW. The term “special plants” is a broad term used by CDFW to refer to all plant taxa inventoried in the CNDDB, regardless of their legal or protection status. As indicated above, only plant taxa considered by CDFW to be “rare, threatened, or endangered in California” (i.e., CRPR 1B and 2B plants) are considered special-status for purposes of this analysis.

Results of the CNDDB and CNPS Inventory queries and the IPaC list are provided in **Attachment A**. The CNDDB USGS 12-quadrangle search yielded occurrences of 54 special-status plants and animals. (Note: Not all species tracked in the CNDDB and included in the search results meet the special-status definition described above.)

2.3.2 Potential to Occur

The potential for special-status plant and wildlife species to occur in the study area were classified under one of five categories as described below. Only those special-status species with a potential of “Could Occur” or greater in the study area are evaluated in this report. The following criteria were applied to assess the potential for species occurrence at the study area:

- **No Potential to Occur:** The study area is located outside of the species extant range and/or potential habitat to support the species is not present.
- **Unlikely to Occur:** Although the study area is located within the extant range of the species, the species is unlikely to be present because of very restricted distribution and/or because only low-quality habitat or very limited habitat is present in the study area and vicinity.
- **Could Occur:** The study area is located within the extant range of the species. While there is suitable habitat available in the study area, there are few or no other indicators that the species may be present.
- **Likely to Occur:** Habitat conditions, behavior of the species, known occurrences in the vicinity, or other factors, including documentations of the species in or near the study area within the last 10 years, indicate a relatively high likelihood that the species would occur.
- **Known to Occur:** The species, or evidence of its presence, was observed in the study area during reconnaissance-level surveys or was recently reported by others.

3. Regulatory Framework

3.1 Federal Regulations

3.1.1 Federal Endangered Species Act

Under the Endangered Species Act (ESA) (Title 16, Section 1531 and following sections of the U.S. Code [16 United States Code [USC] 1531 et seq.]), USFWS and NMFS have regulatory authority over species listed or proposed for Federal listing as threatened or endangered and over projects that may result in take of Federally listed species. In general, persons subject to the ESA (including private parties) are prohibited from "take" of endangered or threatened fish and wildlife species on private property and from taking endangered or threatened plants in areas under Federal jurisdiction or in violation of State law.

The ESA defines take as, "…to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct." "Harass" is further defined as an intentional or negligent act or omission which creates the likelihood of injury to wildlife by annoying it to such an extent as to significantly disrupt normal behavioral patterns which include, but are not limited to, breeding, feeding, and sheltering. "Harm" is further defined as an act which kills or injures wildlife. This may include significant habitat modification or degradation where it kills or injures wildlife by significantly impairing essential behavioral patterns, including breeding, feeding, or sheltering.

Section 7 of the ESA outlines procedures for Federal interagency cooperation to protect and conserve Federally listed species and designated critical habitat. Section 7(a)(2) requires Federal agencies to consult with USFWS and NMFS to ensure that they are not undertaking, funding, permitting, or authorizing actions likely to jeopardize the continued existence of listed species, or destroying or adversely modifying designated critical habitat. For projects where Federal action is not involved and take of a listed species may occur, a project proponent may seek an incidental take permit.

3.1.2 Fish and Wildlife Coordination Act

The Fish and Wildlife Coordination Act requires an agency to consult with USFWS if the agency plans to conduct, license, or permit an activity involving the impoundment, diversion, deepening, control, or modification of a stream or body of water. This Act also requires consultation with the head of the state agency that administers wildlife resources in the affected state. The purpose of this process is to promote conservation of wildlife resources by preventing loss of and damage to such resources and to provide for the development and improvement of wildlife resources in connection with the agency action.

3.1.3 Migratory Bird Treaty Act

The Federal Migratory Bird Treaty Act (MBTA) (16 USC, Sec. 703, Supp. I, 1989) prohibits killing, possessing, or trading migratory birds, except in accordance with regulations prescribed by the Secretary of the Interior. This act encompasses whole birds, parts of birds, bird nests, and eggs and applies to all persons and agencies in the U.S., including Federal agencies. The MBTA is administered by the USFWS, but there is no process for obtaining project-related take authorization under the MBTA.

3.1.4 Bald and Golden Eagle Protection Act

The Bald and Golden Eagle Protection Act (16 USC 668-668d), enacted in 1940, and amended several times since, prohibits anyone, without a permit issued by the Secretary of the Interior, from “taking” bald or golden eagles, including their parts (including feathers), nests, or eggs. This Act provides criminal penalties for persons who “take, possess, sell, purchase, barter, offer to sell, purchase or barter, transport, export or import, at any time or any manner, any bald eagle [or any golden eagle], alive or dead, or any part (including feathers), nest, or egg thereof.”

This Act defines “take” as “pursue, shoot, shoot at, poison, wound, kill, capture, trap, collect, molest or disturb.” Regulations further define “disturb” as “to agitate or bother a bald or golden eagle to a degree that causes, or is likely to cause, based on the best scientific information available, 1) injury to an eagle, 2) a decrease in its productivity, by substantially interfering with normal breeding, feeding, or sheltering behavior, or 3) nest abandonment, by substantially interfering with normal breeding, feeding, or sheltering behavior” (50 Code of Federal Regulations [CFR] 22.6).

In addition to immediate impacts, this definition also covers effects that result from human-induced alterations initiated around a previously used nest site during a time when eagles are not present, if, upon the eagle’s return, such alterations agitate or bother an eagle to a degree that interferes with or interrupts normal breeding, feeding, or sheltering habits, and causes injury, death or nest abandonment. The USFWS issues and maintains permits for eagle take and provides additional information on eagle take permitting, as well as eagle conservation, through their Eagle Management Program.

3.1.5 Clean Water Act

Section 404

Clean Water Act Section 404 regulates the discharge of dredged and fill materials into waters of the United States. The Navigable Waters Protection Rule became effective on June 22, 2020 (85 FR 22250), which redefined the scope of navigable "waters of the United States." On June 9, 2021, EPA and USACE announced their intention, through two separate rulemakings, to revise the definition of waters of the United States. On August 31, 2021, the United States District Court for the District of Arizona vacated and remanded the Navigable Waters Protection Rule in the case of the Pascua Yaqui Tribe v. USEPA. Following the decision, EPA and USACE halted implementation of the Navigable Waters Protection Rule and are currently interpreting "waters of the United States" consistent with the pre-2015 regulations and associated guidelines and case law, including the Supreme Court decision Rapanos v. United States, 547 U.S. 715 (2006). Waters of the United States are currently defined as territorial seas and waters which are currently used, were used in the past, or may be susceptible to use in interstate or foreign commerce, including waters which are subject to the ebb and flow of the tide; interstate waters, including wetlands; other waters such as intrastate lakes, rivers, streams (including intermittent streams), mudflats, sandflats, wetlands, sloughs, prairie potholes, wet meadows, playa lakes, or natural ponds, the use, degradation or destruction of which could affect interstate or foreign commerce; impoundments of waters otherwise defined as waters of the United States; and wetlands adjacent to waters identified above.

Section 401

Under Section 401 of the CWA, an applicant for a Section 404 permit must obtain a certificate from the appropriate State agency stating that the intended dredging or filling activity is consistent with the State's water quality standards and criteria. In California, the State Water Resources Control Board delegates the authority to grant water quality certification to the nine Regional Water Quality Control Boards (RWQCBs); the Central Valley RWQCB has jurisdiction over the San Joaquin Valley.

3.2 State Regulations

3.2.1 California Endangered Species Act

The California Endangered Species Act (CESA; CFGC 2050 et seq.) directs State agencies not to approve projects that would jeopardize the continued existence of an endangered or threatened species or result in the destruction or adverse modification of habitat essential to the continued existence of a species. Furthermore, CESA states that CDFW, together with the project proponent and any State lead agency, must develop reasonable and prudent alternatives consistent with conserving the species, while maintaining the project purpose to the greatest extent possible. Take of State-listed species incidental to otherwise lawful activities requires a permit, pursuant to Section 2081(b) of CESA. Project-related impacts of the authorized take must be minimized and fully mitigated, and adequate funding must be in place to implement mitigation

measures and monitor compliance and effectiveness. Mitigation can include land acquisition, permanent protection and management, and/or funding in perpetuity of compensatory lands.

As under Federal law, listed plants have considerably less protection than fish and wildlife under State law. The California Native Plant Protection Act (CFGC Section 19000 et seq.) allows landowners to take listed plant species from, among other places, a canal, lateral ditch, building site, or road, or other ROW, provided that the owner first notifies CDFW and gives the agency at least 10 days to retrieve (and presumably replant) the plants before they are destroyed.

3.2.2 California Fish and Game Code

Rivers, Lakes, and Streams

Under CFGC Section 1602, it is unlawful for any entity to substantially divert or obstruct the natural flow of or substantially change or use any material from the bed, channel, or bank of, any river, stream, or lake, or to deposit or dispose of debris, waste, or other material where it may pass into any river, stream, or lake, without first notifying CDFW of such activity and obtaining an agreement authorizing the activity. In practice, CDFW may exert authority over any feature that holds water at least periodically or intermittently, and associated habitat (e.g., riparian vegetation), that supports fish, other aquatic life, or terrestrial wildlife.

Fully Protected Species

Sections 3511, 4700, 5050, and 5515 of the CFGC provide protection from take for 37 fish and wildlife species referred to as fully protected species. Except for take related to scientific research or incidental take authorized as part of an approved Natural Community Conservation Plan, take of fully protected species is prohibited.

Protection of Birds

Section 3503 of the CFGC states that it is unlawful to take, possess, or needlessly destroy the nest or eggs of any bird. Section 3503.5 states that it is unlawful to take, possess, or destroy any raptors (i.e., species in the orders Falconiformes and Strigiformes), including their nests or eggs.

Assembly Bill 454

Assembly Bill 454 was signed into law in 2019, in response to changes to MBTA interpretation and application proposed by USFWS (USFWS dropped the proposed changes in 2021). Assembly Bill 454 strengthened the State's protections for migratory birds beyond those specified under Federal law, clarified existing State safeguards for native birds (i.e., CFGC), and closed loopholes where California law defers to Federal law.

3.2.5 Porter-Cologne Water Quality Control Act

The Porter-Cologne Water Quality Control Act (Porter-Cologne Act; California Water Code Section 13000 et seq.) requires that each of the State's nine RWQCBs prepare and periodically update basin plans for water quality control. Each basin plan sets forth water quality standards for surface water and groundwater and actions to control nonpoint and point sources of pollution to achieve and maintain these standards. Basin plans offer an opportunity to protect wetlands through the establishment of water quality objectives. RWQCB jurisdiction includes Federally protected waters and areas that meet the definition of "waters of the state." Waters of the State include all surface water and groundwater, including saline waters, within the State's boundaries. The RWQCBs have discretion to take jurisdiction over areas not Federally regulated under Section 401, provided they meet the definition of waters of the State. Mitigation requiring no net loss of wetlands functions and values of waters of the State is typically required by the RWQCB.

3.3 Local Regulations

3.3.1 Yolo Habitat Conservation Plan/Natural Community Conservation Plan

The Yolo Habitat Conservancy, formerly the Yolo County Habitat Conservation Plan (HCP)/Natural Communities Conservation Plan (NCCP) Joint Powers Agency, prepared the Yolo HCP/NCCP (ICF 2018). The Yolo HCP/NCCP provides a framework to improve conservation of natural resources, including endangered species habitat, while streamlining the permitting process for planned development, infrastructure, and maintenance activities. It allows Yolo County, the Yolo Habitat Conservancy, and the Cities of Davis, West Sacramento, Winters, and Woodland to receive Incidental Take Permits under ESA and CESA for activities and projects they conduct and those under their jurisdiction. The Yolo HCP/NCCP was completed in 2017 and implemented in January of 2018.

3.3.2 Yolo County General Plan

The following policies from the *Yolo 2030 Countywide General Plan* Conservation and Open Space Element (Yolo County 2009) related to biological resources apply to the project, as listed below:

- **Policy CO-1.1:** Expand and enhance an integrated network of open space to support recreation, natural resources, historic and tribal resources, habitat water management, aesthetics, and other beneficial uses.
- **Policy CO-1.9:** Promote the conservation of environmental resources in new and existing park and open space facilities.
- **Policy CO-1.21:** Emphasize the use of native grasses, shrubs and trees as the primary focus of restoration within resource parks and other open spaces.

- **Policy CO-1.28:** Balance the needs of agriculture with recreation, flood management, and habitat, within the Yolo Bypass.

- **Policy CO-2.1:** Consider and maintain the ecological function of landscapes, connecting features, watersheds, and wildlife movement corridors.

- **Policy CO-2.3:** Preserve and enhance those biological communities that contribute to the county's rich biodiversity including blue oak and mixed oak woodlands, native grassland prairies, wetlands, riparian areas, aquatic habitat, agricultural lands, heritage valley oak trees, remnant valley oak groves, and roadside tree rows.

- **Policy CO-2.5:** Protect, restore and enhance habitat for sensitive fish species, so long as it does not result in the large-scale conversion of existing agricultural resources.

- **Policy CO-2.7:** Encourage streamside property owners and appropriate public agencies to participate in fishery enhancement projects.

- **Policy CO-2.8:** Encourage all public land management agencies to protect, restore, and enhance the fish habitat within their jurisdiction.

- **Policy CO-2.9:** Protect riparian areas to maintain and balance wildlife values.

- **Policy CO-2.10**: Encourage the restoration of native habitat.

- **Policy CO-2.14:** Ensure no net loss of oak woodlands, alkali sinks, rare soils, vernal pools or geological substrates that support rare endemic species, with the following exception. The limited loss of blue oak woodland and grasslands may be acceptable, where the fragmentation of large forests exceeding 10 acres is avoided, and where losses are mitigated.

- **Policy CO-2.16:** Existing native vegetation shall be conserved where possible and integrated into new development if appropriate.

- **Policy CO-2.20:** Encourage the use of wildlife-friendly Best Management Practices to minimize unintentional killing of wildlife, such as restricting mowing during nesting season for ground-nesting birds or draining of flooded fields before fledging of wetland species.

- **Policy CO-2.24:** Promote floodplain management techniques that increase the area of naturally inundated floodplains and the frequency of inundated floodplain habitat, restore some natural flooding processes, river meanders, and widen riparian vegetation, where feasible.

- **Policy CO-2.26**: Coordinate with local watershed stewardship groups to identify opportunities for restoring or enhancing watershed, instream, and riparian biodiversity.

- **Policy CO-2.28:** Balance the needs of aquatic and riparian ecosystem enhancement efforts with flood management objectives.

- **Policy CO-2.29:** Promote native perennial grass habitat restoration and controlled fire management in grazing lands to reduce invasive species cover and enhance rangeland forage.

- **Policy CO-2.30:** Protect and enhance streams, channels, seasonal and permanent marshland, wetlands, sloughs, riparian habitat and vernal pools in land planning and community design.

- **Policy CO-2.31:** Protect wetland ecosystems by minimizing erosion and pollution from grading, especially during grading and construction projects.

- **Policy CO-2.37:** Where applicable in riparian areas, ensure that required state and Federal permits/approvals are secured prior to development of approved projects.

- **Policy CO-2.38:** Avoid adverse impacts to wildlife movement corridors and nursery sites (e.g., nest sites, dens, spawning areas, breeding ponds).

- **Policy CO-2.41:** Require that impacts to species listed under the State or Federal Endangered Species Acts, or species identified as special-status by the resource agencies, be avoided to the greatest feasible extent. If avoidance is not possible, fully mitigate impacts consistent with applicable local, State, and Federal requirements.

- **Policy CO-2.42:** Projects that would impact Swainson's hawk foraging habitat shall participate in the *Agreement Regarding Mitigation for Impacts to Swainson's Hawk Foraging Habitat in Yolo County* entered into by the CDFW and the Yolo County HCP/NCCP Joint Powers Agency, or satisfy other subsequent adopted mitigation requirements consistent with applicable local, State, and Federal requirements.

4. Environmental Setting

4.1 Vegetation and Wildlife

4.1.1 Vegetation

As stated in Section 2.2., land cover (vegetation) types were classified based on the descriptions provided by CDFW's California Wildlife Habitat Relationship types (as adapted from Mayer and Laudenslayer's 1988 *A Guide to Wildlife Habitats*) (CDFW 2023c). Where applicable, vegetation assemblages were described to the alliance level based on the descriptions provided in the California Natural Community List (CDFW 2022d), which is adapted from the technical approach and vegetation alliance classification system described in *A Manual of California Vegetation* (Sawyer et al. 2009). The entirety of the study area is approximately 462.5 acres. Vegetation communities within the study area are mapped in **Attachment C**.

Agriculture

Agricultural lands are prevalent landward of the Cache Creek levees. Agricultural lands total approximately 166 acres in the study area. Crop types consist primarily of row crop or orchards, with walnut and *Prunus* spp. being the commonly encountered tree crops. Scattered native trees, such as valley oak (*Quercus lobata*) or black walnut (*Juglans hindsii*), are occasional in agricultural lands. Trees planted for wind breaks, primarily olive (*Olea europaea*) or eucalyptus (*Eucalyptus* sp.), were also noted in the vicinity of the study area.

Non-native Annual Grassland

This habitat type is characterized by dense cover of non-native annual grasses. Within the study area, an estimated total of 252 acres of grassland habitats are present, dominated primarily by non-native grasses and forbs. Non-native annual grassland types found in the study area may be classified, according to the *Manual of California Vegetation* (Sawyer et al. 2009), as wild oats and annual brome grassland, or poison hemlock patches. The herbaceous layer can reach 3 ft or more in height in areas located between the top of channel bank and waterward of the levee toe where regular maintenance activities are not routinely performed on the floodplain. Levee slopes are included in the non-native annual grassland vegetation classification although these areas are subject to regular maintenance, which includes mowing, to ensure required levee inspections can be completed effectively.

Wild oat and annual brome grasslands are dominated by oat species (*Avena fatua* and *A. barbata*) and brome species (*Bromus diandrus, B. hordeacous, B. madritensis*). Other non-native grasses typically encountered include wall barley (*Hordeum murinum*), Italian rye grass (*Festuca perennis*), and rattail sixweeks grass (*Festuca myuros*). Non-native forbs commonly encountered include red stem filaree (*Erodium cicutarium*),

prickly lettuce (*Lactuca serriola*), bristly oxtongue (*Helminthotheca echioides*), and hairy vetch (*Vicia villosa*).

Dense stands of poison hemlock (*Conium maculatum*) patches were occasionally noted in the study area. Poison hemlock patches are included in the non-native annual grassland designation since these areas are dominated by herbaceous species. These areas have a high percentage of the vegetative cover represented by poison hemlock. Other non-native forbs including sweet fennel (*Foeniculum vulgare*), blessed milk thistle (*Silybum marianum*), and white horehound (*Marrubium vulgare*) may individually comprise up to 10 percent of the relative vegetative cover.

Sandbar Willow Thickets

Sandbar willow thickets are a shrub-dominated vegetation assemblage that is dominated by narrowleaf willow, often with 50 percent or more of the shrub layer represented by this species. Invasive smallflower tamarisk (*Tamarix parviflora*) often colonizes sandbar willow thickets. Arroyo willow (*Salix lasiolepis*) occasionally occurs at low percent cover as well. Herbaceous species are absent from the understory as this vegetation type has an expansive canopy that limits light penetration to the ground surface. Within the study area, this vegetation assemblage totals approximately 61 acres, with most of this vegetation alliance occurring on the channel side slopes of Cache Creek.

Tamarisk Thickets

Tamarisk thickets are a shrub-dominated vegetation assemblage that is dominated by a near monoculture of smallflower tamarisk. Tamarisk thickets are often over 75 percent cover of smallflower tamarisk. Herbaceous species are typically absent from the understory. Within the study area, this vegetation assemblage totals approximately 2.78 acres, with most of this vegetation alliance occurring on the channel side slopes of Cache Creek.

Elderberry Savanna

Elderberry savanna occurs at two locations within the study area. The upstream-most location is located on the left bank approximately 600 ft west of I-5, and the second location is approximately 2,400 ft downstream of I-5 along the right bank. Elderberry savanna totals approximately 4.56 acres of the study area. Mature elderberry (*Sambucus nigra* ssp. *caerulea*) shrubs are the most prevalent plant in this habitat type, often forming impenetrable thickets. California manroot (*Marah fabaceus*), a California endemic vine related to cucumber was observed climbing the canopy of elderberry shrubs. Coyote brush (*Baccharis pilularis*) is also present in the shrub layer but comprises less relative cover as compared to the elderberry shrub. Where canopy gaps are present, poison hemlock, white horehound, and non-native annual grasses are present.

This vegetation type is not described in the *Manual of California Vegetation* (Sawyer et al. 2009), but this vegetation assemblage is described in the *Preliminary Descriptions of the Terrestrial Natural Communities of California* (Holland 1986).

Hinds' Walnut

The Hinds' black walnut vegetation alliance is dominated by the Hinds' black walnut, also commonly referred to as Northern California black walnut. This vegetation alliance totals approximately 102 acres of the study area. Areas dominated by this vegetation type typically occur above the top of bank on the rich alluvial floodplain soils. This vegetation alliance within the study area is generally mono-specific, containing only walnut trees, or low percentage of valley oak trees often near the intergrade limits of adjacent vegetation polygons. The understory is composed on non-native annual grasses and forbs.

Fremont Cottonwood Forest and Woodland

Fremont cottonwood forest and woodland is a prevalent riparian community along Cache Creek within the study area. Approximately 179 acres of this vegetation assemblage was mapped to the study area. This vegetation assemblage is characterized by a high degree of Fremont cottonwood (*Populus fremontii*), often 30 to 50 percent of the tree canopy layer is represented by this species. Other riparian trees, such as valley oak and Goodding's black willow (*Salix gooddingii*), are often co-dominant. Occasional Oregon ash (*Fraxinus latifolia*) trees may also be present. This vegetation alliance typically has a diverse and dense shrub layer that often includes elderberry shrub, box elder (*Acer negundo*), poison oak (*Toxicodendron diversilobum*), California rose (*Rosa californica*), narrowleaf willow (*S. exigua*), and arroyo willow (*S. lasiolepis*). The herbaceous layer is dense with non-native grasses and forbs, which typically include black mustard (*Brassica nigra*) and wild radish (*Raphanus sativus*).

Valley Oak Riparian Forest and Woodland

Valley oak riparian forest and woodland is common along the top bank of Cache Creek in the study area, and this vegetation assemblage totals approximately 98.8 acres. Valley oak is the dominant or co-dominant species in is the tree canopy layer. Other tree species commonly associated as co-dominant species in the study area include Fremont cottonwood and Goodding's black willow. The assemblage of tree and shrub species is often similar to Fremont cottonwood forest and woodland, except that valley oak is the dominant tree species in this habitat type with valley oak having 35 percent or more relative cover in the tree canopy layer. Valley oak riparian forest and woodland map units are often adjacent to Fremont cottonwood forest and woodland alliances since both are common riparian vegetation assemblages that occur along drainages in the Central Valley.

Goodding's Willow Riparian Woodland and Forest

Goodding's willow riparian woodland and forest is commonly encountered along the Cache Creek top of bank. Approximately 26.6 acres of this vegetation type is present within the study area. Goodding's black willow is the dominant tree species in this

vegetation alliance, with 50 percent or more of the canopy being represented by Goodding's black willow. Fremont cottonwood, valley oak, Oregon ash, and box elder may also be present in the tree canopy. The shrub layer of this vegetation assemblage is variable, ranging from negligible shrub cover at the southern study area extents to prevalent shrub canopy presence upstream of State Route 113. When present, the shrub layer typically includes the same species present in the Fremont cottonwood forest and woodland shrub layer (see above).

Riverine

Riverine is a habitat type mapped during the 2022 habitat assessments conducted by GEI and represents open water or predominantly unvegetated areas in the channel that were observed at the time of those surveys. This cover type as shown in Attachment C does not align with the delineated OHWM of Cache Creek and is meant to be a rough interpretation of 2022 conditions.

4.1.2 Wildlife

Row crops within and adjacent to the study area, especially those interspersed with native habitat, may provide nectar resources for California's struggling native bee populations as well as provide some crop production security during climactic temperature and drought frequency increases. Watermelon (*Citrullus lanatus*) crops have been recorded with an even higher diversity of native bee genera than that of tomatoes (Greenleaf and Kremen 2006). Other wildlife use of row crops includes occasional foraging from mule deer (*Odocoileus hemionus*), wild pigs (*Sus scrofa*), rodents, rabbits, and some birds (Schultze 1988). Foraging is often met with determent methods, including pesticide/rodenticide use by growers (Schultze 1988).

Orchards and vineyards like those within and adjacent to the study area have relatively low habitat value for wildlife species due to the removal and/or low height maintenance of habitat/food resources within understory vegetation (DWR 2016). However, orchards and vineyards provide food resources for ground squirrels, although this often leads to a hydrologically harmful increased density of rodent burrows within adjacent levees (Van Vuren et al. 2013).

Wildlife species that may use the non-native annual grassland habitat within the study area include, but are not limited to, western fence lizard (*Sceloporus occidentalis*), common garter snake (*Thamnophis sirtalis*), and western rattlesnake (*Crotalus atrox*) (Kie 2005).

Common and special-status bird species that use riparian communities like those within the study area include, but are not limited to: Swainson's hawk (*Buteo swainsonii*), , tricolored blackbird (*Agelaius tricolor*), wild turkey (*Meleagris gallopavo*), black-headed grosbeak (*Meleagris melanocephalus*), tree swallow (*Tachycineta bicolor*), Bewick's wren (*Thryomanes bewickii*), Cooper's hawk (*Accipiter cooperii*), and spotted towhee (*Pipilo maculatus*).

In addition to mule deer, common mammals that forage, roost, and den within riparian communities include many common bat species in addition to western gray squirrel (*Sciurus griseus*), cottontail (*Sylvilagus* spp.), raccoon (*Procyon lotor*), opossum (*Didelphis virginiana*), striped skunk (*Mephitis mephitis*), and American badger (*Taxidea taxus*).

4.2 Special-status Species

Table 1 provides information on each special-status plant that was included in the CNDDB or CNPS search results and/or on the IPaC resource list that have potential to occur in the study area. Based on the review of existing documentation and habitat evaluations made during field surveys, habitat for special-status plants is absent from the study area. Therefore, none of the taxa listed in **Table 1** were determined to have potential to occur on or adjacent to any portion of the study area.

Table 2 provides information on each special-status animal that was included in the CNDDB search results, on the IPaC resource list, or was otherwise determined to have

potential to occur in the study area. Based on the review of existing documentation and observations made during the field survey, GEI determined 12 of these taxa could occur, are likely to occur, or are known to occur on and/or adjacent to the study area. These taxa are discussed further below.

Table 1. Special-Status Plants Evaluated for Potential to Occur in the Study Area

Species	Blooming Period	Status[1]		Habitat Associations	Potential to Occur on the Study Area
		Federal	State		
Ferris' milk-vetch *Astragalus tener var. ferrisiae*	April–May	--	1B.1	Adobe clay, alkali flats, vernally moist meadows and seeps, valley and foothill grassland. Elevation 5 to 245 feet.	None; no suitable adobe clay or alkaline soil is present on or adjacent to the study area.
Alkali milk-vetch *Astragalus tener var. tener*	March–June	--	1B.2	Playas and vernal pools in valley and foothill grassland, alkali flats and flooded lands. Elevation 5 to 195 feet.	None; no suitable alkaline soil is present on or adjacent to the study area.
Heartscale *Atriplex cordulata var. cordulata*	April–October	--	1B.2	Saline or alkaline soils in meadows, chenopod scrub, alkaline flats and scalds, sandy soils in valley and foothill grassland. Elevation 0 to 1835 feet.	None; no suitable alkaline or saline soil is present on or adjacent to the study area.
Brittlescale *Atriplex depressa*	April–October	--	1B.2	Alkali scalds or playas alkaline clay soils in chenopod scrub, meadows, and valley and foothill grassland, rarely associated with riparian, marshes, or vernal pools. Elevation 5 to 1050 feet.	None; no suitable alkaline soil is present on or adjacent to the study area.
Pappose tarplant *Centromadia parryi ssp. parryi*	May–November	--	1B.2	Chaparral, Coastal prairie, marshes and swamps, meadows and seeps, Valley foothill grassland in alkaline soils. Elevation 0 to 1380 feet.	None; no suitable alkaline soil is present on or adjacent to the study area.
Palmate-bracted bird's-beak *Chloropyron palmatum*	May–October	FE	SE	Chenopod scrub, alkaline areas in valley and foothill grassland, usually on Pescadero silty clay which is alkaline. Elevation 15 to 510 feet.	None; no suitable alkaline or clay soil is present on or adjacent to the study area. Covered Species under the Yolo HCP/NCCP (Yolo County 2018).
San Joaquin spearscale *Extriplex joaquinana*	April–October	–	1B.2	Clay and alkaline soils in chenopod scrub, meadows and seeps, playas, valley and foothill grassland. Elevation 5 to 2740 feet.	None; no suitable alkaline or clay soil is present on or adjacent to the study area.

Species	Blooming Period	Status[1]		Habitat Associations	Potential to Occur on the Study Area
		Federal	State		
Woolly rose-mallow *Hibiscus lasiocarpos* var. *occidentalis*	July–September	–	1B.2	Marshes and swamps (freshwaters in moist, river banks and low peat island in sloughs; can also occur on riprap and levees. Elevation 0 to 1655 feet.	None; no suitable habitat is present on or adjacent to the study area.
Heckard's peppergrass *Lepidium latipes* var. *heckardii*	March–May	–	1B.2	Alkaline soils at edges of vernal pools or in valley and foothill grassland. Elevation 5 to 655 feet.	None; no suitable habitat is present on or adjacent to the study area, which is outside the species' known elevation range.
Baker's navarretia *Navarretia leucocephala* ssp. *bakeri*	April–July	–	2B.1	On adobe or alkaline soils; vernal pools, swales, meadows, and seeps in cismontane woodland, and valley and foothill grassland. Elevation 15 to 5740 feet.	None; no suitable habitat is present on or adjacent to the study area, which is outside the species' known elevation range.
Keck's checkerbloom *Sidalcea keckii*	May-July	–	1B.2	Cismontane woodland, valley and foothill grassland; grassy slopes in blue oak woodland on serpentine soils or clay. Elevation 245 to 2135 feet.	None; no suitable habitat is present on or adjacent to the study area.
Suisun Marsh aster *Symphyotrichum lentum*	NA	–	2B.2	Marshes and swamps (brackish and freshwater; often found along sloughs with *phragmites*, *scirpus,* blackberry, *typha.* Elevation 0 to 10 feet.	None; no suitable habitat is present on or adjacent to the study area.
Saline clover *Trifolium hydrophilum*	May–August	–	1B.2	Marshes and swamps, valley and foothill grassland, vernal pools in mesic, alkaline soils. Elevation 0 to 985 feet.	None; no suitable habitat is present on or adjacent to the study area.

Notes: CNDDB = California Natural Diversity Database; CRPR = California Rare Plant Rank.

[1] Status Definitions

Legal Status

E = Listed as Endangered under the Federal (F) or State (S) Endangered Species Act

T = Listed as Threatened under the Federal (F) or State (S) Endangered Species Act

– = No status

California Rare Plant Ranks

1B = Considered rare or endangered in California and elsewhere

2B = Considered rare or endangered in California but more common elsewhere

– = No status

California Rare Plant Rank Extensions

.1 = Seriously endangered in California (greater than 80 percent of occurrences are threatened and/or have a high degree and immediacy of threat)

.2 = Fairly endangered in California (20 to 80 percent of occurrences are threatened and/or have a moderate degree and immediacy of threat).

Sources: CDFW 2022a; CNPS 2022; ICF 2018; data compiled by GEI Consultants, Inc. 2022

Table 2. Special-Status Wildlife Evaluated for Potential to Occur in the Study Area

Species	Status		Habitat Associations	Potential to Occur in the Study Area
	Federal	State/CDFW		
Fish				
Sacramento perch *Archoplites interruptus*	–	--/SSC	Sloughs and slow-flowing streams with heavily vegetated, sluggish waters	None; no suitable habitat is present on or adjacent to the study area.
Delta smelt *Hypomesus transpacificus*	T	E/--	Endemic to the Sacramento-San Joaquin Delta, occurring primarily downstream of Isleton on the Sacramento River.	None; no suitable habitat is present on or adjacent to the study area.
steelhead, Central Valley California DPS, pop 11 *Oncorhynchus mykiss irideus*	T	--/--	Anadromous; requires suitable gravel for spawning; rears seasonally in inundated floodplains, rivers, and tributaries.	None; no suitable habitat is present on or adjacent to the study area.
Chinook salmon, Central Valley spring-run ESU, pop 11 *Onchorhynchus tshawytscha*	T	T/--	Anadromous; requires suitable gravel for spawning; rears seasonally in the Sacramento River and tributaries.	None; no suitable habitat is present on or adjacent to the study area.
Chinook salmon, Sacramento winter-run ESU, pop 7 *Onchorhynchus tshawytscha*	E	E/--	Anadromous; requires suitable gravel for spawning; rears seasonally in the Sacramento River and tributaries.	None; no suitable habitat is present on or adjacent to the study area.
Sacramento splittail *Pogonichthys macrolepidotus*	–	--/SSC	Brackish-water rearing habitats in the San Francisco Estuary and on floodplain and river-edge spawning habitat immediately above estuary.	None; no suitable habitat is present on or adjacent to the study area.
longfin smelt *Sprinchus thaleichthys*	C	T/--	Anadromous, prefers saline to brackish water. Found in open waters of estuaries, mostly in the water column.	None; the study site is outside the species' range.
eulachon *Thaleichthys pacificus*	T	--/--	Anadromous; spawns in coastal freshwater streams immediately above tidal sloughs.	None; no suitable habitat is present on or adjacent to the study area.
Invertebrates				
western bumble bee *Bombus occidentalis*	–	–/–	Open grassland and woodland habitats; primarily nests underground.	Unlikely; marginally suitable grassland and frequent maintenance of levee slopes limit potential nesting.
vernal pool fairy shrimp *Branchinecta lynchi*	T	–/–	Vernal pools/seasonal wetlands, including a wide range of sizes and depths.	None; no suitable habitat is present on or adjacent to the study area.

Species	Status		Habitat Associations	Potential to Occur in the Study Area
	Federal	State/CDFW		
monarch butterfly *Danaus plexippus*	C	–/–	Winter roost sites located in wind-protected tree groves (eucalyptus, Monterey pine, cypress), with nectar and water sources nearby.	Could occur; host plant (*Asclepias fascicularis*) has been planted within the Cache Creek corridor and water source present adjacent to the study area (Western Monarch Milkweed Mapper 2023).
valley elderberry longhorn beetle *Desmocerus californicus dimorphus*	T	–/–	Closely associated with blue elderberry (*Sambucus* sp.), the obligate host plant for the beetle larvae.	Likely; suitable elderberry habitat present on and adjacent to the study area.
vernal pool tadpole shrimp *Lepidurus packardi*	E	–/–	Vernal pools, typically medium to large	None; no suitable habitat is present on or adjacent to the study area.
Amphibians				
California tiger salamander, Pop. 1 *Ambystoma californiense,* Pop.1 Central California DPS	T	T/WL	Lives in burrows; in vernal pools and seasonal ponds; in grassland, savanna, or open woodland habitats. Breeding occurs in shallow ephemeral or semi–permanent pools and permanent ponds.	None; no suitable breeding habitat is present on or adjacent to the study area.
California red-legged frog *Rana draytonii*	T	–/SSC	Lowlands and foothill areas, in or near permanent deep water with dense, shrubby, or emergent riparian vegetation.	None; no suitable breeding habitat is present on or adjacent to the study area.
western spadefoot *Spea hammondii*	–	–/SSC	Occurs primarily in grassland habitat but can be found in valley foothill woodland. Vernal pools are essential for breeding and egg-laying.	None; no suitable breeding habitat is present on or adjacent to the study area.
Reptiles				
western pond turtle *Emys marmorata*	–	–/SSC	A variety of permanent or nearly permanent water bodies in a wide range of habitats; nests in sunny upland habitats, typically within several hundred feet of aquatic habitat.	None; no suitable aquatic habitat present on or adjacent to the study area.
giant garter snake *Thamnophis gigas*	T	T/--	Open water associated with marshes, rivers, streams, sloughs and irrigation/drainage ditches within the Central Valley; requires emergent herbaceous wetland vegetation for escape and foraging habitat, grassy banks and opening in waterside vegetation for basking, and higher elevation upland habitat for cover and refuge from flooding;	None; no suitable aquatic habitat is present on or adjacent to the study area.
Birds				

Species	Status		Habitat Associations	Potential to Occur in the Study Area
	Federal	State/CDFW		
burrowing owl *Athene cunicularia*	–	–/SSC	Nests and forages in grasslands, agricultural lands, and other open habitats with natural or artificial burrows or friable soils.	Could Occur; suitable burrowing and foraging habitat adjacent to the study area.
golden eagle *Aquila chrysaetos*	–	–/FP	Nest on cliffs and steep escarpments in grassland, chapparal, shrubland, forest, and other vegetated areas.	Could Occur; suitable foraging habitat present on and adjacent to the study area.
Swainson's hawk *Buteo swainsonii*	--	T	Forages in grasslands and agricultural fields; nests in open woodland or scattered trees often near riparian habitat.	Known to Occur; multiple nests of this species were observed along Cache Creek within the study area during multiple site visits from spring through summer of 2022.
northern harrier *Circus cyaneus*	–	–/SSC	Nests and forages in grasslands, field crops, and marshes; nests on the ground in patches of dense, often tall, vegetation	Could Occur; suitable foraging and nesting habitat present on and adjacent to the study area.
white-tailed kite *Elanus leucurus*	–	–/FP	Nests in woodlands and isolated trees and forages in grasslands, pasture, and agricultural fields	Could Occur; suitable foraging and nesting habitat present on and adjacent to the study area.
bald eagle *Haliaeetus leucocephalus*	delisted	E/FP	Nests in tall trees or cliffs, seen most often near coastlines of oceans, rivers, or lakes.	Unlikely; the study area does not provide the permanent/long term aquatic habitat/fishing opportunities required to sustain this species. It may occasionally migrate through the study area.
tricolored blackbird *Agelaius tricolor*	–	T/SSC	Nests in dense cattails and tules, riparian scrub, grain crops, and other low dense vegetation; forages in grasslands and agricultural fields	Could Occur; suitable foraging and nesting habitat present on and adjacent to the study area.
western yellow-billed cuckoo *Coccyzus americanus occidentalis*	T	E	Wooded riparian habitat with dense cover and water nearby; dense thickets along streams and marshes.	Unlikely; marginally suitable habitat is present adjacent to the study area. Nearest CNDDB occurrence in 2006 over 4 miles northeast from study area.
California black rail *Laterallus jamaicensis coturniculus*	–	T/FP	Saltwater, brackish, and occasionally freshwater marshes.	None; study area is outside the known range for this species.
purple martin *Progne subis*	–	–/SSC	Inhabits woodland, low elevation coniferous forest. Nests in old woodpecker cavities mostly, or man-made structures. Nest often in tall, isolated trees or snags.	Could Occur; suitable nesting and foraging habitat present in the study area.
mountain plover *Charadrius montanus*	–	–/SSC	Fallow agricultural fields, grazed grasslands, dry tablelands, and other sparsely vegetated open habitats.	Could Occur; suitable nesting and foraging habitat present in the study area.

Species	Status		Habitat Associations	Potential to Occur in the Study Area
	Federal	State/CDFW		
western snowy plover *Charadrius nivosus nivosus*	T	–/SSC	Barren or sparsely vegetated sand beaches along the coast, and on alkaline flats and river bars farther inland.	None; study area is outside the known range for this species.
song sparrow *Melospiza melodia*	–	–/SSC	Found in a variety of open habitat, including agricultural fields, overgrown pastures, freshwater marsh and lake edges, and suburbs.	Could Occur; suitable nesting and foraging habitat present in the study area.
bank swallow *Riparia riparia*	–	T	Forages over ponds, rivers and streams, meadows, field, and pastures. Burrow in sandy, vertical bluff or riverbanks, streams, coastal bluff and sand and gravel pits.	Unlikely; marginally suitable habitat is present adjacent to the study area. Nearest CNDDB occurrence in 2006 over 4 miles northeast from study area.
Least Bell's vireo *Vireo bellii pusillus*	E	–/E	Riparian or dry rivers; nests placed along margin of bushes or on twigs projecting into pathways, usually willow, baccharis, or mesquite.	Unlikely; frequency of disturbance within riparian corridor reduces any habitat suitability for this species. In addition, the species is rare in the greater project vicinity and the nearest documented occurrence of this species is over 12 miles southeast of the study area.
Mammals				
pallid bat *Antrozous pallidus*	–	–/SSC	Various habitats, but most common in open, dry areas with rocky habitat for roosting; also roost in buildings and occasionally hollow trees.	Could Occur; suitable nesting and foraging habitat present in the study area.
western red bat *Lasirus blossevillii*	–	–/SSC	Roosts primarily in trees, often in edge habitats adjacent to streams, fields, or urban areas.	Could Occur; suitable nesting and foraging habitat present in the study area.
American badger *Taxidea taxus*	–	–/SSC	Dry, open areas in various habitats with friable soils and uncultivated ground.	Unlikely; marginally suitable habitat adjacent to the study area. Additionally, disturbance related to agriculture, levee maintenance, and public access reduces the likelihood of the species to occur.

Notes: CNDDB = California Natural Diversity Database
[1] **Status Definitions**
E = Listed as Endangered under the Federal or State Endangered Species Act
T = Listed as Threatened under the Federal or State Endangered Species Act
C = Candidate for listing as Threatened or Endangered under the State Endangered Species Act
FP = Fully Protected under the California Fish and Game Code
SSC = California Species of Special Concern
Sources: CDFW 2022a; USFWS 2023a; GEI Consultants, Inc. field survey observations 2022.

4.3 Sensitive Habitats

Sensitive habitats include those that are of special concern to resource agencies or are afforded specific consideration, such as under ESA, Section 404 of the CWA, the

Porter-Cologne Act, and Section 1602 of the CFGC. Sensitive habitats may be of special concern for a variety of reasons, such as their locally or regionally declining status or because they provide important habitat for special-status species.

4.3.1 Aquatic Resources

The delineation (GEI 2023) identified a total of 63.98 acres of aquatic resources in the survey area, including one perennial channel (Cache Creek), one ditch, and one fresh emergent wetland. All features except for Cache Creek appear to be non-natural and formed as a result of urban and agricultural development. The extent of these features is shown in the mapbook provided as Appendix A of the Aquatic Resources Delineation Report (GEI 2023), and each feature class is described in more detail. Table 3 of the Aquatic Resources Delineation Report summarizes the aquatic resources in the study area. Although Cache Creek is not considered a traditionally navigable water by the USACE, it is a tributary to the Sacramento River. Because all of the features identified in the study area are tributaries to, or within 200 feet of Cache Creek, all aquatic resources are considered waters of the U.S. and are therefore considered sensitive habitat as well.

4.3.2 Critical Habitat

Critical habitat is a geographic area containing features determined to be essential to the conservation of a species federally listed as threatened or endangered. USFWS has jurisdiction over terrestrial wildlife and freshwater fish critical habitat, while NMFS maintains jurisdiction over marine species and anadromous fish. No federal critical habitat is present within the study area.

4.3.2 Other Habitats Protected Under Federal or State Regulations

4.3.3 Sensitive Natural Communities

CDFW maintains a list of terrestrial natural communities that are native to California, the List of Vegetation Alliances and Associations (CDFW 2022b). Within that list, CDFW identifies and ranks sensitive natural communities of special concern considered to be highly imperiled. Hinds' walnut, Fremont cottonwood forest and woodland, valley oak riparian forest and woodland, sandbar willow thickets, and Goodding's willow riparian woodland and forest are all considered sensitive natural communities.

5. Potential Impacts

The impact discussions below focus on resources determined to have potential to be affected by implementing the project. Therefore, special-status species that have no potential or are unlikely to occur on or near the study area (i.e., because suitable habitat is absent, the study area is outside the species' current range, the taxa was not observed during focused surveys, habitat onsite is separated by great distance from other occupied habitat, etc.) and are unlikely to be affected by the project are not addressed in these discussions.

Resources, including sensitive natural communities, would be impacted via project activities, including vegetation removal, in-channel sediment removal, and raising levees along various portions of Cache Creek within the study area. In some cases, resources would be directly affected (i.e., through vegetation removal); however, other resources may be indirectly impacted (i.e., nearby nesting birds affected by project noise/vibration). Additionally, project activities may include vegetation removal of invasive species (including eucalyptus, tamarisk, and arundo [*Arundo donax*]), which may benefit some native plant and wildlife species.

5.1 Special-status Plants

No special-status plants were determined to have potential to occur in the study area; therefore, none would be impacted.

5.2 Special-status Wildlife

5.2.1 Invertebrates

Monarch Butterfly

The California overwintering population of monarch butterfly (*Danaus plexippus plexippus* pop. 1) is a candidate for federal ESA listing. This North American subpopulation's range extends throughout the western U.S. from Idaho to Arizona, and they overwinter in coastal California from Mendocino County south to Baja California, Mexico. Monarchs are considered to be a signal species for ecological health due to their susceptibility to habitat loss, disease, pesticides, and climate change (CDFW 2023d). For these and other reasons, recent steep declines in their population have caused alarm and a heavy push for federal listing status to aid in conservation efforts. In California, roosting monarchs are known to prefer closed-cone coniferous forests, though roosts are located in wind-protected tree groves of multiple species, including eucalyptus (*Eucalyptus* sp.), Monterey pine (*Pinus radiata*), and cypress (Family Cupressaceae). Adult monarchs require nectar and water sources, whereas reproduction can only take place on milkweed species (*Asclepias* sp.). In California, the typical larval host plant is the native narrow-leaved milkweed (*A. fascicularis*), although any landscape/ornamental plant of the same genus may be used by monarchs. The study area is located in the "Priority #1" Action Zone for recovering western monarchs

due to being within the early breeding zone (USFWS 2023c). Actions for this priority zone include protecting monarch habitat and planting pesticide-free early season milkweed and nectar plants (USFWS 2023c).

Narrow-leaved milkweed has been planted within the Cache Creek corridor and water sources are present adjacent to the study area (Western Monarch Milkweed Mapper 2023). Monarch roosts and maturing larvae may be impacted directly from project activities through site mobilization disturbance (staging, etc.), vegetation removal, and general project activities (noise, vibration, human presence).

Valley Elderberry Longhorn Beetle

Valley elderberry longhorn beetle (VELB; *Desmocerus californicus dimorphus*) is federally listed as threatened. The range of this species extends throughout the Central Valley and associated foothills from about 3,000 ft in elevation to the east and the watershed of the Central Valley to the west. VELB is dependent on its host plant, elderberry (*Sambucus* spp.), for all stages of its life cycle. Adults feed on the elderberry leaves and mate within the elderberry canopy. Females deposit eggs on or adjacent to the host elderberry. The larvae bore into the wood of the host plant where they feed on the pith of the plant for 1 to 2 years. The larvae metamorphose between December and April; the adult then emerges from the chamber through an exit hole. Most records for adults occur from late April to mid-May (USFWS 2006), although April 15 to June 15 is considered to be the “flight season” for the species. This is when VELB is in the adult stage and present within the elderberry shrub canopy. The active beetles may be found in the immediate vicinity of the shrubs. VELB may occur anywhere within the study area where elderberry shrubs are located (see **Section 4.1.1**). Vegetation removal and/or trimming of any specific elderberry plants within the study area, both my mechanized or hand alteration of habitat, may negatively impact VELB and cause mortality or loss of reproductive potential.

5.2.2 Birds

Burrowing Owl

Burrowing owl is a CDFW Species of Special Concern. Burrowing owls typically inhabit grasslands and other open habitats with low-lying vegetation. They are also known to nest and forage in idle agricultural fields, ruderal fields, and the edges of cultivated fields, although these areas provide lower-quality habitat than native grasslands. Burrow availability is an essential component of suitable habitat. Burrowing owls are capable of digging their own burrows in areas with soft soil, but they generally prefer to adopt those excavated by other animals, typically ground squirrels. In areas where burrows are scarce, they can use pipes, culverts, debris piles, and other artificial features. Burrowing owls are most likely to inhabit areas of sparse/low vegetation within the study area, particularly where California ground squirrel (*Otospermophilus beecheyi*) burrows are located. Burrowing owl can be impacted by project activities directly (through nest harm via vegetation removal, trampling from foot, or trampling from equipment) and indirectly (through nest disturbance from nearby heavy equipment usage, vibration, or other

general project-related human disturbance causing nest/roost abandonment and mortality of young).

Golden Eagle

Golden eagle is a CDFW Fully Protected Species. Golden eagles typically nest on cliffs or in trees and nests are typically in mountainous or hilly terrain. Hunting for small mammals, snakes, birds, or carrion takes place over open lands. Golden eagles can be found in valleys and plains (especially during migration and the winter) and are fairly common in the western United States (Dunn and Alderfer 2011). Golden eagles are most common in vicinity of the study area in the months of July and August and are highly unlikely to nest in, adjacent, or near the study area due to a lack of mountainous/hilly terrain (USFWS 2023a). For this reason, golden eagle is unlikely to be impacted by project activity.

Swainson's Hawk

Swainson's hawk is State-listed as threatened. This species typically occurs in California only during the breeding season (March to September) and winter in Mexico and South America; the Central Valley population migrates only as far south as central Mexico. Swainson's hawks begin to arrive in the Central Valley in March; nesting territories are usually established by April, with incubation and rearing of young occurring through June. Swainson's hawks are found most commonly in grasslands, low shrublands, and agricultural habitats that include large trees for nesting. Nests are found in riparian woodlands, roadside trees, trees along field borders, and isolated trees. Nesting pairs frequently return to the same nest site for multiple years and decades.

Prey abundance and accessibility are the most important features determining the suitability of Swainson's hawk foraging habitat. In addition, agricultural operations (e.g., mowing, flood irrigation) have a substantial influence on the accessibility of prey and thus create important foraging opportunities for Swainson's hawk. Certain crops provide better foraging than others due to crop height and the frequency of the disturbance regime. Periodic disturbances such as harvesting, tilling, and flooding can increase prey availability. Generally, alfalfa crops are considered the highest value foraging habitat for Swainson's hawk. Crops that are tall and dense enough to preclude the capture of prey do not provide suitable habitat except around field margins, but prey animals in these habitats are accessible during and soon after harvest. Swainson's hawks feed primarily on small rodents but also consume insects and birds. Any habitat within the foraging distance may provide food at some time in the breeding season that is necessary for reproductive success. During the course of several field visits in the summer of 2022, GEI biologists observed numerous active Swainson's hawk nests along the study area.

Swainson's hawks may be impacted directly (through nest harm via vegetation removal) or indirectly (through nest disturbance from nearby heavy equipment usage, vibration, or other general project-related human disturbance causing nest or roost abandonment and mortality of young).

Northern Harrier

Northern harrier is a CDFW Species of Special Concern. Northern harriers nest and forage in grasslands, field crops, and marshes; nests on the ground in patches of dense, often tall, vegetation. Prey includes primarily small mammals and passerines (Shuford and Gardali 2008). Northern harriers may inhabit and/or nest within any of the low grass and/or low shrub vegetated areas of the study area. Northern harriers may be impacted directly (through nest harm via vegetation removal) or indirectly (through nest disturbance from nearby heavy equipment usage, vibration, or other general project-related human disturbance causing nest or roost abandonment and mortality of young).

White-tailed Kite

White-tailed kite is a CDFW Species of Special Concern and a Fully Protected species. They nest in trees and shrubs, especially along marshes or rivers and forage in grasslands and agricultural fields. They are a year-long resident, breeding, nesting, and rearing young between February and October. White-tailed kite may inhabit and/or nest within any of the tree and/or shrub habitat along the study area's riparian corridor. White-tailed kites may be impacted directly (through nest harm via vegetation removal) or indirectly (through nest disturbance from nearby heavy equipment usage, vibration, or other general project-related human disturbance causing nest or roost abandonment and mortality of young).

Tricolored Blackbird

Tricolored blackbird is State-listed as Threatened. This species nests April – July, in a variety of substrates, including cattails, bulrushes, and willows in freshwater marshes, as well as other dense vegetation, such as mustard, blackberry, milk thistle (*Silybum marianum*), mallow (*Malva* spp.), and cultivated grain crops (e.g., triticale). Nesting areas must be large enough to support a minimum colony of 50 pairs as tricolored blackbirds are highly colonial. Tricolored blackbirds forage on the ground in croplands, grassy fields, flooded land, and pond edges. Tricolored blackbirds may inhabit/nest at the study area when aquatic features of the study area are inundated during breeding/nesting season and will likely closely associate with any shrubby and/or cattail/bulrush vegetation directly adjacent to a flooded feature. Tricolored blackbird may be impacted directly (through nest harm via vegetation removal) or indirectly (through nest disturbance from nearby heavy equipment usage, vibration, or other general project-related human disturbance causing nest or roost abandonment and mortality of young).

Purple Martin

Purple martin is a CDFW Species of Special Concern. Purple martins inhabit woodland and low elevation coniferous forest. Nests are created in old woodpecker cavities mostly, though manmade structures may be used as well. When tree-nesting, purple

martins often use tall, isolated trees or snags. Purple martins may inhabit and/or nest anywhere along the linear study area, utilizing any isolated trees or snags for nesting. Purple martins may be impacted directly (through nest harm via vegetation removal) or indirectly (through nest disturbance from nearby heavy equipment usage, vibration, or other general project-related human disturbance causing nest or roost abandonment and mortality of young).

Mountain Plover

Mountain plover is a CDFW Species of Special Concern. Mountain plovers reside in short-grass prairie land or flat areas devoid of vegetation. They prefer non-cultivated lands, as they hunt for prey within dry land cracks. While these birds typically do not nest in California, they can be found wintering around the Yolo Bypass and Central Valley (Shuford and Gardali 2008). Because they do not typically nest in California, mountain plovers are unlikely to be impacted by project activities.

Song Sparrow

The Modesto song sparrow is a CDFW Species of Special Concern. This resident sparrow is typically closely associated with freshwater wetlands and riparian thickets. However, they can also nest along irrigation canals (Shuford and Gardali 2008). Modesto song sparrow may inhabit and/or nest within any of the tree and/or shrub habitat along the study area's riparian corridor. Song sparrows may be impacted directly (through nest harm via vegetation removal) or indirectly (through nest disturbance from nearby heavy equipment usage, vibration, or other general project-related human disturbance causing nest or roost abandonment and mortality of young).

5.2.3 Mammals

Pallid Bat

Pallid bat is a CDFW Species of Special Concern. It is a noticeably large species of bat with distinct ears, body size, eyes, and snout-like nose. In California, they occur in a variety of habitat, including coastal woodland forests, low deserts, and oak woodlands (Pierson and Rainy 1998). Pallid bats are primarily crevice roosters, roosting in buildings, bridges, caves, and hollow trees. As such, pallid bats are most likely to utilize hollow trees for roosting within the study area, and areas of denser tree vegetation with tree hollows may be used for longer-term and/or maternity roosting. Pallid bats may be impacted directly (through roost harm via vegetation removal) or indirectly (through roost disturbance from nearby heavy equipment usage, vibration, or other general project-related human disturbance causing roost abandonment and/or mortality of young).

Western Red Bat

Western red bat is a CDFW Species of Special Concern. They are medium-sized bats with a distinctive fluffy, amber/orange fur and white patches on their shoulders (BCI 2023). Western red bats roost in forests and woodlands of varying elevation but prefer trees (Zeiner et al 1990). Foraging takes place over many vegetation types, including grassland, shrubby zones, open woodland, forests, and agricultural zones. Typical roost sites include those that are within edge habitat adjacent to riparian corridors, open fields, or urban zones. Western red bats are most likely to utilize trees for roosting within the study area, and areas of denser tree vegetation may be used for longer-term and/or maternity roosting. Western red bats may be impacted directly (through roost harm via vegetation removal) or indirectly (through roost disturbance from nearby heavy equipment usage, vibration, or other general project-related human disturbance causing roost abandonment and/or mortality of young).

5.3 Sensitive Habitats

Jurisdictional aquatic resources are quantified and described in the Aquatic Resources Delineation Report (**Section 4.3.1** and GEI 2023). Consultation with USACE for impacts to jurisdictional waters will include measures to avoid impacts on jurisdictional waters where possible, and compensatory measures when impacts cannot be avoided.

Other sensitive habitats impacted include Hinds' walnut, Fremont cottonwood forest and woodland, valley oak riparian forest and woodland, sandbar willow thickets, and Goodding's willow riparian woodland and forest communities within the footprint of areas to be excavated within the channel or those within levee raising footprints.

Sensitive habitats within the study area (Hinds' walnut, Fremont cottonwood forest and woodland, valley oak riparian forest and woodland, sandbar willow thickets, Goodding's willow riparian woodland and forest, and jurisdictional waters) may be either temporarily or permanently impacted directly through construction activities and general project-related vegetation removal. Jurisdictional waters may also be impacted indirectly via runoff and/or other water contamination sources from project equipment, project activities, or other inadvertent waste from project activities.

No sensitive habitats will be impacted for project staging or haul routes. However, sensitive natural communities are included within the area of riparian jurisdiction for CFGC Section 1602 (see **Section 3.2.2**). As such, any planned impacts would have to be disclosed to CDFW as part of the Lake and Streambed Alteration Agreement. The permitting process will include required measures to avoid impacts to sensitive natural communities where possible, as well as compensatory measures when impacts cannot be avoided. In avoiding or compensating for any impacts through the consultation/permitting processes, impacts to sensitive habitats would be reduced to a less than significant level.

5.4 Other Potential Impacts on Biological Resources

The study area supports wildlife nursery sites, particularly nesting birds and potentially roosting bats. In addition, the entirety of the riparian vegetation along Cache Creek is considered a migratory corridor for native species, especially given the agricultural development surrounding the site that is not preferred for cryptic species searching for cover. While these nursery sites and wildlife corridor may be temporarily impacted by project activities, the study area will remain usable as a nursery site and wildlife corridor upon project completion. Additional impact avoidance, minimization, and compensation measures aimed at reducing the temporary impacts of project implementation on wildlife nursery sites and wildlife corridor habitat to less-than-significant levels are discussed below.

The Yolo County General Plan has several policies aimed at preserving, avoiding impacts to, and mitigating for the sensitive natural resources within the study area, particularly riparian vegetation communities. However, consultation and permitting processes (including implementation of required avoidance, minimization, and compensation measures) for impacts to jurisdictional waters and riparian vegetation communities described in **Section 4.3** are aligned with the goals and policies of the Yolo County General Plan. Therefore, the project would not be in any conflict with any local plans or policies aimed at protection of biological resources.

The study area is within the Yolo HCP/NCCP boundary. DWR may choose to consult for ESA and CESA compliance through the Yolo HCP/NCCP processes.

A variety of special-status, common resident, and migratory birds that use riparian-associated habitats could nest on or adjacent to the study area. Project implementation could remove and/or fatally impact active nests if construction activities occur during the nesting season. In addition, if active nests are present on or adjacent to the study area, construction activities could result nest abandonment, reduced care of eggs or young, or premature fledging. Loss of active nests of common species would not substantially reduce their abundance or cause any species to drop below self-sustaining levels, but it could be considered a violation of the MBTA and CFGC Section 3503.

6. Recommended Impact Avoidance, Minimization, and Compensation Measures

The measures described in this section are primarily designed to avoid or reduce project-related impacts on special-status species and other biological resources that are protected under state and federal laws and regulations. General construction best management practices (BMPs) are presented first, followed by measures for special-status species or groups of species. In addition to avoidance and minimization

measures, potential compensatory mitigation measures are identified to offset unavoidable impacts on protected species; specific compensatory mitigation requirements would be identified during the ESA and CESA permitting processes.

5.5 Best Management Practices

BMP-1: All project personnel working on the study area will attend a worker training program before beginning on-site work. The program will be presented by a qualified biologist[1] with knowledge of sensitive biological resources known or with potential to occur on the study area. The program will address applicable state and federal laws and regulations; sensitive habitats on and adjacent to the study area; biology, habitat needs, and distribution of special-status species on and adjacent to the study area; regulatory status of each resource and its associated protections; measures required to avoid and reduce impacts to these resources during project construction; potential penalties for non-compliance; and procedures to be followed if dead or injured wildlife are found during project activities. Upon completion of the orientation, employees will sign a form stating that they attended the program and understand all required measures.. No untrained personnel will be allowed to work onsite.

BMP-2: A biological monitor approved by USFWS and CDFW will be present onsite or available as necessary during all project activities that could result in "take" of listed species to assist with implementation of required species-specific avoidance and minimization measures. The biological monitor will have the authority to halt all non-emergency actions in an area in which imminent threat to a listed species arises or if avoidance and minimization measures are not being properly implemented. Work will proceed only after the biological monitor deems it appropriate.

BMP-3: Before on-site project activities begin on non-agricultural lands, work areas will be marked with fencing, stakes with rope or cord, or other means of clearly delineating the work limits and access routes. All fencing, stakes, etc., will be maintained until project construction is complete and then removed from the study area. Project activities will be restricted to within marked or otherwise designated areas.

BMP-4: Project activities will only occur during the day (between 30 minutes before sunrise and 30 minutes after sunset).

BMP-5: Off-road traffic in habitat suitable for listed species and outside designated project boundaries will be prohibited. Vehicles and equipment will adhere to an on-site speed limit 20 miles per hour or less.

BMP-6: All equipment and materials storage, staging, and parking will be confined to the construction corridors or other previously identified staging areas.. Workers will check for wildlife under parked vehicles and equipment prior to operation. If wildlife is observed, vehicles/equipment will not be moved until such wildlife has moved out of

[1] A "qualified biologist" typically has appropriate academic qualifications, work experience with the species of focus for the project, and/or has been authorized by USFWS, CDFW, or another regulatory body to manage protected biological resources on the project site.

harm's way. If necessary and authorized under project permits and approvals, the biological monitor may move wildlife from under/near vehicles/equipment.

BMP-7: All project materials that could pose a hazard to wildlife (as determined by the biological monitor) will be contained in closed containers either in the work area or on/in vehicles. Loose items (e.g., rags, hose, etc.) will not be stored on the study area unless they are inaccessible to wildlife. Accidental project-related spills of hazardous materials, fuels, lubricants, or solvents will be cleaned up and removed from the study area as soon as possible, according to applicable federal, state, and local regulations. Any spills of hazardous liquids will not be left unattended until clean-up has been completed.

BMP-8: Project-related use of rodenticides and herbicides on the study area will be prohibited, except carefully-applied herbicide use by permitted personnel against invasive plant species.

BMP-9: Dust control measures will be implemented throughout construction activities. The amount of water used will be kept to a minimum as to avoid forming puddles.

BMP-10: To prevent wildlife entrapment during construction, all excavated, steep-walled holes or trenches more than 2 feet deep will be covered with plywood or similar material when work is not actively being conducted in the excavation. If the trenches cannot be closed, one or more escape ramps of no more than a 1:1 (45-degree) slope will be constructed of earthen fill or created with wooden planks at no greater than 500-foot-long intervals. All covered or uncovered excavations will be inspected at the beginning, middle, and end of each day. Before trenches are filled, they will be inspected for trapped animals. If a trapped or injured animal is discovered, project activities will stop, and escape ramps or structures will be installed immediately to allow the animal(s) to escape voluntarily before construction activities begin/resume. A biological monitor may remove wildlife from an excavation or other entrapment if the immediate welfare of the individual is in jeopardy and appropriate agency permits/approvals are in place. If a federally or State-listed species that is not covered by take authorization (e.g., a fully protected species) becomes entrapped and measures have not been previously developed to address the situation, USFWS and/or CDFW will be contacted to determine the appropriate actions.

BMP-11: All construction pipes, culverts, or similar structures laid in trenches overnight or stored onsite overnight will be capped. If an open pipe is subsequently discovered, the pipe will be visually inspected for wildlife, if feasible. After it is confirmed that no state or federally listed species are present in the pipe, the pipe will be capped. If the pipe cannot be visually inspected (buried, bent, too long, etc.), it will be monitored with tracking medium and/or an infrared camera. If after no less than 3 consecutive nights of monitoring, no sign of state or federally listed species is observed, the pipe will be capped. All pipes will be thoroughly inspected for wildlife before the pipe is buried or otherwise used or moved in any way. If an animal is discovered inside a pipe, the pipe will not be moved, and the animal will be allowed to leave voluntarily before construction activities begin/resume. A biological monitor may remove an animal from a pipe or other entrapment if appropriate agency permits/approvals are in place and the immediate

welfare of the individual is in jeopardy or the animal does not vacate the pipe on its own accord within a reasonable timeframe. If a federally or State-listed species that is not covered by take authorization (e.g., a fully protected species) becomes entrapped and measures have not been previously developed to address the situation, USFWS and/or CDFW will be contacted to determine the appropriate actions.

BMP-12: All food-related trash items such as wrappers, cans, bottles, micro-trash, and food scraps generated by project activities will be disposed of in closed containers and removed at least once each week from the site. Deliberate feeding of wildlife will be prohibited.

BMP-13: Project personnel will be prohibited from having firearms or domestic pets on the study area.

BMP-14: Any project personnel who inadvertently kills or injures an animal or finds any animal dead, injured, or entrapped on the study area will be required to report the incident immediately to a designated site representative (e.g., foreman, manager, biological monitor, etc.). The site representative must then notify a biological monitor if one has not already been notified. All project work in the immediate vicinity of any such finding will cease until a biological monitor determines the appropriate action and deems it appropriate for work to resume. USFWS will be notified of injury or mortality of any federally listed species, and CDFW will be notified of injury or mortality of any state-listed or other special-status species. Instructions provided by USFWS and/or CDFW for the care of any injured animal and potential transfer of any mortalities will be implemented.

BMP-15: All construction refuse, including, but not limited to, fencing, stakes, flagging, broken equipment parts, wrapping material, cords, cables, wire, rope, strapping, twine, buckets, containers, forms, wood, rebar, pipe, pallets, and boxes will be removed within 14 days of completing construction activities.

5.6 Species-specific Measures

Because birds are generally highly mobile, the project would result in only minor impacts from the project, if any, to bird species that do not have nesting ranges or nesting habitat within the study area. These bird species, including those that are special-status, are *not* considered below for avoidance, minimization, and compensation measures for project implementation. Any birds that utilize the study area for foraging have ample foraging opportunities outside the boundary of the study area and would be able to return once project work has completed.

Avoidance, minimization, and compensation measures for other wildlife species—including birds with nesting ranges that overlap the study area—that could occur, are likely to occur, and are known to occur within the study area are discussed below.

5.6.1 Monarch Butterfly

DWR and its construction contractor(s) will implement the following measures based on the USFWS Western Monarch Butterfly Conservation Recommendations (USFWS 2023c) and Managing for Monarchs in the West (Xerces 2018):

- If vegetation removal is occurring from March 16 through October 30, a qualified biologist will survey any area to have vegetation removed or be otherwise disturbed (staging, heavy vibration, noise, etc.) for the presence of monarch milkweed (larval host plants) and adult nectar plants. If there is milkweed or adult nectar plants within the area to be disturbed:

    - Milkweed and adult nectar plants will be flagged and avoided to the extent possible. Any plants with eggs present or larvae actively feeding will not be impacted until larvae have completed metamorphosis and migrated outside the study area, as documented by a qualified biologist.

    - If eggs/larvae are not present, but avoidance of host and nectar plants is not possible, DWR will attempt to replace any plants lost in post-construction efforts. Plants should be replaced at a 1:1 ratio, with the goal of no net loss of monarch habitat within the study area. Replacement plants should be insecticide free and any plants grown via contract should use specifications that limit harmful pesticide residue.

- If vegetation removal is occurring from October 31 through March 15, a qualified biologist will survey any area to have vegetation removed or be otherwise disturbed (staging, heavy vibration, noise, etc.) for the presence of milkweed and adult nectar plants. If there is milkweed or adult nectar plants within the area to be disturbed, they will be flagged and avoided to the extent possible. If avoidance is not possible, DWR will attempt to replace any plants lost in post-construction efforts. Plants should be replaced at a 1:1 ration, with the goal of no net loss of monarch habitat within the study area. Replacement plants should be insecticide free and any plants grown via contract should use specifications that limit harmful pesticide residue.

- Any herbicide use within the study area on non-native plants should be used with care for monarch habitat, including:

    - Using herbicide when target plants are responsive to treatment as it coincides with when monarchs and other pollinators are less likely to be seeking nectar

    - Use targeted application methods, including avoiding broadscale application and taking precautions to limit off-site movement (wind, run-off).

5.6.2 Valley Elderberry Longhorn Beetle

DWR and its construction contractor(s) will implement the following measures, consistent with the *Framework for Assessing Impacts to the Valley Elderberry Longhorn Beetle* (USFWS 2017b)—or any updated guidance from USFWS—to minimize and compensate for unavoidable effects on VELB:

- Elderberry shrub removal will be avoided wherever possible by considering shrub locations during development of the final project design, including the levee, maintenance zone, and construction staging areas and access routes.

- Before project activities begin, worker awareness training will be provided by a qualified biologist to inform on-site project personnel on the status of VELB, its host plant and habitat, the need to avoid damaging the elderberry shrubs, and the possible penalties for noncompliance.

- Before project activities near elderberry shrubs begin, all areas to be avoided during construction activities will be fenced and/or flagged as close to construction limits as feasible.

- A qualified biologist will monitor the work area at intervals appropriate to the project to assure that all avoidance and minimization measures are implemented.

- To the maximum extent feasible, activities that occur within 165 feet of an elderberry shrub will occur between November and February and will avoid removal of branches and stems greater than 1 inch in diameter.

- Elderberry shrubs with stems greater than 1 inch in diameter that cannot be avoided to accommodate project construction will be transplanted, if feasible to safely do so, given potential access challenges related to their location. The transplant location will be suitable for elderberry growth and reproduction and as close as possible to the shrubs' original location. Transplanting will be implemented as follows:

    - If feasible, elderberry shrubs will be transplanted when they are dormant (November through the first 2 weeks in February) and after they have lost their leaves.

    - For any elderberry shrubs that require trimming:

        - an exit hole survey should be conducted on the focus individual plant(s)
        - the surrounding habitat should be evaluated as riparian or non-riparian
        - stems greater than one inch in diameter should be avoided where possible;
        - trimming should take place between the months of November and February

- A qualified biologist will conduct an exit hole survey immediately before transplanting and will monitor transplanting activities. The biologist will record the number of exit holes found on each shrub, the precise location of each shrub that is removed, and the precise transplant location for each shrub. This information will be reported to USFWS and the CNDDB.

- Compensatory mitigation will be provided for elderberry shrub removal. An appropriate mitigation approach will be developed and implemented in consultation with USFWS to ensure no net loss of habitat for valley elderberry longhorn beetle. Mitigation will include replacing individual elderberry shrubs and/or riparian habitat at ratios ranging from 1:1 to 3:1, depending on circumstances of the elderberry shrub distribution and habitat in which the shrubs occur.

5.6.3 Burrowing Owl

DWR and/or its contractors will use measures specified in the *Staff Report on Burrowing Owl Mitigation* (CDFW 2012), or alternative/any updated CDFW protocols and requirements to avoid and/or minimize impacts on burrowing owl:

BUOW-1: If burrowing owls or active burrows are observed in maintenance areas, DWR will establish a buffer based on the activity dates and the level of disturbance in accordance with the Staff Report on Burrowing Owl Mitigation (CDFG 2012) and described as follows:

Time of Year	Distance of Disturbance (feet) from Occupied Burrows		
	Low Disturbance	***Medium Disturbance***	***High Disturbance***
April 1-August 15	600	1,500	1,500
August 16-October 15	600	600	1,500
October 16-March 31	150	300	1,500

Activities that involve heavy equipment would be expected to constitute medium to high levels of disturbance for the species. Buffers will be marked in the field by a qualified biologist using temporary fencing, high-visibility flagging, or other means that are equally effective in clearly delineating the buffers. Maintenance activities will not occur within the established buffer and workers will avoid entering the area.

BUOW-2: If active burrows cannot be avoided with the minimum buffers indicated above, DWR will consult with CDFW to determine the best approach to avoid and minimize potential impacts. Such measures will conform to the Staff Report on Burrowing Owl Mitigation (CDFG, 2012) and may include modified buffers or passive relocation of owls during the non-breeding season (September 1-January 31). Passive relocation of owls will be conducted in accordance with an exclusion and relocation plan developed in coordination with and approved by CDFW. The relocation plan will

describe methods for passive relocation of the owls, destruction of suitable burrows, and how the site will be maintained to prevent owl reoccupation.

5.6.4 Swainson's Hawk

SWHA-1: If construction activities would occur during the Swainson's hawk nesting season (March 1–September 15), a qualified biologist will conduct surveys of accessible potential Swainson's hawk nesting trees within 0.5 mile of the study area. Surveys will be conducted in accordance with the *Recommended Timing and Methodology for Swainson's Hawk Nesting Surveys in California's Central Valley* (Swainson's Hawk Technical Advisory Committee 2000).

SWHA-2: If an active Swainson's hawk nest is found, a qualified biologist will prepare a site-specific take avoidance plan to comply with the CFGC and avoid need for federal consultation on CESA. Measures may include but are not limited to nest-specific no disturbance buffers (0.5 mile in rural areas or where heavy equipment will be used), biological monitoring, rescheduling construction activities around sensitive periods for the species (e.g., nest establishment), and/or implementing construction best practices, such as staging equipment out of the species' line of sight from the nest tree. The avoidance/protection measures will be established before construction activities begin and continue until the adult and young birds are no longer reliant on the nest site. A qualified biologist will monitor construction activities and behavior of the nesting birds and young to ensure project activities do not cause disturbance that could result in nest abandonment, reduced care of eggs or young, or premature fledging.

5.6.5 White-tailed Kite

WTKI-1: If construction would begin during the white-tailed kite nesting season (February–October), a qualified biologist will conduct a survey of accessible potential white-tailed kite nesting trees within 0.5 mile of the study area. At a minimum, at least one survey will be conducted within 10 days before project activities begin during the nesting season.

WTKI-2: If an active white-tailed kite nest is found, a qualified biologist will prepare a site-specific take avoidance plan to comply with CFGC. Measures may include but are not limited to nest-specific no disturbance buffers, biological monitoring, rescheduling construction activities around sensitive periods for the species (e.g., nest establishment), and/or implementing construction best practices, such as staging equipment out of the species' line of sight from the nest tree. The avoidance/protection measures will be established before construction activities begin and continue until the adult and young birds are no longer reliant on the nest site. A qualified biologist will monitor construction activities and behavior of the nesting birds and young to ensure project activities do not cause disturbance that could result in nest abandonment, reduced care of eggs or young, or premature fledging.

5.6.6 Northern Harrier, Tricolored Blackbird, Purple Martin, Song Sparrow, and Other Protected Nesting Birds

BIRD-1: A qualified biologist will conduct surveys of suitable nesting habitat that would be directly disturbed by project activities and suitable nesting habitat for northern harrier, tricolored blackbird, purple martin, song sparrow, and other more common bird species in accessible potential habitat within 500 feet of the study area. Surveys will be conducted within 10 days before project activities begin near suitable nesting habitat during the nesting season (February–August).

BIRD-2: If an active nest is observed, a qualified biologist will prepare a site-specific take avoidance plan to comply with applicable state and federal regulations. Measures for other species may include but are not limited to nest-specific no disturbance buffers, biological monitoring, rescheduling construction activities around sensitive periods for the species (e.g., nest establishment), and/or implementing construction best practices, such as staging equipment out of the species' line of sight from the nest tree. DWR's buffer distances for specific nesting birds that have potential to nest within the study area are as follows:

- tricolored blackbird: 300 feet
- common nesting passerines: 100 feet
- common nesting raptors: 300 feet
- heron or egret rookeries: 200 feet

The avoidance/protection measures will be established before construction activities begin and continue until the adult and young birds are no longer reliant on the nest site. A qualified biologist will monitor construction activities and behavior of the nesting birds and young to ensure project activities do not cause disturbance that could result in nest abandonment, reduced care of eggs or young, or premature fledging.

5.6.7 Pallid Bat, Western Red Bat, and Other Roosting Bats

BATS-1: DWR will implement the following measures to avoid and minimize effects on special-status bats:

- Wherever feasible, DWR will conduct construction activities near potential roost habitat outside of the pupping season for bats (generally April 1 to August 31).
- DWR or its designated environmental personnel will specify the trees within the study area that are slated for removal and have suitable bat roosting habitat. Trees indicated for removal within the study area that are not identified as suitable bat habitat can be removed using DWR's or its contractor's typical methods.

- Trees that are indicated to contain roosting habitat shall be removed in a two-phase process outside the pupping season. The first day, under the supervision of the biological monitor, remove limbs and branches that do not contain cavities, cracks, crevices, or deep bark fissures that can provide roosting habitat. On the second day remove the remainder of tree by gently lowering the tree to the ground, under the supervision of the biological monitor and leave material undisturbed for 48-hours. If it is not feasible to remove a tree using the two-phased approach, limbs containing habitat features should be removed and gently lowered to the ground in a location where they are not likely to be crushed or disturbed by the felling of the tree and left undisturbed for the next 48-hours.

- Standing dead trees or snags with habitat features should be removed over a single day by gently lowering the tree or snag to the ground. The tree or snag should be left undisturbed on the site for the next 48-hours.

- For trees containing suitable bat roosting habitat that will be trimmed, trimming shall be conducted in the presence of a biological monitor. If trimming results in the removal of vegetation that contains potential bat habitat, vegetation should be gently lowered to the ground and left near the tree for 48-hours prior to removal, if feasible. If the vegetation cannot be left for 48-hours, the biological monitor shall survey the vegetation for presence of bats. If any bats are found within the vegetation, the vegetation must be left for 48-hours (or CDFW should be called for guidance regarding relocation of the bat dependent on urgency for removal).

- If removal of trees must occur during the bat pupping season, within 30 days of tree removal activities, all trees to be removed will be surveyed by a qualified biological monitor for the presence of features that may function as special-status bat maternity roosting habitat. Trees that do not contain potential special-status maternity roosting habitat may be removed. For trees that contain suitable special-status bat maternity roosting habitat, surveys for active maternity roosts shall be conducted by the designated biological monitor in trees designated for removal. The surveys shall be conducted from dusk until dark.

- If any special-status species bat maternity roost is located, appropriate buffers must be established by clearly marking the buffer area. The buffer area must be a minimum of 250 feet outside the tree containing the maternity roost. No contract activities shall commence within the buffer areas until the end of pupping season (September 1st) or the biological monitor confirms that the maternity roost is no longer active.

- If construction activities must occur within the buffer, the biological monitor must monitor activities either continuously or periodically during the work, which will be determined by the biological monitor. The biological monitor would be empowered to stop activities that, in their opinion, would cause unanticipated adverse effects on specials status bats. If construction activities are stopped, the biological monitor would inform DWR, and CDFW would be consulted to determine appropriate measures to implement to avoid adverse effects.

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Attachment A: Special-status Species Lists

Selected Elements by Scientific Name

California Department of Fish and Wildlife

California Natural Diversity Database

Query Criteria: Quad IS (Woodland (3812167) OR Grays Bend (3812166) OR Zamora (3812178) OR Eldorado Bend (3812177) OR Knights Landing (3812176) OR Verona (3812175) OR Taylor Monument (3812165) OR Sacramento West (3812155) OR Davis (3812156) OR Merritt (3812157) OR Winters (3812158) OR Madison (3812168))
 AND Taxonomic Group IS (Ferns OR Gymnosperms OR Monocots OR Dicots OR Lichens OR Bryophytes)
 AND CNPS List IS (1A OR 1B OR 1B.1 OR 1B.2 OR 1B.3 OR 2A OR 2B OR 2B.1 OR 2B.2 OR 2B.3 OR 3 OR 3.1 OR 3.2 OR 3.3 OR 4 OR 4.1 OR 4.2 OR 4.3)

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Astragalus tener var. ferrisiae Ferns' milk-vetch	PDFABDF8R3	None	None	G2T1	S1	1B.1
Astragalus tener var. tener alkali milk-vetch	PDFABDF8R1	None	None	G2T1	S1	1B.2
Atriplex cordulata var. cordulata heartscale	PDCHE040B0	None	None	G3T2	S2	1B.2
Atriplex depressa brittlescale	PDCHE042L0	None	None	G2	S2	1B.2
Centromadia parryi ssp. parryi pappose tarplant	PDAST4R0P2	None	None	G3T2	S2	1B.2
Chloropyron palmatum palmate-bracted bird's-beak	PDSCR0J0J0	Endangered	Endangered	G1	S1	1B.1
Extriplex joaquinana San Joaquin spearscale	PDCHE041F3	None	None	G2	S2	1B.2
Hibiscus lasiocarpos var. occidentalis woolly rose-mallow	PDMAL0H0R3	None	None	G5T3	S3	1B.2
Lepidium latipes var. heckardii Heckard's pepper-grass	PDBRA1M0K1	None	None	G4T1	S1	1B.2
Navarretia leucocephala ssp. bakeri Baker's navarretia	PDPLM0C0E1	None	None	G4T2	S2	1B.1
Puccinellia simplex California alkali grass	PMPOA53110	None	None	G3	S2	1B.2
Sidalcea keckii Keck's checkerbloom	PDMAL110D0	Endangered	None	G2	S2	1B.1
Symphyotrichum lentum Suisun Marsh aster	PDASTE8470	None	None	G2	S2	1B.2
Trifolium hydrophilum saline clover	PDFAB400R6	None	None	G2	S2	1B.2

Record Count: 14

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Selected Elements by Scientific Name

California Department of Fish and Wildlife

California Natural Diversity Database

Query Criteria: Quad IS (Woodland (3812167) OR Grays Bend (3812166) OR Zamora (3812178) OR Eldorado Bend (3812177) OR Knights Landing (3812176) OR Verona (3812175) OR Taylor Monument (3812165) OR Sacramento West (3812155) OR Davis (3812156) OR Merritt (3812157) OR Winters (3812158) OR Madison (3812168))
 AND Taxonomic Group IS (Fish OR Amphibians OR Reptiles OR Birds OR Mammals OR Molluscs OR Arachnids OR Crustaceans OR Insects)
 AND (Federal Listing Status IS (Endangered OR Threatened OR Proposed Endangered OR Proposed Threatened OR Candidate OR All CNDDB element occurrences OR Delisted) OR State Listing Status IS (Endangered OR Threatened OR Rare OR All CNDDB element occurrences OR Delisted OR Candidate Endangered OR Candidate Threatened))

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 pop. 1 California tiger salamander - central California DPS	AAAAA01181	Threatened	Threatened	G2G3	S3	WL
Antrozous pallidus pallid bat	AMACC10010	None	None	G4	S3	SSC
Archoplites interruptus Sacramento perch	AFCQB07010	None	None	G2G3	S1	SSC
Ardea alba great egret	ABNGA04040	None	None	G5	S4	
Ardea herodias great blue heron	ABNGA04010	None	None	G5	S4	
Athene cunicularia burrowing owl	ABNSB10010	None	None	G4	S3	SSC
Bombus crotchii Crotch bumble bee	IIHYM24480	None	None	G3G4	S1S2	
Bombus occidentalis western bumble bee	IIHYM24250	None	None	G2G3	S1	
Branchinecta lynchi vernal pool fairy shrimp	ICBRA03030	Threatened	None	G3	S3	
Buteo swainsoni Swainson's hawk	ABNKC19070	None	Threatened	G5	S3	
Charadrius montanus mountain plover	ABNNB03100	None	None	G3	S2S3	SSC
Charadrius nivosus nivosus western snowy plover	ABNNB03031	Threatened	None	G3T3	S2	SSC
Cicindela hirticollis abrupta Sacramento Valley tiger beetle	IICOL02108	None	None	G5TH	SH	
Circus hudsonius northern harrier	ABNKC11011	None	None	G5	S3	SSC

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Selected Elements by Scientific Name

California Department of Fish and Wildlife

California Natural Diversity Database

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Coccyzus americanus occidentalis western yellow-billed cuckoo	ABNRB02022	Threatened	Endangered	G5T2T3	S1	
Desmocerus californicus dimorphus valley elderberry longhorn beetle	IICOL48011	Threatened	None	G3T2	S3	
Egretta thula snowy egret	ABNGA06030	None	None	G5	S4	
Elanus leucurus white-tailed kite	ABNKC06010	None	None	G5	S3S4	FP
Emys marmorata western pond turtle	ARAAD02030	None	None	G3G4	S3	SSC
Falco columbarius merlin	ABNKD06030	None	None	G5	S3S4	WL
Gonidea angulata western ridged mussel	IMBIV19010	None	None	G3	S1S2	
Lasionycteris noctivagans silver-haired bat	AMACC02010	None	None	G3G4	S3S4	
Lasiurus blossevillii western red bat	AMACC05060	None	None	G4	S3	SSC
Lasiurus cinereus hoary bat	AMACC05030	None	None	G3G4	S4	
Laterallus jamaicensis coturniculus California black rail	ABNME03041	None	Threatened	G3G4T1	S1	FP
Lepidurus packardi vernal pool tadpole shrimp	ICBRA10010	Endangered	None	G4	S3S4	
Linderiella occidentalis California linderiella	ICBRA06010	None	None	G2G3	S2S3	
Melospiza melodia song sparrow ("Modesto" population)	ABPBXA3010	None	None	G5	S3?	SSC
Myotis yumanensis Yuma myotis	AMACC01020	None	None	G5	S4	
Myrmosula pacifica Antioch multilid wasp	IIHYM15010	None	None	GH	SH	
Nycticorax nycticorax black-crowned night heron	ABNGA11010	None	None	G5	S4	
Oncorhynchus mykiss irideus pop. 11 steelhead - Central Valley DPS	AFCHA0209K	Threatened	None	G5T2Q	S2	
Oncorhynchus tshawytscha pop. 11 chinook salmon - Central Valley spring-run ESU	AFCHA0205L	Threatened	Threatened	G5T1T2Q	S2	
Oncorhynchus tshawytscha pop. 7 chinook salmon - Sacramento River winter-run ESU	AFCHA0205B	Endangered	Endangered	G5T1Q	S1	
Plegadis chihi white-faced ibis	ABNGE02020	None	None	G5	S3S4	WL

Selected Elements by Scientific Name

California Department of Fish and Wildlife

California Natural Diversity Database

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Pogonichthys macrolepidotus Sacramento splittail	AFCJB34020	None	None	GNR	S3	SSC
Progne subis purple martin	ABPAU01010	None	None	G5	S3	SSC
Riparia riparia bank swallow	ABPAU08010	None	Threatened	G5	S2	
Spea hammondii western spadefoot	AAABF02020	None	None	G2G3	S3	SSC
Spirinchus thaleichthys longfin smelt	AFCHB03010	Candidate	Threatened	G5	S1	
Taxidea taxus American badger	AMAJF04010	None	None	G5	S3	SSC
Thaleichthys pacificus eulachon	AFCHB04010	Threatened	None	G5	S2	
Thamnophis gigas giant gartersnake	ARADB36150	Threatened	Threatened	G2	S2	
Vireo bellii pusillus least Bell's vireo	ABPBW01114	Endangered	Endangered	G5T2	S2	

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IPaC resource list

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

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

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Location

Yolo County, California

Local office

Sacramento Fish And Wildlife Office

(916) 414-6600
(916) 414-6713

Federal Building

Federal Building
2800 Cottage Way, Room W-2605
Sacramento, CA 95825-1846

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Endangered species

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

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

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

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

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

Listed species[1] and their critical habitats are managed by the Ecological Services Program of the U.S. Fish and Wildlife Service (USFWS) and the fisheries division of the National Oceanic and Atmospheric Administration (NOAA Fisheries[2]).

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

1. Species listed under the Endangered Species Act are threatened or endangered; IPaC also shows species that are candidates, or proposed, for listing. See the listing status page for more information. IPaC only shows species that are regulated by USFWS (see FAQ).

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

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

Birds

NAME	STATUS
Western Snowy Plover *Charadrius nivosus nivosus* There is **final** critical habitat for this species. Your location does not overlap the critical habitat. https://ecos.fws.gov/ecp/species/8035	Threatened
Yellow-billed Cuckoo *Coccyzus americanus* There is **final** critical habitat for this species. Your location does not overlap the critical habitat. https://ecos.fws.gov/ecp/species/3911	Threatened

Reptiles

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

Amphibians

NAME	STATUS
California Tiger Salamander *Ambystoma californiense* There is **final** critical habitat for this species. Your location does not overlap the critical habitat. https://ecos.fws.gov/ecp/species/2076	Threatened

Insects

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

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Valley Elderberry Longhorn Beetle Desmocerus californicus dimorphus — Threatened

Wherever found

There is **final** critical habitat for this species. Your location does not overlap the critical habitat.

https://ecos.fws.gov/ecp/species/7850

Crustaceans

NAME	STATUS
Vernal Pool Fairy Shrimp Branchinecta lynchi	Threatened

Wherever found

There is **final** critical habitat for this species. Your location does not overlap the critical habitat.

https://ecos.fws.gov/ecp/species/498

Vernal Pool Tadpole Shrimp Lepidurus packardi	Endangered

Wherever found

There is **final** critical habitat for this species. Your location does not overlap the critical habitat.

https://ecos.fws.gov/ecp/species/2246

Flowering Plants

NAME	STATUS
Palmate-bracted Bird's Beak Cordylanthus palmatus	Endangered

Wherever found

No critical habitat has been designated for this species.

https://ecos.fws.gov/ecp/species/1616

Critical habitats

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

There are no critical habitats at this location.

Migratory birds

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Certain birds are protected under the Migratory Bird Treaty Act[1] and the Bald and Golden Eagle Protection Act[2].

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

1. The Migratory Birds Treaty Act of 1918.
2. The Bald and Golden Eagle Protection Act of 1940.

Additional information can be found using the following links:

- Birds of Conservation Concern https://www.fws.gov/program/migratory-birds/species
- Measures for avoiding and minimizing impacts to birds https://www.fws.gov/library/collections/avoiding-and-minimizing-incidental-take-migratory-birds
- Nationwide conservation measures for birds https://www.fws.gov/sites/default/files/documents/nationwide-standard-conservation-measures.pdf

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

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

NAME	BREEDING SEASON
Bald Eagle *Haliaeetus leucocephalus* This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.	Breeds Jan 1 to Aug 31

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Belding's Savannah Sparrow Passerculus sandwichensis beldingi This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA https://ecos.fws.gov/ecp/species/8	Breeds Apr 1 to Aug 15
Black Tern Chlidonias niger This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/3093	Breeds May 15 to Aug 20
Black Turnstone Arenaria melanocephala This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds elsewhere
Bullock's Oriole Icterus bullockii This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA	Breeds Mar 21 to Jul 25
California Gull Larus californicus This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds Mar 1 to Jul 31
California Thrasher Toxostoma redivivum This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds Jan 1 to Jul 31
Clark's Grebe Aechmophorus clarkii This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds Jun 1 to Aug 31
Common Yellowthroat Geothlypis trichas sinuosa This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA https://ecos.fws.gov/ecp/species/2084	Breeds May 20 to Jul 31
Golden Eagle Aquila chrysaetos This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities. https://ecos.fws.gov/ecp/species/1680	Breeds Jan 1 to Aug 31

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Lawrence's Goldfinch Carduelis lawrencei This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9464	Breeds Mar 20 to Sep 20
Marbled Godwit Limosa fedoa This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9481	Breeds elsewhere
Mountain Plover Charadrius montanus This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/3638	Breeds elsewhere
Nuttall's Woodpecker Picoides nuttallii This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA https://ecos.fws.gov/ecp/species/9410	Breeds Apr 1 to Jul 20
Oak Titmouse Baeolophus inornatus This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9656	Breeds Mar 15 to Jul 15
Olive-sided Flycatcher Contopus cooperi This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/3914	Breeds May 20 to Aug 31
Short-billed Dowitcher Limnodromus griseus This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9480	Breeds elsewhere
Tricolored Blackbird Agelaius tricolor This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/3910	Breeds Mar 15 to Aug 10

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Western Grebe aechmophorus occidentalis This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/6743	Breeds Jun 1 to Aug 31
Willet Tringa semipalmata This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds elsewhere
Wrentit Chamaea fasciata This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds Mar 15 to Aug 10
Yellow-billed Magpie Pica nuttalli This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9726	Breeds Apr 1 to Jul 31

Probability of Presence Summary

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

Probability of Presence (▪)

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

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

1. The probability of presence for each week is calculated as the number of survey events in the week where the species was detected divided by the total number of survey events for that week. For example, if in week 12 there were 20 survey events and the Spotted Towhee was found in 5 of them, the probability of presence of the Spotted Towhee in week 12 is 0.25.
2. To properly present the pattern of presence across the year, the relative probability of presence is calculated. This is the probability of presence divided by the maximum probability of presence across all weeks. For example, imagine the probability of

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presence in week 20 for the Spotted Towhee is 0.05, and that the probability of presence at week 12 (0.25) is the maximum of any week of the year. The relative probability of presence on week 12 is 0.25/0.25 = 1; at week 20 it is 0.05/0.25 = 0.2.

3. The relative probability of presence calculated in the previous step undergoes a statistical conversion so that all possible values fall between 0 and 10, inclusive. This is the probability of presence score.

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

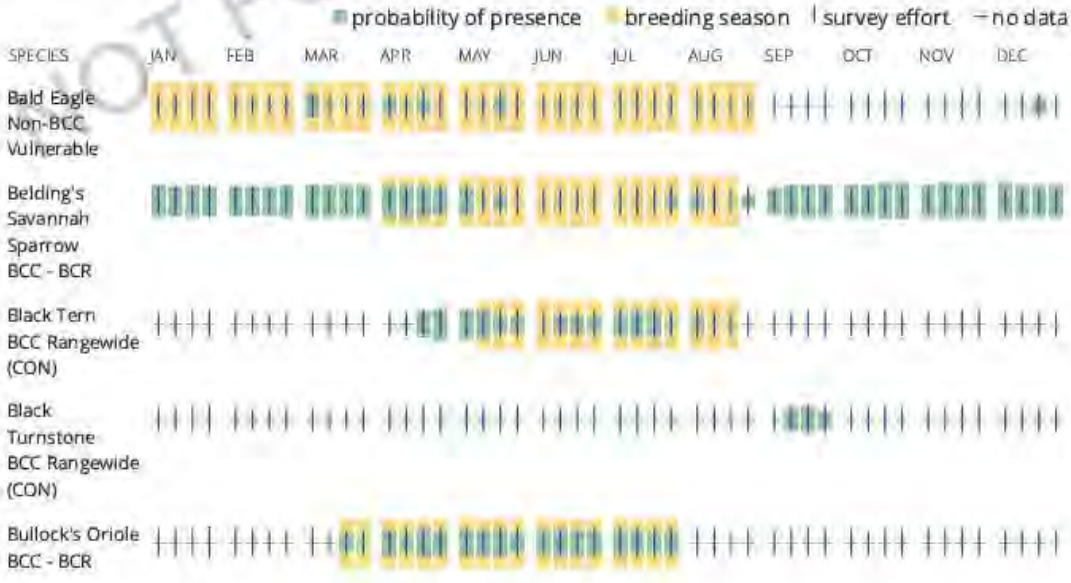
Breeding Season ( )
Yellow bars denote a very liberal estimate of the time-frame inside which the bird breeds across its entire range. If there are no yellow bars shown for a bird, it does not breed in your project area.

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

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

No Data (–)
A week is marked as having no data if there were no survey events for that week.

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



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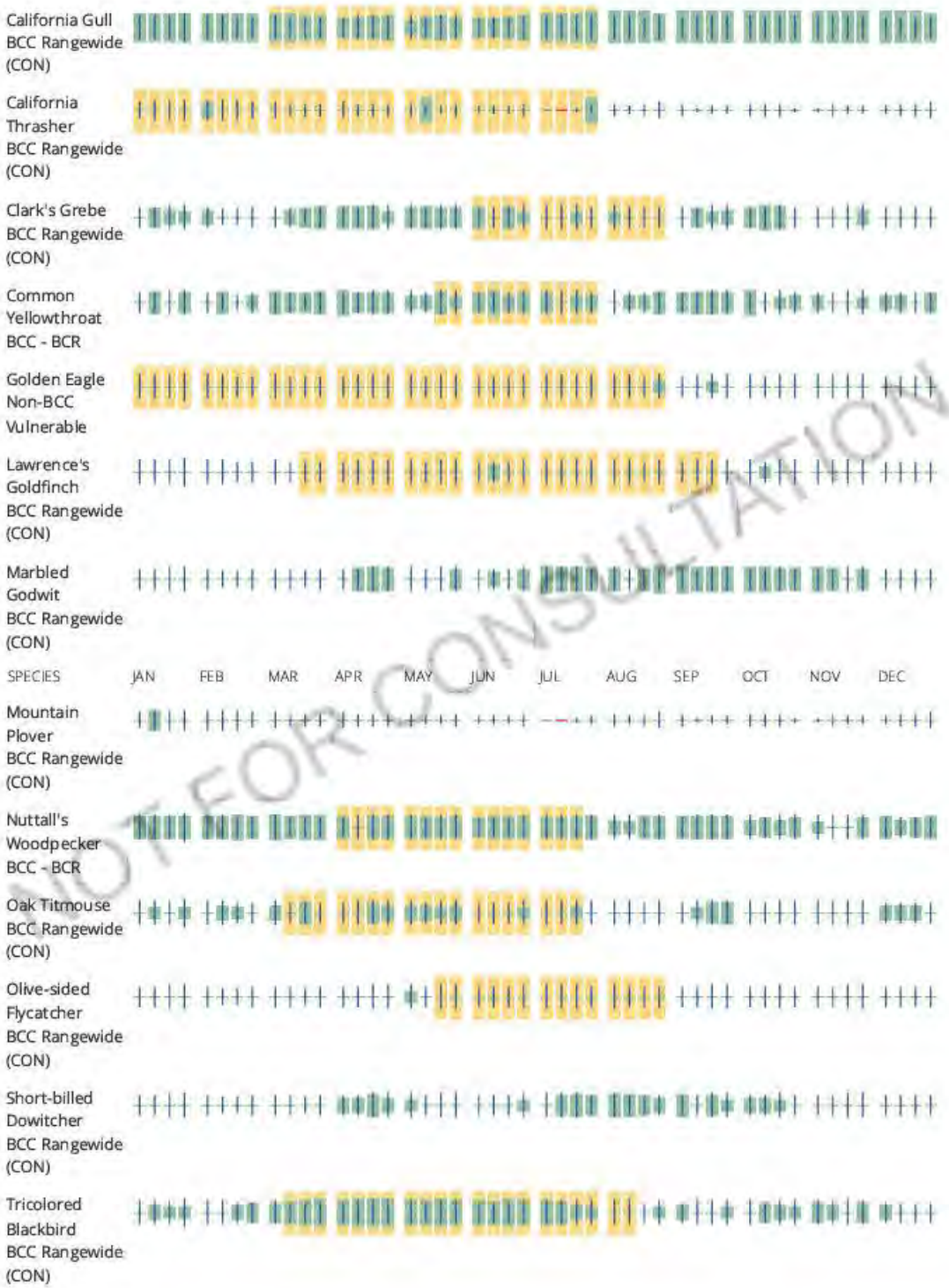

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Tell me more about conservation measures I can implement to avoid or minimize impacts to migratory birds.

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

What does IPaC use to generate the list of migratory birds that potentially occur in my specified location?

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

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

Again, the Migratory Bird Resource list includes only a subset of birds that may occur in your project area. It is not representative of all birds that may occur in your project area. To get a list of all birds potentially present in your project area, please visit the Rapid Avian Information Locator (RAIL) Tool.

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

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

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

How do I know if a bird is breeding, wintering or migrating in my area?

To see what part of a particular bird's range your project area falls within (i.e. breeding, wintering, migrating or year-round), you may query your location using the BAM Tool and look at the range maps provided for birds in your area at the bottom of the profiles provided for each bird in your results. If a bird on your migratory bird species list has a breeding season associated with it, if that bird does occur in your project area, there may be nests present at some point within the timeframe specified. If "Breeds elsewhere" is indicated, then the bird likely does not breed in your project area.

What are the levels of concern for migratory birds?

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

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

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

Details about birds that are potentially affected by offshore projects

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

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

What if I have eagles on my list?

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

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Proper Interpretation and Use of Your Migratory Bird Report

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

Facilities

National Wildlife Refuge lands

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

There are no refuge lands at this location.

Fish hatcheries

There are no fish hatcheries at this location.

Wetlands in the National Wetlands Inventory

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(NWI)

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

For more information please contact the Regulatory Program of the local U.S. Army Corps of Engineers District.

This location did not intersect any wetlands mapped by NWI.

NOTE: This initial screening does **not** replace an on-site delineation to determine whether wetlands occur. Additional information on the NWI data is provided below.

Data limitations

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

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

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

Data exclusions

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

Data precautions

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

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seek the advice of appropriate Federal, state, or local agencies concerning specified agency regulatory programs and proprietary jurisdictions that may affect such activities.

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CNPS Rare Plant Inventory

CALIFORNIA NATIVE PLANT SOCIETY

Search Results

22 matches found. Click on scientific name for details

Search Criteria: CRPR is one of [1A:1B:2A:2B:3:4] , Quad is one of [3812167:3812166:3812178:3812177:3812176:3812175:3812165:3812155:3812156:3812157:3812158:3812168]

▲ SCIENTIFIC NAME	COMMON NAME	FAMILY	LIFEFORM	BLOOMING PERIOD	FED LIST	STATE LIST	GLOBAL RANK	STATE RANK	CA RARE PLANT RANK	CA ENDEMIC	DATE ADDED	PHOTO
Astragalus pauperculus	depauperate milk-vetch	Fabaceae	annual herb	Mar-Jun	None	None	G4	S4	4.3	Yes	1974-01-01	 ©2012 Tim Kellison
Astragalus tener var. ferrisiae	Ferris' milk-vetch	Fabaceae	annual herb	Apr-May	None	None	G2T1	S1	1B.1	Yes	1994-01-01	No Photo Available
Astragalus tener var. tener	alkali milk-vetch	Fabaceae	annual herb	Mar-Jun	None	None	G2T1	S1	1B.2	Yes	1994-01-01	No Photo Available
Atriplex cordulata var. cordulata	heartscale	Chenopodiaceae	annual herb	Apr-Oct	None	None	G3T2	S2	1B.2	Yes	1988-01-01	 © 1994 Robert E. Preston, Ph.D.
Atriplex depressa	brittlescale	Chenopodiaceae	annual herb	Apr-Oct	None	None	G2	S2	1B.2	Yes	1994-01-01	 © 2009 Zoya Akulova
Centromadia parryi ssp. parryi	pappose tarplant	Asteraceae	annual herb	May-Nov	None	None	G3T2	S2	1B.2	Yes	2004-01-01	No Photo Available
Centromadia parryi ssp. rudis	Parry's rough tarplant	Asteraceae	annual herb	May-Oct	None	None	G3T3	S3	4.2	Yes	2007-05-22	No Photo Available
Chloropyron palmatum	palmate-bracted bird's-beak	Orobanchaceae	annual herb (hemiparasitic)	May-Oct	FE	CE	G1	S1	1B.1	Yes	1974-01-01	No Photo Available
Extriplex joaquinana	San Joaquin spearscale	Chenopodiaceae	annual herb	Apr-Oct	None	None	G2	S2	1B.2	Yes	1988-01-01	No Photo Available

Fritillaria agrestis	stinkbells	Liliaceae	perennial bulbiferous herb	Mar-Jun	None	None	G3	S3	4.2	Yes	1980-01-01	 © 2016 Aaron Schusteff
Hesperevax caulescens	hogwallow starfish	Asteraceae	annual herb	Mar-Jun	None	None	G3	S3	4.2	Yes	2001-01-01	 © 2017 John Doyen
Hibiscus lasiocarpos var. *occidentalis*	woolly rose-mallow	Malvaceae	perennial rhizomatous herb (emergent)	Jun-Sep	None	None	G5T3	S3	1B.2	Yes	1974-01-01	 © 2020 Steven Perry
Lasthenia ferrisiae	Ferris' goldfields	Asteraceae	annual herb	Feb-May	None	None	G3	S3	4.2	Yes	2001-01-01	 © 2009 Zoya Akulova
Lepidium latipes var. *heckardii*	Heckard's pepper-grass	Brassicaceae	annual herb	Mar-May	None	None	G4T1	S1	1B.2	Yes	1994-01-01	 2018 Jennifer Buck
Lessingia hololeuca	woolly-headed lessingia	Asteraceae	annual herb	Jun-Oct	None	None	G2G3	S2S3	3	Yes	1994-01-01	 © 2015 Aaron Schusteff
Malacothamnus helleri	Heller's bush-mallow	Malvaceae	perennial deciduous shrub	May-Jul	None	None	G2Q	S2	3.3	Yes	1974-01-01	 © 2017 Kelli Motow
Navarretia cotulifolia	cotula navarretia	Polemoniaceae	annual herb	May-Jun	None	None	G4	S4	4.2	Yes	2001-01-01	 © 2020 Zoya Akulova
Navarretia leucocephala ssp. *bakeri*	Baker's navarretia	Polemoniaceae	annual herb	Apr-Jul	None	None	G4T2	S2	1B.1	Yes	1994-01-01	 © 2018 Barry Rice
Puccinellia simplex	California alkali grass	Poaceae	annual herb	Mar-May	None	None	G2	S2	1B.2		2015-10-15	No Photo Available

Sidalcea keckii	Keck's checkerbloom	Malvaceae	annual herb	Apr-May(Jun)	FE	None	G2	S2	1B.1	Yes	1974-01-01	No Photo Available
Symphyotrichum lentum	Suisun Marsh aster	Asteraceae	perennial rhizomatous herb	(Apr)May-Nov	None	None	G2	S2	1B.2	Yes	1974-01-01	No Photo Available
Trifolium hydrophilum	saline clover	Fabaceae	annual herb	Apr-Jun	None	None	G2	S2	1B.2	Yes	2001-01-01	No Photo Available

Showing 1 to 22 of 22 entries

Suggested Citation:

California Native Plant Society, Rare Plant Program. 2023. Rare Plant Inventory (online edition, v9.5). Website https://www.rareplants.cnps.org [accessed 17 March 2023].

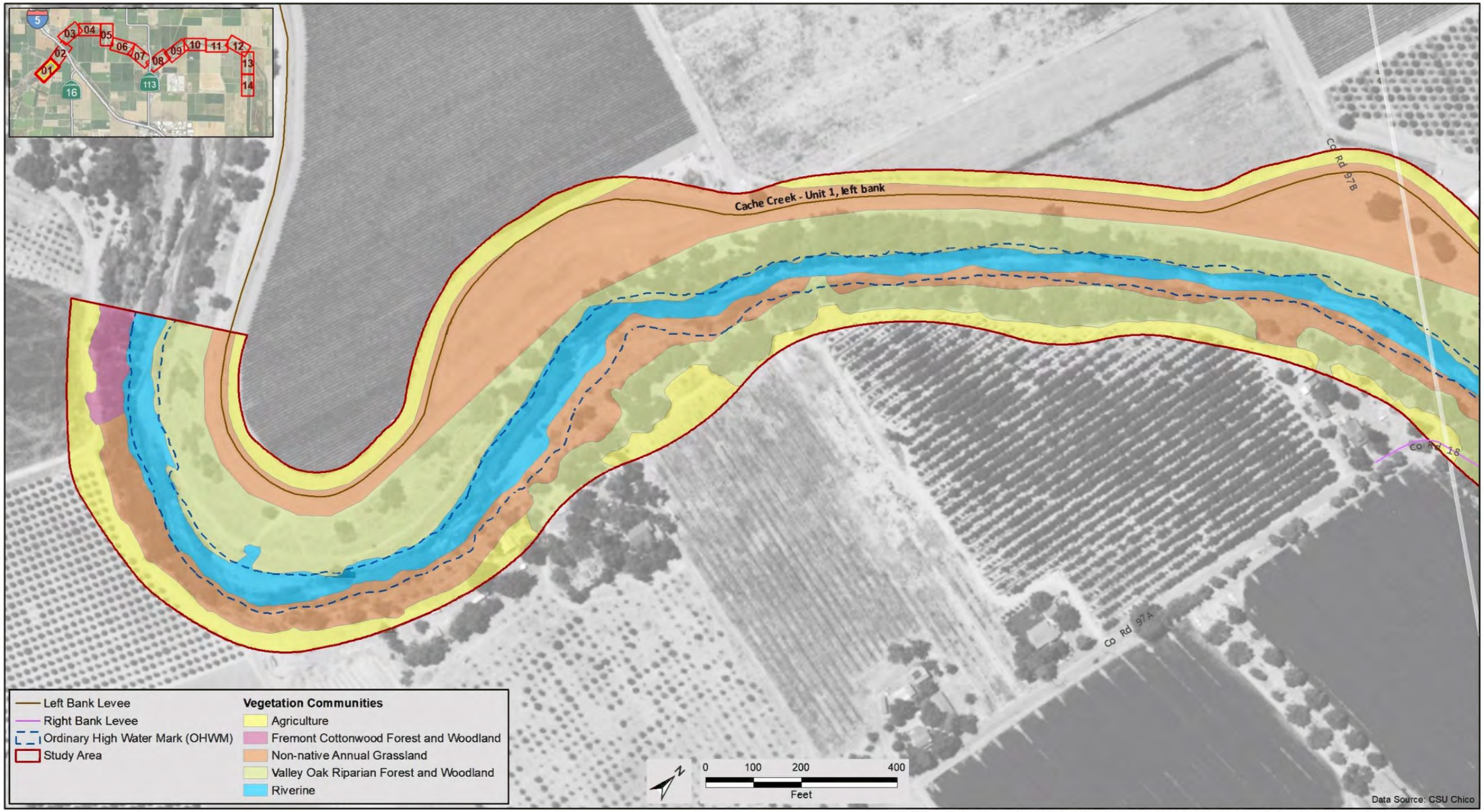
Attachment B: Representative Photos

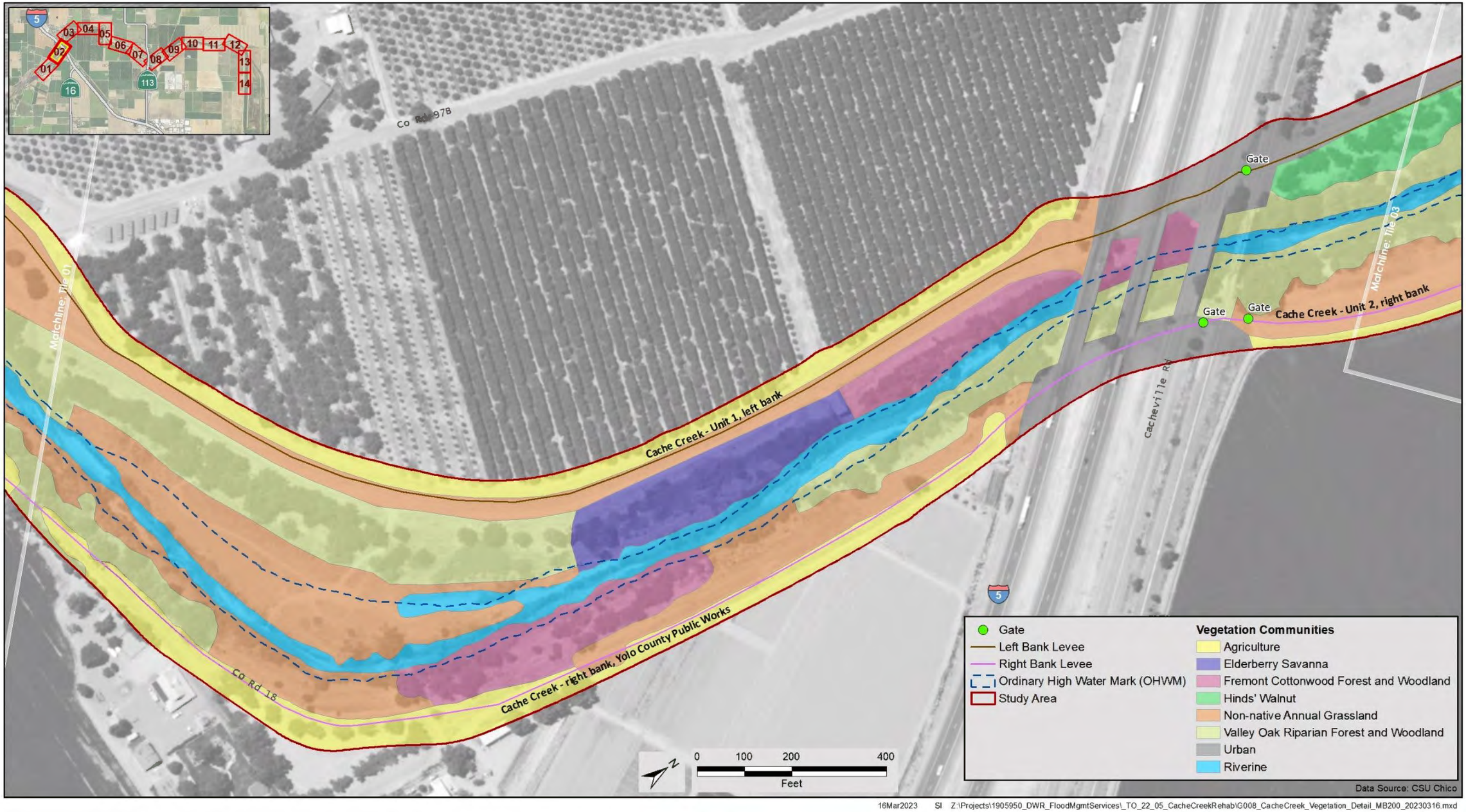
Figure 1. Drone photo taken June, 28, 2022 showcasing an area of denser riparian forest/woodland, bounded by mowed grassland to the north and south, followed by agriculture farther from the study area.

Figure 2. Drone photo taken June 28, 2022. A portion of the study area that is relatively more wide and more sparsely vegetated, near the channel's intersection with County Road 102. Note agricultural parcel directly adjacent to the study area, divided by linear strips of mowed non-native annual grassland along levee roads. Patches of untreated tamarisk thicket can be seen in the bottom right of the photo.

Figure 3. Photo taken April 12, 2022. Unmowed non-native annual grassland in linear strips along the study area, on both sides of the levee road. Mature riparian woodland and forest appears in patches within the slopes of Cache Creek, interspersed with non-native annual grassland and sandbar willow thickets.

Attachment C: Vegetation Communities within the Study Area

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Co Rd 18
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Matchline: Tile 03
Cache Creek - Unit 1, left bank
Cache Creek - right bank, Yolo County Public Works
Cache Creek - Unit 2, right bank
Gate
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Cachevi l le Rd
0 100 200 400
Feet
Gate
Left Bank Levee
Right Bank Levee
Ordinary High Water Mark (OHWM)
Study Area
Vegetation Communities
Agriculture
Elderberry Savanna
Fremont Cottonwood Forest and Woodland
Hinds' Walnut
Non-native Annual Grassland
Valley Oak Riparian Forest and Woodland
Urban
Riverine
Data Source: CSU Chico
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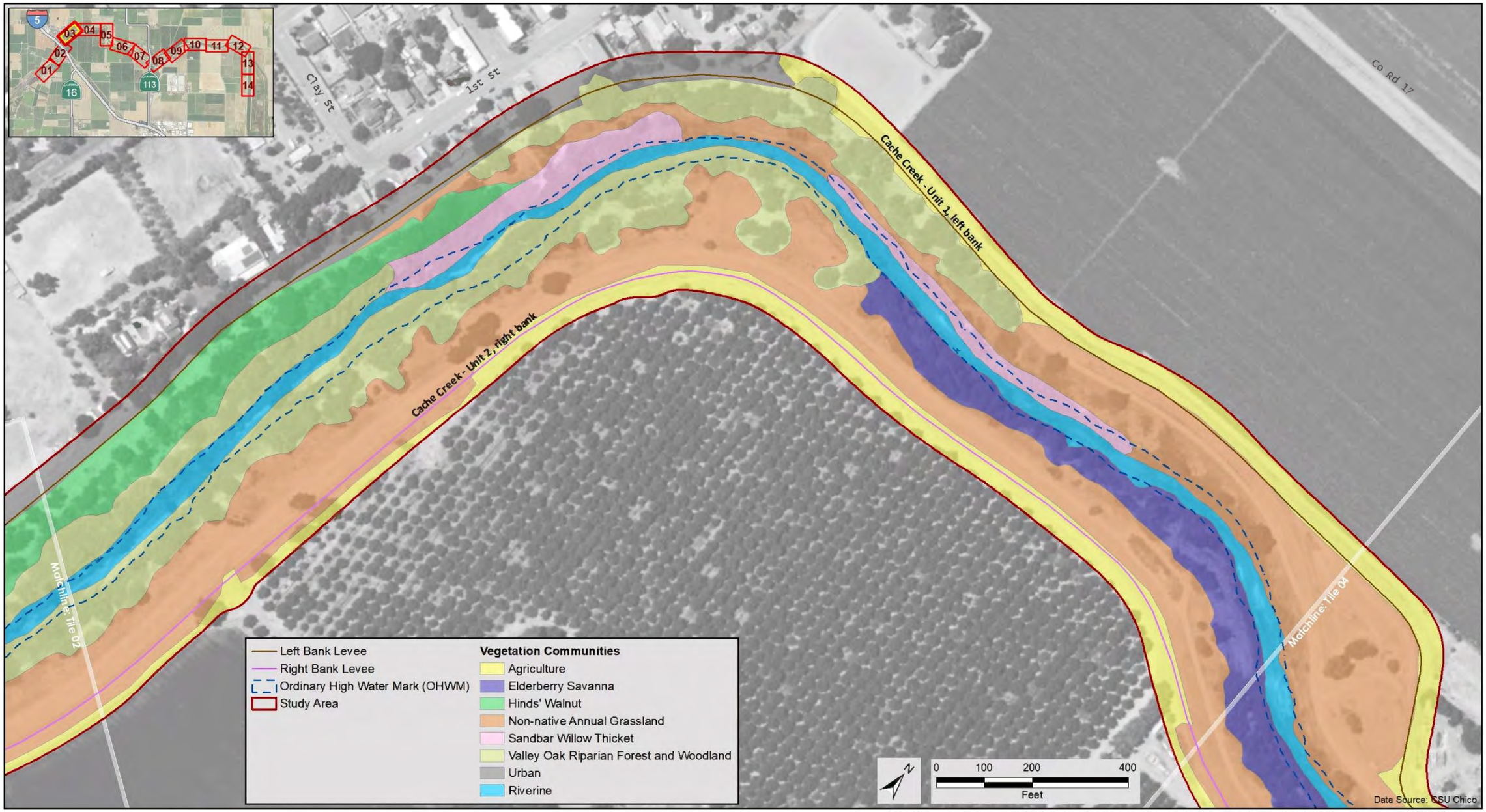
Clay St
1st St
Co Rd 17
Cache Creek - Unit 1, left bank
Cache Creek - Unit 2, right bank
Matchline: Tile 02
Matchline: Tile 04
Left Bank Levee
Right Bank Levee
Ordinary High Water Mark (OHWM)
Study Area
Vegetation Communities
Agriculture
Elderberry Savanna
Hinds' Walnut
Non-native Annual Grassland
Sandbar Willow Thicket
Valley Oak Riparian Forest and Woodland
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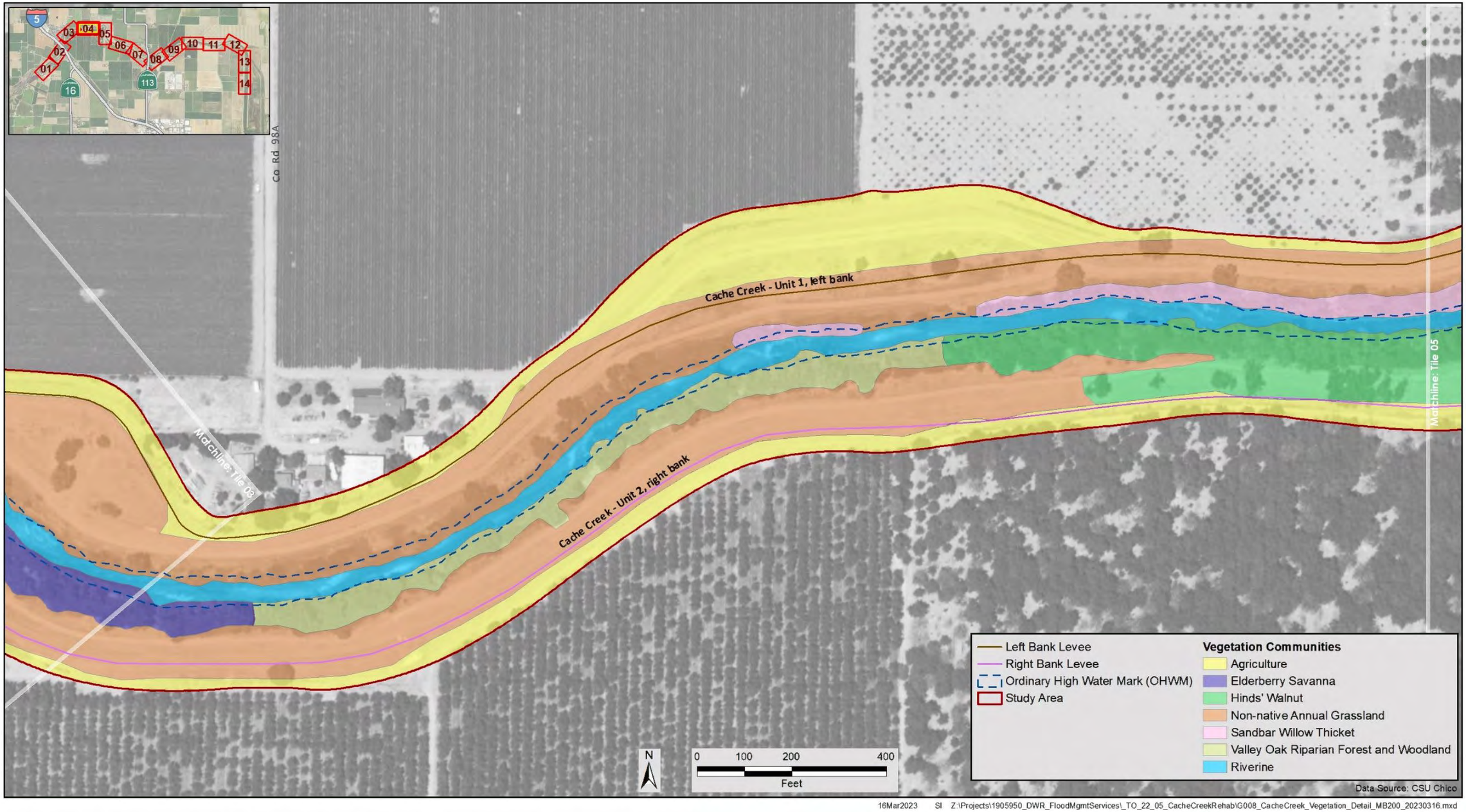
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Cache Creek - Unit 2, right bank
Matchline: Tile 03
Matchline: Tile 05
Left Bank Levee
Right Bank Levee
Ordinary High Water Mark (OHWM)
Study Area
Vegetation Communities
Agriculture
Elderberry Savanna
Hinds' Walnut
Non-native Annual Grassland
Sandbar Willow Thicket
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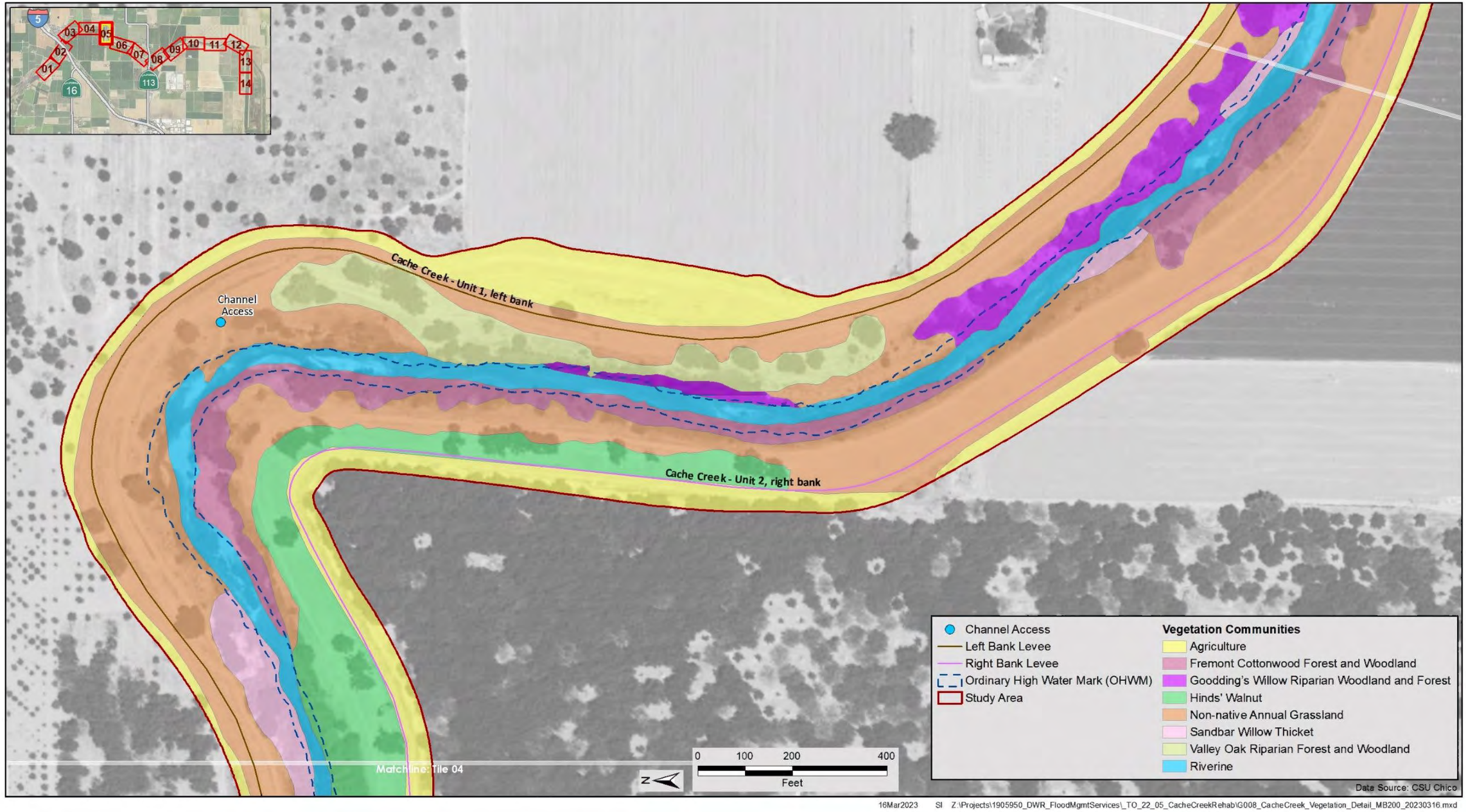
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Cache Creek - Unit 1, left bank
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Ordinary High Water Mark (OHWM)
Study Area
Vegetation Communities
Agriculture
Fremont Cottonwood Forest and Woodland
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Hinds' Walnut
Non-native Annual Grassland
Sandbar Willow Thicket
Valley Oak Riparian Forest and Woodland
Riverine
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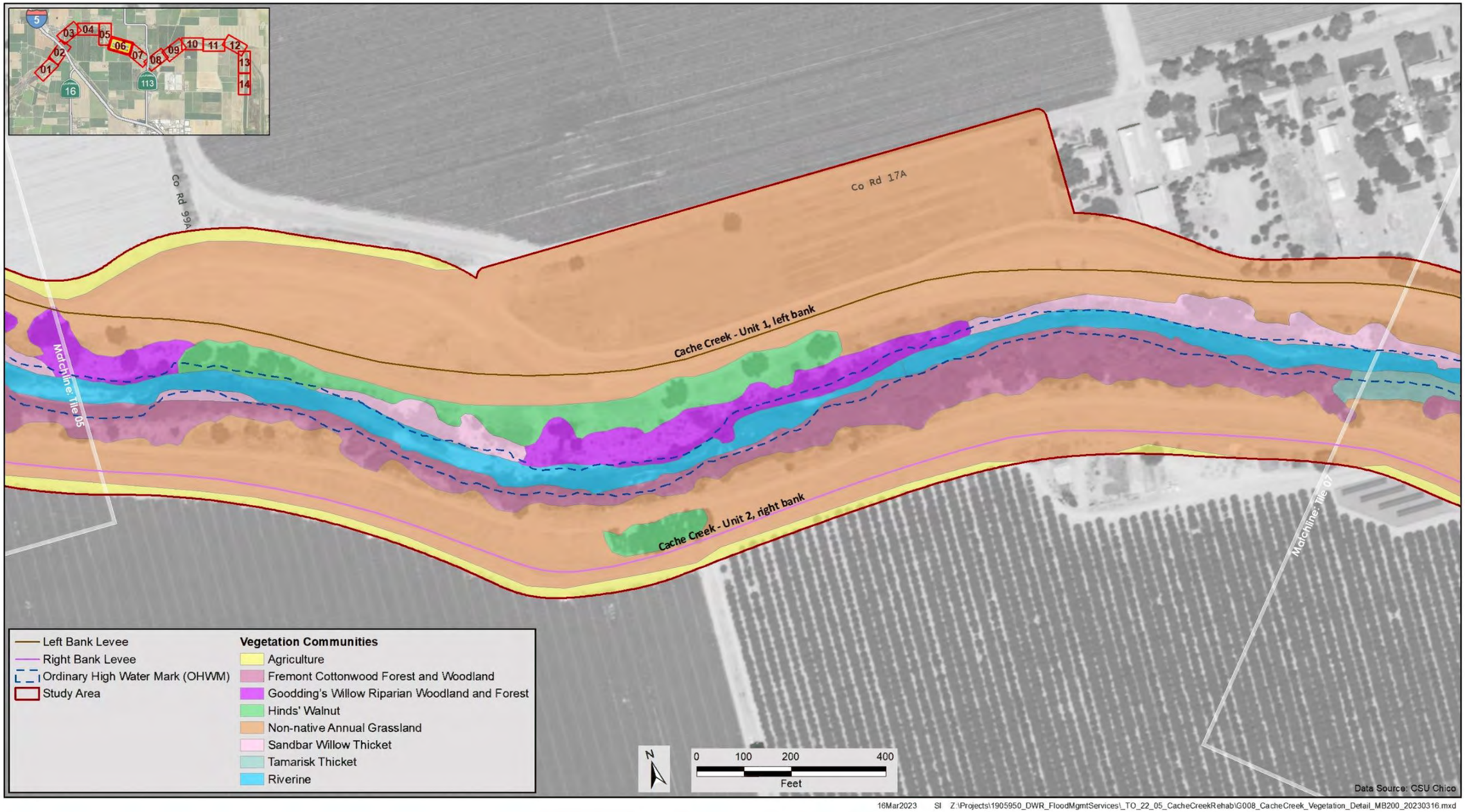
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Cache Creek - Unit 1, left bank
Cache Creek - Unit 2, right bank
Matchline: Tile 05
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Left Bank Levee
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Ordinary High Water Mark (OHWM)
Study Area
Vegetation Communities
Agriculture
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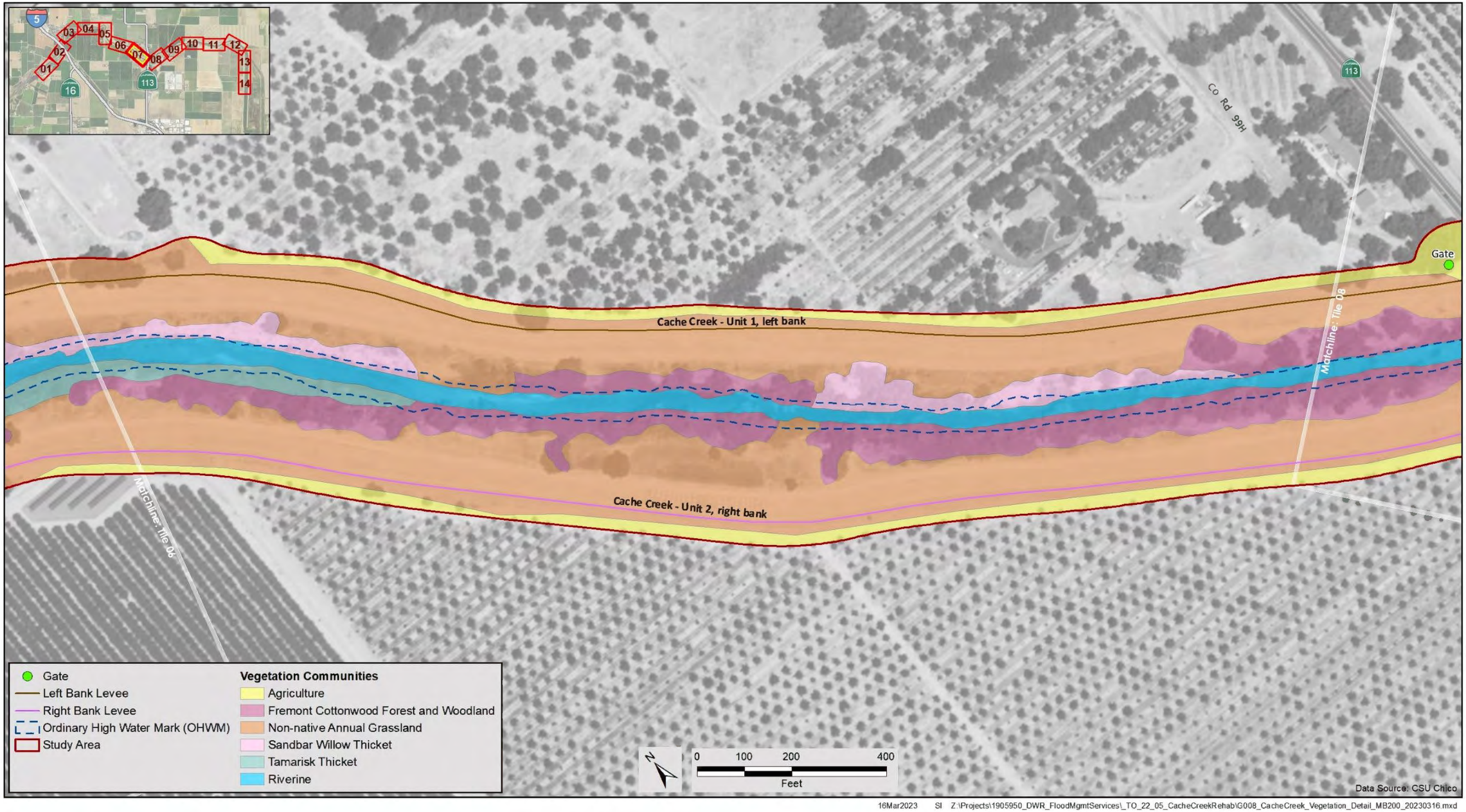
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Cache Creek - Unit 2, right bank
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Matchline: Tile 06
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Ordinary High Water Mark (OHWM)
Study Area
Vegetation Communities
Agriculture
Fremont Cottonwood Forest and Woodland
Non-native Annual Grassland
Sandbar Willow Thicket
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Data Source: CSU Chico
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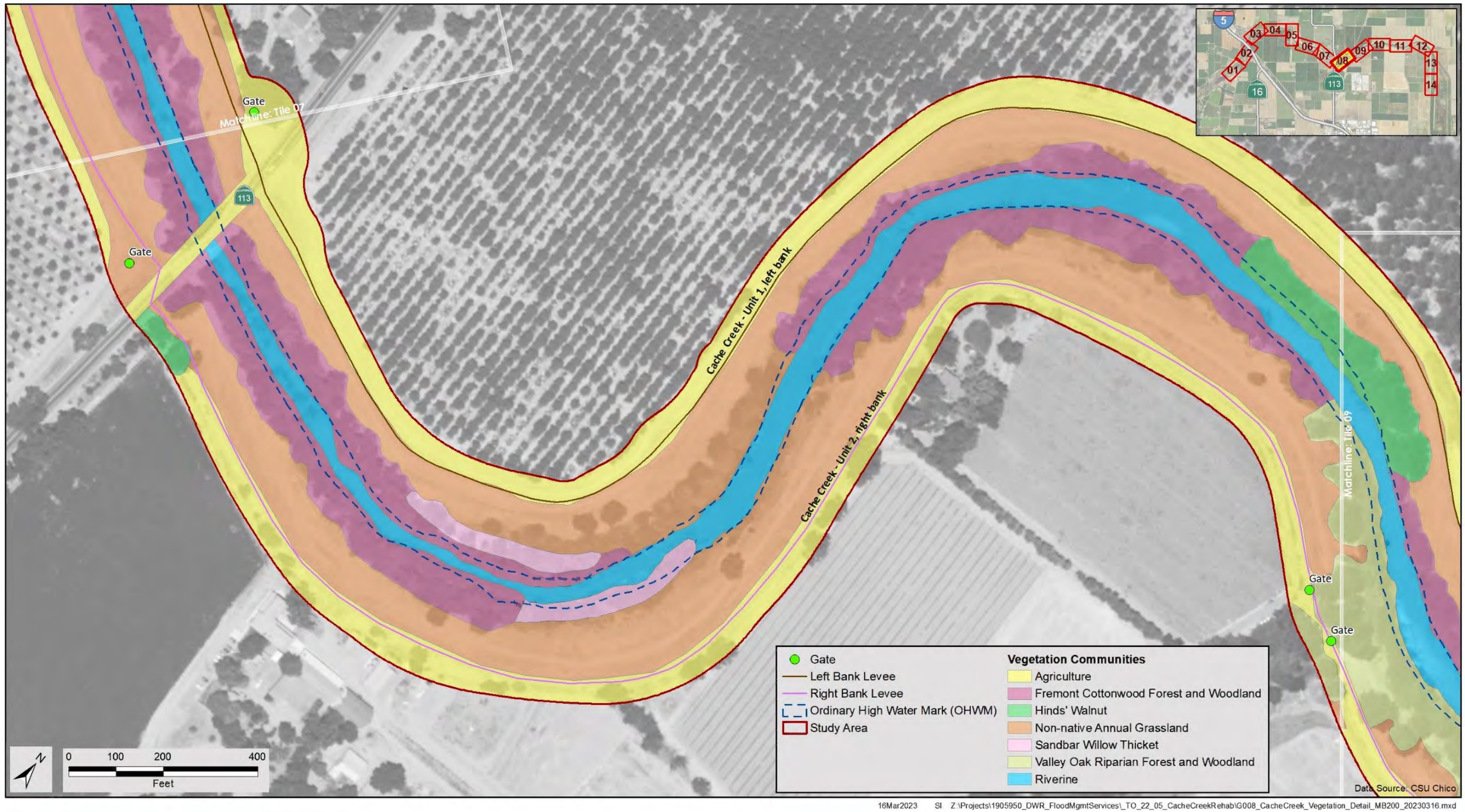
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Data Source: CSU Chico
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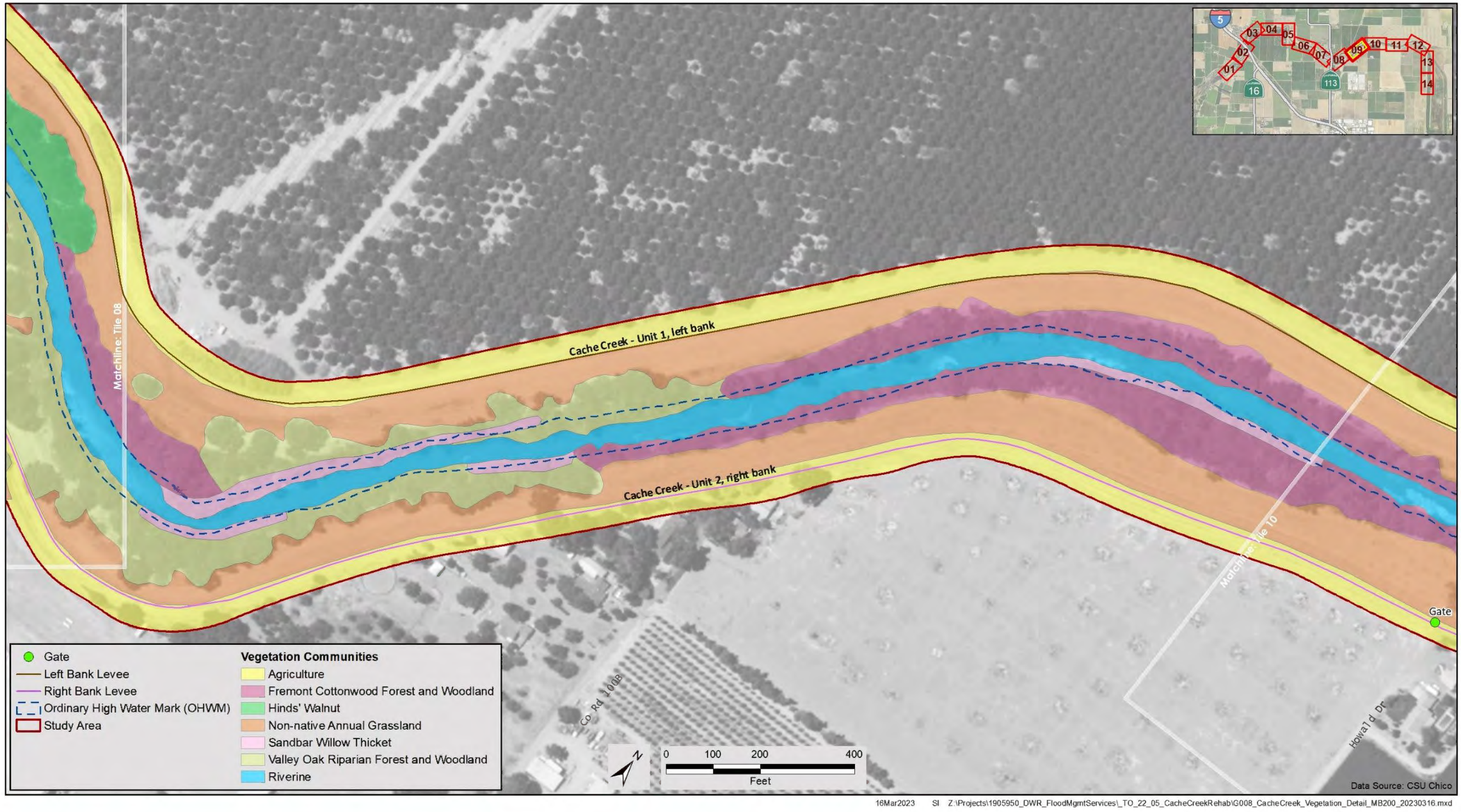
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Cache Creek - Unit 1, left bank
Cache Creek - Unit 2, right bank
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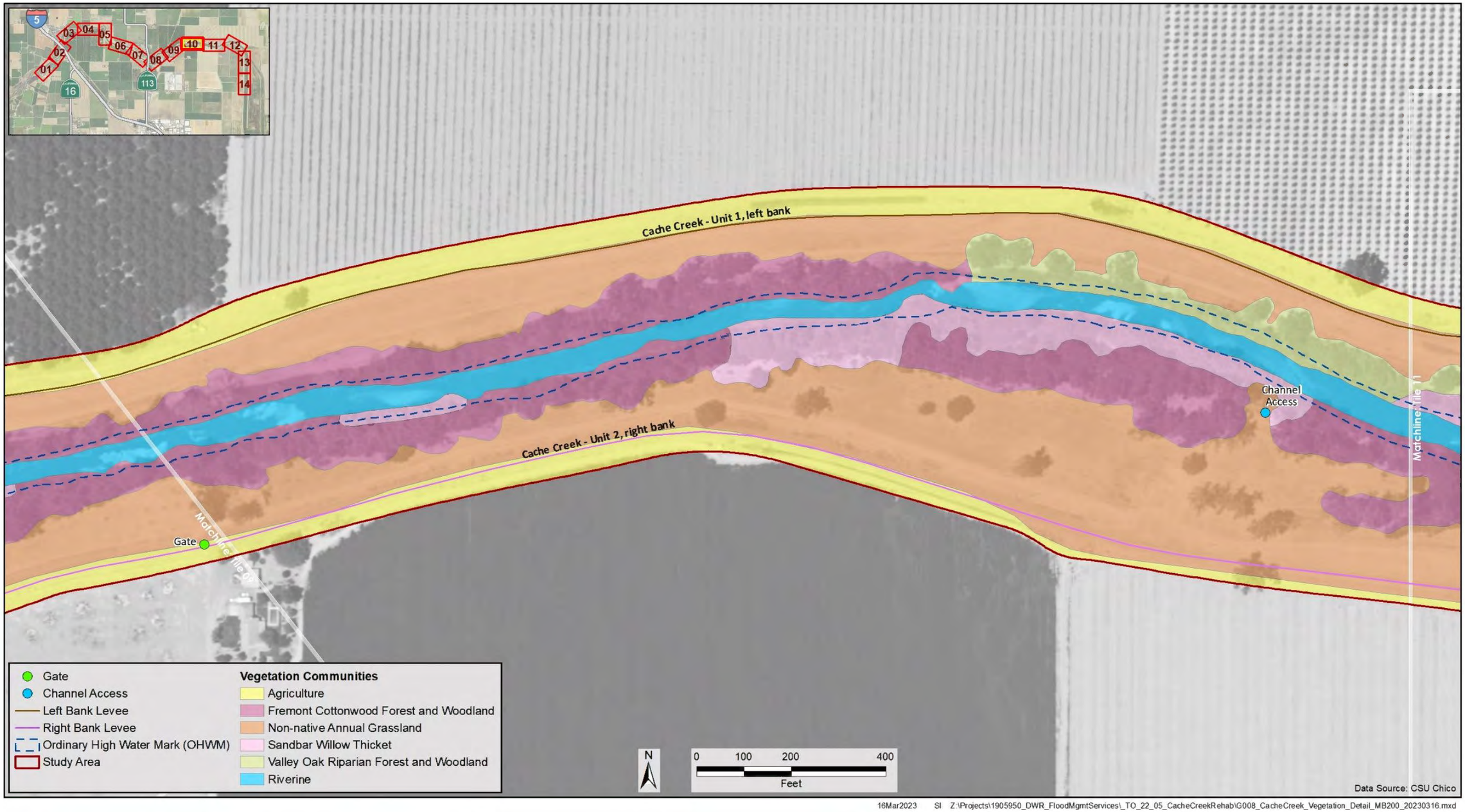
Cache Creek - Unit 1, left bank
Cache Creek - Unit 2, right bank
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Marchiness Tile 02
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Channel Access
Left Bank Levee
Right Bank Levee
Ordinary High Water Mark (OHWM)
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Valley Oak Riparian Forest and Woodland
Riverine
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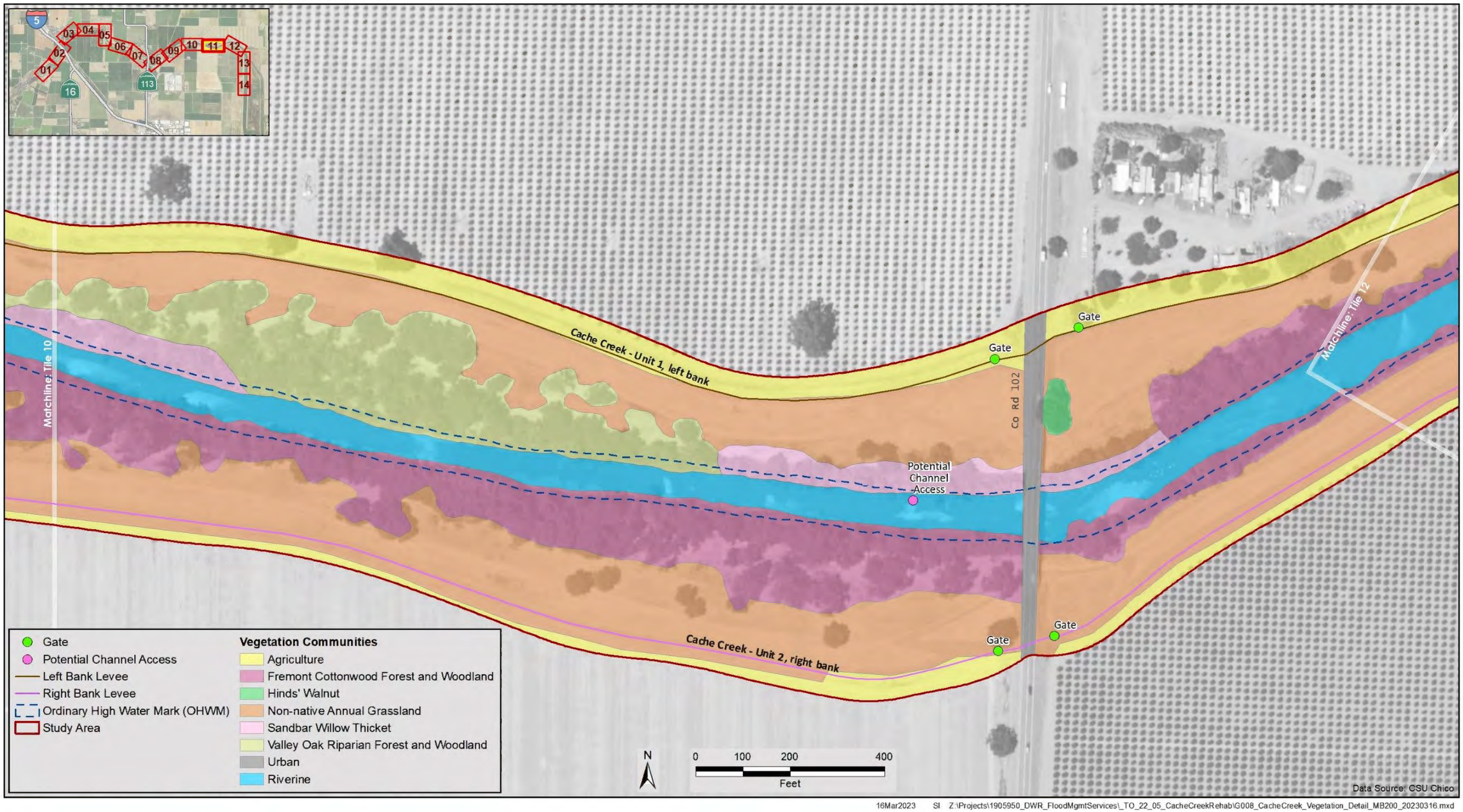
Matchline: Tile 10
Cache Creek - Unit 1, left bank
Co Rd 102
Gate
Gate
Matchline: Tile 12
Potential Channel Access
Cache Creek - Unit 2, right bank
Gate
Gate
Gate
Potential Channel Access
Left Bank Levee
Right Bank Levee
Ordinary High Water Mark (OHWM)
Study Area
Vegetation Communities
Agriculture
Fremont Cottonwood Forest and Woodland
Hinds' Walnut
Non-native Annual Grassland
Sandbar Willow Thicket
Valley Oak Riparian Forest and Woodland
Urban
Riverine
N
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Feet
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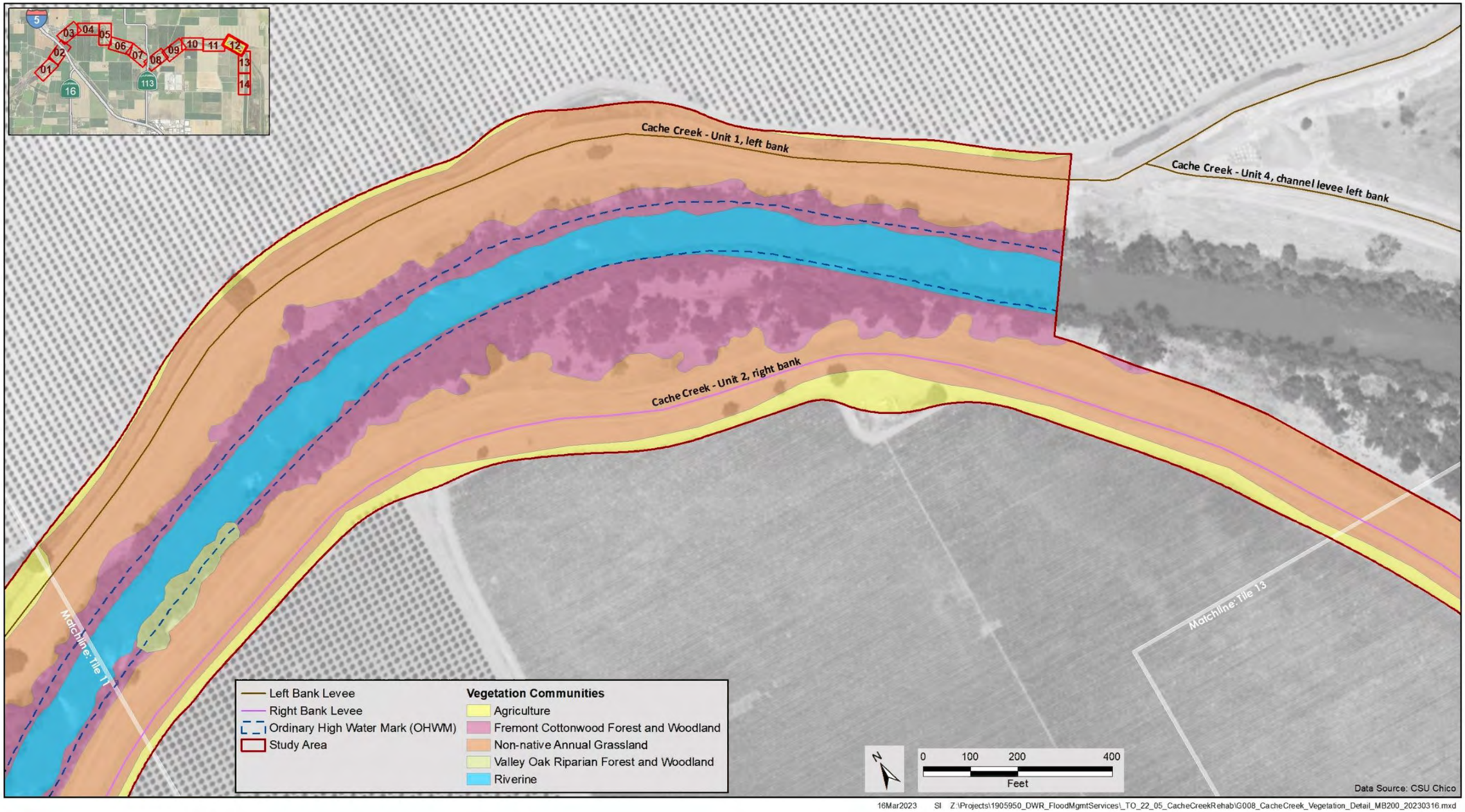
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Cache Creek - Unit 4, channel levee left bank
Cache Creek - Unit 2, right bank
Matchline: Tile 11
Matchline: Tile 13
Left Bank Levee
Right Bank Levee
Ordinary High Water Mark (OHWM)
Study Area
Vegetation Communities
Agriculture
Fremont Cottonwood Forest and Woodland
Non-native Annual Grassland
Valley Oak Riparian Forest and Woodland
Riverine
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Feet
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Cache Creek - Unit 4, channel levee left bank
Cache Creek - Unit 2, right bank
Matchline: Tile 14
Matchline: Tile 12
Left Bank Levee
Right Bank Levee
Study Area
Vegetation Communities
Agriculture
Fremont Cottonwood Forest and Woodland
Non-native Annual Grassland
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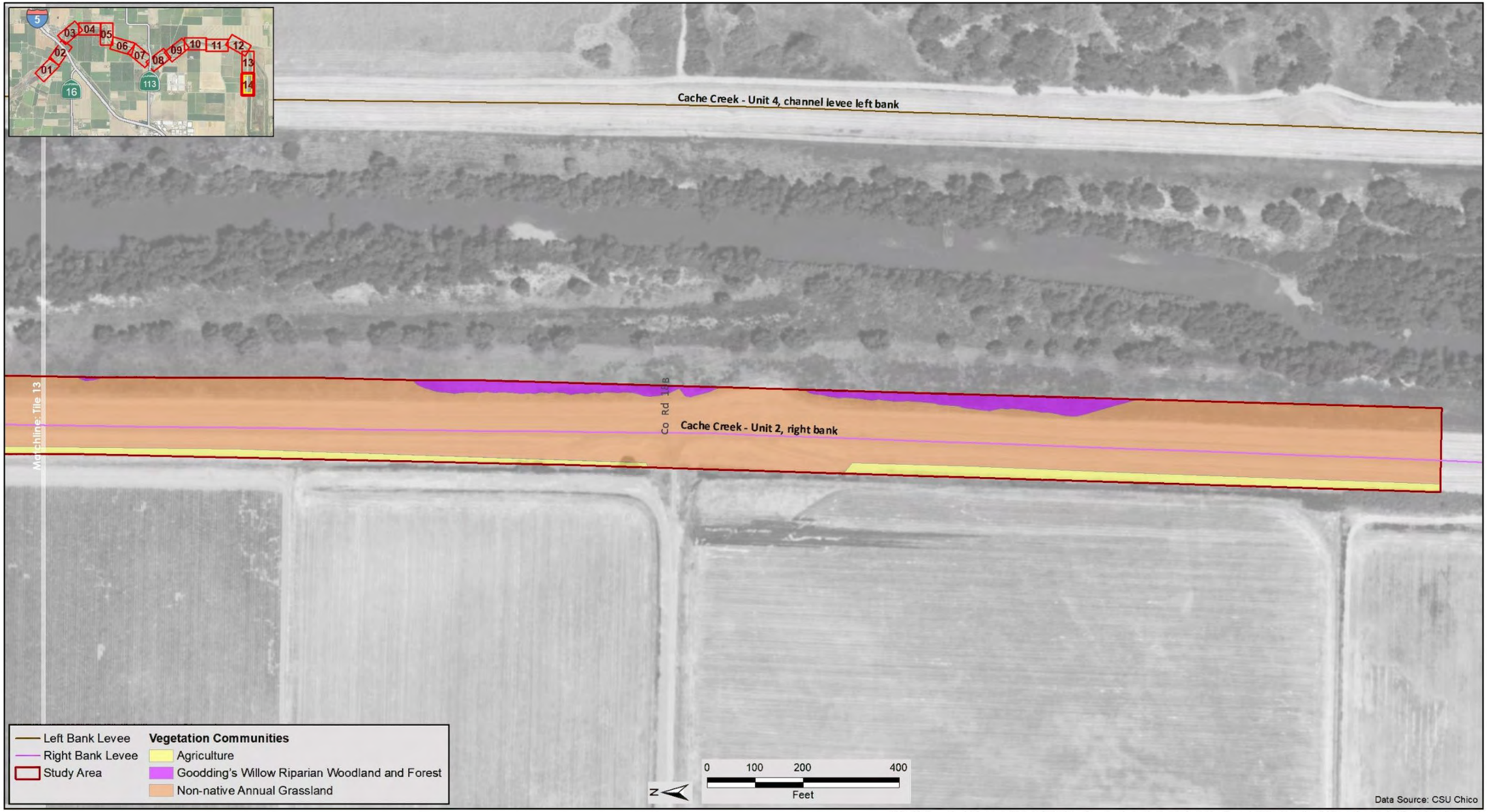
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Cache Creek - Unit 2, right bank
Co Rd 108
Mapshline: Tile 13
Left Bank Levee
Right Bank Levee
Study Area
Vegetation Communities
Agriculture
Goodding's Willow Riparian Woodland and Forest
Non-native Annual Grassland
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Feet
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C.2 Figures of Elderberry Shrubs and Invasive Species

Sheet 1 of 14. Vegetation Communities, Invasive Species, and Elderberries

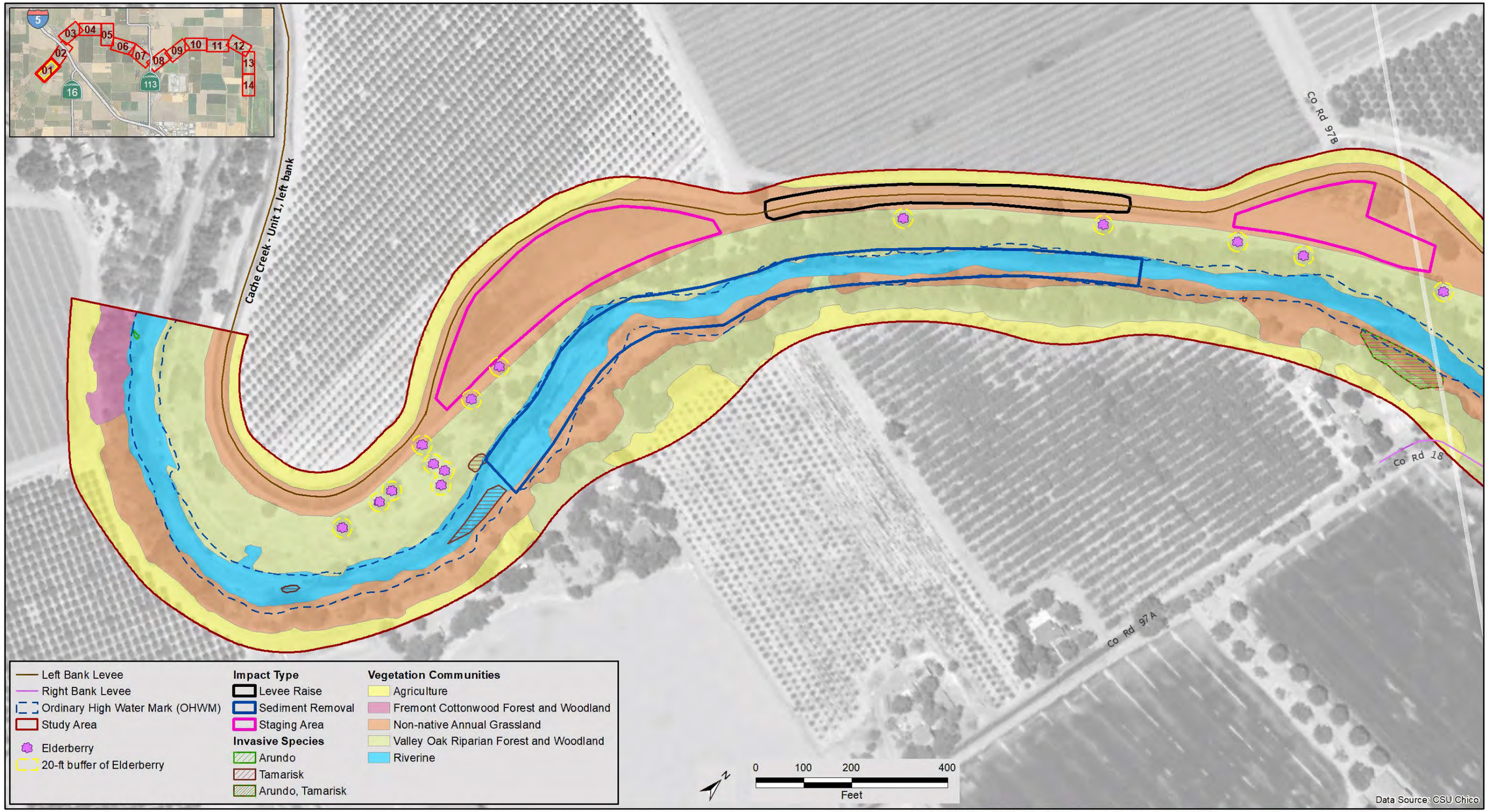
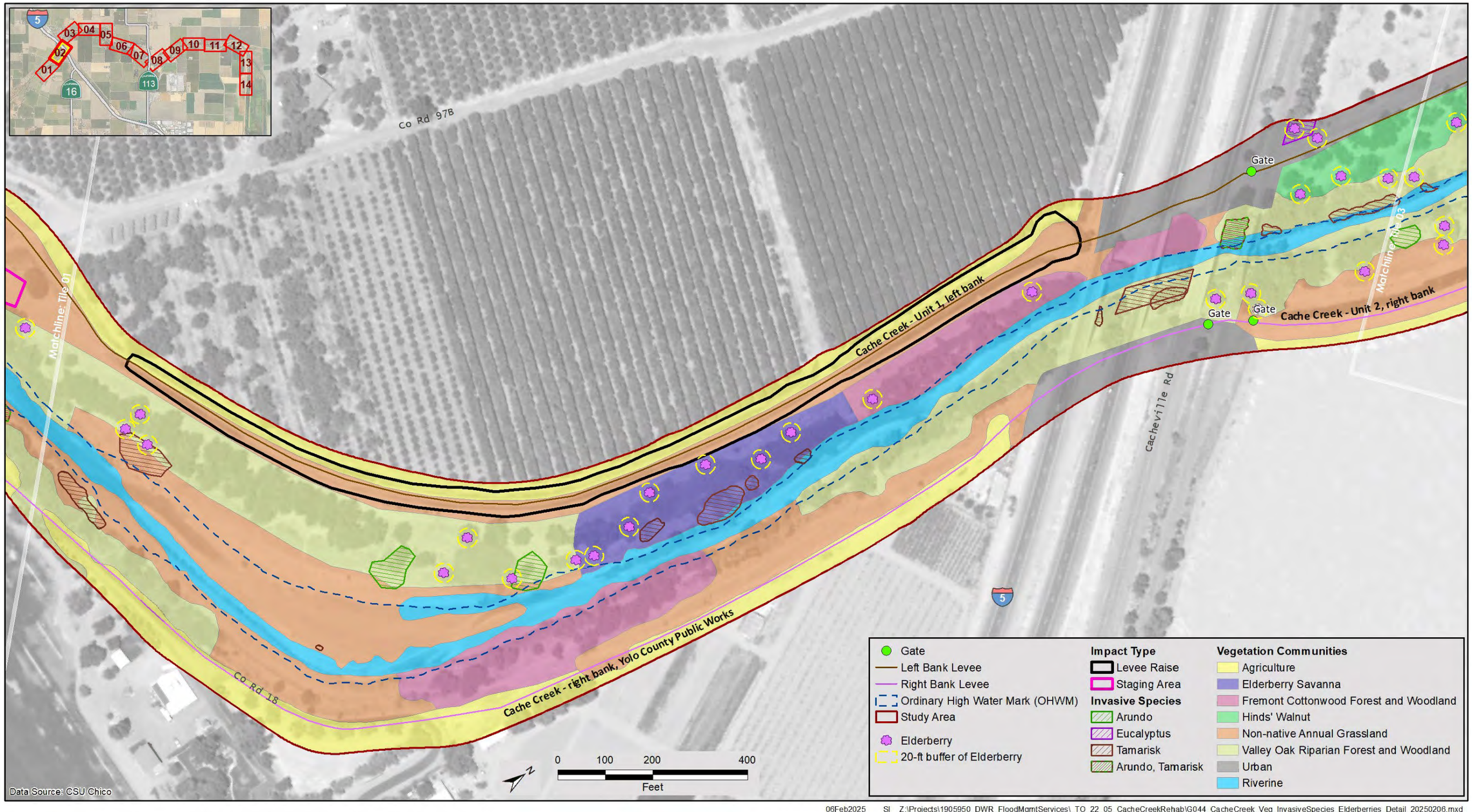


Figure Source: GEI Consultants, Inc. 2025

Sheet 2 of 14. Vegetation Communities, Invasive Species, and Elderberries



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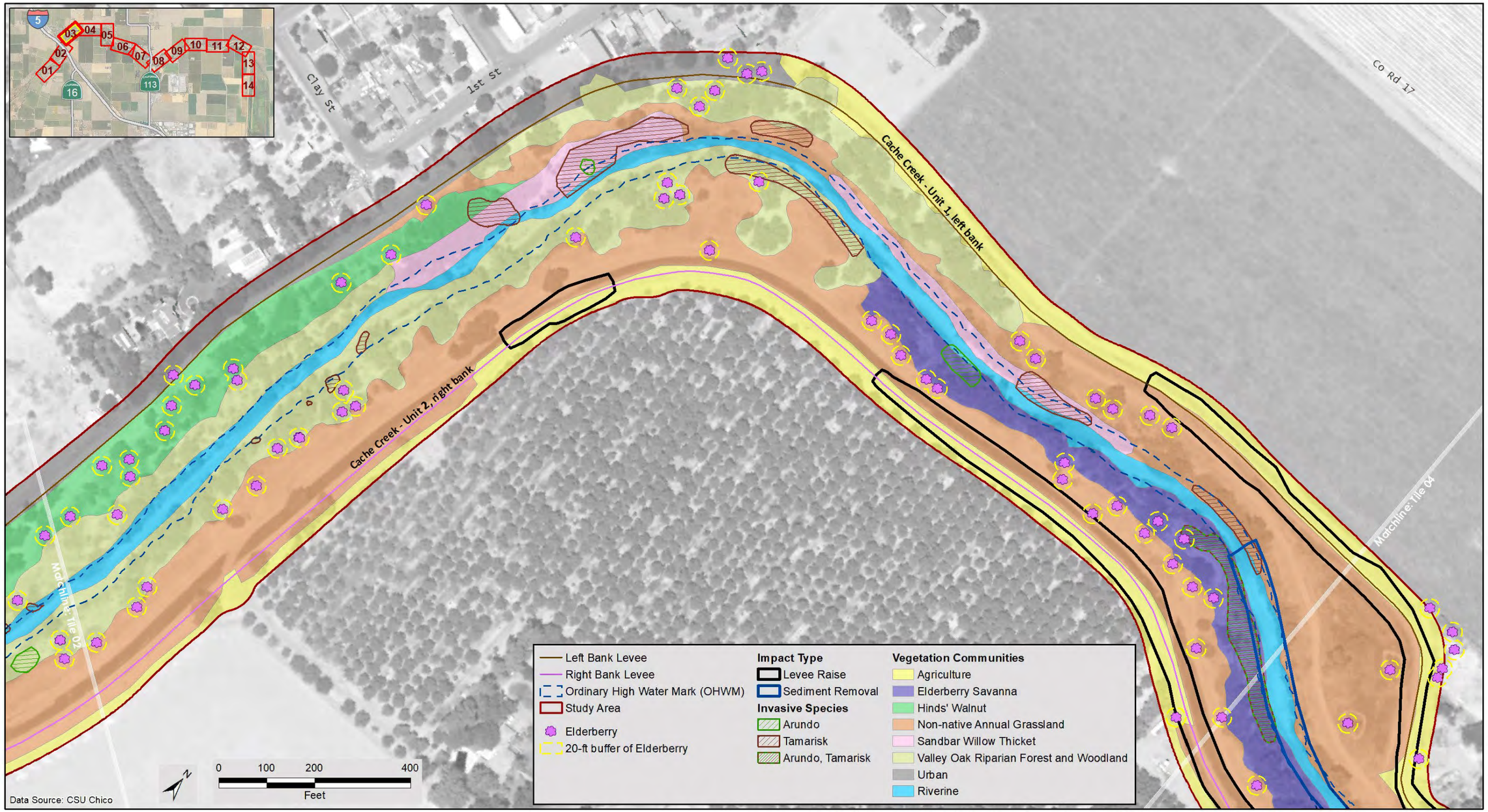
Sheet 3 of 14. Vegetation Communities, Invasive Species, and Elderberries



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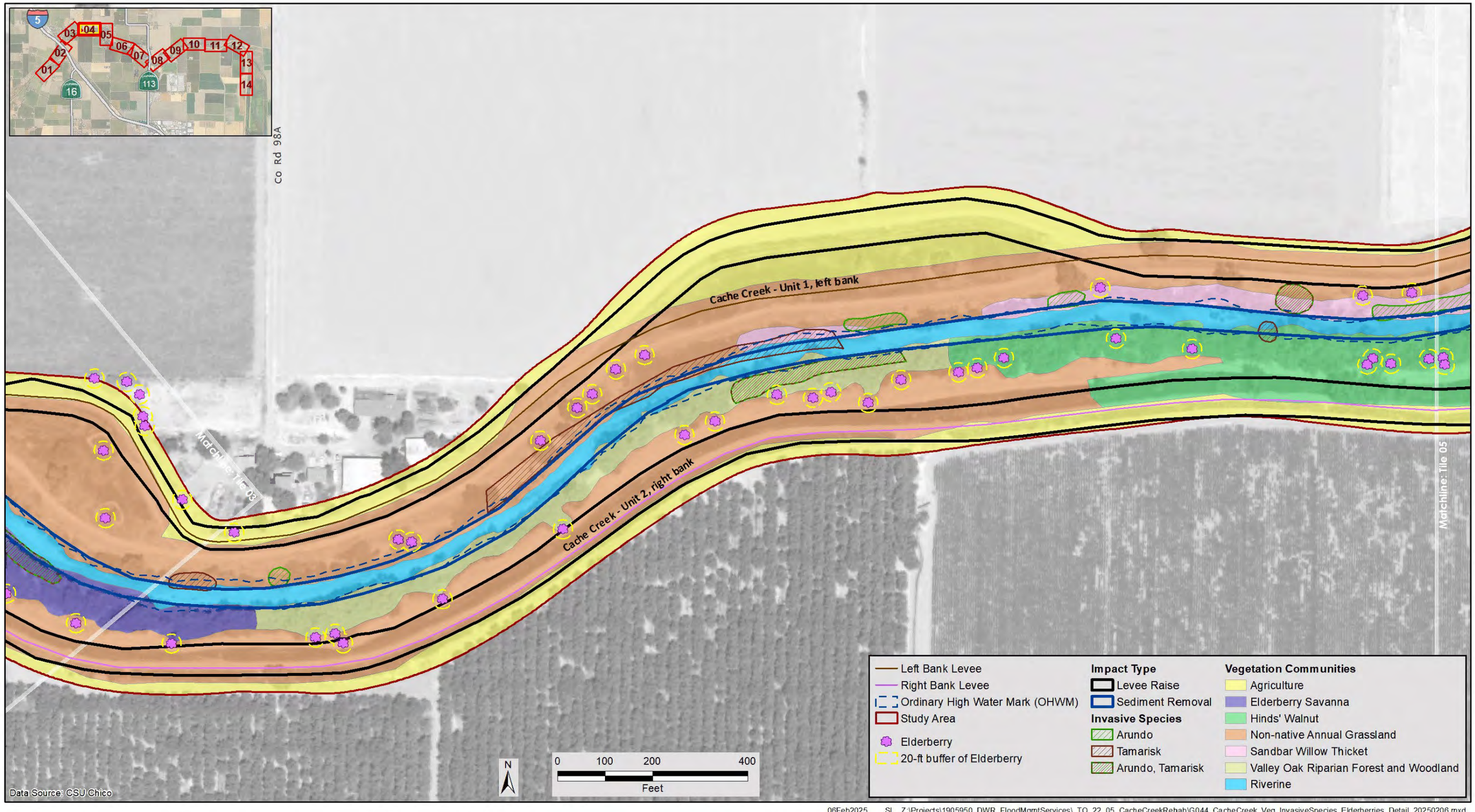
Sheet 4 of 14. Vegetation Communities, Invasive Species, and Elderberries



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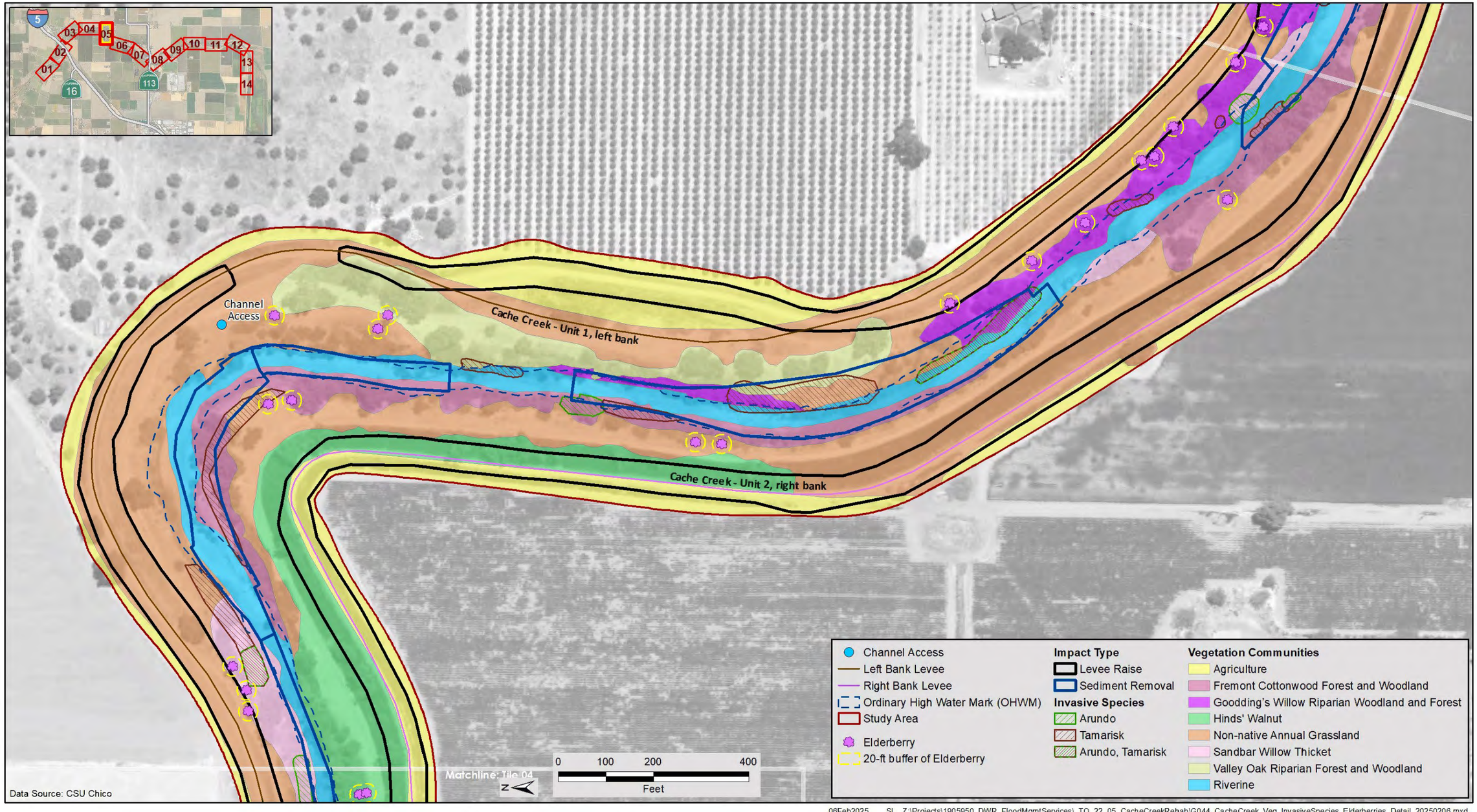
Sheet 5 of 14. Vegetation Communities, Invasive Species, and Elderberries



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Sheet 6 of 14. Vegetation Communities, Invasive Species, and Elderberries

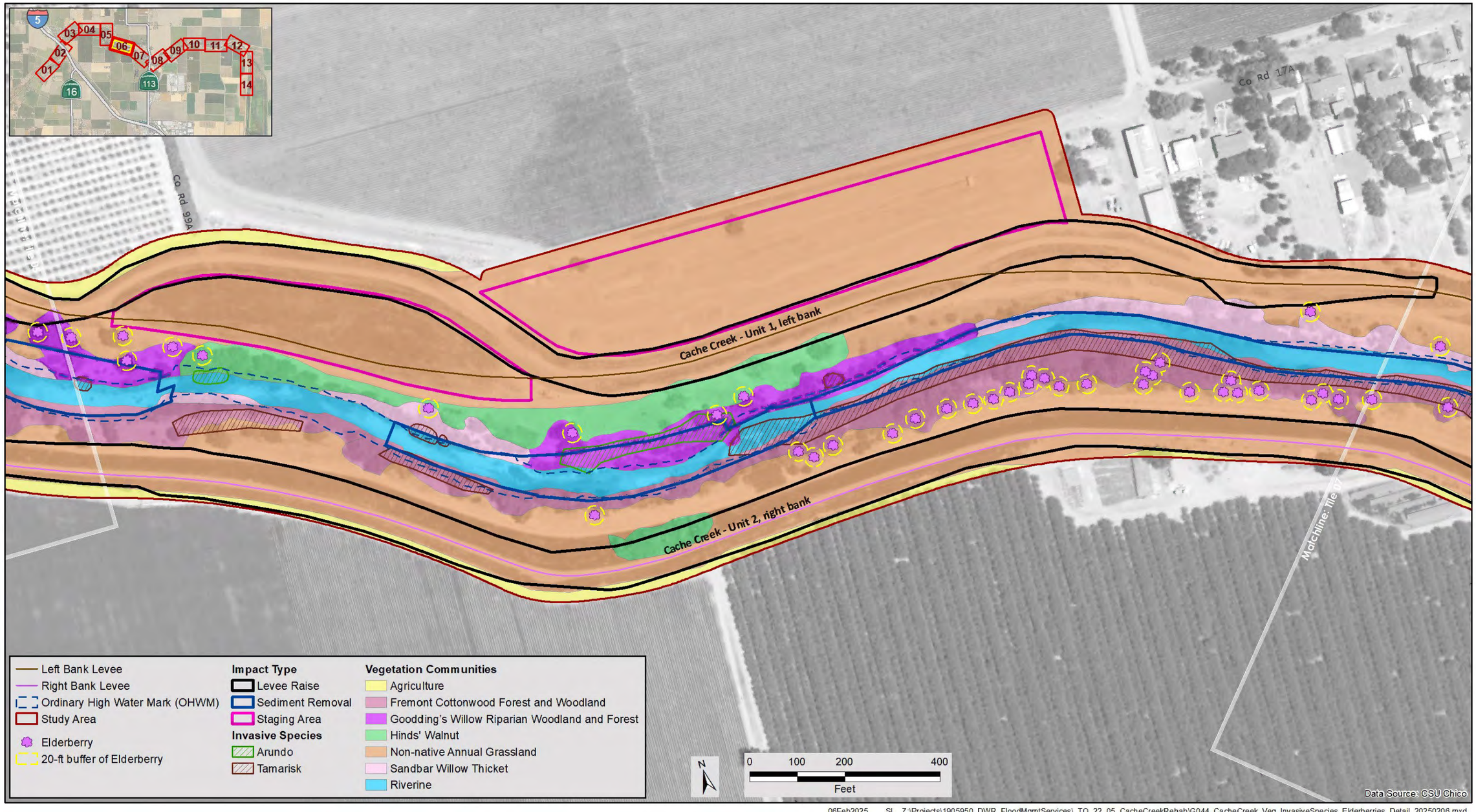


Figure Source: GEI Consultants, Inc. 2025

Sheet 7 of 14. Vegetation Communities, Invasive Species, and Elderberries

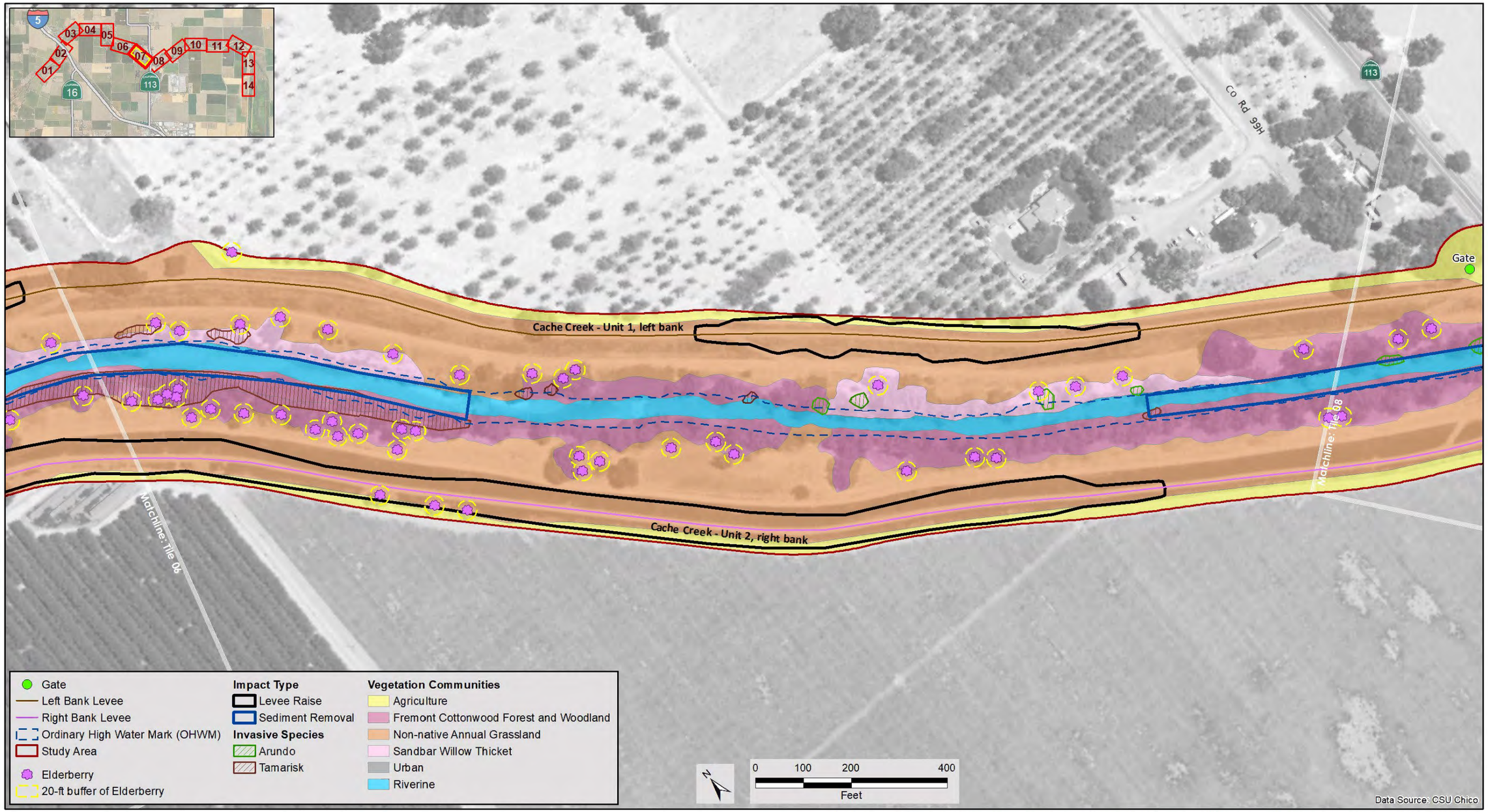


Figure Source: GEI Consultants, Inc. 2025

Sheet 8 of 14. Vegetation Communities, Invasive Species, and Elderberries

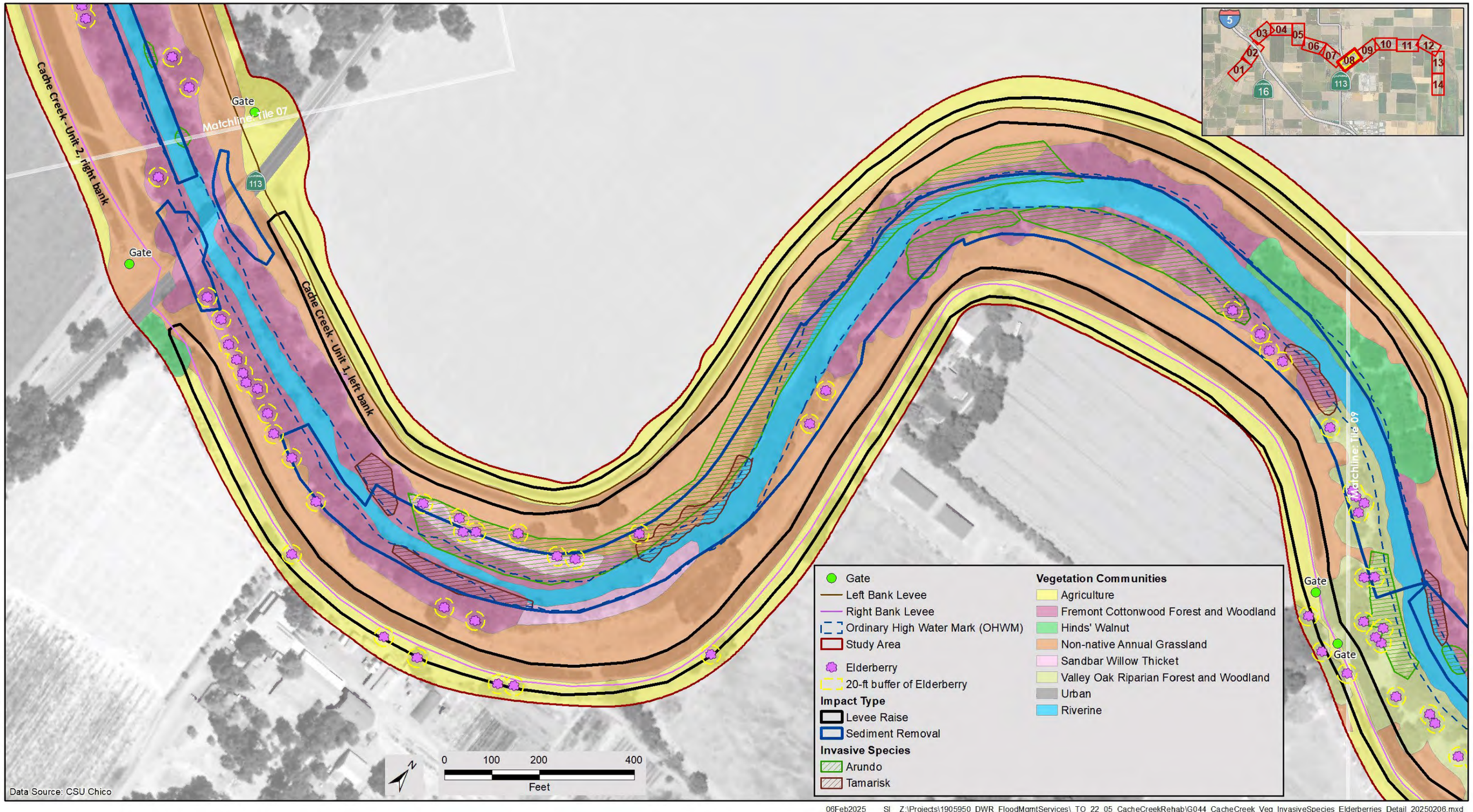
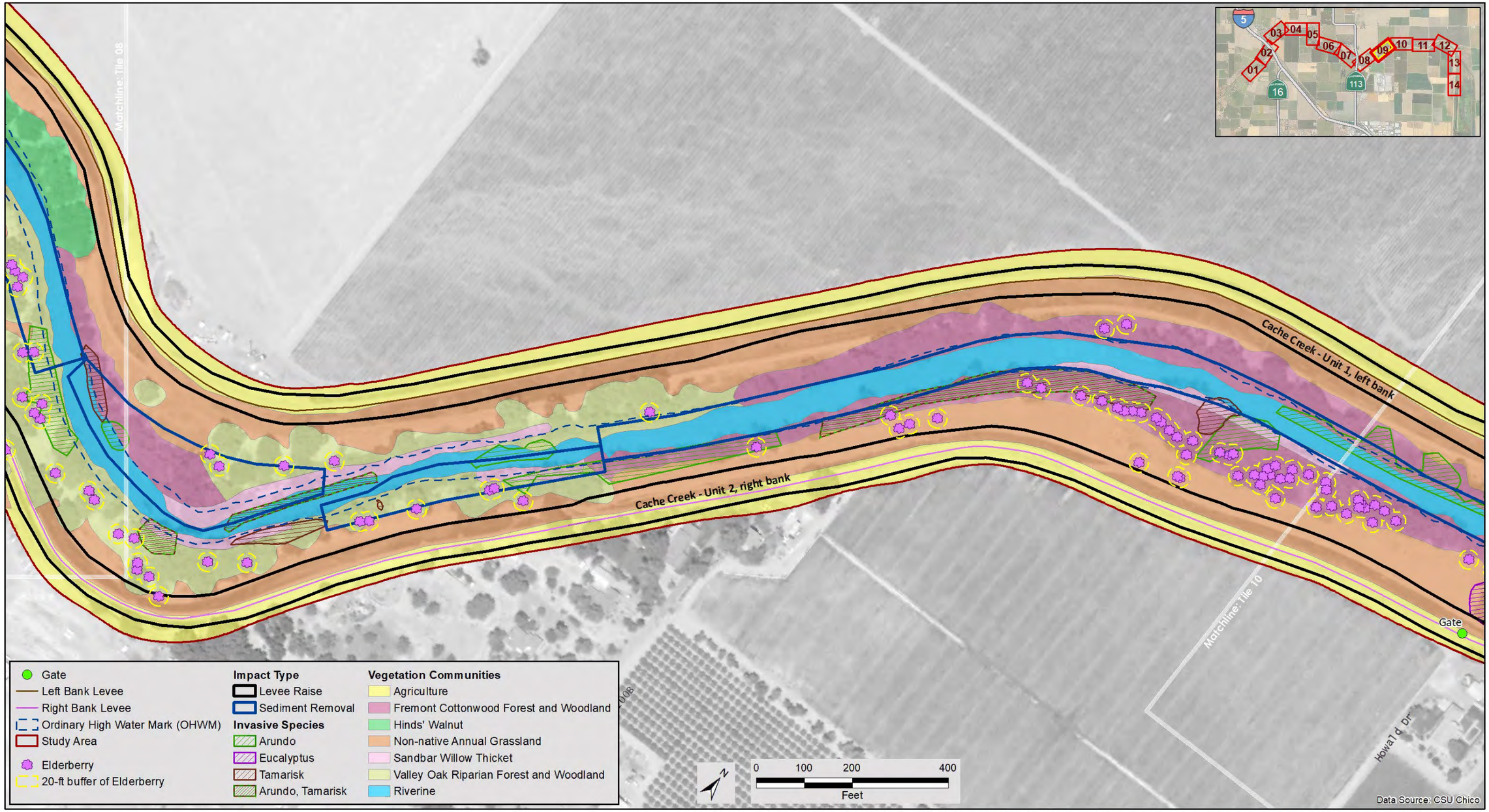


Figure Source: GEI Consultants, Inc. 2025

Sheet 9 of 14. Vegetation Communities, Invasive Species, and Elderberries



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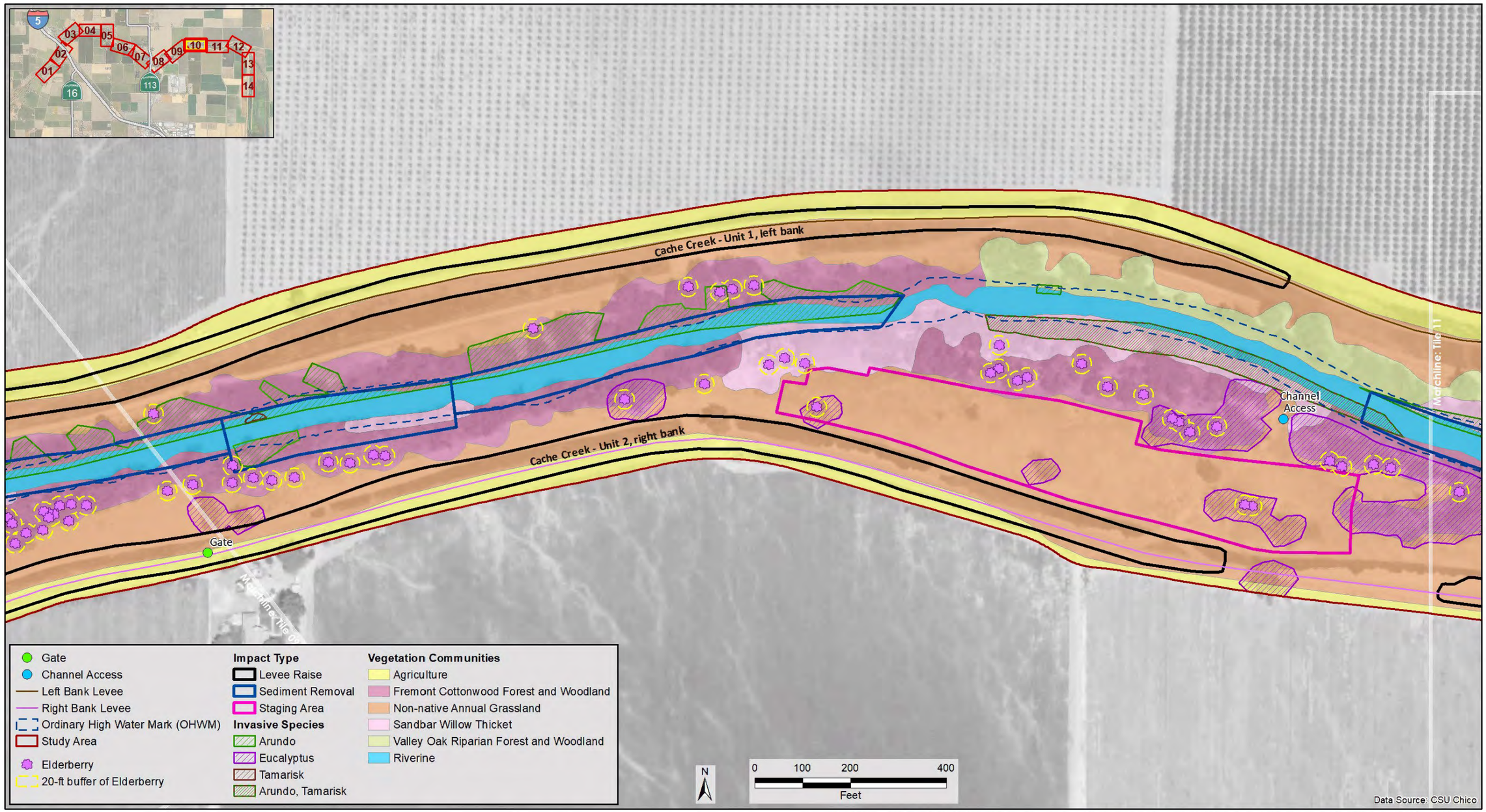
Sheet 10 of 14. Vegetation Communities, Invasive Species, and Elderberries



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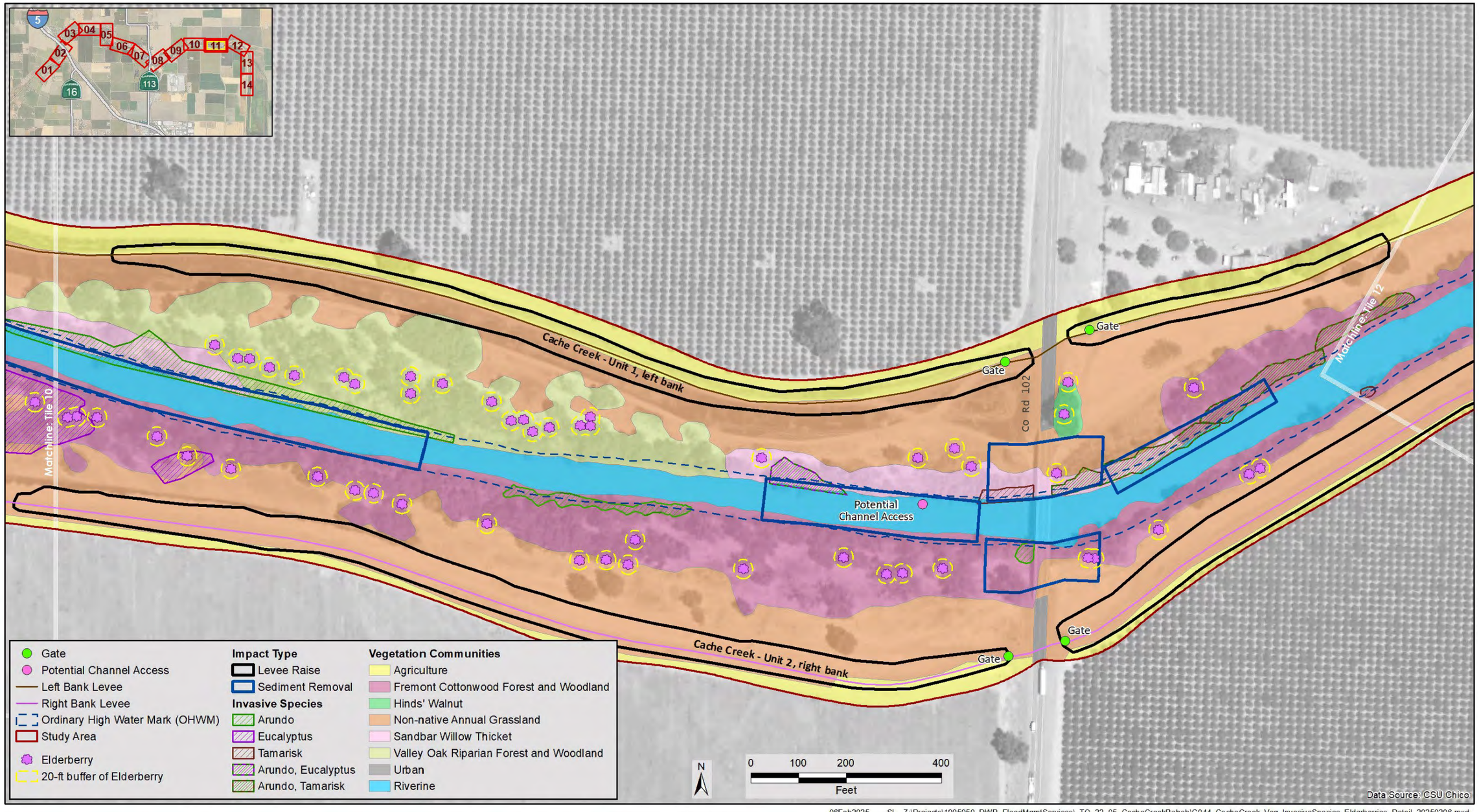
Sheet 11 of 14. Vegetation Communities, Invasive Species, and Elderberries



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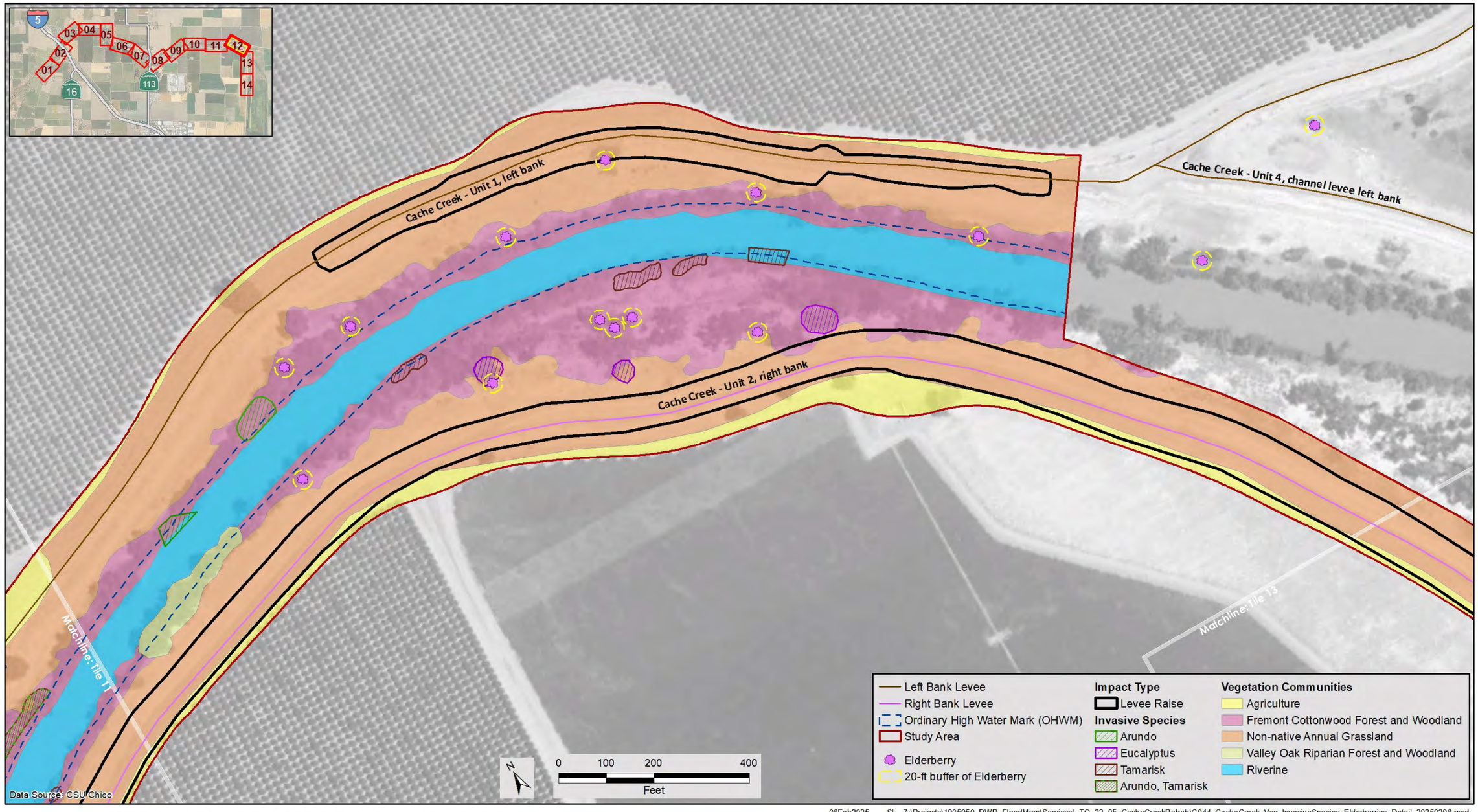
Sheet 12 of 14. Vegetation Communities, Invasive Species, and Elderberries



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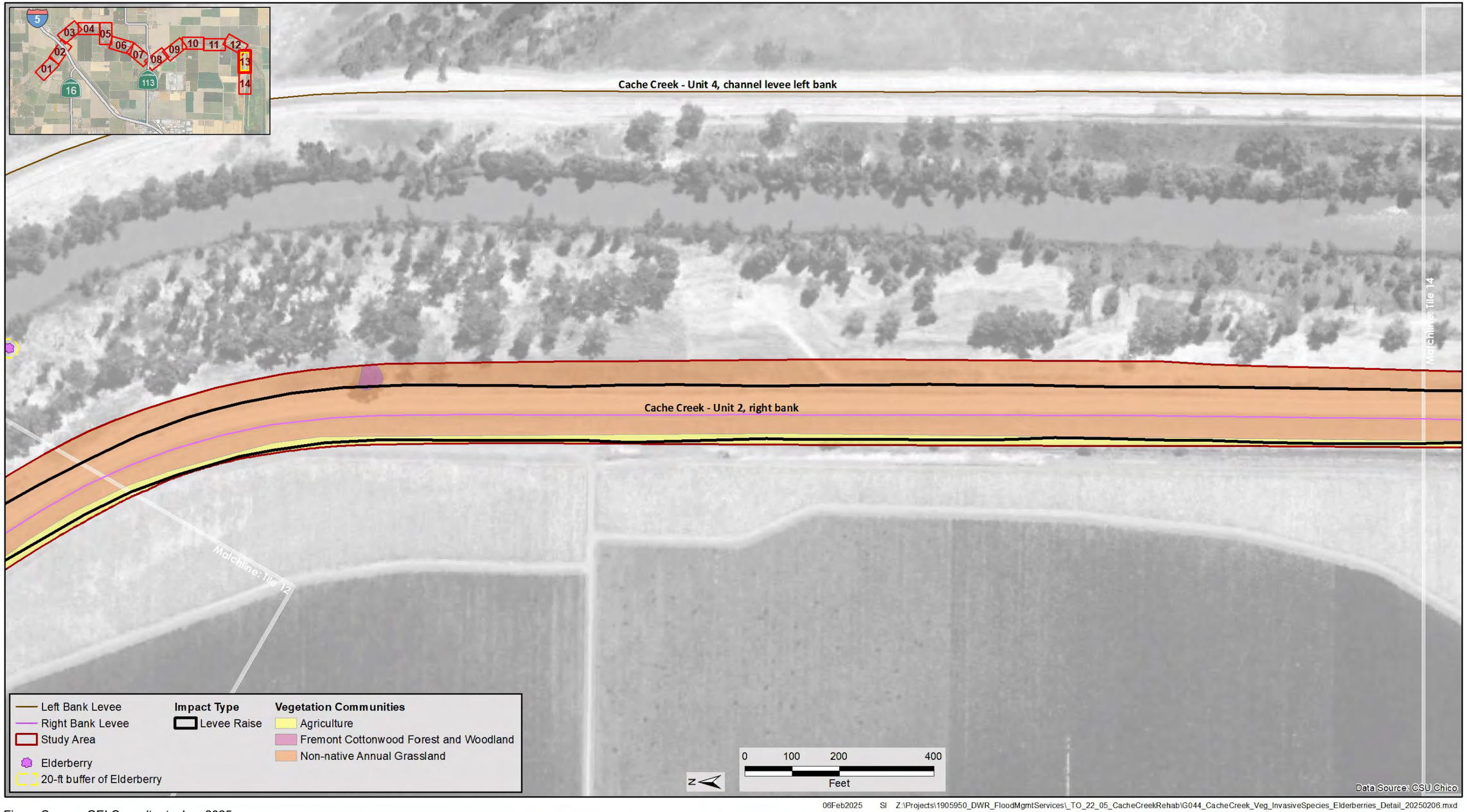
Sheet 13 of 14. Vegetation Communities, Invasive Species, and Elderberries



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Sheet 14 of 14. Vegetation Communities, Invasive Species, and Elderberries

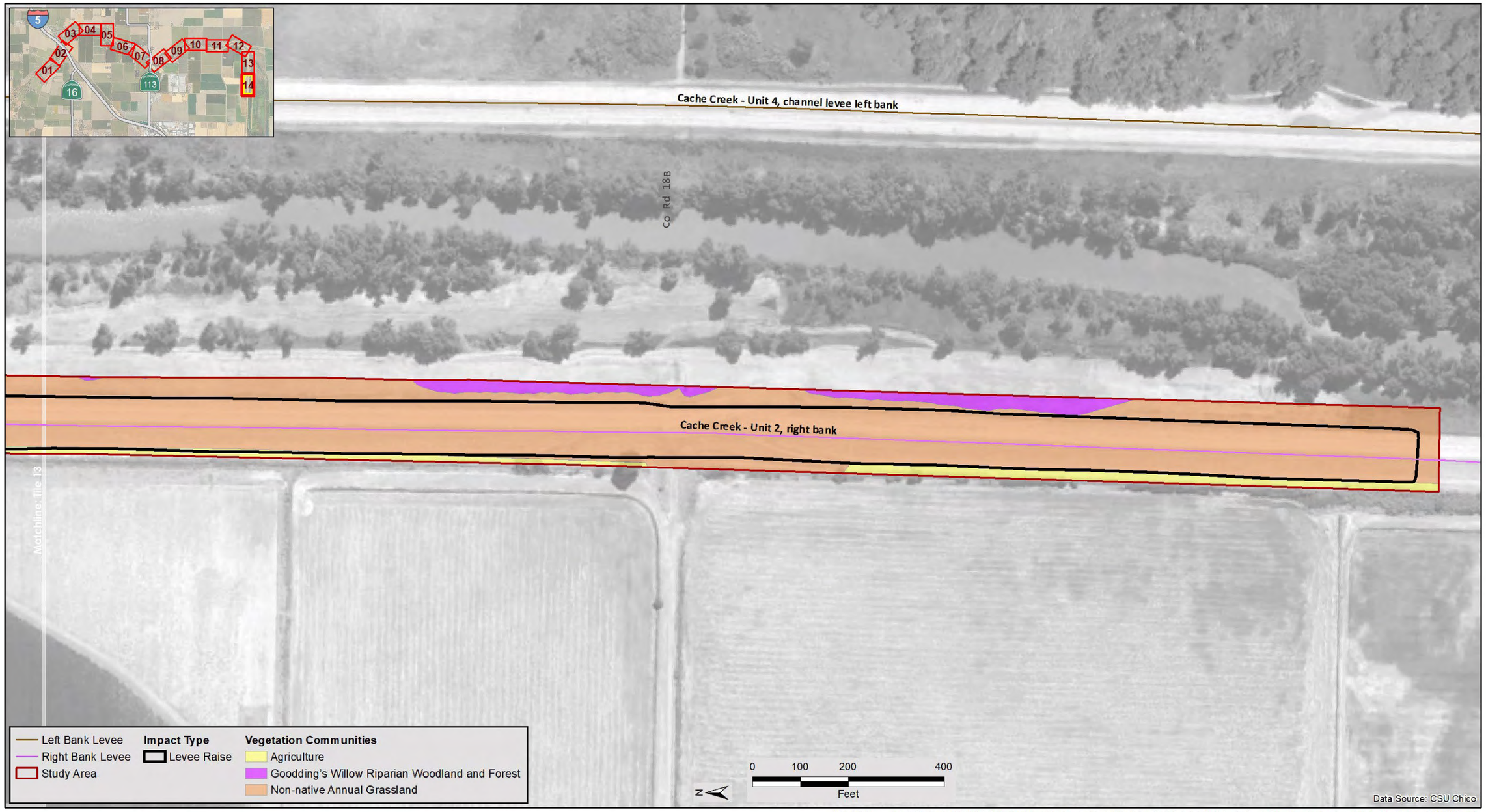


Figure Source: GEI Consultants, Inc. 2025

Appendix D. Native American Heritage Commission Correspondence

NATIVE AMERICAN HERITAGE COMMISSION

CHAIRPERSON
Laura Miranda
Luiseño

VICE CHAIRPERSON
Reginald Pagaling
Chumash

PARLIAMENTARIAN
Russell Attebery
Karuk

SECRETARY
Sara Dutschke
Miwok

COMMISSIONER
William Mungary
Paiute/White Mountain Apache

COMMISSIONER
Isaac Bojorquez
Ohlone-Costanoan

COMMISSIONER
Buffy McQuillen
Yokayo Pomo, Yuki, Nomlaki

COMMISSIONER
Wayne Nelson
Luiseño

COMMISSIONER
Stanley Rodriguez
Kumeyaay

EXECUTIVE SECRETARY
Raymond C. Hitchcock
Miwok/Nisenan

NAHC HEADQUARTERS
1550 Harbor Boulevard
Suite 100
West Sacramento,
California 95691
(916) 373-3710
nahc@nahc.ca.gov

April 4, 2022

Amy Wolpert
GEI Consultants, Inc.

Via Email to: awolpert@geiconsultants.com

Re: Cache Creek Slough (1905950) Project, Yolo County

Dear Ms. Wolpert:

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

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

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

If you have any questions or need additional information, please contact me at my email address: Pricilla.Torres-Fuentes@nahc.ca.gov.

Sincerely,

Pricilla Torres-Fuentes
Cultural Resources Analyst

Attachment

Native American Heritage Commission
Native American Contact List
Yolo County
4/4/2022

Cachil Dehe Band of Wintun Indians of the Colusa Indian Community
Daniel Gomez, Chairman
3730 Highway 45 — Wintun
Colusa, CA, 95932
Phone: (530) 458 - 8231
dgomez@colusa-nsn.gov

Cachil Dehe Band of Wintun Indians of the Colusa Indian Community
Clifford Mota, Tribal Preservation Liaison
3730 Highway 45 — Wintun
Colusa, CA, 95932
Phone: (530) 458 - 8231
cmota@colusa-nsn.gov

Cortina Rancheria - Kletsel Dehe Band of Wintun Indians
Charlie Wright, Chairperson
P.O. Box 1630 — Wintun
Williams, CA, 95987
Phone: (530) 473 - 3274
Fax: (530) 473-3301

Shingle Springs Band of Miwok Indians
Regina Cuellar, Chairperson
P.O. Box 1340 — Maidu
Shingle Springs, CA, 95682 — Miwok
Phone: (530) 387 - 4970
Fax: (530) 387-8067
rcuellar@ssband.org

United Auburn Indian Community of the Auburn Rancheria
Gene Whitehouse, Chairperson
10720 Indian Hill Road — Maidu
Auburn, CA, 95603 — Miwok
Phone: (530) 883 - 2390
Fax: (530) 883-2380
bguth@auburnrancheria.com

Wilton Rancheria
Jesus Tarango, Chairperson
9728 Kent Street — Miwok
Elk Grove, CA, 95624
Phone: (916) 683 - 6000
Fax: (916) 683-6015
jtarango@wiltonrancheria-nsn.gov

Wilton Rancheria
Steven Hutchason, THPO
9728 Kent Street — Miwok
Elk Grove, CA, 95624
Phone: (916) 683 - 6000
Fax: (916) 863-6015
shutchason@wiltonrancheria-nsn.gov

Wilton Rancheria
Dahlton Brown, Director of Administration
9728 Kent Street — Miwok
Elk Grove, CA, 95624
Phone: (916) 683 - 6000
dbrown@wiltonrancheria-nsn.gov

Yocha Dehe Wintun Nation
Yvonne Perkins, THPO, Cultural Resources Chairman
P.O. Box 18 — Patwin
Brooks, CA, 95606
Phone: (530) 796 - 3400
thpo@yochadehe-nsn.gov

Yocha Dehe Wintun Nation
Anthony Roberts, Chairperson
P.O. Box 18 — Patwin
Brooks, CA, 95606
Phone: (530) 796 - 3400
thpo@yochadehe-nsn.gov

Yocha Dehe Wintun Nation
Laverne Bill, Director of Cultural Resources
P.O. Box 18 — Patwin
Brooks, CA, 95606
Phone: (530) 796 - 3400
thpo@yochadehe-nsn.gov

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

This list is only applicable for contacting local Native Americans with regard to cultural resources assessment for the proposed Cache Creek Slough (1905950) Project, Yolo County.

Appendix E. Technical Memorandum: Cache Creek Channel and Levee Rehabilitation Draft Environmental Impact Report Hydrology Impact Analysis on Sedimentation in the Cache Creek Settling Basin

Technical Memorandum

11010 White Rock Road, Suite 200 ● Rancho Cordova, CA 95670 ● 916-631-4500

To:	Jeff Schuette, Senior Environmental Scientist California Department of Water Resources, Division of Flood Maintenance
From:	Erick Cooke Chris Kissick, PE
cc:	Ryan Jolley, Michael Conant
Date:	August 13, 2024
Re:	Cache Creek Channel and Levee Rehabilitation (proposed project) Draft Environmental Impact Report (DEIR) Hydrology Impact Analysis on Sedimentation in the Cache Creek Settling Basin (CCSB)
Project No.:	1905950

Introduction

The Cache Creek Channel and Levee Rehabilitation Project (proposed project) would reduce flood risk to lands in Yolo County by restoring the design flood conveyance capacity along an approximately 9-mile-long reach of Cache Creek (referred to as the project reach) by removing sediment along with vegetation and slightly raising levee elevations at selected locations. The purpose of this Technical Memorandum (TM) is to assess potential impacts on the useful life of the Cache Creek Settling Basin (CCSB) from the proposed project. The proposed project would increase flows through the project reach of Cache Creek from the existing capacity of approximately 25,000 cubic feet per second (cfs) to the intended design criteria flow of 30,000 cfs.

Methodology

To assess the potential impact on the CCSB, previous studies available from University of California (UC) at Davis (2020) and the Central Valley Regional Water Quality Control Board (CVRWQCB) (2004) were consulted to calculate the sediment production in Cache Creek and the settling efficiency within the CCSB. Additionally, a physical ratio analysis from GEI (2024) was used to adjust the settling efficiency change due to the training levee degrade which occurred within the basin in 2021. The ratio analysis adjusted settling efficiency (SE) is based on changes in shear stress, flow depth, and flow path/settling length that was determined using the U.S. Army Corps of Engineers Hydrologic Engineering Center's River Analysis System (HEC-RAS) software model. This analysis utilized five individual flow paths within the basin to determine the relative changes along each path and calculated a weighted SE change for the overall basin. This flow path analysis was done for 2,000, 11,000, and 25,000 cfs within the basin to analyze the SE change for a low, medium, and high flow through the basin. Note that 25,000 cfs is a relatively common flow event based on observed flow history, approximately a one-in-seven year event, but it is near the capacity of the levee and basin system. In turn, higher flows were not analyzed as the flow dynamics upstream of the basin will likely change significantly above 30,000 cfs. Sediment production totals based on Cache Creek flows are shown in **Figure 1**. Settling efficiency for pre-2021

conditions is shown in **Figure 2**, which shows the expected total suspended solids (TSS) inflow and outflow as a function of flow rates in the blue and red trendlines, respectively. The TSS outflow can be divided by the TSS inflow and then be subtracted from the total (i.e., 100% of flows) to determine the SE. Adjusted SE for the post-2021 training levee degrade conditions are shown in **Table 1**.

The sediment production and SE were then converted into long-term averages using U.S. Geological Survey (USGS) flow gage data. The Cache Creek at Yolo gage (USGS Gage No. 11452500) provides flow data entering the levee system from November, 1987, to May, 2022 (34.5 years); this data spans the majority of time the basin has been in operation since its inception in 1983. Using the time series, the flow could be converted into sediment production using the values in **Figure 1** and the sediment deposition within the basin could be determined with the values in **Table 1**. Two scenarios were analyzed to assess the potential for the proposed project to change the remaining lifetime of the CCSB (i.e., remaining sediment storage capacity):

1. Existing conditions, where flows up to 25,000 cfs enter the CCSB and any flow above that rate leaves the system and does not contribute sediment to the basin.
2. Future conditions, where flows above 25,000 cfs are captured.

Total deposited sediment was calculated for each scenario over the period of record and then converted into a long-term annual average. It should be noted that flows only exceeded 25,000 cfs in seven of the years of record.

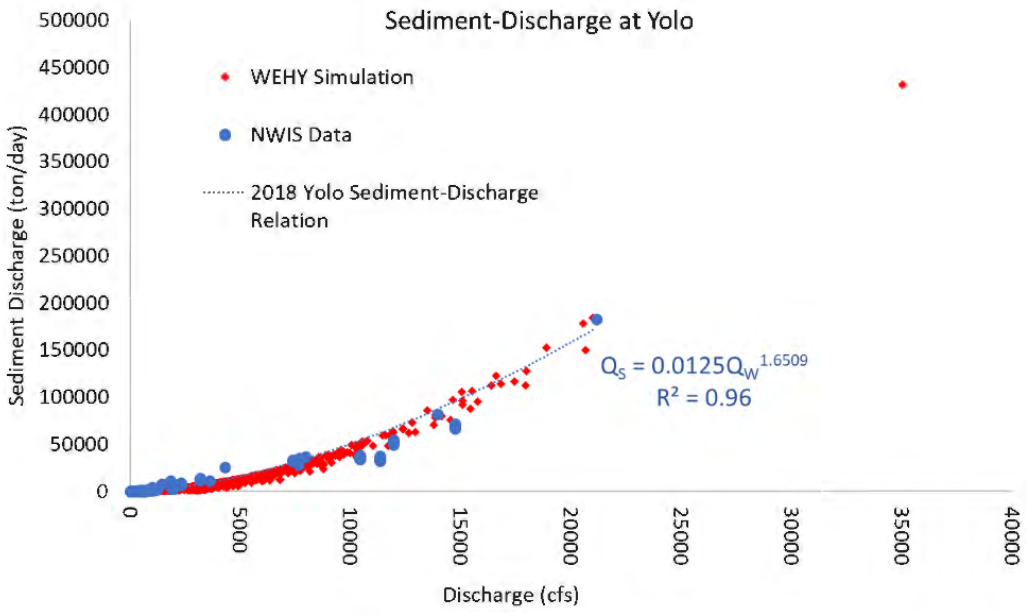


Figure 11. Sediment-discharge at Cache Creek at Yolo, instantaneous suspended sediment measurements from 1986 - 2018, power trendline, and WEHY simulation results.

Figure 1: Sediment Discharge Vs Cache Creek Flow, Cache Creek at Yolo Gage (UCD, 2020)

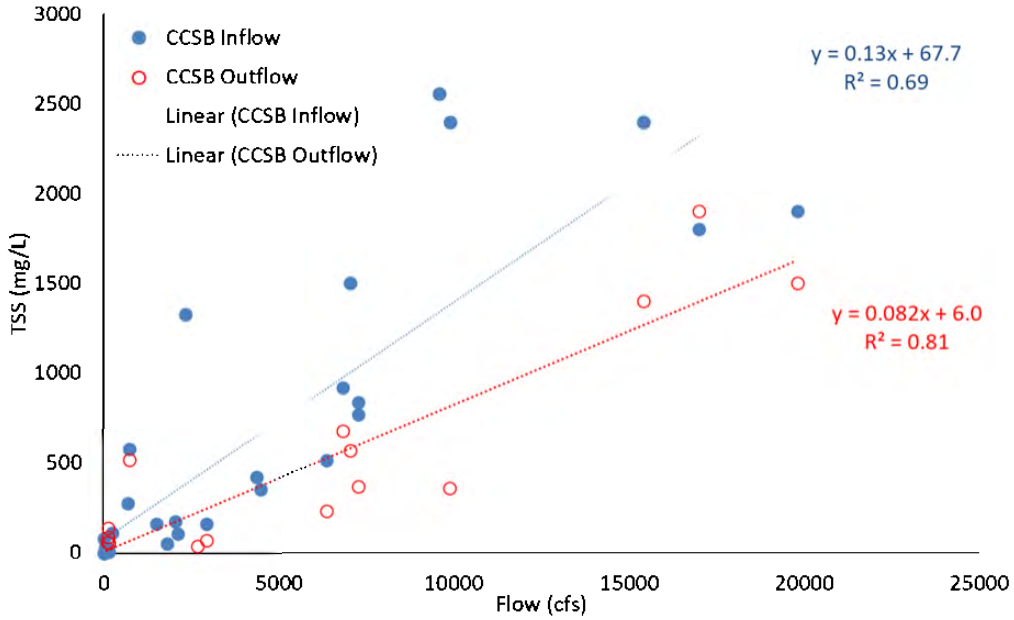


Figure 14. TSS to Flow regression for Cache Creek Settling Basin Inflow and Outflow, reproduced from CVRWQCB (2004).

Figure 2: CCSB Total Suspended Sediment Inflow and Outflow vs Flow (UCD, 2020)

Table 1: CCSB Settling Efficiency (Post 2021 training levee degrade)

Flow (cfs)	Settling Efficiency (%)
0.0001	100
1	99
100	83
500	65
2,000	55
11,000	44
25,000	42
100,000	42

Results

The results from comparing the two scenarios are presented in **Table 2**. Sediment deposition within the CCSB only increased 0.53% over the 34.5-year period, and additional total deposition of 22 acre-feet (AF) of sediment over this time. Using the annual deposition rates and the existing sediment storage behind the weir (approximately 1,517 AF extracted from 2019 LiDAR), the potential decrease in remaining storage capacity would only be reduced by approximately 0.6% in terms of capacity over the remaining estimated storage capacity lifetime of the CCSB.

This analysis is intended to be a comparative assessment of potential changes in average annual sediment deposition and is not intended to estimate exact changes in sediment loads. This analysis assumes that the sediment loads entering the CCSB are the same before and after the proposed project

is completed. Further, this analysis is a basic comparison of existing data and does not use a sediment transport model and is limited in accuracy but is a representation of the scale of the proposed project's potential impact on the sediment storage capacity in the CCSB using the best scientific data available.

Finally, it should be noted that the lifetime of the CCSB was only designed for a total of 50 years, and it is likely that improvements will be made to the basin over the next 25 years to increase settling efficiency and extend the useful life and operation of the basin. Levee raises upstream will have an even smaller affect once changes to the CCSB are implemented.

Table 2: CCSB Sediment Deposition Comparison - Existing Conditions Vs Proposed Conditions

Scenario	Total Sediment Deposition (Tons)	Total Sediment Deposition (AF)	Annual Sediment Deposition (Tons/yr)	Annual Sediment Deposition (AF/yr)	Percent Increase Total	Percent Increase Annual
Proposed Conditions - Flows Above 25kcfs	8,139,595	4,070	235,930	117.97	0.53%	0.53%
Existing Conditions - Flows Below 25kcfs	8,096,426	4,048	234,679	117.34	-	-

References

CVRWQCB (2004), *Cache Creek, Bear Creek, and Harley Gulch TMDL for Mercury, Central Valley Regional Water Quality Control Board*. September 2004.

GEI Consultants, Inc. (2024), *Cache Creek Settlement Basin Feasibility Study.* GEI Consultants, Inc. for CA Department of Water Resources = Division of Flood Management.

University of California Davis (2020), *Study of Sediment Inflow into the Cache Creek Settling Basin Based on Cache Creek Watershed Hydrology, Sediment and Flow Reconstruction, and Select Routing of Flow and Sediment through the Cache Creek Settling Basin.* UCD J.A. Hydraulics Laboratory for CA Dept. of Water Resources – Division of Flood Management.

Appendix F. Memorandum: Climate Change Mitigation, Adaptation, and Resilience Analysis for the Cache Creek Channel and Levee Rehabilitation Project

Memorandum

To: Jeff Schuette and Serena Stumpf (DWR)

From: Ryan Jolley, Erick Cooke, and Jenifer King (GEI)

Date: January 27, 2025

Subject: Climate Change Mitigation, Adaptation, and Resilience Analysis for the Cache Creek Channel and Levee Rehabilitation Project

GEI Project 1905950, 2205

1. Introduction

The California Department of Water Resources (DWR) is proposing the Cache Creek Channel and Levee Rehabilitation Project (project or proposed project). The proposed project would restore the original U.S. Army Corps of Engineers (USACE) design flood conveyance capacity along an approximately 9-mile-long reach of Cache Creek (referred to as the project reach) by removing sediment along with vegetation and slightly raising levee elevations at selected locations. The project reach is in unincorporated Yolo County adjacent to the Town of Yolo, within 2 miles north of the City of Woodland and about 4.5 miles west of the Sacramento River.

This Memorandum was prepared to address the DWR's internal policies and will be included as an appendix to the Draft EIR for the proposed project. DWR's Climate Action Plan (CAP), Phase 2: Climate Change Analysis Guidance established policies for considering climate change issues in the California Environmental Quality Act (CEQA). This Memorandum satisfies Policy No. 5 by providing information about how the proposed project will:

- help meet the challenges posed by climate change,
- make California more resilient or adaptable to climate changes, and
- function to improve the project area's resiliency and/or ability to adapt to extreme climate events or shifts in climate

Additionally, DWR conducted an analysis consistent with Assembly Bill (AB) 2800 requirements to consider current and future impacts from climate change when planning, designing, building, operating, maintaining, and investing in state infrastructure, which is included as **Attachment 1** to this Memorandum.

Organization

This Memorandum provides background on climate change related to the proposed project, by summarizing relevant climate change science, issues, and trends related to the project region (i.e., the northern Central Valley) and the project design. This document also analyzes aspects of the proposed project as it relates to climate change mitigation, resilience, and adaptation. The information in this Memorandum is organized into the following sections:

1. **Introduction.** Discusses the intent and organization of this Memorandum, along with definition of key climate change terminology.

2. **Background Information.** Describes the proposed project and DWR's CAP.
3. **Relevant Climate Change Issues.** Provides a discussion of climate change science on issues relevant to the proposed project.
4. **Climate Change Mitigation, Adaptation, and Resilience Analysis.** Provides an analysis of the proposed project related to climate change to answer specific DWR CAP questions related to climate change mitigation, adaptation, and resilience.
5. **References.** Provides complete references for information sources cited within this memorandum.

Terms

The following terms are used in this chapter. The definitions shown here are provided by the California Natural Resources Agency's (CNRA) Safeguarding California Plan: 2018 Update (CNRA 2018).

- **Climate change.** Generally refers to a change in the state of the climate that can be identified by changes in the mean and/or variability of its properties and that persists for an extended period, typically decades or longer.
- **Climate change scenarios.** A plausible and often simplified representation of the future climate, based on an internally consistent set of climatological relationships that has been constructed for explicit use in investigating the potential consequences of anthropogenic climate change, often serving as input to impact models. Climate projections often serve as the raw material for constructing climate scenarios, but climate scenarios usually require additional information such as the observed current climate.
- **Climate change adaptation.** Adjustment in natural or human systems in response to actual or expected climatic stimuli or their effects, which moderates harm or exploits beneficial opportunities.
- **Climate change mitigation.** A human intervention to reduce the human impact on the climate system; it includes strategies to reduce greenhouse gas (GHG) sources and emissions and enhancing greenhouse gas sinks.
- **Climate change resilience.** The ability of a system to resist or quickly rebound from the harm caused by a climate impact. "Resilience" refers to the ability to prepare for and adapt to changing conditions and withstand and recover rapidly from disruption. Climate adaptation, when successful, creates climate resilience.

2. Project and Analysis Background

Proposed Project Overview

Cache Creek drains an area of approximately 1,139 square miles in Lake, Colusa, and Yolo Counties. Cache Creek is a component of the Sacramento River Flood Control Project, serving as the sole discharge of the Cache Creek drainage basin into the Yolo Bypass. Cache Creek levees provide flood protection to the Town of Yolo, the City of Woodland, and the adjacent agricultural lands.

The proposed project consists of a combination of sediment removal from within the Cache Creek channel and raising levees to provide 3 feet of freeboard at 30,000 cubic feet per second (cfs) in the areas shown within the project site boundary. Vegetation would be removed where in-channel sediment removal occurs, to provide at least 1-foot of freeboard throughout Cache Creek. Raising of

levees along the project reach would provide the additional elevation required to create the required 3 feet of freeboard. The design and implementation of each component is discussed further below.

Approximately 210,000 cubic yards (cy) of sediment would be excavated from Cache Creek to help restore the channel's original USACE design capacity. No fill would be added to the main channel as part of the project. Approximately 19 acres of vegetation would be removed where in-channel sediment removal is proposed. Vegetation in areas adjacent to project construction would be preserved in place with avoidance buffers and best management practices to maintain the health of vegetation to remain. The typical depth of cuts would range from 1 to 2 feet for limited removal and between 5 and 30 feet for sections of substantial removal. Typical side slopes where excavations occur would vary, with 2 horizontal (H):1 vertical (V) slopes as the target. The proposed project would excavate soil at elevations between approximately 1 and 6 feet below current conditions in several reaches and excavate up to approximately 70 lateral feet of soil of overbank materials to specific design criteria slopes from the main creek channel.

The proposed project would raise levees up to approximately 2.5 feet at select locations on both the north and south levees along the project reach to restore channel capacity and levee freeboard required after excavations. This would result in a shift of the water and land side toe roads with minor grading to accommodate the shift in the road alignment to be the same width under current conditions (12-foot-wide). The range in the span of raised levees between the water and land side toes would be between approximately 80 to 100 feet wider based on height of raising the levee. The amount of imported fill would total approximately 100,000 cy and prior to importation would be tested to meet State water quality criteria (e.g., not contain contaminants of concern) for use in the channel. Typical levee side slopes would be approximately 2H:1V on the landside and 3H:1V on the waterside. Some adjacent land would be acquired through flood maintenance and right-of-way easements wherever the landside levee toe must expand to meet the new height at those locations.

DWR Climate Action Plan

The CAP is DWR's guide to addressing climate change in the programs, projects, and activities over which it has authority. The CAP is divided into three phases to address mitigation, adaptation, and consistency in the analysis of climate change:

- Phase I: Greenhouse Gas Emissions Reduction Plan (GGERP) (DWR 2020)—The plan lays out DWR's GHG emissions reduction goals and strategies for the near term (present to 2030) and long term (2045).
- Phase II: Climate Change Analysis Guidance—This phase of planning develops a framework and guidance for consistent incorporation and alignment of analysis for climate change impacts in DWR's project and program planning activities.
- Phase III: Climate Change Vulnerability Assessment—This phase describes, evaluates, and quantifies the vulnerabilities of DWR's assets and business to potential climate change impacts. The Phase III Adaptation Plan will help prioritize DWR resiliency efforts such as infrastructure improvements, enhanced maintenance and operation procedures, revised health and safety procedures, and improved habitat management.

Section 3, "Relevant Climate Change Issues," section of this Memorandum provides a high-level overview of the primary ways in which climate change is expected to alter the proposed project.

The Climate Mitigation, Adaptation and Resilience portion of this Memorandum addresses the following questions:

1. Climate Change Mitigation: Could the Proposed Project provide any carbon sequestration benefits that are not already accounted for under compliance with the DWR CAP: Phase 1-Greenhouse Gas Emissions Reduction Plan (GGERP) inventory?
2. Climate Change Adaptation and Resilience: Are there any climate change adaptation strategies built into the Proposed Project? Will the benefits of the Proposed Project be maintained under future climate change projections? How could the Proposed Project increase the resiliency of the study area to the effects of climate change? Could the Proposed Project strengthen the study area's ability to rebound from climate change impacts?

3. Relevant Climate Change Issues

The measured climate impacts and future climate projections described in this Memorandum primarily cite the State of California's Fourth Climate Assessment (Pierce et al. 2018). A fifth Climate Assessment, based on 2020 data, is underway and is expected to include information that is currently unavailable and include updated climate projections which may provide more detailed understanding of the specific timing or magnitude of future climate impacts. However, the general character of those impacts, including extreme heat, increased flood magnitudes, and increased periods of intense drought, are of "high confidence" within the scientific community, meaning that the character of the impacts will remain generally as described.

The California Fourth Climate Change Assessment used Global Climate Model (GCM) results derived from the Coupled Model Intercomparison Project version 5 (CMIP5) to generate downscaled climate projections for California. Version 6 of the global climate projections (CMIP6) were released in 2022. Although DWR has the downscaled products for California they are currently not readily available for flood risk analysis.

Global and National Climate Trends and Impacts

Measured climate change–related events are consistently meeting or exceeding climate change predictions. The United Nations' Intergovernmental Panel on Climate Change (IPCC), the largest and most respected group of climate scientists globally, released the report Climate Change 2022: Impacts, Adaptation and Vulnerability. The IPCC's Summary for Policymakers states that "it is unequivocal that climate change has already disrupted human and natural systems" (IPCC 2022). Rising GHG levels are causing corresponding increases in average global temperatures and in the frequency and severity of natural disasters, including storms, flooding, and wildfire. Climate trends described in the IPCC's report are consistent with the United States Global Change Research Program's Fourth National Climate Assessment reports (United States Global Change Research Program 2018).

Climate change results published by the U.S. Global Change Research Program in the Fifth National Climate Assessment (Marvel et al. 2023) indicate that:

- Global average temperatures over the decade from 2012 to 2021 were close to 2°F (1.1°C) warmer than the preindustrial period (1850 – 1899).
- Global warming has been accompanied by large-scale changes such as loss of glaciers and increases in ocean heat content, leading to changes in weather patterns.
- Global average sea levels over the past decade were also higher than in the preindustrial period by between 7 and 9.5 inches, with more than half of this rise occurring since 1980.

- Atmospheric and land surface changes include increases in atmospheric humidity; shifting rainfall patterns and more frequent heavy precipitation; seasonal shifts including shorter winters and earlier spring and summer seasons.
- The US is warming faster than the global average with temperatures in the contiguous United States (CONUS) have risen by 2.5°F since 1970, compared to a global temperature rise of around 1.7°F over the same period. About 20% – 46% of increases in observed flood damages in the US over the period 1988 to 2021 can be attributed to increasing precipitation.

Climate Change in California and the Project Area

Most of California experiences a Mediterranean weather pattern with cool, wet winters and hot, dry summers. Precipitation occurs mostly in the winter months. Consistent with the changes to the climate being experienced in California and across the project area are consistent with those observed nationally and globally (Bedsworth et al., 2018; Blunden and Boyer, 2022).

Cal-Adapt (2023) was analyzed to further characterize potential effects of climate change in the project area under various emissions scenarios. Climate-sensitive parameters include average precipitation, summer daily high temperatures, and atmospheric river–driven precipitation; climate-driven parameters include average annual streamflow, stream temperatures, and wildfire. Future projected GHG emissions scenarios were considered and are reported as a range, with the lower end representing the Representative Concentration Pathway[1] (RCP) 4.5 emissions scenarios and the upper end representing the RCP 8.5 emissions scenario. As applicable, both mid-century (2035–2064) and end-century (2070–2099) results are presented as parameters of interest.

The climate changes experienced in California are consistent with those observed nationally and globally. A wealth of climate data and predictions are available for California. Even so, many specifics of the climate's future remain uncertain. This section briefly summarizes existing measured climate data and future predictions relevant to the proposed project.

A note about climate modeling: The discussion below repeatedly references the acronym "RCP" or representative concentration pathway. These are the specific GHG concentrations considered within a given climate model. A lower RCP value indicates a lower concentration of GHGs simulated in the model. Both RCP 4.5 and RCP 8.5 are commonly used to represent a range of different climate futures. RCP 4.5 is considered an intermediate scenario, with GHG emissions declining after 2045. RCP 8.5 represents "business as usual" with no decline in emissions throughout this century. The higher the RCP value, the more extreme the climate repercussions.

Precipitation, Floods, and Droughts

More intense rainfall events. With a maximum elevation of about 3,200 feet, Cache Creek receives most of its precipitation as rainfall but with occasional snowfalls at higher elevations. As the climate warms, more of our precipitation is falling in fewer, more intense storms. This is because warmer air can hold more water, which allows for larger, more intense storms. Already, the largest California storms, called "atmospheric rivers," are becoming more frequent. Atmospheric rivers contribute on average 40 percent of the Sierra snowpack and produce heavy rainfall and substantial flood risk. The

[1] *Representative concentration pathways*, or RCPs, are the specific GHG concentrations considered within a given climate model. A lower RCP value indicates a lower concentration of GHGs simulated in the model. RCPs 4.5 and 8.5 are commonly used to represent a range of different climate futures. RCP 4.5 is considered the intermediate or "medium emissions" scenario, with GHG emissions declining after 2045. RCP 8.5 represents the "business as usual" or "high emissions" scenario, with no decline in emissions through this century (2099). The higher the RCP value, the more extreme the climate repercussions. Results are reported as a range, with the lower end representing the RCP 4.5 emissions scenarios and the upper end representing the RCP 8.5 emissions scenario.

seasonality of precipitation events is also changing with more precipitation concentrated earlier in the water year in winter and early spring.

More frequent large floods and overall higher wet/dry variability. The combination of more frequent, high intensity storms and changing seasonality of precipitation leads to an increased frequency of large flooding.

Climate projections (Ackerly et al. 2018), indicate precipitation will increasingly exhibit high year-to-year variability - "booms and busts" - with very wet and very dry years. Northern California's largest winter storms will become more intense, and potentially more damaging. The exact change to storm periodicity is unclear, but small storms, such as historic 1-year, 5-year, and 10-year storms, may become less frequent, while larger storms, such as historic 100-year and larger storms, may become more frequent. This pattern is consistent with recent, precipitous increases globally in 100-year and larger storm events.

Results from the 2022 update of the Central Valley Flood Protection Plan (CVFPP) indicate that flow peaks from the 100-year flood in the Yolo Bypass below Cache Creek could increase by approximately 19% over the next 50 years (DWR 2022).

Longer, deeper droughts. Warmer summers lead to more soil evaporation and higher water demand and longer annual dry seasons. This combines with longer interval between wet years to force an overall increase in multi-year intense drought events. In fact, the California Fifth Climate Assessment states recent research suggests that extended drought occurrence ("mega-drought") could become more pervasive in future decades. The 2012–2016 California drought led to the most severe moisture deficits in the last 1,200 years and a 1-in-500 year low in Sierra snowpack (Ackerly 2018).

The United States Geological Survey (USGS) modeled streamflow for the Sacramento Valley Region, which includes Cache Creek, through the end of century (Stern et al. 2020). The USGS model showed:

- Increases in peak precipitation days for 18 out of 20 scenarios indicate the likelihood of more high flow events than historically, even in the drier scenarios where the high flow events may occur between an increasing number of dry days.
- Peak precipitation events can generally be classified as landfalling atmospheric rivers, the source of the largest storms and floods on the West Coast.
- Atmospheric river magnitude and frequencies are projected to increase in the next century for most of the ten global climate models, which further increases the role of these large storms to determine the occurrence of extended wet periods or prolonged droughts.

The results indicate that 60 percent of scenarios projected increases in average precipitation, with a general model consensus of increased peak precipitation, with varying magnitudes that broadly depend on the climate model used. Temperature increases also lead to more intense precipitation, and therefore, create larger magnitude floods earlier in the wet season with increases in precipitation frequency and intensity.

Extreme Heat Events and Water Temperatures

Across California, heat records and extreme heat waves are increasing. In July of 2024, Death Valley reached 130°F, a global heat record. In fact, California's hottest summer on record was 2024. Climate predictions indicate that Northern California will see higher average temperatures year-round, both daytime and nighttime, with a larger increase in summer than in winter (with July–September

increases of 2.7°F–10.8°F). Heat waves are expected to be more extreme and to have longer durations and larger geographic extents than historical averages (Houlton 2018). The Sacramento region will likely see average daily maximum temperatures increase by 10°F by end-of-century. Under baseline conditions, the project area experiences an average of 4 extreme heat days per year with temperature above 103.9°F (Cal-Adapt 2024).

Future projections from the California Fourth Climate Change Assessment (2018) indicate that the project region could experience an average of 18 days per year (RCP 4.5) and 22 days per year (RCP 8.5) of extreme heat days by mid-century (2035 - 2064). At the end of the century (2070 - 2099), it is estimated the average number of extreme heat days will increase to 24 days per year under moderate (RCP 4.5) and 40 days per year extreme (RCP 8.5) climate scenarios. **Figure 1** shows extreme heat scenarios for the project region.

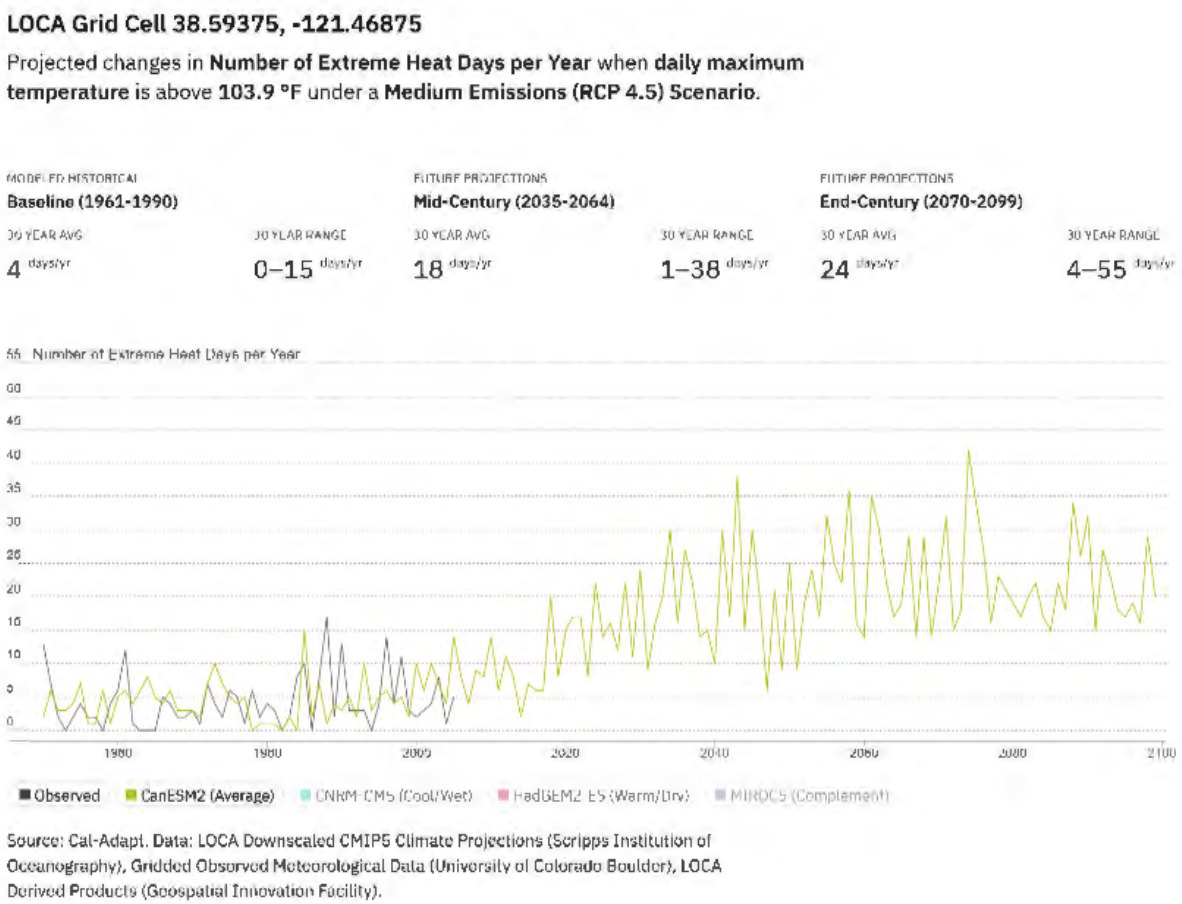
Heat is one of the main drivers of climate migration: a documented phenomenon where both plants and animals shift their range either northward or higher in altitude in response to climate drivers. Heat extremes and longer heat waves within the project area may impact habitat restoration efforts, decrease recruitment of preferred native species and increase recruitment of non-native species.

Water temperatures in Cache Creek project area are influenced by water inflow temperatures and local temperature conditions. Increased average air temperatures and occurrence of extreme heat events are increasing regionally, which will raise water temperatures locally. Increased water temperatures have a direct impact on many aquatic species by directly inducing stress and/or decreasing dissolved oxygen levels. This is especially acute when experienced cumulatively with other climate change consequences such as decreased water levels, changes in hydrology, the occurrence of harmful algal blooms, and alterations in food source availability or predator-prey dynamics.

Warmer storms and decreased riverine flow volumes, without air temperature increases, lead to higher riverine water temperatures (Ackerly 2018). Increased air and soil temperatures exacerbate this rise. By the end of the century, Sacramento River water temperatures could warm as much as 5.4 to 10.8°F (Wagner et al. 2011).

The proposed project would remove approximately 19 acres of vegetation where in-channel sediment removal is proposed, which may exacerbate some water heating. However, because Cache Creek dries annually, this impact on local riparian & riverine habitat and species, such as northwestern pond turtle, is expected to be minimal. Vegetation in areas adjacent to project construction would be preserved in place with avoidance buffers and best management practices to maintain the health of vegetation to remain. Aquatic species already adjust to seasonal drying and could take refuge in remaining riparian habitat during hot days.

Figure 1. Extreme Heat Scenarios for the Project Region.



Source: Cal-Adapt 2024

Changes in Ecological Sensitivity

Climate change causes ecological stress in a wide variety of ways. Heat, wildfire, drought and floods can directly harm or injure both flora and fauna, or indirectly cause stress through destruction of habitat, reduction of food sources, or disruption of critical seasonal signals such as those that trigger migration or leaf fall. Climate change may also favor the spread of new diseases and invasive species within the project area. The ability of wildlife and vegetation to respond to rapidly changing conditions is still poorly understood, and best discussed on a species or family level, rather than broadly. Of the approximately 8 million species on earth, up to 1 million could be threatened with climate extinction, many within the next few decades. The current rate of global extinction is tens to hundreds of times higher now than was the average over the last 10 million years, and the rate is accelerating (Diaz et al. 2019).

4. DWR CAP Climate Change Mitigation, Adaptation, and Resilience Analysis

Question 1 – Climate Change Mitigation: *Could the Proposed Project provide any carbon sequestration benefits that are not already accounted for under compliance with the DWR CAP: Phase 1- Greenhouse Gas Emissions Reduction Plan (GGERP) inventory?*

Revegetation associated with the project would be limited to areas temporarily disturbed by construction activities. The project would not create wetland habitat or modify soil conditions to sequester more carbon. Therefore, the project is not designed to nor expected to provide carbon sequestration benefits.

Questions 2 and 3 – Climate Change Adaptation & Resilience: *Are there any climate change adaptation strategies built into the Proposed Project? Will the benefits of the Proposed Project be maintained under future climate change projections? How could the Proposed Project increase the resiliency of the study area to the effects of climate change? Could the Proposed Project strengthen the study area's ability to rebound from climate change impacts?*

The proposed project is intended to provide long-term flood protection, reducing climate-enhanced flood impacts, to the project region. The climate adaptation and resilience aspects of the proposed project are further analyzed below.

Flood Magnitude and Frequency

Climate change may increase the magnitude and frequency of large flood events. As discussed, results from the 2022 update of the CVFPP indicate that flow peaks from the 100-year flood in the Yolo Bypass below Cache Creek could increase by approximately 19% over the next 50 years (DWR 2022). The proposed project includes raising levee segments to meet the required 3 feet of freeboard. Therefore, compared to existing conditions, the proposed project would improve onsite drainage and stormwater flows and improve flood risk reduction to adjacent residents and agricultural land uses.

The portion of Cache Creek within the project site is considered a regional drainage (or stormwater) facility within Yolo County, as the project reach includes facilities for conveyance and flood risk reduction. Therefore, compared to existing conditions, the proposed project would also improve regional stormwater conveyance and control.

Compared to existing conditions, the proposed project would increase the capacity of the Cache Creek channel at the project site and improve the ability of the channel to accommodate design maximum flood flows. The possibility of an excessive hydraulic force that could lead to levee failure would be reduced, and the more durable design would improve levee stability during large flood events.

Additionally, DWR conducted an analysis of the proposed project to complement this appendix (Attachment 1) that utilizes the best available information to evaluate the following: 1) three climate change projection scenarios (low, medium, and high) for a similar flood return period event in 2072, corresponding to the current required channel capacity of Cache Creek (set at 30,000 cfs); and 2) the annual exceedance probability of a 30,000 cfs flood by 2072. Both evaluations used the CVFPP 2022 technical analysis. The analysis determined that for a 36,347 cfs unregulated flow (the correspondent regulated flow for a 30,000 cfs flood), the return period is approximately 15 years under the low climate change scenario, 9 years under the medium scenario, and 4 years under the high scenario. This analysis indicates that a 30,000 cfs regulated flow is twice as likely to occur by 2072 compared to the current frequency. This means that operations and maintenance within the Cache Creek

Channel may be subject to construction of similar projects (as the Cache Creek Project) more frequently than is currently performed.

Without the proposed project, the capacity of the Cache Creek channel would not be increased, and the effects of climate change in the future on flood protection would be greater. Therefore, the analysis further demonstrates the benefits of the proposed project's objective of increasing the channel capacity compared to existing conditions.

Sedimentation

Climate change is also changing sedimentation rates and patterns. By increasing the capacity of the Cache Creek channel, compared to existing conditions, the project would increase the amount of flow conveyed by the reach of Cache Creek within the project site which could also increase the amount of sediment transport through the project site and downstream to the Cache Creek Settlement Basin (CCSB). This increase in sediment transport and deposition within the CCSB could result in a decrease in the remaining storage capacity within the CCSB. However, flow and sediment deposition data from the past 34.5 years of data collected (during most of the years the CCSB has been in operation) were analyzed and show that sediment deposition would only increase by approximately 0.53 percent because of the proposed project. Further, the potential decrease in storage in the CCSB from the proposed project increase in flows was predicted to be approximately 0.6 percent over the remaining storage capacity lifetime of the CCSB (approximately 16 more years). The data analysis shows that the proposed project would not result in a substantial deposition of sediment in the CCSB and would not result in a substantial loss of storage lifetime remaining in the CCSB.

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Attachment 1

Assessing Climate Change Driven Flood Risks in Cache Creek Associated with the Cache Creek Channel and Levee Rehabilitation Project

Purpose:

The CA Pub Res Code § 71155 (2024) (Amended by Stats. 2020, Ch. 118, Sec. 1. (AB 2800) Effective January 1, 2021.) states: *Consistent with this part, state agencies shall take into account the current and future impacts of climate change, including the economic damages and financial liabilities associated with those impacts, when planning, designing, building, operating, maintaining, and investing in state infrastructure*.

This document outlines the methodology used to evaluate climate change projection scenarios for similar return period and the annual exceedance probability of the design flow by 2072 associated with the Cache Creek Channel and Levee Rehabilitation Project (Cache Creek Project). By utilizing flood scenarios with a return period corresponding to the current required channel capacity of Cache Creek set at 30,000 cfs (design flow), the analysis explores the influence of low, medium, and high climate change projection scenarios. This document also explores the reoccurrence of a 30,000 cfs event under the same three climate change scenarios. This analysis develops a method to verify that the Cache Creek Project does not exacerbate risks as a result of climate change induced flooding while meeting the operation and maintenance (O&M) requirements.

Background:

Climate Change Effect on Hydrology

The Central Valley hydrology is predominantly governed by highly variable year-to-year precipitation and runoff within the broader Sacramento-San Joaquin watershed. Most Central Valley precipitation occurs during the cooler and wetter months from October through April. Most of the annual precipitation falls during discrete storms or atmospheric river events. California's atmospheric rivers are responsible for up to half of the State's annual precipitation and account for more than 80 percent of flood damages (Corringham et al., 2019, Florsheim and Dettinger, 2015). Rare summer rains also occur, mainly as brief, scattered thunderstorms extending over limited portions of the Central Valley. Though uncommon, snowfall on the State Water Project watershed's western slope occasionally occurs in the winter.

Although average annual total precipitation amounts are not expected to change significantly across the Central Valley under climate change, interannual variability may increase. There is growing evidence that the frequency and intensity of precipitation extremes will increase in a warming climate, even where projected changes in mean precipitation are minimal and/or uncertain (Dettinger et al., 2016). In addition, the occurrence of extreme wet and extreme dry conditions and drastic transitions between the two – referred to as "climate whiplash" – may increase (Swain et al., 2018). Furthermore, studies have demonstrated a link between the increasing intensity of atmospheric rivers along with warmer air and sea surface temperatures, which support greater atmospheric moisture and wetter, longer, and wider atmospheric rivers that can lead to higher precipitation rates (Dettinger et al., 2018).

Cache Creek and Flood Risk Induced By Climate Change

The Department of Water Resources (DWR) is developing a CEQA document for the Cache Creek Project. The project purpose is to restore the Cache Creek channel capacity while maintaining a minimum of 3 feet freeboard above an adopted flood profile calculated using a project design flood of 30,000 cubic feet per second (cfs) (USACE,1961) along an approximately 9-mile-long reach of Cache Creek by removing sediment along with vegetation and slightly raising levee elevations at selected locations. The project reach is in unincorporated Yolo County adjacent to the Town of Yolo, within 2 miles north of the City of Woodland and about 4.5 miles west of the Sacramento River.

State and DWR Requirements

Per CA Pub Res Code § 71155 (2024) (Amended by Stats. 2020, Ch. 118, Sec. 1. (AB 2800) Effective January 1, 2021.), State agencies are required to incorporate "*current and future impacts of climate change, including the economic damages and financial liabilities associated with those impacts, when planning, designing, building, operating, maintaining, and investing in state infrastructure*" and DWR formalized this requirement by adopting the Water Resources Memorandum No 75. Specific to the Cache Creek Project, DWR is required to maintain the specified level of flood protection per USACE,1961, yet DWR is also required to evaluate the effect of climate change on the project, which in this instance results in an analysis of climate change on the post-project channel capacity (i.e., the USACE design standard). Therefore, this analysis develops a method to verify that the Cache Creek Project does not exacerbate risks as a result of climate change induced flooding while meeting the operation and maintenance (O&M) requirements

Approach:

The approach outlined below utilizes the best available information to evaluate 1) three climate change projection scenarios (low, medium, and high) for a similar flood return period event in 2072, corresponding to the current required channel capacity of Cache Creek, which is set at 30,000 cfs and 2) the annual exceedance probability of a 30,000 cfs flood by 2072. Both evaluations used the Central Valley Flood Protection Plan Update 2022 technical analysis.

Climate Change Projection Scenarios:

The following steps were taken to evaluate three climate change projection scenarios (low, medium, and high) for a similar flood return period event in 2072, corresponding to the current required channel capacity of Cache Creek, which is set at 30,000 cfs:

1. **Establishing Baseline Conditions:**
   Evaluate the annual exceedance probability (AEP) for a 1-day, 30,000 cfs regulated flow at Cache Creek at Road 94B. The return period of this flow was interpolated using Table 2 from the Central Valley Hydrological Study, Cache Creek Watershed Hydrologic Analysis, USACE, February 27, 2014.

Table 1 Regulated Runoff Peak at Each Analysis Point (flow, CFS) *(Excerpt from CVHS 2014 Table 2)*

AEP	CAC-12 Cache Creek at Road 94B (Drainage Area 1,130 sq mi)		
	Peak	1-Day	3-Day
0.1	31,500	24,500	18,700
0.02	49,900	38,600	29,200
0.01	58,300	45,000	34,000
0.005	65,400	50,800	39,300
0.002	74,200	57,500	45,000

30,000 cfs ≈ 0.0546 AEP = 18.31 Return Period

2. **Transposing to Unregulated Flow:**
Establish the corresponding unregulated flow for a 30,000 cfs regulated flow at Cache Creek. Using Tables 1 and 2 from the Central Valley Hydrological Study, create a relationship between unregulated and regulated flows for a 1-day duration flood event.

Table 2 Unregulated Runoff Peak at Each Analysis Point (flow, CFS) *(Excerpt from CVHS 2014 Table 1)*

AEP	CAC-12 Cache Creek at Road 94B (Drainage Area 1,130 sq mi)		
	Peak	1-Day	3-Day
0.1	39,700	29,600	21,500
0.02	63,400	46,900	33,700
0.01	74,200	54,800	39,200
0.005	83,000	61,700	45,400
0.002	94,300	70,100	51,500

1-day regulated flow of 30,000 cfs ≈ 36,347cfs unregulated flow.

3. **Identifying Climate Change Ratio:**
Estimate the "Climate Change Ratios" as the ratio of flow-frequency curves with and without projected climate change conditions. These ratios are computed by dividing volumes from hydrological model simulations for future climate conditions by those for historical conditions, based on various durations and AEPs. The resultant climate change ratios were applied to the Central Valley Hydrological Study flow-frequency curves to normalize the results. Since no specific ratios were developed for Cache Creek, the ratios from Putah Creek near Davis, CA (PUC-12) were used as a surrogate (Table 3), assuming similar geographic, physical, and geomorphic characteristics.

Cache Creek's 0.0546 AEP was used to interpolate three climate change ratios for low, medium, and high climate change condition by 2072 (Table 4). More information can be found on the 2022 Central Valley Flood Protection Plan Update Technical Summary Report and Appendices.

Table 3: PUC-12 Climate Change Ratio associated with different AEPs

AEP	Low	Medium	High
	Climate Change Ratio		
0.002	1.13	1.33	1.76
0.005	1.13	1.33	1.76
0.01	1.11	1.32	1.77
0.02	1.09	1.3	1.77
0.04	1.07	1.29	1.78
0.1	1.05	1.27	1.8

Table 4: Climate Change Ratio for a high, medium and low climate change scenario in Cache Creek with a 0.0546 AEP.

AEP	Low	Medium	High
	Climate Change Ratio		
0.0546	1.06	1.28	1.79

4. **Applying Climate Change Ratios:**
   Apply the climate change ratios to the 1-day unregulated flow calculated in step 2 above. Multiple the unregulated flow by the low, medium and high climate change ratio (Table 5).

5. **Reverting to Regulated Flow:**
   Transpose the 1-day unregulated flow for the three climate change scenarios to regulated flow, similar to step 2 above. Table 5 presents these regulated flows.

Table 5: Unregulated and regulated flow for a low, medium and high climate change scenario corresponding to a AEP of 0.0546.

	Low	Medium	High
Unregulated Flow (CFS)	36,347	36,347	36,347
CC Ratio	1.06	1.28	1.79
CC Unreg Flow (CFS)	38,528	46,524	65,061
CC Regulated Flow (CFS)	31,780	38,306	53,433

6. **Reverting to Regulated Flow:**
   Transpose the 1-day unregulated flow for the three climate change scenario to regulated flow reversely similar to step 2 above. Table 5 presents these regulated flows.

As indicated above, this analysis evaluated three climate change scenarios—low, medium, and high—centered at 2072, with the same return period as a 30,000 cfs regulated flood and modeled through a hydraulic framework. These scenarios provide insights into the project's performance under varying levels of climate change projection.

The low and high climate change scenarios represent the "bookends" of potential outcomes, capturing the range of uncertainty in future projections. However, with advancements in climate science, particularly the development of CMIP6 data, this range is expected to narrow, improving the accuracy and predictability of climate change impacts in the future.

The proposed project contains the low climate change scenario and mostly contains the medium scenario under the 30,000 cfs channel capacity. While the high climate change scenario overwhelms the system, this scenario represents an extreme and unlikely case that has a minimal probability of occurring before the end of the century. Therefore, the project provides a practical and temporary solution to address increasing flood risks associated with climate change, particularly over the next 47 years following project completion.

It is important to note that the project's design capacity is specified by the U.S. Army Corps of Engineers (USACE) at 30,000 cfs, limiting DWR's ability to provide a larger capacity at this time. However, under potential changed climate conditions the maintenance frequency of the project may be more frequent under climate-driven events (as already mentioned), creating opportunities to revisit and reevaluate future maintenance strategies for the project location. Furthermore, this 47-year planning horizon could also allow local, state, and federal agencies to reflect on the project's performance and work collaboratively on developing a more comprehensive and adaptive solution for Cache Creek and its surrounding region, addressing longer-term challenges posed by climate change.

Annual Exceedance Probability of a 30,000 cfs Flood by 2072.

Correspondingly, the return period of a 30,000 cfs regulated flow at Cache Creek at Road 94B by 2072 can be calculated. This information is crucial for understanding the potential recurring maintenance needs for the channel and levee associated with the project in a future influenced by climate change.

Using the unregulated flow established in step 2 above (36,347 cfs) and the information from step 3, one can develop an unregulated flow frequency curve (Table 6) for Cache Creek and determine the return periods of a flood under three climate change scenarios.

For a 36,347 cfs unregulated flow, the return period is approximately 15 years under the low climate change scenario, 9 years under the medium scenario, and 4 years under the high scenario. This indicates that a 30,000 cfs regulated flow is twice as likely to occur by 2072 compared to the current frequency. This means that operations and maintenance within the Cache Creek Channel may be subject to construction of similar projects (as the Cache Creek Project) more frequently than currently performed.

Table 6: Relationship between AEP and the unregulated flow under three climate change scenarios at 2072.

Annual Exceedance Probability	CC Factors Low	CC Factors Medium	CC Factors High	Return Period
0.002	79,213	93,233	123,376	500.0
0.005	69,721	82,061	108,592	200.0
0.01	60,828	72,336	96,996	100.0
0.02	51,121	60,970	83,013	50.0
0.0546	38,528	46,524	65,061	18.3
0.1	31,080	37,592	53,280	10.0

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