Draft

MOSSDALE TRACT AREA URBAN FLOOD RISK REDUCTION PROJECT

Environmental Impact Report
State Clearinghouse #2022040471

Prepared for
San Joaquin Flood Control Agency

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ESA



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ESA

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List of Acronyms and Abbreviations

AB	Assembly Bill
AB 1279	Assembly Bill 1279
AB 203	Assembly Bill 203
ADA	Americans with Disabilities Act
AEP	Annual Exceedance Probability
AERMOD	AMS/EPA Regulatory Model
AFY	Acre-feet per year
BAU	Business-as-Usual
bgs	Below ground surface
BMP(s)	Best Management Practice(s)
BP	Before Present
BPS	Best Performance Standards
BSSCP	Bentonite Slurry Spill Contingency Plan
Btu	British thermal unit
CA	California
CAA	Clean Air Act
CAAQS	California Ambient Air Quality Standards
CAFE	Corporate Average Fuel Economy
CAL FIRE	California Department of Forestry and Fire Protection
Cal OES	California Governor's Office of Emergency Services
CalEEMod	California Emissions Estimator Model
CalEPA	California Environmental Protection Agency
Cal-IPC	California Invasive Plant Council
CalRecycle	California Department of Resources Recycling and Recovery
CAP	Climate Action Plan
CARB	California Air Resources Board
CBC	California Building Code
CC	Candidate for Listing (State)
CCAP	Climate Change Action Plan
CCIC	Central California Information Center
CCR	California Code of Regulations
CCSA	Climate Change & Sustainability Agency
CDC	Centers for Disease Control and Prevention
CDCP	California Department of Public Health
CDFA	California Department of Food and Agriculture
CDFW	California Department of Fish and Wildlife
CDMG	California Division of Mines and Geology
CDPH	California Department of Public Health
CDTFA	California Department of Tax and Fee Administration
CEC	California Energy Commission
CEQA	California Environmental Quality Act

CESA	California Endangered Species Act
CFP	California Fully Protected (species)
CFR	Code of Federal Regulations
CGP	Construction General Permit
CH4	Methane
CHRIS	California Historical Resources Information System
CNDDB	California Natural Diversity Database
CNEL	Community Noise Equivalent Level
CNPPA	California Native Plant Protection Act
CNRA	California Natural Resources Agency
CO	Carbon Monoxide
COLD	Cold Freshwater Habitat
COMM	Commercial and Sport Fishing
CRPR	California Rare Plant Rank
CSC	California Species of Special Concern
CSLC	California State Lands Commission
CVFPB	Central Valley Flood Protection Board
CVFPP	Central Valley Flood Protection Plan
CVL	Confederated Villages of Lisjan
CVP	Central Valley Project
CWA	Clean Water Act
CY	cubic yards
D-1641	State Water Board Water Rights Decision 1641
DDE	Dichlorodiphenyldichloroethylene
DDT	Dichlorodiphenyltrichloroethane
DOC	California Department of Conservation
DOT	Department of Transportation
DPC	Delta Protection Commission
DPM	Diesel Particulate Matter
DPR	California Department of Pesticide Regulation
DPS	Distinct Population Segment
DRMS	Delta Risk Management Strategy
DSC	Delta Stewardship Council
DTSC	California Department of Toxic Substances Control
du/ac	dwelling units per acre
DWR	California Department of Water Resources
EFH	Essential Fish Habitat
EIR	Environmental Impact Report
EMS	Emergency Medical Services
EOP	Emergency Operations Plan
EPA	Environmental Protection Agency
ESA	Environmental Science Associates

ESJGA	Eastern San Joaquin Groundwater Authority
ESRI	Environmental Systems Research Institute
EST	Estuarine Habitat
ESU	Evolutionarily Significant Unit
FAA	Federal Aviation Administration
FCC	Federal Communications Commission
FESA	Federal Endangered Species Act
FHSZ	Fire Hazard Severity Zone
FHWA	Federal Highway Administration
FICON	Federal Interagency Committee on Noise
FIFRA	Federal Insecticide, Fungicide, and Rodenticide Act
FMMP	Farmland Mapping and Monitoring Program
FRR	Flood risk reduction components
FRSH	Freshwater Replenishment
g	Acceleration due to gravity
GAMA	Groundwater Ambient Monitoring and Assessment Program
GAMAQI	Guidance for Assessing and Mitigating Air Quality Impacts
GDP	Gross Domestic Product
GHG	Greenhouse Gas
GSA	Groundwater Sustainability Agency
GSP	Groundwater Sustainability Plan
GWh	Gigawatt-hour
GWP	Global Warming Potential
GWR	Groundwater Recharge
HHI	Hazard Index
HMBP	Hazardous Materials Business Plan
hp	Horsepower
HRA	Health Risk Assessment
HSC	Health and Safety Code
HSWA	Hazardous and Solid Waste Act
HWCL	Hazardous Waste Control Law
HWMP	Hazardous Waste Management Plan
I-5	Interstate 5
IEP	Interagency Ecological Program
IPaC	Information for Planning and Consultation
IPCC	Intergovernmental Panel on Climate Change
kWh	Kilowatt-hour
L90	noise level exceeded 90 percent of the time
Ldn	day-night average noise level
LESA	Land Evaluation and Site Assessment
LF	linear feet
Lmax	maximum noise level

Lmin	minimum noise level
LS	Less than Significant
LSM	Less than Significant with Mitigation
LURMP	Land Use and Resource Management Plan
MAF	Million acre-feet
MAR	Marine Habitat
MBTA	Migratory Bird Treaty Act
MEIR	Maximally Exposed Individual Receptor
mgd	Million gallons per day
MIGR-COLD	Cold Migration of Aquatic Organisms
MIGR-WARM	Warm Migration of Aquatic Organisms
MLD	Most Likely Descendant
MM	Modified Mercalli (intensity scale)
MOU	Memorandum of Understanding
mpg	Miles per gallon
MRZ	Mineral Resource Zone
msl	Mean sea level
MTCO2e	Metric Tons of Carbon Dioxide Equivalent
MW	Megawatt
Mw	Moment Magnitude
MWh	Megawatt-hour
MWQCF	Manteca Wastewater Quality Control Facility
N2O	Nitrous Oxide
NAAQS	National Ambient Air Quality Standards
NAHC	Native American Heritage Commission
NAV	Navigation
NAVD	North American Vertical Datum
NAVD88	North American Vertical Datum of 1988
NEHRP	National Earthquake Hazards Reduction Program
NFIP	National Flood Insurance Program
NFPA	National Fire Protection Association
NHPA	National Historic Preservation Act
NHTSA	National Highway Traffic Safety Administration
NIOSH	National Institute for Occupational Safety and Health
NMFS	National Marine Fisheries Service
NO_2	Nitrogen Dioxide
NOAA	National Oceanic and Atmospheric Administration
NOI	Notice of Intent
NOP	Notice of Preparation
NOx	Oxides of Nitrogen
NOX	Nitrogen Oxides
NPDES	National Pollutant Discharge Elimination System

NPPA	California Native Plant Protection Act
NRCS	Natural Resources Conservation Service
NSR	New Source Review
NVYT	Northern Valley Yokuts Tribe
O&M	operations and maintenance
OEHHA	Office of Environmental Health Hazard Assessment
OES	Office of Emergency Services
OHWM	ordinary high-water mark
OPR	Governor's Office of Planning and Research
OSHA	Occupational Safety and Health Administration
PCC	Portland cement concrete
PEIR	Program Environmental Impact Report
PG&E	Pacific Gas & Electric Company
PM10	Particulate Matter ≤10 microns in diameter
PM2.5	Particulate Matter ≤2.5 microns in diameter
PMI	Performance Measures and Indicators
PPE	Personal Protective Equipment
ppt	Parts per thousand
PPV	peak particle velocity
PRC	Public Resources Code
PRC	California Public Resources Code
QSD	Qualified SWPPP Developer
RACT	Reasonably Available Control Technology
RARE	Rare, Threatened, or Endangered Species
RCCC	Red Cross Red Crescent Climate Centre
RCNM	Roadway Construction Noise Model
RCRA	Resource Conservation and Recovery Act
RD	Reclamation District
RD 17	Reclamation District 17
Regulation VIII	SJVAPCD Fugitive PM10 Prohibitions
RM	River Mile
ROG	Reactive Organic Gases
RPS	Renewables Portfolio Standard
RS	Restoration Sites
RTD	San Joaquin Regional Transit District
RTP/SCS	Regional Transportation Plan / Sustainable Communities Strategy
Rule 4101	SJVAPCD Rule 4101
Rule 4102	SJVAPCD Rule 4102
Rule 8021	SJVAPCD Rule 8021
Rule 9510	SJVAPCD Rule 9510
RWCF	Regional Wastewater Control Facility
SB	Senate Bill

SB 5	Senate Bill 5
SB 32	Senate Bill 32
SB 97	Senate Bill 97
SB 100	Senate Bill 100
SB 743	Senate Bill 743
SB 1020	Senate Bill 1020
SDWA	Safe Drinking Water Act
SFHA	Occupational Safety and Health Act
SFHA	Special Flood Hazard Area
SGMA	Sustainable Groundwater Management Act
SHELL	Shellfish Harvesting
SJAFCA	San Joaquin Area Flood Control Agency
SJALUC	San Joaquin County Airport Land Use Commission
SJCOG	San Joaquin Council of Governments
SJMSCP	San Joaquin County Multi-Species Habitat Conservation Plan
SJVAB	San Joaquin Valley Air Basin
SJVAPCD	San Joaquin Valley Air Pollution Control District
SLF	Sacred Lands File
SO_2	Sulfur Dioxide
SOI	Sphere of Influence
SPFC	State Plan of Flood Control
SPWN-COLD	Cold Spawning, Reproduction, and/or Early Development
SPWN-WARM	Warm Spawning, Reproduction, and/or Early Development
SR	State Route
SR 120	State Route 120
SRA	Shaded Riverine Aquatic
SRA	State Responsibility Area
SSJID	South San Joaquin Irrigation District
STC	Sound Transmission Class
SVP	Society of Vertebrate Paleontology
SWP	State Water Project
SWPPP	Storm Water Pollution Prevention Plan
TAC / TACs	Toxic Air Contaminant(s)
TDS	Total dissolved solids
TMDL	Total Maximum Daily Load
U.S. DOT	U.S. Department of Transportation
U.S. EIA	U.S. Energy Information Administration
U.S. EPA	U.S. Environmental Protection Agency
UCMP	University of California Museum of Paleontology
UFRR	Urban Flood Risk Reduction Project
ULOP	urban level of flood protection
USACE	U.S. Army Corps of Engineers

USC	United States Code
USCGS	U.S. Coast and Geodetic Survey
USCS	U.S. Coast Survey
USFWS	U.S. Fish and Wildlife Service
USGS	United States Geological Survey
VdB	vibration decibels
VELB	Valley Elderberry Longhorn Beetle
VERA	Voluntary Emission Reduction Agreement
VMT	Vehicle Miles Traveled
WARM	Warm Freshwater Habitat
WHO	World Health Organization
WILD	Wildlife Habitat
WRCC	Western Regional Climate Center
ZEV	Zero-emission vehicle

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EXECUTIVE SUMMARY

ES.1 Introduction

The San Joaquin Flood Control Agency (SJAFCA) proposes to implement the Mossdale Tract Urban Flood Risk Reduction Project (UFRR or proposed project) to provide increased public safety benefits by rehabilitating and improving flood management infrastructure for the 22,400-acre Mossdale Tract area (proposed project area), which includes Reclamation District 17 (RD 17) and portions of the cities of Stockton, Lathrop, Manteca, and unincorporated San Joaquin County. Pursuant to the California Environmental Quality Act (CEQA), SJAFCA is the lead agency and has prepared this draft environmental impact report (EIR) to analyze potentially significant environmental effects of the proposed project and other actions associated with construction and operation of the proposed project.

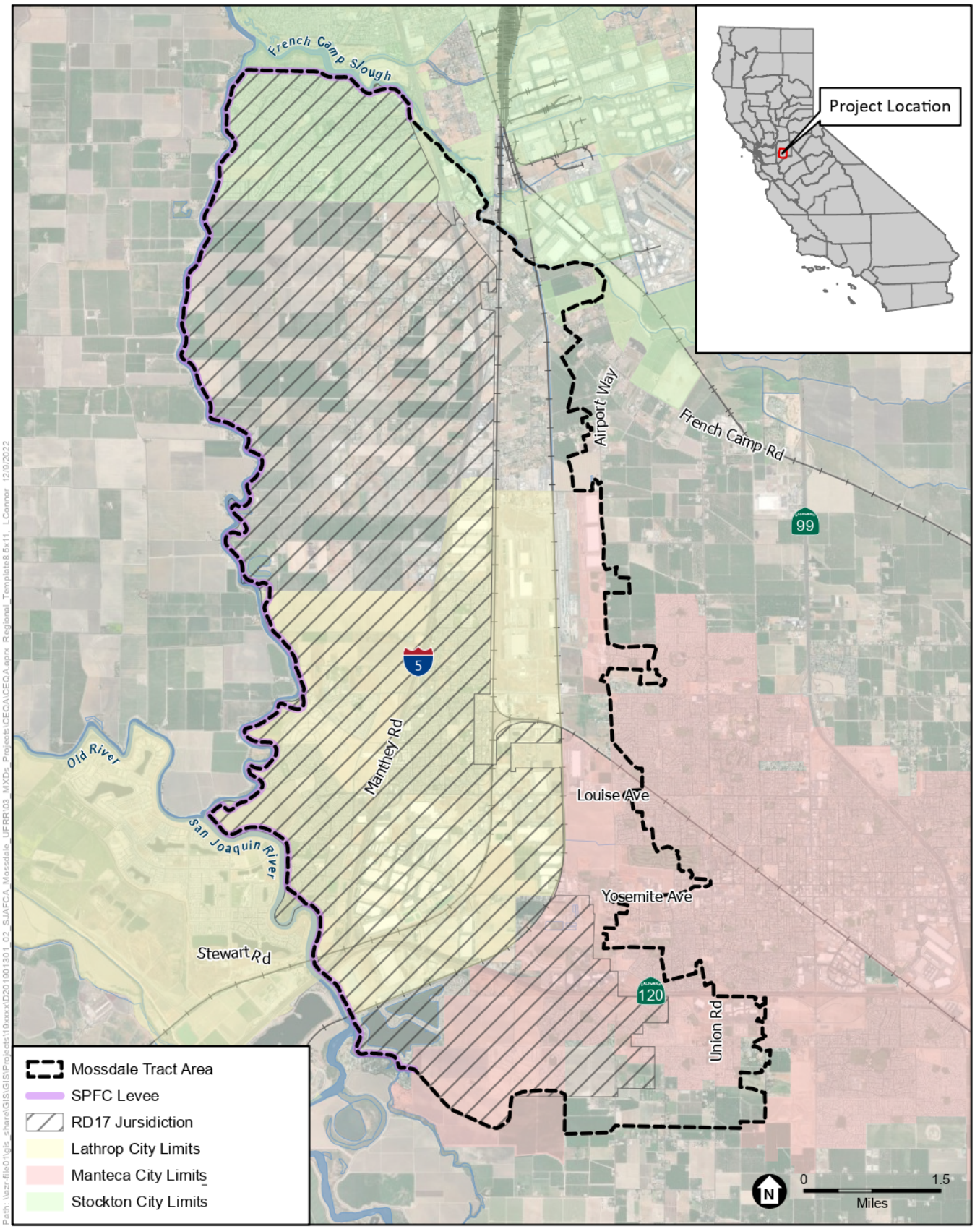
ES.2 Objectives of the Proposed Project

The general objective of the proposed project is to provide increased public safety benefits by rehabilitating, improving, and constructing flood risk reduction infrastructure to achieve a 200-year urban level of flood protection (ULOP) for the Mossdale Tract area. The objectives include the following:

- Improve long-term operation, maintenance, repair, rehabilitation, and replacement over time.
- Modernize the flood risk reduction infrastructure to accommodate future performance and climate change resiliency goals identified in the Central Valley Flood Protection Plan and in SJAFCA's Climate Change Adaptation Policy.
- Implement a multi-benefit flood risk reduction project that: (1) improves ecological function and habitat in the flood system, and (2) contributes additional societal benefits such as recreation where feasible.

ES.3 Project Areas

The proposed project area covers 22,400 acres, RD 17 (16,110 acres), and portions of the cities of Stockton, Lathrop, Manteca, and unincorporated San Joaquin County (see **Figure ES-1**). The RD 17 levee system comprises state-federal project levees (also referred to as State Plan of Flood Control [SPFC]) along the San Joaquin River and French Camp Slough, which form the west and north borders of RD 17, and a dryland levee to the south. The land generally slopes east to west and south to north, and because there is no levee along the east side of the RD 17 jurisdiction, the interior drainage watershed extends to the east of RD 17. The proposed project area includes the SPFC levees, RD 17's dryland levee, the area for a proposed dryland levee extension, the Mossdale Tract area, and areas to the west along the San Joaquin River identified for the potential development of ecosystem restoration features.



SOURCE: MAXAR, 2021; KSN, 2022; PBI, 2022; ESA, 2022

Mossdale Tract Area Urban Flood Risk Reduction Project

Figure ES-1
Regional Location

ESA

ES.4 Summary of the Project

The proposed project would include the construction and operation and maintenance of flood risk reduction and multi-benefit components in and adjacent to the proposed project area, which are summarized below. Specifically, the primary components of the proposed project include the following:

- Fix-in-place improvements with habitat enhancement and revegetation.
- Dryland levee extension.
- Ecosystem restoration at multiple sites.
- Recreational features along the levee system.

Each of these components are described in more detail below and are presented on **Figure ES-2** and **Figure ES-3**.

ES.4.1 Flood Risk Reduction Components

Fix-in-Place and Potential Setback Levee Improvements – The various levee improvements that would be constructed and operated within the levee rights-of-way and easements under the proposed project include the following:

- **Existing Dryland Levee Reconstruction and Seepage Berm.** These improvements would consist of raising and widening the levee and constructing a drained seepage berm. They also include reconstructing pipe penetrations that cross the levee.
- **Cutoff Walls**. The improvements would consist of constructing a fix-in-place traditional cement/ bentonite slurry cutoff wall of varying depth along portions of the existing levee alignment.
- **Seepage Berm.** The improvements would consist of constructing a drained seepage berm of varying width along portions of the existing levee alignment.
- **Erosion Repairs.** The improvements would consist of supplementing riprap rock slope protections on the waterside of the levee along portions of the existing levee alignment.
- **Encroachment Remediation.** The improvements would consist of removing high-hazard encroachments.
- **Pipe Penetrations Rehabilitation.** The improvements would consist of reconstructing pipe penetrations that cross the levee.
- **Levee Raise.** The improvements would consist of raising the height of levee along portions of the existing levee alignment and extending the landside toe to meet levee slope design standards.
- **Potential Setback Levee.** The improvements would consist of constructing a setback levee to meet the ULOP standards at a designated sharp bend in the San Joaquin River and connecting to existing levee segments.

Dryland Levee Extension – This improvement would extend the existing dryland levee by approximately 1 to2 miles to the east as needed to prevent flanking during flood events.

ES.4.2 Multi-Benefit Components

Ecosystem Restoration – The proposed project would locate undeveloped land on the water side of the levee system to create ecosystem restoration sites. Parcels of land are currently under investigation for meeting restoration criteria based on existing land habitats, elevations, and other opportunities for gaining natural ecosystem functions appropriate for the lower San Joaquin River. Because the locations and designs of these ecosystem restoration sites are still under development, analysis of these proposed project components will be done at a programmatic level in the EIR.

Recreational Features Along the Levee System – This component would develop recreational features, including recreational paths, along the top of levee and landside toe. Because the locations and design of this component are still under development, analysis of these proposed project components will be done at a programmatic level in the EIR.

In addition to the proposed project, the EIR will evaluate up to two variants to the proposed project that will include the same general types of flood risk reduction and multi-benefit components as those proposed under the proposed project.

ES.5 Alternatives

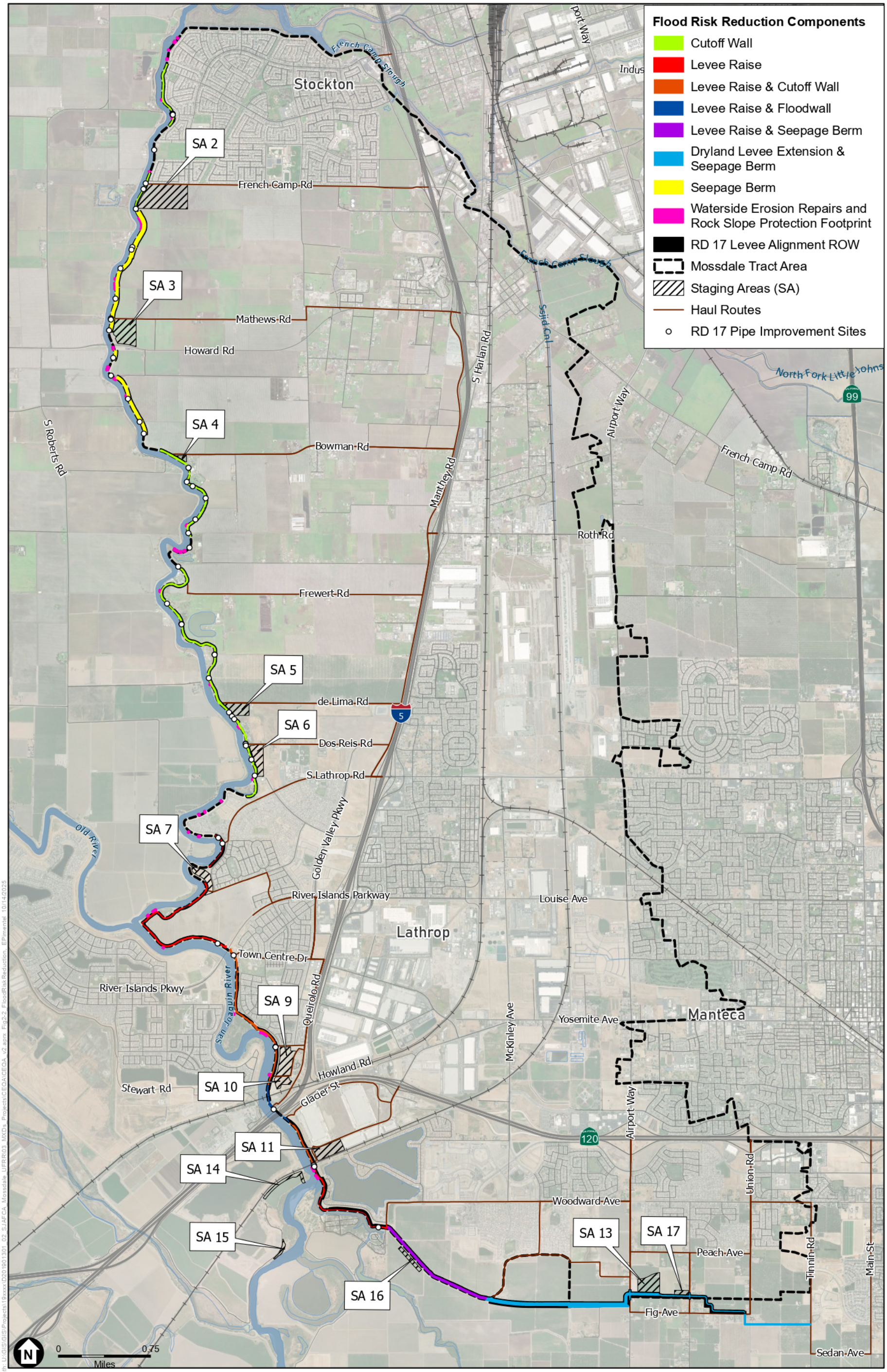
Chapter 6, *Alternatives*, describes alternatives to the proposed project and compares the environmental impacts of those alternatives. This chapter also describes alternatives that were considered but eliminated from detailed consideration. The alternatives that were considered but rejected include the following:

- Construction of a dryland levee north of the City of Lathrop.
- Construction of a setback levee, breach of the existing levee, and installation of an aquatic habitat ecosystem restoration site at river mile (RM) 52.
- Installation of an additional dryland habitat ecosystem restoration site at RM 52 without the proposed levee breaches or setback levee.

Two alternatives were identified for further evaluation in the Draft EIR as a result of the alternatives development and screening process described in Chapter 6. The alternatives are:

- No Project Alternative
- Dryland Levee Extension to Union Road

As shown in Chapter 6, *Alternatives* in Table 6-1, and as discussed in the alternatives analysis in Chapter 6, the No Project Alternative would not result in any construction or O&M impacts when compared to the proposed project. However, none of the proposed flood risk reduction or multi-benefit objectives of the proposed project would be achieved, because the fix-in-place levee improvements, dryland levee extension, ecosystem restoration sites, and other multi-benefit components would not be developed. The approximately 17 miles of levee system protecting the proposed project area would not achieve a ULOP consistent with Senate Bill 5 requirements for urban areas; modernization of infrastructure to accommodate climate change resiliency goals would not occur; and there would be no

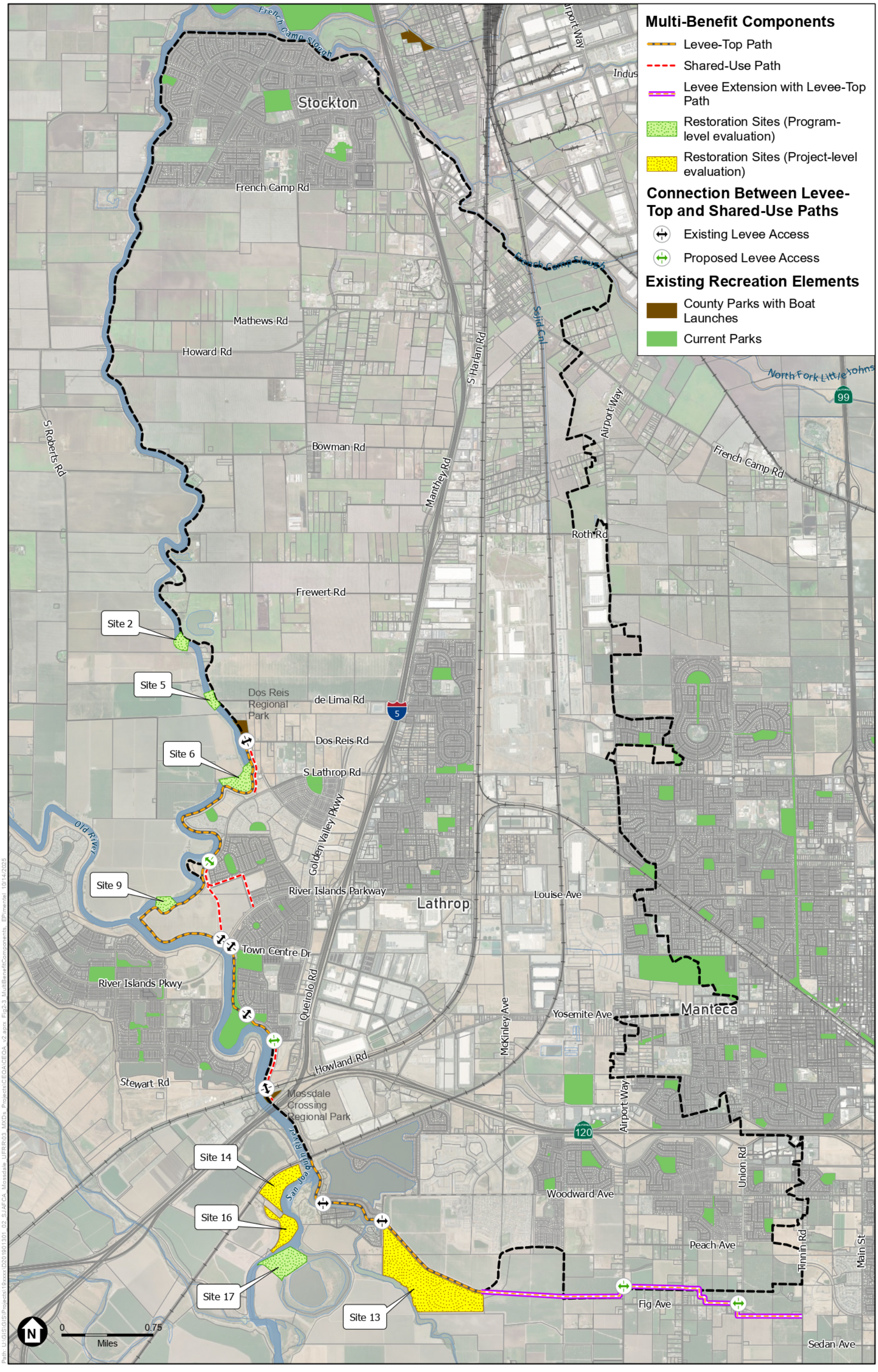


SOURCE: MAXAR, 2021; CPAD, 2021; KSN, 2022; PBI, 2022; ESA, 2022

SJAFCA Mossdale Tract Urban Flood Risk Reduction Project

Figure ES-2
Flood Risk Reduction Components

ESA



SOURCE: MAXAR, 2024; CPAD, 2024; KSN, 2025; PBI, 2025; ESA, 2025

SJAFCA Mossdale Tract Urban Flood Risk Reduction Project

Figure ES-3
Multi-Benefit Components

ESA

improvement to ecological function (the net quantity, diversity, and connectivity of riparian and floodplain habitats) or recreational opportunities along the lower San Joaquin River corridors. Deficiencies in the existing levee would leave areas within the Mossdale Tract area increasingly vulnerable to flood events in the future, potentially resulting in damage to property and/or existing land uses, increased run-off, and other risk factors.

The Dryland Levee Extension to Union Road would require a reduced construction footprint compared to the proposed project, extending the proposed dryland levee to Union Road instead of Tinnin Road, which would result in reduced construction impacts as compared to the proposed project. The Dryland Levee Extension to Union Road would therefore be the environmentally superior alternative. However, as discussed in subsection 6.4.2, this alternative would only partially achieve the overall objectives of the proposed project. This alternative would achieve the objective of implementing a multi-benefit project that would improve ecological function and habitat in the flood system and contribute additional social benefits, such as recreational features or opportunities in the proposed project area. However, extending the dryland levee to Union Road instead of Tinnin Road would result in reduced freeboard at the eastern terminus of the levee and reduced performance under future hydrologic uncertainties and climate change scenarios. The Dryland Levee Extension to Union Road would not fully achieve proposed project objectives to modernize flood risk reduction infrastructure and accommodate climate change resiliency goals.

ES.6 Potential Areas of Controversy and Concern

SJAFCA issued a Notice of Preparation (NOP) on Wednesday, April 22, 2022, to satisfy the requirements of CEQA and CEQA Guidelines Section 15082 (State Clearinghouse #2022040471). The NOP was also sent to public agencies, organizations, and individuals that requested receipt of SJAFCA's public notices, to invite them to provide input. The NOP was also available for review on SJAFCA's website: www.sjafca.org/projects/mossdale-tract. The public comment period for the NOP closed at 5:00 p.m. on Monday, May 23, 2022. In addition to the public and agency comment period, an in-person meeting was held at 6:30 p.m. on Monday, May 9, 2022, and a virtual public meeting was held at 11:30 a.m. on Thursday, May 12, 2022, via the Zoom web conference application. Concerns raised in response to the NOP, written comments, and verbal comments received at the scoping meeting were considered during the preparation of this Draft EIR. The NOP and comment letters are included as Appendix A to the Draft EIR.

ES.7 Draft Environmental Impact Report

This Draft EIR will be published and made available to federal, state, and local agencies and interested organizations and individuals who may want to review and comment on the adequacy of the analysis in this Draft EIR. Notice of this Draft EIR will be sent directly to persons and agencies that commented on the NOP. The 45-day public review period for this Draft EIR is Friday December 19, 2025 through Monday February 2, 2026. During the public review period, written comments should be mailed or emailed to:

Ryan Curry
San Joaquin Area Flood Control Agency
2800 March Lane, Suite 200
Stockton, CA 95219
e-mail: Ryan.Curry@sjafca.org

The Draft EIR is available for review at SJAFCA's office during normal business hours at 2800 W March Lane, Suite 200, Stockton, CA, 95219. The Draft EIR is also available on SJAFCA website:

https://www.sjafca.org/projects/mossdale-tract

During the 45-day review period, a virtual public meeting will be via Zoom on Tuesday January 13 from 6-7 p.m. Pacific Time. The Zoom information will be posted on SJAFCA's website:

https://www.sjafca.org/projects/mossdale-tract

Comments are due no later than 5:00 p.m. Pacific Time on Monday February 2, 2026.

Comments from individual respondents, including names and home addresses of respondents, will be made available for public review. Commenters may request that SJAFCA withhold their contact information from public disclosure, which will be honored to the extent allowable under California law. If the commenter wishes SJAFCA to consider withholding this information, this must be stated prominently at the beginning of the comments.

ES.8 Summary of Impacts

Table ES-1 presents a summary of the impacts and mitigation measures identified for the proposed project evaluated in this Draft EIR. The complete impact statements and mitigation measures are presented in the resource sections in Chapter 3, *Environmental Setting, Impacts, and Mitigation Measures*. The level of significance for each impact was determined using thresholds of significance presented in each resource section of Chapter 3. Significant impacts are those adverse environmental impacts that meet or exceed the standards of significance; less-than-significant impacts would not exceed the standards of significance. For each impact identified, Table ES-1 presents the following information:

- The environmental impact statement.
- The level of significance before mitigation for each proposed project component: S – Significant; LS – Less than Significant; NI – No Impact.
- For significant impacts, recommended mitigation measures. Each mitigation measure identifies which proposed project component that it applies to using the following abbreviations:
  - Flood Risk Reduction Components – FRR.
  - Ecosystem Restoration Sites 13, 14, and 16 – RS.
  - Other Multi-Benefit Components – MB.
- For significant impacts, the level of significance after mitigation for the applicable proposed project component (LSM – Less than Significant after Mitigation; SU – Significant and Unavoidable).

TABLE ES-1
SUMMARY OF IMPACTS AND MITIGATION MEASURES

Impact	Significance Before Mitigation			Mitigation Measure	Significance After Mitigation		
	FRR	RS	MB		FRR	RS	MB
3.2 Aesthetics							
3.2-1: Implementation of the proposed project could have a substantial adverse effect on scenic views, scenic vistas, and scenic resources.	LS	LS	LS	**(FRR/RS/MB):** None required.	LS	LS	LS
3.2-2: Implementation of the proposed project could substantially degrade the existing visual character or quality of the site and its surroundings or conflict with applicable zoning and other regulations governing scenic quality.	LS	LS	LS	**(FRR/RS/MB):** None required.	LS	LS	LS
3.2-3: Implementation of the proposed project could create a new source of substantial light or glare which would adversely affect day or nighttime views in the area.	S	S	S	**Mitigation Measure 3.2-3 (FRR/RS/MB):** SJAFCA shall require its construction contractors to ensure that all temporary lighting used for security of the staging areas is shielded or directed away from nearby residences to avoid or minimize any direct illumination onto light-sensitive receptors located outside of the proposed project area.	LSM	LSM	LSM
3.3 Agriculture Resources							
3.3-1: Implementation of the proposed project could convert existing Important Farmland to non-agricultural uses.	S	S	S	**Mitigation Measure 3.3-1 (FRR/RS/MB):** Permanent conversion of Important Farmland shall be mitigated by adhering to the requirements of the San Joaquin County Multi-Species Habitat Conservation and Open Space Plan, as well as other local ordinances, related to agricultural conservation and mitigation. Specifically, any loss or conversion of Important Farmland due to implementation of the proposed project shall be mitigated by preserving other Important Farmland of equal or greater value in perpetuity by acquiring an agricultural conservation easement, or by contributing funds to a land trust or other entity qualified to preserve Important Farmland in perpetuity at a ratio of 1:1.	SU	SU	SU
3.3-2: Implementation of the proposed project could conflict with existing zoning for agricultural use, or a Williamson Act contract.	LS	LS	LS	**(FRR/RS/MB):** None required.	LS	LS	LS
3.3-3: Implementation of the proposed project could involve other changes in the existing environment that could result in the conversion of Important Farmland to non-agricultural use.	LS	LS	LS	**(FRR/RS/MB):** None required.	LS	LS	LS
3.4 Air Quality							
3.4-1: Implementation of the proposed project could conflict or obstruct the implementation of air quality plans adopted by the SJVAPCD and any other applicable air quality plans.	S	S	S	**Mitigation Measure 3.4-1 (FRR/RS/MB):** Before starting onsite construction activities, construction contractors shall be required to submit a Construction Emissions Minimization Plan (Plan) to the SJAFCA for review and approval. The Plan shall state, in reasonable detail, how the contractor will achieve fleet reduction of 20 percent in NOx emissions over the statewide fleet average. The Plan shall rely on any combination of the following measures to meet this requirement: 1. *Engine Requirements.* All off-road equipment greater than 25 horsepower and operating for more than 20 total hours over the entire duration of construction activities shall meet the following requirements: a. Portable equipment, such as generators, shall be powered by grid electricity. If grid electricity is not available, propane or natural gas generators shall be used b. Electric engines shall be used for all equipment that is commercially available (i.e., inventory is available for the contractor team to rent or buy at the time needed based on the construction schedule) as plug-in or battery-electric equipment during each construction phase and activity. c. Engines that cannot be electrically powered must meet or exceed either U.S. EPA or CARB Tier 4 Final off-road emission standards. d. Engines shall be fueled with alternative fuels as commercially available during each construction phase and activity. This may include natural gas, propane, hydrogen fuel cell, and electricity. e. Any other control technology available in the future may be included in the Plan as substitutions for the above items a–d, provided that it can be documented that (1) the technology would result in comparable NO_X emissions reductions and (2) it would not increase other pollutant emissions or result in other additional impacts, such as noise. This may include new alternative fuels or engine technology for off-road equipment (such as electric or hydrogen fuel cell equipment) that is not available as of 2022. 2. *Emissions Estimates.* The Plan shall include estimates of the construction timeline by phase, with a description of each piece of off-road equipment required for every construction phase. The description may include, but is not limited to: equipment type, equipment manufacturer, equipment identification number, engine model year, engine certification (Tier rating), horsepower, engine serial number, expected fuel type (e.g., diesel, gasoline, electric, propane, natural gas), and hours of operation. The Plan shall also include an updated calculation of expected annual construction NO_X emissions. The Plan shall document the project's performance in relation to the threshold of 10 tons of NO_X per year.	LSM	LSM	LSM

LS = less than significant; LSM = less than significant after mitigation; NI = no impact; S = significant; SU = significant and unavoidable.

Impact	Significance Before Mitigation			Mitigation Measure	Significance After Mitigation		
	FRR	RS	MB		FRR	RS	MB
				3. *Reporting.* After start of construction activities, the SJAFCA shall submit biannual reports to the SJAFCA documenting compliance with the Plan. The biannual reports shall include a calculation of NO_X emissions for all construction activities completed prior to the biannual report for all phases of construction completed. Emissions shall be reported in tons per year for each calendar year. Within six months of the completion of construction activities, SJAFCA shall submit to the SJAFCA a final report summarizing construction activities. The final report shall indicate the start and end dates and duration of each construction phase (or Reach and Activity). For each phase, the report shall include detailed information required above. The report shall also include a final inventory of NO_X emissions for all construction activities completed. Emissions shall be reported in average daily pounds (for each construction period during each calendar year) and total tons per calendar year. 4. *Certification Statement and Onsite Requirements.* Prior to commencing construction activities, SJAFCA shall certify (1) compliance with the Plan, and (2) all applicable requirements of the Plan have been incorporated into contract specifications.			
3.4-2: Implementation of the proposed project could result in an increase of criteria pollutants for which the project region is non-attainment under an applicable federal or state ambient air quality standard.	S	S	S	**Mitigation Measure (FRR/RS/MB):** Implement Mitigation Measure 3.4-1.	LSM	LSM	LSM
3.4-3: Implementation of the proposed project could result in health risk impacts from exposure of sensitive receptors to substantial pollutant concentrations.	S	S	S	**Mitigation Measure (FRR/RS/MB):** Implement Mitigation Measure 3.4-1.	LSM	LSM	LSM
3.4-4: Implementation of the proposed project could result in emissions (such as those leading to odors) that would affect a substantial number of people.	LS	LS	LS	**(FRR/RS/MB):** None required.	LS	LS	LS
3.4-5: Implementation of the proposed project could expose workers and sensitive receptors to the risk of Valley Fever.	LS	LS	LS	**(FRR/RS/MB):** None required.	LS	LS	LS
3.5 Biological Resources – Aquatic							
3.5-1: Implementation of the proposed project could result in direct or indirect impacts to listed fish species and their associated habitat and could interfere with movement of native resident or migratory fish or impede the use of fish hatchery sites.	LS	LS	LS	**(FRR/RS/MB):** None required.	LS	LS	LS
3.6 Biological Resources – Terrestrial							
3.6-1: Implementation of the proposed project could result in substantial adverse effects, either directly or through habitat modifications, to species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by CDFW or USFWS.	S	S	S	**Mitigation Measure 3.6-1a (FRR/RS/MB):** Before SJAFCA initiates any work in the proposed project area, including grading, a qualified biologist would conduct mandatory contractor/worker awareness training for all construction (FRR/RS/MB) and operations (MB) personnel. It would be provided to brief them on the need to avoid effects on sensitive biological resources (e.g., riparian habitat, special-status species, wetlands and other sensitive biological communities) and the penalties for not complying with permit requirements. The biologist would inform all construction personnel about the life history of special-status species, including but not limited to VELB, Swainson's hawk, riparian brush rabbit, northwestern pond turtle, burrowing owl, MBTA species, bats, and special-status plants with potential for occurrence on the site, the importance of maintaining habitat and the terms and any applicable regulatory permit conditions. The training would also cover the restrictions and guidelines that must be followed by all personnel to reduce or avoid effects on sensitive biological communities and special-status species during project construction. The crew leader would be responsible for ensuring that crew members adhere to the guidelines and restrictions. Educational training would be conducted for new personnel as they are brought on the job. General restrictions and guidelines for vegetation and wildlife that must be followed by personnel include the life history and status and of special-status species and their habitat, how to identify these species and their habitats (e.g., nesting, roosting and foraging habitat, elderberry shrubs, and riparian habitat), what to do if these species are encountered during proposed project construction activities and explain the state and federal laws pertaining to them and the possible penalties for non-compliance. **Mitigation Measure 3.6-1b (FRR/MB):** SJAFCA shall implement the following measures to avoid and minimize effects on Crotch's bumble bee for construction (FRR/MB) and O&M (MB) activities as long as Crotch's bumble bee is considered a CESA candidate species or is listed under CESA: a. **Pre-Activity Nest Survey**. If ground-disturbing activities will occur during the nesting season (February 1 through October 31) in an area with burrows, a pre-activity nest survey shall be conducted within 30 days of initiation of activities to evaluate whether an active nest is present within work areas. Bee identification shall be documented using photos of bees taken from multiple angles. Only approved biologists are allowed to handle, capture, or net bees if needed for identification, as described in the California Department of Fish and Wildlife's 2023 Survey Considerations for California Endangered Species Act Candidate Bumble Bee Species, or most recent version. b. **Nest Avoidance**. If an active Crotch's bumble bee nest is detected within a work area, an avoidance buffer of 100 feet (30.5 meters) shall be established. The buffer may be reduced if determined by a qualified biologist that, based on bee behavior, a reduced buffer will not affect nesting individuals. Ground-disturbing activities shall avoid active nests during the Crotch's bumble bee nesting period (February 1 through October 31), to the maximum extent feasible, or until the nest is determined to no longer be active by a qualified biologist. c. **Consultation.** If impacts cannot be feasibly avoided and construction could result in potential direct or indirect impacts to Crotch's bumble bee and/or occupied habitats, SJAFCA shall consult with CDFW to ensure compliance with the California Endangered Species Act, which may include obtaining a "take" permit (e.g., CESA Section 2081 Incidental take Permit from CDFW).	LSM	LSM	LSM

LS = less than significant; LSM = less than significant after mitigation; NI = no impact; S = significant; SU = significant and unavoidable.

Impact	Significance Before Mitigation			Mitigation Measure	Significance After Mitigation		
	FRR	RS	MB		FRR	RS	MB
				Mitigation Measure 3.6-1c (FRR/RS/MB): During construction (FRR/RS/MB) and operational (MB) activities SJAFCA shall implement the measures included in the *Framework for Assessing Impacts to the Valley Elderberry Longhorn Beetle* (USFWS 2017; see Appendix E to the Draft EIR) to reduce effects on valley elderberry longhorn beetle. The framework includes avoidance and minimization measures for shrubs that would not be transplanted within 50 meters of the proposed project, methodologies for transplanting of shrubs, and methodologies for compensatory mitigation guidance for removed habitat. **Mitigation Measure 3.6-1d (FRR/RS/MB):** SJAFCA shall implement the following measures to reduce effects on nesting Swainson's hawks during construction (FRR/RS/MB) and O&M (MB) activities. a. **Breeding Season Survey.** If work occurs during the Swainson's hawk breeding season, SJAFCA would conduct a breeding season survey for nesting birds that would be conducted for all trees and shrubs that would be removed or disturbed that are located within 0.5 mile of construction activities, including grading. Swainson's hawk surveys would be completed during at least two of the following survey periods: January 1 to March 20; March 20 to April 5; April 5 to April 20; and June 10 to July 30, with no fewer than three surveys completed in at least two survey periods and with at least one of these surveys conducted no more than 48 hours from the initiation the proposed project activities to confirm the absence of nesting. If the biologist determines that the area surveyed does not contain any active nests, construction activities, including removal or pruning of trees and shrubs, could commence without any further mitigation. b. **Active Nest Buffer.** If active nests are found, a buffer of 0.25 mile shall be established until the nest is no longer active. A qualified biologist may propose a smaller distance from the nest subject to SJAFCA approval in coordination with CDFW. The purpose of the buffer shall be to avoid any take of nesting birds until the nest is no longer active (i.e., the young have fledged or the nest otherwise becomes inactive). The extent of an alternative buffer will depend on the level of noise or construction disturbance compared to ambient noise or other disturbances, line of sight, barriers, or development between the next and activities, and other site-specific circumstances. A qualified biologist shall be present on-site daily during construction activities within .025 mile of an active nest to ensure the buffer distance is adequate and the birds are not showing any signs of stress. If signs of stress that could cause nest abandonment are noted (such as defensive flights at intruders, getting up from a brooding position, or flying off the nest), construction activities shall cease until they can be resumed without signs of stress. **Mitigation Measure 3.6-1e (FRR/RS/MB):** SJAFCA shall implement the following for construction (FRR/RS/MB) and O&M (MB) activities to reduce effects on riparian brush rabbit per USFWS guidance (USFWS, 2019): a. **Pre-construction Surveys.** Prior to the initiation of any ground-disturbing construction activities, an approved biologist shall conduct a reconnaissance-level survey to determine if any riparian brush rabbits occur within the proposed work areas. If any riparian brush rabbits are observed within the construction areas, construction shall only be allowed to commence when the observed riparian brush rabbit has exited the work area and at the discretion of the qualified biologist. b. **Silt Fencing.** Prior to initiation of any ground-disturbing construction activities, silt fencing shall be installed at the top of the waterside of the levee to prevent encroachment of construction personnel and equipment as well as minimize the potential for sedimentation to avoided riparian habitat and Oxbow Preserve. c. **Exclusion Fencing.** The boundary of the proposed project footprint shall be delineated with exclusionary fencing (silt fence with bottom buried) to prevent riparian brush rabbits from entering the site during construction. Only tightly woven netting or similar material shall be used for erosion control materials, such as coir rolls and geo-textiles, within or adjacent to suitable habitat of sensitive species. No plastic monofilament matting shall be used. **Mitigation Measure 3.6-1f (FRR/RS/MB):** SJAFCA shall implement the following measures to avoid and minimize effects on northwestern pond turtle for construction (FRR/RS/MB) and O&M (MB) activities: a. A qualified biologist shall conduct a pre-construction survey within 7 days before the start of project activities. If no northwestern pond turtles are observed, SJAFCA shall document that information for the file, and no additional measures would be required, except as described below for dewatering activities. b. Should any northwestern pond turtles be detected on land during the pre-construction survey, the qualified biologist shall identify the location using GPS coordinates. With prior CDFW approval, a qualified biologist may relocate any northwestern pond turtles found on land or in aquatic habitat within the construction footprint to suitable aquatic habitat at least 200 feet away from the construction footprint. c. If northwestern pond turtles are observed on land within the construction footprint during proposed project activities, work shall be stopped within approximately 200 feet of the turtle, and a qualified biologist shall be notified immediately. If possible, the turtle will be allowed to leave on its own and the qualified biologist will remain in the area until the biologist deems his or her presence no longer necessary to ensure that the turtle is not harmed. Alternatively, with prior CDFW approval, the qualified biologist may capture and relocate the turtle unharmed to suitable habitat at least 200 feet outside the construction footprint. If a northwestern pond turtle nest is unintentionally uncovered during project activities, work shall be stopped within 200 feet of the nest and SJAFCA shall contact CDFW to determine the appropriate next steps. **Mitigation Measure 3.6-1g (FRR/RS/MB):** SJAFCA shall implement the following measures to avoid and minimize effects on burrowing owl for construction (FRR/RS/MB) and O&M (MB) activities: a. Prior to initiation of any excavation activities at borrow sites, SJAFCA shall conduct a pre-construction survey for burrowing owls in accordance with CDFW guidelines described in the Staff Report on Burrowing Owl Mitigation. If no burrowing owls are located during these surveys, then effects to burrowing owls would be less than significant and no mitigation would be required. b. If burrowing owls are located on or immediately adjacent to the site, then coordination would occur to determine the proper measures that would need to be implemented to ensure that burrowing owls are not impacted by the proposed project. Potential mitigation measures that could be implemented include: i. A qualified biologist shall conduct appropriate surveys at and around material source sites, to determine the presence/absence of burrowing owls. At least one survey shall be conducted no more than 1 week prior to the onset of any construction activity. ii. A 250-foot buffer, within which no new activity would be permissible, shall be maintained between the proposed project activities and nesting burrowing owls. This protected area shall remain in effect until August 31 or at the discretion of a qualified biologist, until the young owls are foraging independently.			

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Impact	Significance Before Mitigation			Mitigation Measure	Significance After Mitigation		
	FRR	RS	MB		FRR	RS	MB
				iii. No burrowing owls shall be evicted from burrows during the nesting season (February 1 through August 31). Eviction outside the nesting season could be permitted pending evaluation of eviction plans and receipt of formal written approval from CDFW authorizing the eviction. **Mitigation Measure 3.6-1h (FRR/RS/MB):** SJAFCA shall implement the following measures to avoid and minimize effects on breeding and migratory birds for construction (FRR/RS/MB) and O&M (MB) activities: a. **Clearing and Grubbing.** Tree and shrub removal and work in other areas scheduled for vegetation clearing, grading, or other construction or O&M activities shall not be conducted during the nesting season (generally February 15 through September 30, depending on the species and environmental conditions for any given year), when feasible. b. **Pre-construction Surveys.** Conduct surveys to locate any nest sites within proposed construction and O&M areas in the spring. Surveys shall be conducted by a qualified biologist using approved methods. If nests or young of these species are not located, construction may proceed. If nests or young are located, nest buffer requirements shall be implemented as described below. c. **Active Nest Buffer.** If nesting birds have been identified within or adjacent to the construction footprint, avoidance buffers shall be established of 500 feet for white-tailed kite, northern harrier, and loggerhead shrike; 300 feet for common raptors; 200 feet for heron or egret rookeries, and 100 feet for common passerines. Reduced buffers may be implemented if recommended by the monitoring biologist. Buffers 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. No construction activities shall occur within the buffer zone, which would be maintained until the young have fledged (as determined by a qualified biologist). **Mitigation Measure 3.6-1i (FRR/RS/MB):** In advance of tree and structure removal, a pre-construction survey for bats shall be conducted by a qualified biologist to characterize potential bat habitat and identify active roost sites within the proposed project area. Should potential roosting habitat or active bat roosts be found in trees and/or structures to be removed, the following measures shall be implemented: a. Removal of trees and structures shall occur when bats are active, approximately between the periods of March 1 to April 15 and August 15 to October 15, and outside of bat maternity roosting season (approximately April 15 – August 31) and outside of months of winter torpor (approximately October 15 – February 28), to the extent feasible. b. If removal of trees and structures during the periods when bats are active is not feasible and active bat roosts being used for maternity or hibernation purposes are found on or in the immediate vicinity of the proposed project area where tree and structure removal is planned, a no-disturbance buffer of 100 feet shall be established around these roost sites until they are determined to be no longer active by the qualified biologist. c. The qualified biologist shall be present during tree and structure removal if active bat roosts, which are not being used for maternity or hibernation purposes, are present. Trees and structures with active roosts shall be removed only when no rain is occurring or is forecast to occur for three days and when daytime temperatures are at least 50°F. d. Removal of trees with active or potentially active roost sites shall follow a two-step removal process: i. On the first day of tree removal and under supervision of the qualified biologist, branches and limbs not containing cavities or fissures in which bats could roost, shall be cut only using chainsaws. ii. On the following day and under the supervision of the qualified biologist, the remainder of the tree may be removed, either using chainsaws or other equipment (e.g., excavator or backhoe). e. Removal of structures containing or suspected to contain active bat roosts, which are not being used for maternity or hibernation purposes, shall be dismantled under the supervision of the qualified biologist in the evening and after bats have emerged from the roost to forage. Structures shall be partially dismantled to significantly change the roost conditions, causing bats to abandon and not return to the roost. If deemed necessary by a qualified biologist, bat exclusion devises may be installed to prevent the re-entry of bats to a roost. **Mitigation Measure 3.6-1j (RS/MB):** SJAFCA shall implement the following measures to avoid and minimize effects on special-status plants during restoration activities: a. **Pre-construction Surveys.** Qualified botanists shall survey the proposed project area to document the presence of special-status plants before project implementation and would conduct a floristic survey that follows the CDFW botanical survey guidelines (CDFW, 2018). All plant species observed would be identified to the level necessary to determine whether they qualify as special-status plants or are plant species with unusual or significant range extensions. The guidelines also require that field surveys be conducted when special-status plants that could occur in the area are evident and identifiable, generally during the reported blooming period. To account for different special-status plant identification periods, one or more series of field surveys may be required in spring and summer. If any special-status plants are identified during the surveys, the botanist would photograph and map locations of the plants, document the location and extent of the special-status plant population on a CNDDB Survey Form and submit the completed Survey Form to the CNDDB. The amount of compensatory mitigation required would be based on the results of these surveys. b. **Avoidance.** If one or more special-status plants is identified in the proposed project area during pre-construction surveys, SJAFCA shall redesign or modify the proposed project components to avoid indirect or direct effects on special-status plants wherever feasible. If special-status plants cannot be avoided by redesigning proposed project components, implementation of mitigation would avoid significant effects on special-status plants. c. **Preservation.** If complete avoidance of special-status plants is not feasible, the effects of the proposed project on special-status plants would be compensated through off-site preservation at a one-to-one ratio or as negotiated with the resource agencies. Suitable habitat for affected special-status plant species would be purchased in a conservation area or established onsite and preserved and managed in perpetuity. Detailed information would be provided to the agencies on the location and quality of the preservation area, the feasibility of protecting and managing the area in perpetuity and the responsible parties. Other pertinent information also would be provided, to be determined through future coordination with the resource agencies. **Mitigation Measure (FRR/RS/MB):** Implement Mitigation Measure 3.6-2 (see Impact 3.6-2).			

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Impact	Significance Before Mitigation			Mitigation Measure	Significance After Mitigation		
	FRR	RS	MB		FRR	RS	MB
3.6-2: Implementation of the proposed project could result in adverse effects to riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations, or by CDFW or USFWS.	S	S	LS	**Mitigation Measure (FRR):** Implement Mitigation Measure 3.6-1a. **Mitigation Measure 3.6-2 (FRR/RS):** SJAFCA shall conduct an aquatic resources delineation to identify potential wetlands and other waters that fall under state and federal jurisdiction within proposed project areas. During construction and O&M activities, design and or refinement of proposed project activities would be implemented to reduce impacts on sensitive habitat to the extent practicable. Refinements implemented to reduce the loss of riparian and wetland/waters habitat would include reducing the impact footprint, constructing on the landside of the levee to avoid impacts to riparian and wetland/waters habitat, and constructing within the existing disturbed areas of the existing levee. Where practicable, trees on the waterside slopes that are not dead and/or downed would be avoided and not impacted by rock slope protection efforts. Temporary and permanent impacts to riparian habitat and wetland/waters, that cannot be mitigated through avoidance, minimization, or remediation shall be mitigated to ensure no net loss through compensation, by restoring riparian and wetlands/waters habitat at one of the proposed ecosystem restoration sites or an approved offsite location, mitigation bank, or in-lieu fee program. Riparian and wetlands/waters habitat will not be restored where it would be removed by future maintenance activities. A revegetation plan would be prepared by a qualified biologist or landscape architect and reviewed by the appropriate agencies. The revegetation plan would specify the use of beneficial native plants appropriate for each area that provide a diverse variety of grasses and forbs that support native wildlife species.	LSM	LSM	LS
3.6-3: Implementation of the proposed project could result in adverse effects on state or federally protected wetlands (including but not limited to marsh, vernal pool, and coastal) through direct removal, filling, hydrological interruption, or other means.	S	S	LS	**Mitigation Measure (FRR/RS):** Implement Mitigation Measures 3.6-1a and 3.6-2.	LSM	LSM	LS
3.6-4: Implementation of the proposed project could interfere with the movement of native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors or impede the use of native wildlife nursery site.	S	S	LS	**Mitigation Measure (FRR/RS):** Implement Mitigation Measures 3.6-1a through 3.6-1h and 3.6-2.	LSM	LSM	LS
3.6-5: Implementation of the proposed project could conflict with local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance.	S	S	S	**Mitigation Measure (FRR/RS/MB):** Implement Mitigation Measures 3.6-1a and 3.6-2. **Mitigation Measure 3.6-5 (FRR/RS/MB):** In the City of Stockton, SJAFCA shall submit an application for a heritage tree removal permit for any oaks that will be removed that meet Stockton Municipal Code size requirements. SJAFCA shall replace heritage trees removed per the requirements of the municipal code on a 3:1 basis with each replacement tree being of at least 15-gallon container size. SJAFCA shall comply with any other applicable local code regarding tree removal.	LSM	LSM	LSM
3.6-6: Implementation of the proposed project could conflict with provisions of an adopted habitat conservation plan, natural community conservation plan, or other approved local, regional, or state habitat conservation plan.	LS	LS	LS	**(FRR/RS/MB):** None required.	LS	LS	LS
3.7 Cultural Resources							
3.7-1: Implementation of the proposed project could cause a substantial adverse change in the significance of a historical resource pursuant to CEQA Guidelines Section 15064.5.	S	NI	S	**Mitigation Measure 3.7-1 (FRR/MB):** Before implementation of the proposed project, SJAFCA shall, in consultation with a qualified archaeologist and architectural historian, defined as those meeting the U.S. Secretary of the Interior's Professional Qualifications Standards for Archeology and Architectural History, and California Native American Tribes culturally and geographically affiliated with the proposed project area, develop and implement a Cultural Resources Management Plan (CRMP) for the proposed project. The CRMP shall be submitted to the CHRIS upon SJAFCA approval, and shall require the following: • A cultural resources survey and associated documentation for those portions of the proposed project area not covered by the pedestrian survey conducted to date. • An evaluation of any cultural resources identified in the proposed project area during the supplemental survey for California Register-eligibility (i.e., as qualifying as historical resources, as defined in CEQA Guidelines Section 15064.5) as well as whether they qualify as archaeological resources, pursuant to CEQA Guidelines Section 15064.5. Such evaluation may require archaeological testing (excavation), potentially including laboratory analysis, consultation with relevant California Native American Tribes (for indigenous resources), or archival research. The evaluation should also include any cultural resources previously recorded in the proposed project area that have not been previously evaluated for California Register-eligibility (e.g., P-39-005084). • An assessment of potential proposed project impacts on any cultural resources identified in the proposed project area that qualify as historical resources (per CEQA Guidelines Section 15064.5) and/or archaeological resources (per CEQA Guidelines Section 15064.5). This shall include an analysis of whether the proposed project's potential impacts would materially alter a resource's physical characteristics that convey its historical significance and that justify its inclusion (or eligibility for inclusion) in the California Register or a qualified local register. • A technical report documenting the cultural resources survey, evaluations of California Register-eligibility, and assessment of potential proposed project impacts on cultural resources meeting U.S. Secretary of the Interior's Standards for cultural resources technical reporting. This report shall be submitted to the CHRIS upon SJAFCA approval. The CRMP shall also include and require implementation of the following: • Methods and procedures associated with protective measures to avoid impacts on archaeological resources P-39-000006 and P-39-000014/000141 during proposed project construction required under Mitigation Measure 3.7-2(b).	SU	NI	SU

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Impact	Significance Before Mitigation			Mitigation Measure	Significance After Mitigation		
	FRR	RS	MB		FRR	RS	MB
				• Methods and procedures associated with the cultural resources awareness and sensitivity training required under Mitigation Measure 3.7-2(c). • The protocol for the monitoring and reporting of unanticipated discoveries shall follow the methods and procedures described in the Archaeological and Tribal Monitoring Plan portion of the CRMP required in Mitigation Measures 3.7-2(d), Mitigation Measures 3.7-2(e) and 3.7-2(f).			
3.7-2: Implementation of the proposed project could cause a substantial adverse change in the significance of an archaeological resource pursuant to CEQA Guidelines Section 15064.5.	S	S	S	**Mitigation Measure 3.7-2a (FRR/RS/MB):** Implement Mitigation Measure 3.7-1. **Mitigation Measure 3.7-2b (FRR):** Prior to construction activities, a membrane shall be placed over the recorded site boundaries of P-39-000006 and -39-000014/000141 with a 50-foot buffer. A thin (3 to 6-inch-thick) layer of imported gravel and/or sediment shall then be placed over the membrane to cover the entire site boundary and buffer. The sediment and membrane shall be maintained throughout proposed project construction to ensure that the resource boundaries are not impacted by the proposed project. At the conclusion of proposed project construction, the imported gravel and/or sediment and membrane shall be carefully removed to avoid disturbance to the original ground surface at the resources' boundaries. The placement, maintenance, and removal of the membrane and imported gravel and/or sediment shall be subject to the cultural resources monitoring required under Mitigation Measure 3.7-2(d). **Mitigation Measure 3.7-2c (FRR/RS/MB):** Before implementation of the proposed project, SJAFCA shall, in consultation with a qualified archaeologist, defined as those meeting the U.S. Secretary of the Interior's Professional Qualifications Standards for Archeology, and California Native American Tribes culturally and geographically affiliated with the proposed project area, develop a Cultural Resources Awareness and Sensitivity Training Program for all construction and field workers involved in proposed project ground-disturbing activities. The program shall include a presentation that covers, at a minimum, the types of cultural resources common to the area, regulatory protections for cultural resources, and the protocol for unanticipated discovery of archaeological resources, submerged cultural resources, and human remains required under Mitigation Measures 3.7-2(e) to 3.7-2(f). Personnel working in areas of proposed project ground-disturbing activities shall receive the training prior to working in these areas. Written materials associated with the program shall be provided to proposed project personnel as appropriate. Documentation of the training attendance shall be maintained by SJAFCA. **Mitigation Measure 3.7-2d (FRR/RS/MB):** An archaeologist meeting, or supervised by an archaeologist meeting, the Secretary of the Interior's Professional Qualifications Standards for Archeology, in addition a representative from a California Native American Tribe culturally and geographically affiliated with the proposed project area, shall be invited to conduct construction monitoring for all proposed project ground-disturbing construction activities in culturally designated areas. The conduct and work of any Tribal Monitor shall be consistent with the NAHC *Guidelines for Native American Monitors/Consultants* (NAHC 2005). The methods and procedures for the monitoring shall follow those presented in the ATMP portion of the CRMP, including unanticipated discovery and reporting protocol. Monitoring may be concluded upon mutual agreement between SJAFCA, the archaeologist, and the California Native American Tribe. **Mitigation Measure 3.7-2e (FRR/RS/MB):** If archaeological resources are encountered during proposed project construction, all construction activities within 100 feet shall halt, and a qualified archaeologist, defined as an archaeologist meeting the Secretary of the Interior's Professional Qualifications Standards for Archeology, shall inspect the find within 24 hours of discovery and notify SJAFCA of their initial assessment. Indigenous archaeological materials might include: obsidian and chert flaked-stone tools (e.g., projectile points, knives, scrapers) or toolmaking debris; culturally darkened soil (midden) containing heat-affected rocks, artifacts, or shellfish remains; stone milling equipment (e.g., mortars, pestles, handstones); and battered stone tools, such as hammerstones and pitted stones. Historic-era materials might include: building or structure footings and walls; and deposits of metal, glass, and/or ceramic refuse. If SJAFCA, based on recommendations from the qualified archaeologist and California Native American Tribes that are traditionally and culturally affiliated with proposed project area (if the resource is indigenous), determines that the resource may qualify as a historical resource or unique archaeological resource (pursuant to CEQA Guidelines Section 15064.5), or a tribal cultural resource (as defined in PRC Section 21074), the resource shall be avoided, if feasible. Consistent with CEQA Guidelines Section 15126.4(b)(3), this may be accomplished through: planning construction to avoid the resource; incorporating the resource within open space; capping and covering the resource; or deeding the site into a permanent conservation easement. If avoidance of the resource is not feasible, SJAFCA shall continue to consult with California Native American Tribes that are traditionally and culturally affiliated with the proposed project area (if the resource is indigenous) and other appropriate interested parties to determine treatment measures to avoid, minimize, or mitigate any potential impacts to the resource pursuant to PRC Section 21083.2 and CEQA Guidelines Section 15126.4. This shall include documentation of the resource and may include data recovery (according to PRC Section 21083.2), if deemed appropriate, or other actions such as treating the resource with culturally appropriate dignity and protecting the cultural character and integrity of the resource (according to PRC Section 21084.3). Any technical report developed to document the implementation mitigation shall be submitted to the CHRIS upon SJAFCA approval, unless the document contains information that California Native American Tribes involved in the development of the mitigation deem should not be filed with the CHRIS, in which case, the report shall be submitted to the NAHC. **Mitigation Measure 3.7-2f (FRR/RS/MB):** If a shipwreck, and associated artifacts, or other cultural resource on or in the tide and submerged lands of California is encountered during proposed project construction or operation, Mitigation Measure 3.7-2(e) shall be implemented, in addition to the following measures: • SJAFCA shall initiate consultation with CSLC staff within two business days of the discovery. • Per PRC Section 6313(c), any submerged cultural resource remaining in state waters for more than 50 years shall be presumed to be archaeologically or historically significant. • If the find is a maritime archaeological resource, the qualified archaeologist assessing the find shall have expertise in maritime archaeology. • SJAFCA shall consult with the CSLC regarding assessment of the find and development of any treatment measures to minimize or mitigate potential impacts on the resource, pursuant to PRC Section 21083.2 and CEQA Guidelines Section 15126.4. Treatment measures would typically consist of (but would not necessarily be limited to) sample excavation, artifact collection, site documentation, and historical research, with the aim to target the recovery of important scientific data contained in the portion(s) of the significant resource to be affected by the proposed project. SJAFCA shall prepare a treatment plan to	SU	LSM	SU

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Impact	Significance Before Mitigation			Mitigation Measure	Significance After Mitigation		
	FRR	RS	MB		FRR	RS	MB
				document the treatment measures and their implementation methods. The treatment plan shall include provisions for analysis of data in a regional context, reporting of results within a timely manner, curation of artifacts and data at an approved facility, and dissemination of reports to local and state repositories, libraries, and interested professionals. Any treatment measures implemented shall be documented in a professional-level technical report (e.g., archaeological testing results report, archaeological data recovery report, ethnographic report) authored by a qualified archaeologist, to be filed with the CHRIS. Proposed project construction work at the location of the find may commence upon completion of the approved treatment and authorization by SJAFCA. Work may proceed in other parts of the proposed project area while the mitigation is being carried out. • SJAFCA shall submit to the CSLC any report prepared for the resource as part of the assessment of the find and implementation of treatment measures to minimize or mitigate potential impacts.			
3.7-3: Implementation of the proposed project could disturb human remains, including those interred outside of dedicated cemeteries.	S	S	S	**Mitigation Measure (FRR/MB):** Implement Mitigation Measures 3.7-2(b) through 3.7-2(d) **Mitigation Measure 3.7-3b (FRR/RS/MB):** In the event of discovery of any human remains during proposed project-related construction activities, such activities within 100 feet of the find shall cease until the San Joaquin County Coroner has been contacted to determine that no investigation of the cause of death is required. If the Coroner determines that the remains are not modern and are Native American in origin, the NAHC shall be contacted within 24 hours of the Coroner's determination. The NAHC shall then identify the person or persons it believes to be the most likely descendant (MLD) from the deceased Native American; the MLD shall then make recommendations to SJAFCA for the appropriate means of treating the human remains and any grave goods. Per PRC Section 5097.98, SJAFCA shall ensure that the immediate vicinity of the location of the human remains is not damaged or disturbed by further development activity until SJAFCA has discussed and conferred with the MLD regarding their recommendations, if applicable, taking into account the possibility of multiple human remains. Any technical report developed to document the implementation mitigation shall be submitted to the CHRIS and NAHC upon SJAFCA approval, unless the document contains information that California Native American Tribes involved in the development of the mitigation deem should not be filed with the CHRIS, in which case, the report shall be submitted only to the NAHC.	LSM	LSM	LSM
3.8 Energy							
3.8-1: Implementation of the proposed project could result in wasteful, inefficient, or unnecessary consumption of energy resources during construction or operation or conflict with or obstruct a state or local plan for renewable energy or energy efficiency	LS	LS	LS	**(FRR/RS/MB):** None required.	LS	LS	LS
3.9 Geology, Soils, and Mineral Resources							
3.9-1: Implementation of the proposed project could expose people or structures to potential substantial adverse effects involving strong seismic ground shaking; seismic-related ground failure, including liquefaction; and landslides.	LS	LS	LS	**(FRR/RS/MB):** None required.	LS	LS	LS
3.9-2: Implementation of the proposed project could result in substantial soil erosion or the loss of topsoil.	LS	LS	LS	**(FRR/RS/MB):** None required.	LS	LS	LS
3.9-3: The proposed project could be located on a geologic unit or soil that is unstable as a result of the proposed project, potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction or collapse, or be located on expansive or corrosive soils that could result in structural damage.	LS	LS	LS	**(FRR/RS/MB):** None required.	LS	LS	LS
3.9-4: Implementation of the proposed project could result in the loss of availability of a known mineral resource or recovery site that would be of value to the region and the residents of the state.	LS	LS	LS	**(FRR/RS/MB):** None required.	LS	LS	LS
3.9-5: Implementation of the proposed project could directly or indirectly destroy a unique paleontological resource or site or unique geologic feature.	S	S	S	**Mitigation Measure 3.9-1a (FRR/RS/MB):** Prior to the start of any ground-disturbing activities, a Qualified Paleontologist shall conduct pre-construction worker paleontological resources sensitivity training. The training shall include information on what types of paleontological resources could be encountered during excavations, what to do in case an unanticipated discovery is made by a worker, and laws protecting paleontological resources. All construction personnel shall be informed of the possibility of encountering fossils and instructed to immediately inform the construction foreperson or supervisor if any bones or other potential fossils are unexpectedly unearthed in an area where a paleontological monitor is not present. **Mitigation Measure 3.9-1b (FRR/RS/MB):** If a paleontological resource is discovered during construction, a Qualified Paleontologist or paleontological monitor shall be contacted and empowered to temporarily divert or redirect grading and excavation activities in the area of the exposed resource to facilitate evaluation of the discovery. An appropriate buffer area shall be established by the Qualified Paleontologist around the find where construction activities shall not be allowed to continue. Work shall be allowed to continue outside of the buffer area. All significant fossils shall be collected by the paleontological monitor and/or the Qualified Paleontologist. Collected fossils shall be prepared to the point of identification and catalogued before they are submitted to their final repository. Any fossils collected shall be curated at a public, non-profit institution with a research interest in the materials, such as the University of California Museum of Paleontology at Berkeley, if such an institution agrees to	LSM	LSM	LSM

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Impact	Significance Before Mitigation			Mitigation Measure	Significance After Mitigation		
	FRR	RS	MB		FRR	RS	MB
				accept the fossils. If no institution accepts fossil collection, they shall be donated to a local school in the area for educational purposes. Accompanying notes, maps, photographs, and a technical report shall also be filed at the repository and/or school. **Mitigation Measure 3.9-1c (FRR/RS/MB):** A Qualified Paleontologist shall select paleontological monitors meeting the Society for Vertebrate Paleontology standards (SVP 2010) who shall be present during all excavations in the Modesto Formation or in areas with high potential to encounter paleontological resources (e.g., excavation depths over five feet in previously undisturbed deposits). Depending on the conditions encountered, full-time monitoring can be reduced to part-time inspections or ceased entirely if determined adequate by the Qualified Paleontologist. The Qualified Paleontologist may spot check the excavation on an intermittent basis and recommend whether the depth of required monitoring should be revised based on his/her observations. Monitoring activities shall be documented in a Paleontological Resources Monitoring Report to be prepared by the Qualified Paleontologist at the completion of construction.			
3.10 Greenhouse Gas Emissions							
3.10-1: Implementation of the proposed project could generate greenhouse gas emissions that could have a significant impact on the environment.	LS	LS	LS	**Mitigation Measure (FRR/RS/MB):** Implement Mitigation Measure 3.4-1.	LS	LS	LS
3.10-2: Implementation of the proposed project could conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases.	LS	LS	LS	**(FRR/RS/MB):** None required.	LS	LS	LS
3.11 Hazards and Hazardous Materials							
3.11-1: Implementation of the proposed project could involve the routine transport, use, or disposal of hazardous materials and may result in reasonably foreseeable upset and accident conditions.	LS	LS	LS	**(FRR/RS/MB):** None required.	LS	LS	LS
3.11-2: Implementation of the proposed project could involve the storage or use of hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school.	LS	LS	LS	**(FRR/RS/MB):** None required.	LS	LS	LS
3.11-3: Implementation of the proposed project could interfere with an adopted existing emergency response plan or evacuation plan.	S	S	S	**Mitigation Measure (FRR/RS/MB):** Implement Mitigation Measure 3.17-1.	LSM	LSM	LSM
3.11-4: Implementation of proposed project could expose people or structures, either directly or indirectly, to significant loss, injury, or death due to wildland fires.	LS	LS	LS	**(FRR/RS/MB):** None required.	LS	LS	LS
3.12 Hydrology and Water Quality							
3.12-1: Implementation of the proposed project could violate any water quality standards or waste discharge requirements, or otherwise substantially degrade surface or ground water quality.	S	LS	LS	**Mitigation Measure 3.12-1 (FRR):** Prior to the start of construction and before activities that involve the use of bentonite materials, the contractor in coordination with SJAFCA shall develop and implement a Bentonite Slurry Spill Contingency Plan (BSSCP), or frac-out plan, to minimize the potential for a frac-out associated with excavation and tunneling activities, provide for timely detection of frac-outs, and ensure a “minimum-effect” response in the event of a frac-out and release of excavation fluid. The BSSCP shall identify sensitive areas such as wetlands and streams, map bore paths to avoid sensitive areas, and evaluate soil and weather conditions that could increase spill risks. The BSSCP shall also describe protocols for continuous visual checks and pressure monitoring systems to identify a loss of circulation. The BSSCP shall describe response actions such as stopping drilling, deploying containment measures like sandbags or silt fences, and recovering slurry using pumps or vacuum trucks to avoid any impacts to sensitive areas if a spill occurs.	LSM	LS	LS
3.12-2: Implementation of the proposed project could substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the basin.	LS	LS	LS	**(FRR/RS/MB):** None required.	LS	LS	LS
3.12-3: Implementation of the proposed project could substantially alter the existing drainage pattern of the site or area, in a manner which would: result in substantial erosion or siltation on- or off-site, or substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or offsite.	LS	LS	LS	**(FRR/RS/MB):** None required.	LS	LS	LS
3.12-4: Implementation of the proposed project could substantially alter the existing drainage pattern of the site or area in a manner which would impede or redirect flood flows.	LS	LS	LS	**(FRR/RS/MB):** None required.	LS	LS	LS
3.12-5: Implementation of the proposed project could risk release of pollutants due to project inundation in a flood hazard zone.	LS	LS	LS	**(FRR/RS/MB):** None required.	LS	LS	LS

LS = less than significant; LSM = less than significant after mitigation; NI = no impact; S = significant; SU = significant and unavoidable.

Impact	Significance Before Mitigation			Mitigation Measure	Significance After Mitigation		
	FRR	RS	MB		FRR	RS	MB
3.12-6: Implementation of the proposed project could conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan.	LS	LS	LS	**(FRR/RS/MB):** None required.	LS	LS	LS
3.13 Land Use and Planning							
3.13-1: Implementation of the proposed project could have the potential to physically divide an established community.	LS	LS	LS	**(FRR/RS/MB):** None required.	LS	LS	LS
3.13-2: Implementation of the proposed project could have the potential to cause a significant environmental impact if the proposed project conflicted with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental impact.	LS	LS	LS	**(FRR/RS/MB):** None required.	LS	LS	LS
3.14 Noise and Vibration							
3.14-1: Implementation of the proposed project could 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 applicable standards of other agencies.	S	S	S	**Mitigation Measure 3.14-1 (FRR/RS/MB):** SJAFCA shall require its contractors to implement the measures below, as a condition of contract, to avoid and minimize temporary and short-term construction noise effects on sensitive receptors. These measures shall be implemented during construction, particularly when construction occurs during the nighttime (10:00 p.m. to 7:00 a.m.) and is within 90 feet of a sensitive receptor in unincorporated San Joaquin County or city of Lathrop, to avoid and minimize temporary and short-term construction noise effects on sensitive receptors: a. All construction equipment shall be equipped with noise-reduction devices, such as mufflers, to minimize construction noise, and all internal combustion engines shall be equipped with exhaust and intake silencers, in accordance with manufacturers' specifications. c. The use of bells, whistles, alarms, and horns shall be restricted to safety warning purposes only. d. Noise-reducing enclosures shall be used around stationary noise-generating equipment (e.g., compressors and generators at slurry pond locations). e. Mobile and fixed construction equipment (e.g., compressors and generators), construction staging and stockpiling areas, and construction vehicle routes will be located at the most distant point feasible from noise-sensitive receptors. f. When noise-sensitive uses are located within 450 feet of and subject to prolonged construction noise, noise attenuating buffers, such as structures, truck trailers, or soil piles, shall be located between noise generation sources and sensitive receptors. g. Contractors shall properly maintain all heavy trucks and will equip them with noise-control devices (e.g., mufflers), in accordance with manufacturers' specifications, at each work site during project construction to minimize construction traffic noise effects on sensitive receptors. h. Before haul truck trips are initiated during a construction season on roads within 500 feet of residences located along haul routes, written notification will be provided to the potentially affected residents identifying the hours and frequency of haul truck trips. Notification materials will include contact information for a designated noise disturbance coordinator and also will identify a mechanism for residents to register complaints with the appropriate jurisdiction if haul truck noise levels are overly intrusive or occur outside the exempt daytime hours for the applicable jurisdiction. i. Queuing locations for haul trucks shall be designated at locations at least 500 feet from noise-sensitive receptors.	SU	SU	SU
3.14-2: Construction of the proposed project could generate excessive groundborne vibration or groundborne noise levels.	S	LS	S	**Mitigation Measure 3.14-2 (FRR/MB):** Contractors shall implement the following measures at work sites within 90 feet of sensitive receptors during project construction to avoid and minimize the effects of temporary and short-term construction-related groundborne vibration on sensitive receptors. • Equipment shall be operated as far away as practical from vibration-sensitive receptors. • Contractors, as a condition of contract, shall limit compaction activities to the hours of 8:00 a.m. to 6:00 p.m. when work is within 90 feet of a sensitive land use. • Where practicable, contractors shall use smaller vibratory rollers to minimize vibration levels during compaction activities where needed to meet vibration standards.	LSM	LS	LSM
3.15 Public Services							
3.15-1: Implementation of the proposed project could result in substantial unplanned adverse physical impacts associated with the provision of new or physically altered governmental facilities, or the need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times, or other performance objectives for any of the public services.	NI	NI	NI	**(FRR/RS/MB):** None required.	NI	NI	NI
3.16 Recreation							
3.16-1: Construction, operation, and maintenance of the proposed project could cause existing parks to physically deteriorate	LS	LS	LS	**(FRR/RS/MB):** None required.	LS	LS	LS

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Impact	Significance Before Mitigation			Mitigation Measure	Significance After Mitigation		
	FRR	RS	MB		FRR	RS	MB
3.17 Transportation and Circulation							
3.17-1: Construction, operation, or maintenance of the proposed project could conflict with a program, plan, ordinance, or policy addressing the circulation system, including transit, roadway, bicycle, and pedestrian facilities.	S	S	S	**Mitigation Measure 3.17-1 (FRR/RS/MB):** SJAFCA shall require that contractors prepare and implement a construction traffic management plan to manage traffic flow during construction, reduce potential interference with local emergency response plans, reduce potential traffic safety hazards, and ensure adequate access for emergency responders. Development and implementation of this plan shall be coordinated with local agencies with jurisdiction over affected roadways, and/or the construction contractor(s) shall ensure that the plan is implemented during construction. The plan may include but not be limited to the following measures: • Identify construction truck haul routes and timing to limit conflicts between truck and automobile traffic on nearby roads. The identified routes will be designed to minimize impacts on vehicular, bicycle, and pedestrian traffic, circulation, and safety. • Implement comprehensive traffic control measures, including scheduling of major truck trips and deliveries to avoid peak traffic hours, warning and detour signs, lane closure procedures, and traffic cones for drivers indicating potential road hazards or detours. • Coordinate construction activities to ensure that one lane of traffic in each direction remains open at all times, unless flaggers or temporary traffic controls are in place, to provide emergency access. • Evaluate the need to provide flaggers or temporary traffic control at project driveways and entries to staging areas. • Notify affected adjacent property owners and public safety personnel regarding the timing of major deliveries, detours, and lane closures. • Develop a process for responding to and tracking issues pertaining to construction activity impacts on traffic, including identification of an on-site traffic manager. Post 24-hour contact information for the traffic manager on all construction sites. • Document road pavement conditions for all routes that would be used by construction vehicles before and after proposed project construction. Make provisions to monitor the condition of roads used for haul routes so that any damage or debris attributable to haul trucks can be identified and corrected. Roads damaged by construction vehicles shall be repaired to their pre-construction condition.	LSM	LSM	LSM
3.17-2: Construction, operation, or maintenance of the proposed project could conflict or be inconsistent with CEQA Guidelines Section 15064.3(b).	LS	LS	LS	**(FRR/RS/MB):** None required.	LS	LS	LS
3.17-3: Construction, operation, or maintenance of the proposed project could substantially increase hazards due to a geometric design feature or incompatible uses.	LS	LS	LS	**(FRR/RS/MB):** None required.	LS	LS	LS
3.17-4: Construction, operation, or maintenance of the proposed project could result in inadequate emergency access.	S	S	S	**Mitigation Measure (FRR/RS/MB):** Implement Mitigation Measure 3.17-1.	LSM	LSM	LSM
3.18 Tribal Cultural Resources							
3.18-1: Implementation of the proposed project could cause a substantial adverse change in the significance of a tribal cultural resource, as defined in PRC Section 21074.	S	S	S	**Mitigation Measures (FRR/RS/MB):** Implement Mitigation Measures 3.7-1, 3.7-2(b) through (f), and 3.7-3(b).	SU	SU	SU
3.19 Utilities and Service Systems							
3.19-1: Implementation of the proposed project would result in the need to relocate existing utilities infrastructure.	LS	LS	LS	**(FRR/RS/MB):** None required.	LS	LS	LS
3.19-2: Implementation of the proposed project would result in the need for water that could have an impact on water supplies during normal, dry and multiple dry years.	LS	LS	LS	**(FRR/RS/MB):** None required.	LS	LS	LS
3.19-3: Implementation of the proposed project could generate solid waste in excess of state or local standards, or in excess of the capacity of local infrastructure, or otherwise impair the attainment of solid waste reduction goals.	LS	LS	LS	**(FRR/RS/MB):** None required.	LS	LS	LS
3.20 Wildfire							
3.20-1: Implementation of the proposed project could impair emergency access or an emergency evacuation plan in the proposed project area.	S	S	S	**Mitigation Measure (FRR/RS/MB):** Implement Mitigation Measure 3.17-1.	LSM	LSM	LSM
3.20-2: Implementation of the proposed project may, due to slope, prevailing winds, and other factors, exacerbate wildfire risks, and thereby expose project occupants to pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire	LS	LS	LS	**(FRR/RS/MB):** None required.	LS	LS	LS

LS = less than significant; LSM = less than significant after mitigation; NI = no impact; S = significant; SU = significant and unavoidable.

Impact	Significance Before Mitigation			Mitigation Measure	Significance After Mitigation		
	FRR	RS	MB		FRR	RS	MB
3.20-3: Implementation of the proposed project may require the installation or maintenance of associated infrastructure (such as roads, fuel breaks, emergency water sources, power lines or other utilities) that may exacerbate fire risk or that may result in temporary or ongoing impacts to the environment	LS	LS	LS	**(FRR/RS/MB):** None required.	LS	LS	LS
3.20-4: Implementation of the proposed project may expose people or structures to significant risks, including downslope or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes	LS	LS	LS	**(FRR/RS/MB):** None required.	LS	LS	LS

LS = less than significant; LSM = less than significant after mitigation; NI = no impact; S = significant; SU = significant and unavoidable.

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CHAPTER 1
Introduction

The San Joaquin Flood Control Agency (SJAFCA) proposes to implement the Mossdale Tract Urban Flood Risk Reduction Project (UFRR or proposed project) to provide increased public safety benefits by rehabilitating and improving flood management infrastructure for the 22,400-acre Mossdale Tract area (proposed project area), which includes Reclamation District 17 (RD 17) and portions of the incorporated cities of Stockton, Lathrop, and Manteca, and unincorporated San Joaquin County.

On March 9, 2015, the City of Lathrop authored a Concept Proposal for a state UFRR grant to design fix-in-place improvements to the RD 17 levees to achieve an urban level of flood protection (ULOP) equivalent to a 200-year level of protection. On May 15, 2015, the California Department of Water Resources (DWR) responded with a grant to prepare a UFRR study of alternatives and preliminary design of the preferred flood risk reduction project for the proposed project area, which was identified as being at risk of flooding from a 200-year flood event, with this risk being significantly increased under future climate conditions. In November 2017, SJAFCA, consisting of the City of Stockton, San Joaquin County, and the San Joaquin County Flood Control and Water Conservation District, modified its joint-powers-authority structure to add the cities of Lathrop and Manteca. The UFRR grant agreement and lead agency status were then transferred to SJAFCA in March 2020. The final selected alternative in the UFRR study (Alternative 4a) is the proposed project that is analyzed in this Environmental Impact Report (EIR). Details of the proposed project are presented in Chapter 2, *Project Description*.

SJAFCA, as the California Environmental Quality Act (CEQA) lead agency, has prepared this EIR to evaluate the proposed project in compliance with CEQA (Public Resources Code [PRC] Section 21000 et seq.) and the *Guidelines for Implementation of the California Environmental Quality Act* (CEQA Guidelines) (California Code of Regulations Title 14, Section 15000 et seq.).

1.1 Type of EIR

This EIR is both a project-specific and program EIR. As a project-specific EIR, this document evaluates the environmental impacts of proposed flood risk reduction components consistent with CEQA Guidelines Section 15161. Proposed multi-benefit components are evaluated at a program level.

As described in CEQA Guidelines Section 15168, the analysis in this EIR assesses and documents the broad environmental impacts of the proposed multi-benefit components. Implementation of specific future multi-benefit projects will be examined in the light of this EIR to determine whether additional subsequent environmental review is required (CEQA Guidelines Section 15168). Subsequent environmental review documents may be "tiered" from this EIR pursuant to CEQA Guidelines Sections 15152 and 15168. "Tiering" refers to the use of analysis from a broader EIR. Subsequent environmental

reviews would concentrate on environmental issues specific to the future multi-benefit projects that were not fully evaluated at a project-specific level in this EIR.

1.2 Purpose of the Draft EIR

This Draft EIR has been prepared in conformance with CEQA (PRC Section 21000 et seq.) and the CEQA Guidelines (14 CCR Section 15000 et seq.). As described in CEQA Guidelines Section 15121(a), an EIR is a public information document that objectively assesses and discloses potential environmental effects of the proposed project and identifies mitigation measures and alternatives to the proposed project that would reduce or avoid adverse environmental impacts. CEQA requires that lead, responsible, or trustee agencies consider the environmental consequences of projects over which they have discretionary authority. SJAFCA is the lead agency for the proposed project. SJAFCA's Board of Directors (Board) will use the information in this Draft EIR to evaluate the proposed project's potential environmental impacts; determine whether any feasible mitigation measures and alternatives are necessary and available to reduce potentially significant environmental impacts; and approve, modify, or deny approval of the proposed project.

1.3 Environmental Review and Approval Process

The preparation of an EIR involves multiple steps in which the public is provided the opportunity to review and comment on the scope of the analysis, content of the EIR, results and conclusions presented, and overall adequacy of the document to meet the substantive requirements of CEQA. The following describes the steps in the environmental review process for the proposed project.

1.3.1 Notice of Preparation

CEQA recommends conducting early coordination with the general public, appropriate public agencies, and local jurisdictions to assist in developing the scope of the environmental document. In accordance with CEQA Guidelines Sections 15063 and 15082, SJAFCA prepared a Notice of Preparation (NOP) to identify potential significant impacts that would be evaluated in this EIR (see Appendix A). The NOP was distributed to federal, state, and local agencies and other interested parties for a 30-day review period from Friday, April 22, 2022, through Tuesday, May 23, 2022. Public notices were placed in the *Manteca Bulletin* and the *Stockton Record* to inform the general public of the scoping meetings and the availability of the NOP. During the NOP review period, pursuant to CEQA Guidelines Section 15083, two public scoping meetings were held: an in-person meeting on May 9, 2022, at the Manteca Transit Center located at 220 Moffat Boulevard, Manteca, CA 95336; and on May 12, 2022, a virtual public meeting was conducted. The purpose of the public scoping meetings was to provide a forum for the public to learn about the proposed project and comment on the proposed scope of the EIR analysis. The NOP was posted and is available on SJAFCA's website: https://www.sjafca.org/.

Comments received during the NOP comment period are included in Appendix A to this Draft EIR and are summarized in the technical sections of Chapter 3, *Environmental Setting, Impacts, and Mitigation Measures,* as applicable.

Notification of California Native American Tribes

Assembly Bill 52 requires lead agencies to notify California Native American Tribes that are traditionally and culturally affiliated with the geographic area of a proposed project and to give such Tribes the opportunity to request consultation, if they have requested notice of projects proposed within that area. Pursuant to PRC Section 21080.3.1, SJAFCA sent a letter to the Wilton Rancheria and to the Confederated Villages of Lisjan (CVL) in April 2022. Wilton Rancheria replied to SJAFCA via email in June 2022, requesting to consult on the proposed project. In June 2022, SJAFCA sent an email to Wilton Rancheria containing additional information about the proposed project and requesting that the Tribe provide dates and times for a potential conference call. To date, SJAFCA has not received any additional replies from Wilton Rancheria.

In April 2022, CVL representatives replied to SJAFCA, requesting additional information about the proposed project; SJAFCA provided this additional information to CVL in June 2022. In August 2022, SJAFCA received an email from CVL requesting to consult on the proposed project. SJAFCA also received a separate letter from CVL in September 2022, requesting that SJAFCA notify CVL of any proposed projects pursuant to PRC Section 21080.3.1, from that date onward. SJAFCA and CVL had a conference call in September 2022 to discuss the proposed project and tribal concerns regarding potential impacts on cultural resources and tribal cultural resources. In November 2022, SJAFCA sent an email to CVL that summarized cultural resources and tribal cultural resources mitigation measures proposed for inclusion in the Draft EIR. The email requested that the Tribe either identify concerns about the proposed project or confirm that the Tribe agrees to conclude consultation on the proposed project. To date, SJAFCA has not received any additional correspondence from CVL.

In addition, SJAFCA contacted the Native American Heritage Commission (NAHC) in March 2022, requesting a search of the NAHC's Sacred Lands Files and a list of California Native American Tribes that may have interest in the proposed project. In April 2022, SJAFCA sent letters to representatives from the six additional California Native American Tribes whose contact information was provided in the NAHC reply. SJAFCA received one response in June 2022 from the Northern Valley Yokuts Tribe (NVYT), which noted that the Tribe would like to consult on the proposed project. SJAFCA and the NVYT met in July and September 2022 to discuss the proposed project. In November 2022, SJAFCA sent an email to the NVYT that summarized cultural resources and tribal cultural resources mitigation measures proposed for inclusion in the Draft EIR. The email requested that the Tribe either identify concerns about the proposed project or confirm that the Tribe agrees to conclude consultation on the proposed project. To date, SJAFCA has not received any additional correspondence from the NVYT.

SJAFCA re-initiated consultation with California Native American Tribes in 2025. SJAFCA contacted the NAHC in September 2025, requesting a search of the NAHC's Sacred Lands Files and a list of California Native American Tribes that may have expressed interest in the proposed project since the 2022 consultation took place. In October 2025, SJAFCA sent letters to representatives from seven California Native American Tribes whose contact information was provided in the NAHC reply. SJAFCA received one response in November 2025 from Wilton Rancheria, which noted that they did not have comments and did not wish to open consultation on the proposed project. To date, SJAFCA has not received any additional correspondence from the Wilton Rancheria.

A detailed discussion of Native American correspondence is presented in Section 3.18, *Tribal Cultural Resources*.

1.3.2 Draft EIR

This Draft EIR will be published and made available to federal, state, and local agencies and interested organizations and individuals who may want to review and comment on the adequacy of the analysis in this Draft EIR. Notice of this Draft EIR will be sent directly to persons and agencies that commented on the NOP. The 45-day public review period for this Draft EIR is Friday December 19, 2025 through Monday February 2, 2026. During the public review period, written comments should be mailed or emailed to:

Ryan Curry
San Joaquin Area Flood Control Agency
2800 March Lane, Suite 200
Stockton, CA 95219
e-mail: Ryan.Curry@sjafca.org

The Draft EIR is available for review at SJAFCA's office during normal business hours at 2800 W March Lane, Suite 200, Stockton, CA, 95219. The Draft EIR is also available on SJAFCA website:

https://www.sjafca.org/projects/mossdale-tract

During the 45-day review period, a virtual public meeting will be via Zoom on Tuesday January 13 from 6-7 p.m. Pacific Time. The Zoom information will be posted on SJAFCA's website:

https://www.sjafca.org/projects/mossdale-tract

Comments are due no later than 5:00 p.m. Pacific Time on Monday February 2, 2026.

Comments from individual respondents, including names and home addresses of respondents, will be made available for public review. Commenters may request that SJAFCA withhold their contact information from public disclosure, which will be honored to the extent allowable under California law. If the commenter wishes SJAFCA to consider withholding this information, this must be stated prominently at the beginning of the comments.

1.3.3 Final EIR and Mitigation Monitoring and Reporting Program

Written and oral comments received on the Draft EIR during the public review period will be addressed in a response to comments document, which, together with the Draft EIR and any changes to the Draft EIR made in response to comments received, will constitute the Final EIR. The Draft EIR and Final EIR together will compose the EIR for the proposed project.

If the proposed project is approved, the Board will prepare and adopt a mitigation monitoring and reporting program as part of the approval process, as required under PRC Section 21081.6(a), for any mitigation measures included in the EIR that will be adopted by the Board.

1.3.4 Approval Process

As required by CEQA Guidelines Section 15090(a), before the Board can make a decision with regard to the proposed project, the Board must certify that the EIR has been completed in compliance with CEQA, that the Board has reviewed and considered the information in the EIR, and that the EIR reflects the independent judgment and analysis of the Board.

In the event the Board approves the proposed project, CEQA requires the Board to adopt appropriate findings as set forth in CEQA Guidelines Section 15091. Under CEQA Guidelines Section 15092, a lead agency may approve or carry out a project subject to an EIR only if it determines that (1) the project will not have a significant effect on the environment, or (2) the agency has eliminated or substantially lessened all significant effects on the environment where feasible, and any remaining significant effects on the environment that are found to be unavoidable are acceptable due to overriding considerations, in which case it will adopt a statement of overriding considerations pursuant to CEQA Guidelines Section 15093. Following approval of the proposed project, SJAFCA will file a Notice of Determination pursuant to CEQA Guidelines Section 15094.

1.4 Scope of the EIR

SJAFCA identified in the NOP for this Draft PEIR the impacts that could result from implementation of the proposed project. Based on the NOP (provided in Appendix A) and the scoping process, SJAFCA determined that this Draft EIR would address the following resource areas: aesthetics; agriculture and forestry resources; air quality; greenhouse gas emissions; biological resources (aquatic and terrestrial); cultural resources; energy; geology; hazards and hazardous materials; hydrology and water quality; land use and planning; noise; public services; recreation; transportation; tribal cultural resources; utilities and service systems; and wildfire.

1.5 Organization of the Draft EIR

This Draft EIR is organized into the following chapters:

- **Executive Summary** presents (1) a summary of the proposed project; (2) potential areas of controversy and concern; (3) alternatives considered and evaluated; and (4) a summary table listing the impacts of implementing the proposed project, including recommended mitigation measures and levels of significance before and after implementation of applicable mitigation measures.
- **Chapter 1, *Introduction*,** presents an introduction and summary of the proposed project's background. It also describes the intended uses of this EIR, the environmental review and approval process, and document organization.
- **Chapter 2, *Project Description*,** describes the study area, project objectives, and elements of the proposed project.
- **Chapter 3, *Environmental Setting, Impacts, and Mitigation Measures*,** presents an introduction to how the resource topics were evaluated (method of analysis), resource topics not evaluated further in the Draft EIR, and the analysis of the potential environmental impacts of the proposed project. Each

resource section presents an analysis of proposed flood risk reduction components and proposed multi-benefit components.

- **Chapter 4, *Cumulative Impacts*,** provides an analysis of the effects of the proposed project in combination with the effects of other past, present, and reasonably foreseeable future projects.
- **Chapter 5, *Other CEQA Considerations*,** presents a summary of cumulative impacts, significant unavoidable impacts, significant irreversible environmental changes, and growth-inducing impacts of the proposed project.
- **Chapter 6, *Alternatives*,** describes the No Project Alternative and a range of reasonable alternatives to the proposed project; describes the alternatives screening process; compares the alternatives to the proposed project; and identifies the environmentally superior alternative.
- **Chapter 7, *List of Preparers*,** lists the individuals involved with preparation of the Draft EIR.
- **Chapter 8, *References*,** provides a bibliography of the sources cited in the Draft EIR.
- **Appendices** include materials that support the findings and conclusions presented in the text of the Draft EIR.

CHAPTER 2
Project Description

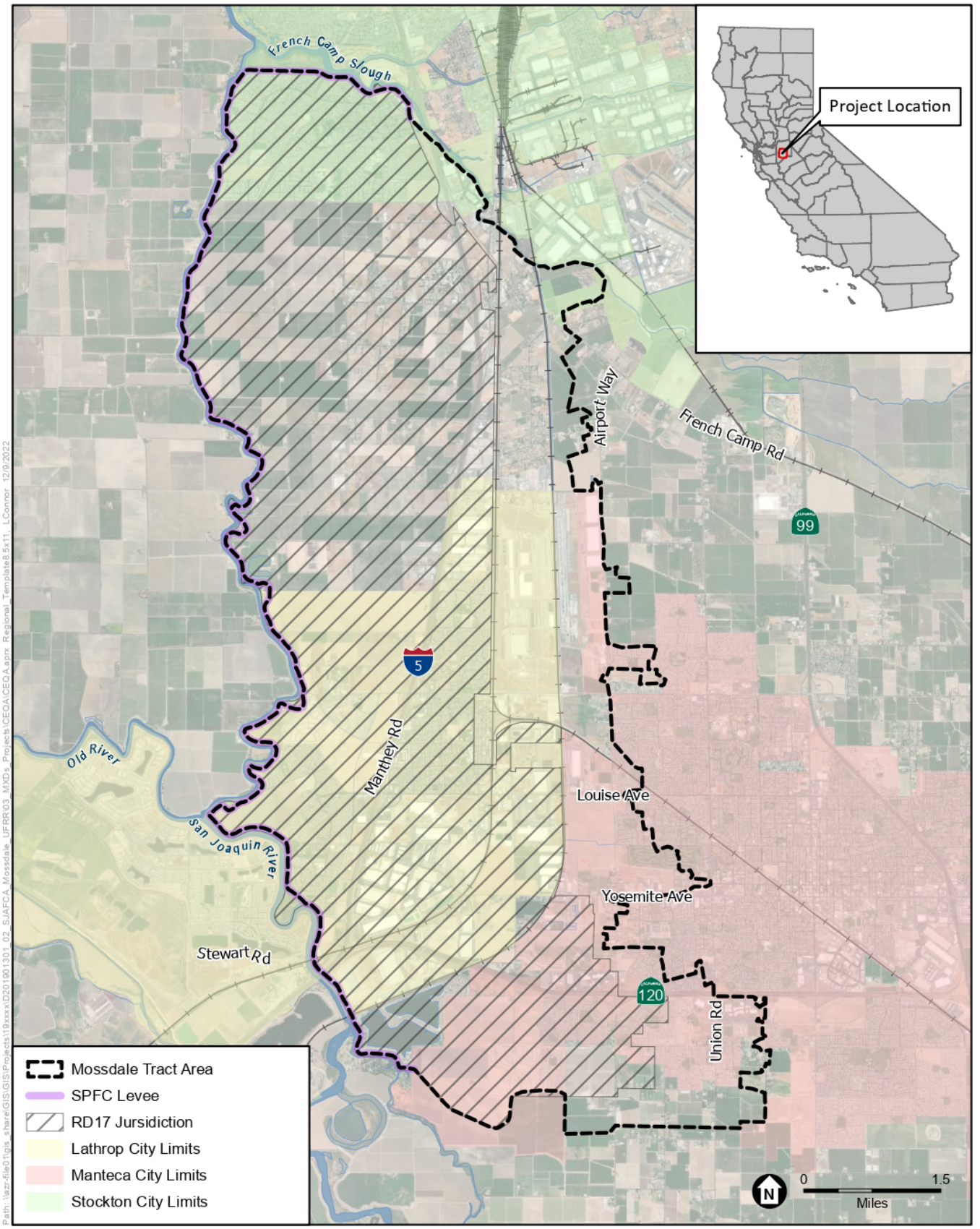
2.1 Introduction

Levee failure can occur during high-water events resulting in flooding and associated risks to adjacent land uses. The intensity and frequency of such events is expected to increase over time due to the effects of climate change. Levee failure can be caused by a number of failure mechanisms, including slope instability, erosion, overtopping, and through or under levee seepage. Levee failures are typically unexpected, sudden, and unpredictable, and they can produce large volume, high velocity flood flows. Such failures often occur with little warning and therefore, with minimal time for evacuation and emergency actions. Flooding as a result of levee overtopping and/or flanking is much more predictable; therefore, evacuation and emergency actions can be implemented in a more timely and effective manner.

As described in Chapter 1, *Introduction*, San Joaquin Area Flood Control Agency (SJAFCA) proposes to implement the proposed project to provide increased public safety benefits by rehabilitating and improving flood management infrastructure for the proposed project area. The proposed project is described in detail in this chapter.

2.2 Project Location

The proposed project area covers 22,400 acres and includes Reclamation District No. 17 (RD 17) (16,110 acres), portions of the cities of Stockton, Lathrop, Manteca, and unincorporated San Joaquin County (see **Figure 2-1**). The RD 17 levee system comprises state-federal project levees (also referred to as State Plan of Flood Control [SPFC]) along the San Joaquin River and French Camp Slough, which form the west and north borders of RD 17, and a dryland levee to the south. The land generally slopes east to west and south to north, and because there is no levee along the east side of the RD 17 jurisdiction, the interior drainage watershed extends to the east of RD 17. The proposed project area includes the SPFC levees, RD 17's dryland levee, the area for a proposed dryland levee extension, the Mossdale Tract area, and areas to the west along the San Joaquin River identified for the potential development of ecosystem restoration features.



SOURCE: MAXAR, 2021; KSN, 2022; PBI, 2022; ESA, 2022

Mossdale Tract Area Urban Flood Risk Reduction Project

Figure 2-1
Regional Location

ESA

2.3 Project Objectives

The overall objective of the proposed project is to provide increased public safety benefits by rehabilitating, improving, and constructing flood risk reduction infrastructure to achieve a 200-year urban level of flood protection (ULOP) for the Mossdale Tract area. The objectives include the following:

1. Improve long-term operation, maintenance, repair, rehabilitation, and replacement over time.
2. Modernize the flood risk reduction infrastructure to accommodate future performance and climate change resiliency goals identified in the Central Valley Flood Protection Plan and in SJAFCA's Climate Change Adaptation Policy.
3. Implement a multi-benefit flood risk reduction project that: (1) improves ecological function and habitat in the flood-system, and (2) contributes additional societal benefits such as recreation where feasible.

2.4 Proposed Project

The proposed project would include the construction and operations and maintenance (O&M) of flood risk reduction and multi-benefit components in and adjacent to the proposed project area, which are summarized below. Specifically, the primary components of the proposed project include the following:

1. Fix-in-place levee improvements with habitat enhancement and revegetation.
2. Dryland levee extension.
3. Ecosystem restoration at multiple sites.
4. Recreational features along the levee system.

Each of these components are described in more detail below and are presented in **Figure 2-2** and **Figure 2-3**.

2.4.1 Flood Risk Reduction Components

Flood risk reduction components of the proposed project include: (1) fix-in-place levee improvements; and (2) a dryland levee extension. Each of these components, along with associated construction techniques, are described in detail below. Details of the proposed project area are described in **Table 2-1**.

TABLE 2-1
PROPOSED PROJECT FLOOD RISK REDUCTION COMPONENTS

Proposed Project Component ID	Proposed Project Component	Estimated Length (feet)
1	Cutoff Wall	2,900
2	Cutoff Wall	2,000
3	Seepage Berm	5,700
4	Seepage Berm	400
5	Seepage Berm	2,800

Proposed Project Component ID	Proposed Project Component	Estimated Length (feet)
6	Cutoff Wall	5,100
7	Cutoff Wall	13,000
8.a	Levee Raise at San Joaquin River / Cutoff Wall	18,800
8.b	Levee Raise / Floodwall at San Joaquin River	1,100
8.c	Levee Raise / Floodwall at San Joaquin River	780
8.d	Levee Raise at San Joaquin River / Cutoff Wall	2,100
8.e	Levee Raise at San Joaquin River	2,300
9[a]	Cutoff Wall	-
10[b]	Cutoff Wall	-
11	Levee Raise at Walthall Slough	3,100
12	Levee Raise and Seepage Berm at Dryland Levee	5,500
13[c]	Erosion Protection	3,700
15	Dryland Levee Extension/with Seepage Berm (to Tinnin Road)	15,500

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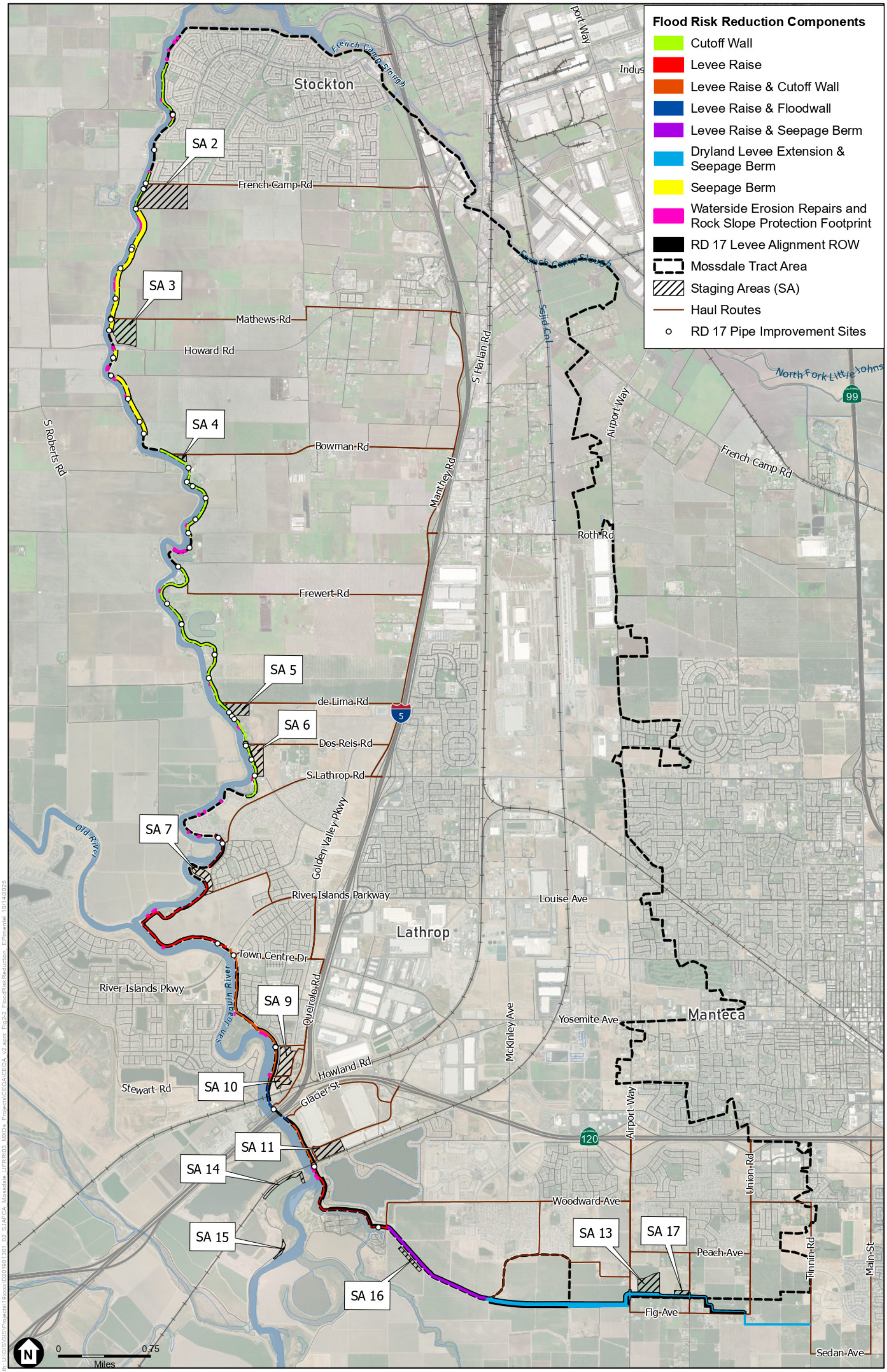
a. Project Component ID 9 consists of a cutoff wall and is included as a component of Project Component ID 8.a.
b. Project Component ID 10 consists of a cutoff wall and is included as a component of Project Component ID 8.d.
c. Project Component ID 13 consists of various erosion repair sites along the existing RD 17 levee. The individual erosion repair sites have been incorporated into the other adjacent projects.

SOURCE: Data compiled by ESA 2025

Fix-in-Place Levee Improvements

The fix-in-place levee improvements that would be constructed and maintained within the levee rights-of-way and easements under the proposed project include the following:

- Reconstruction (raising and widening) of the existing dryland levee, construction of a drained seepage berm, reconstruction of pipe penetrations that cross the levee, and reconstruction of intersecting roadways.
- Raising of the levee along portions of the existing alignment and extension of the landside toe to meet levee slope design standards.
- Installation of a traditional soil-bentonite slurry cutoff wall of varying depth along portions of the existing levee alignment.
- Installation of a drained seepage berm of varying width along portions of the existing levee alignment.
- Placement of erosion protection on the waterside of the levee along portions of the existing levee alignment.
- Relocation and/or remediation of conflicting utilities and encroachments.
- Replacement of pipe penetrations.

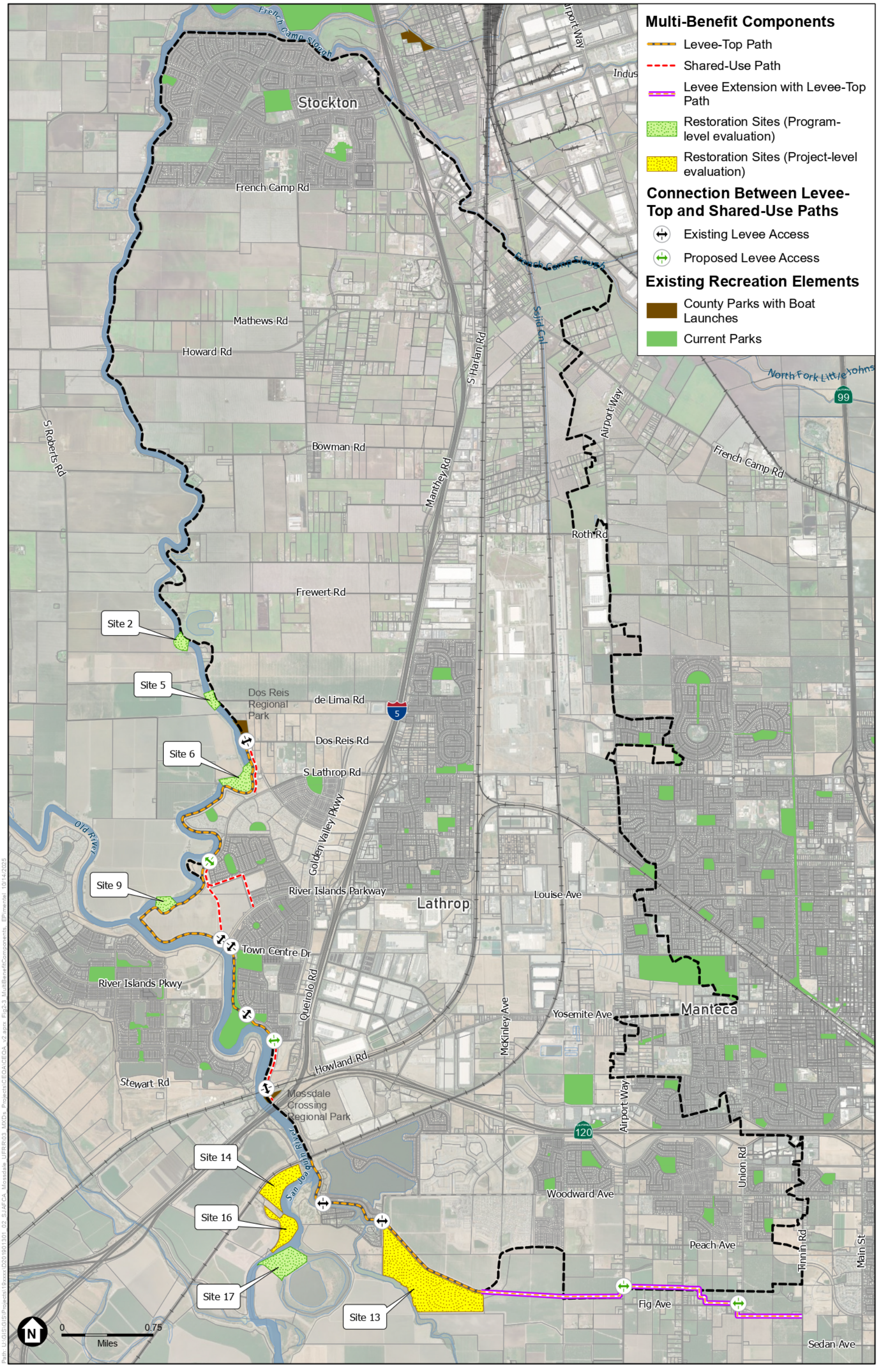


SOURCE: MAXAR, 2021; CPAD, 2021; KSN, 2022; PBI, 2022; ESA, 2022

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Figure 2-2
Flood Risk Reduction Components

ESA



SOURCE: MAXAR, 2024; CPAD, 2024; KSN, 2025; PBI, 2025; ESA, 2025

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Figure 2-3
Multi-Benefit Components

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Each of these components are described in more detail below. Common levee terminology used throughout this Environmental Impact Report (EIR) is shown in a diagram in **Figure 2-4**. In addition, typical levee deficiencies addressed by the proposed project's flood risk reduction components are shown in diagrams in **Figure 2-5a** and **Figure 2-5b**.

Existing Dryland Levee Reconstruction and Seepage Berm

This proposed project component would consist of raising the existing dryland levee by up to 2 feet high and widening the levee by approximately 10 to 20 feet wide at the base and constructing a drained seepage berm approximately 5 feet high and 50 feet wide along the alignment shown on Figure 2-2. The existing dryland levee also intersects Woodward Avenue within San Joaquin County. Development of this proposed project component would require demolition and reconstruction of portions of this roadway, as well as the relocation and/or reconstruction of existing utilities and pipe penetrations that cross the existing levee segment. Debris resulting from demolition activities would be disposed of at local landfills permitted to accept this type of material.

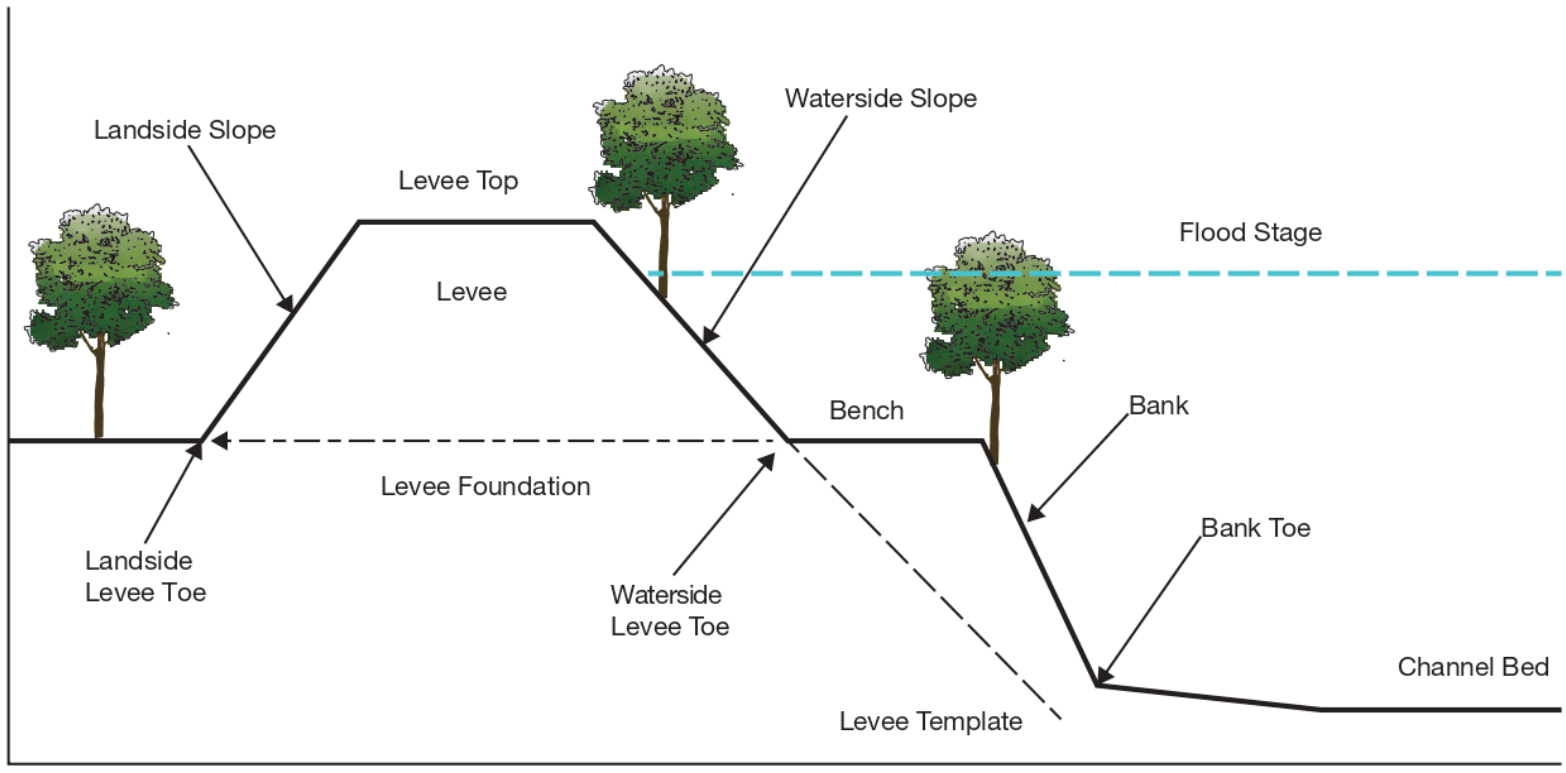
Levee Raise

Raising the levee in place would require the existing levee footprint to be widened at its base on the land side only. Although the levee footprint (its base) size may not be substantially altered, mitigation for loss of habitat would be required by various regulatory agencies. In some instances, irrigation, drainage ditches, canals, or other utilities exist at the toe of the levee and would require relocation. Widening of the existing levee may require the purchase of additional easements and/or rights-of-way, including areas for utilities and planting/replacement woodlands and other habitats. Proper construction of the widened levee may require excavation of a keyway trench, designed to anchor the new embankment and minimize the risk of sliding. This would involve excavating a trapezoidal trench in the foundation area at the toe of the levee where widening is to occur; placement of new levee fill material starts at the bottom of the keyway and is built up to the planned levee height. See **Figure 2-6** for a typical cross section of proposed project levee raise dimensions compared to existing levee dimensions.

There are two locations within the proposed project where a traditional levee raise is not appropriate, due to the significant widening of the levee footprint required to raise a levee and the resulting conflicts with adjacent existing features. One location is adjacent to the Mossdale Crossing County Park, and the other location is adjacent to the Interstate 5 freeway corridor. In order to increase the levee height in these areas while maintaining the existing levee footprint (and thus avoid conflicts with these adjacent features), floodwalls are proposed at these two locations. Floodwalls would consist of a cast-in-place concrete T-wall or a steel sheet pile wall, which would provide additional levee height in areas where the levee raise cannot meet the required height for flood protection. The floodwalls would be constructed on the levee crown as close to the waterside hinge point as possible and include an all-weather patrol road on the landside of the floodwalls. See **Figure 2-7** for typical cross sections of proposed floodwalls.

Cutoff Walls

Sandy or gravelly soils of higher permeability in the levee or levee foundation can transmit water via seepage during high-water stages. Cutoff walls are designed to reduce levee through-seepage and underseepage by providing a barrier of low-permeability material within the higher permeability materials in the levee and levee foundation. For the proposed project, cutoff walls would be constructed at the levee



Note: Not to scale, for illustrative purposes only

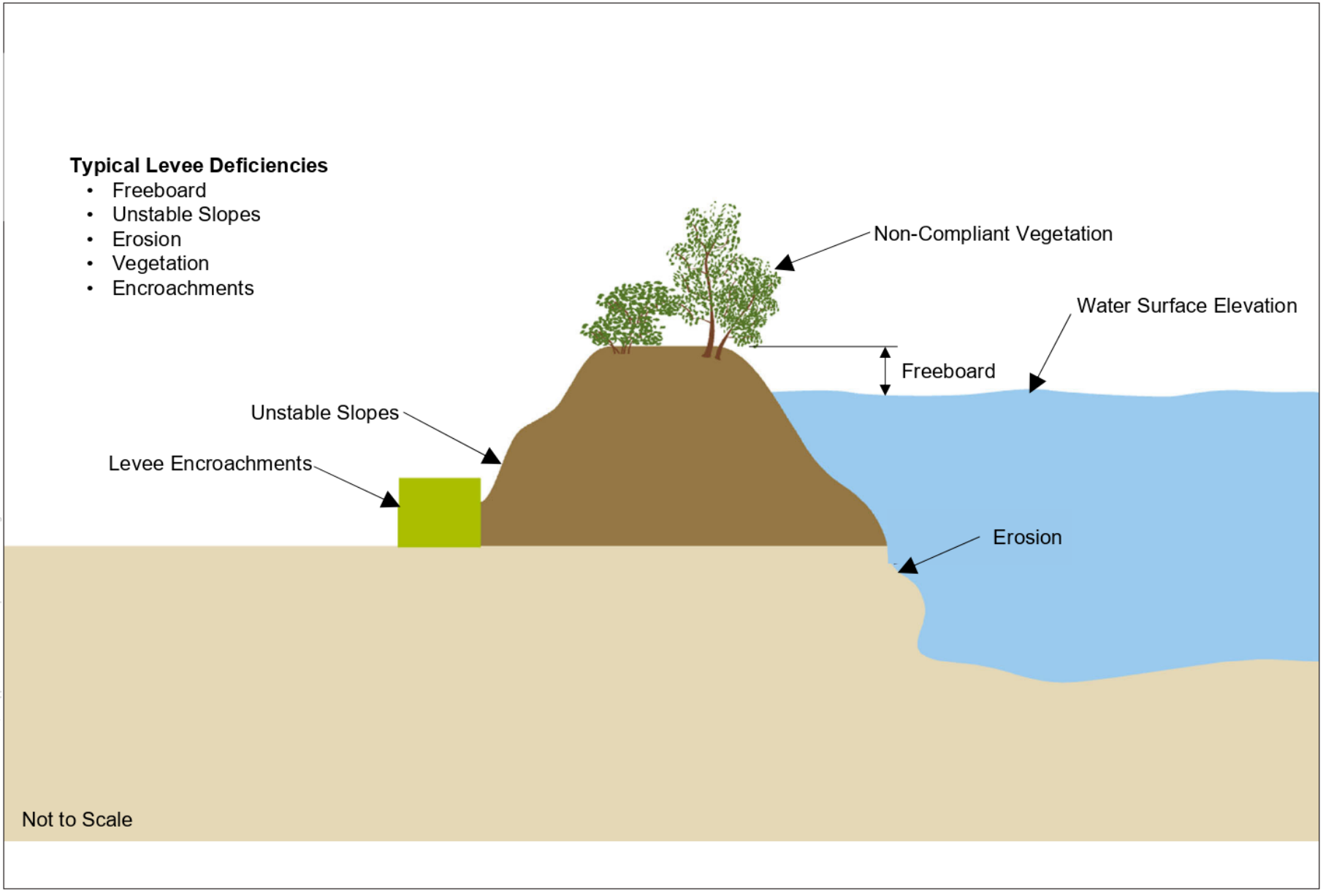
SOURCE: USACE

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Figure 2-4
Levee Terminology

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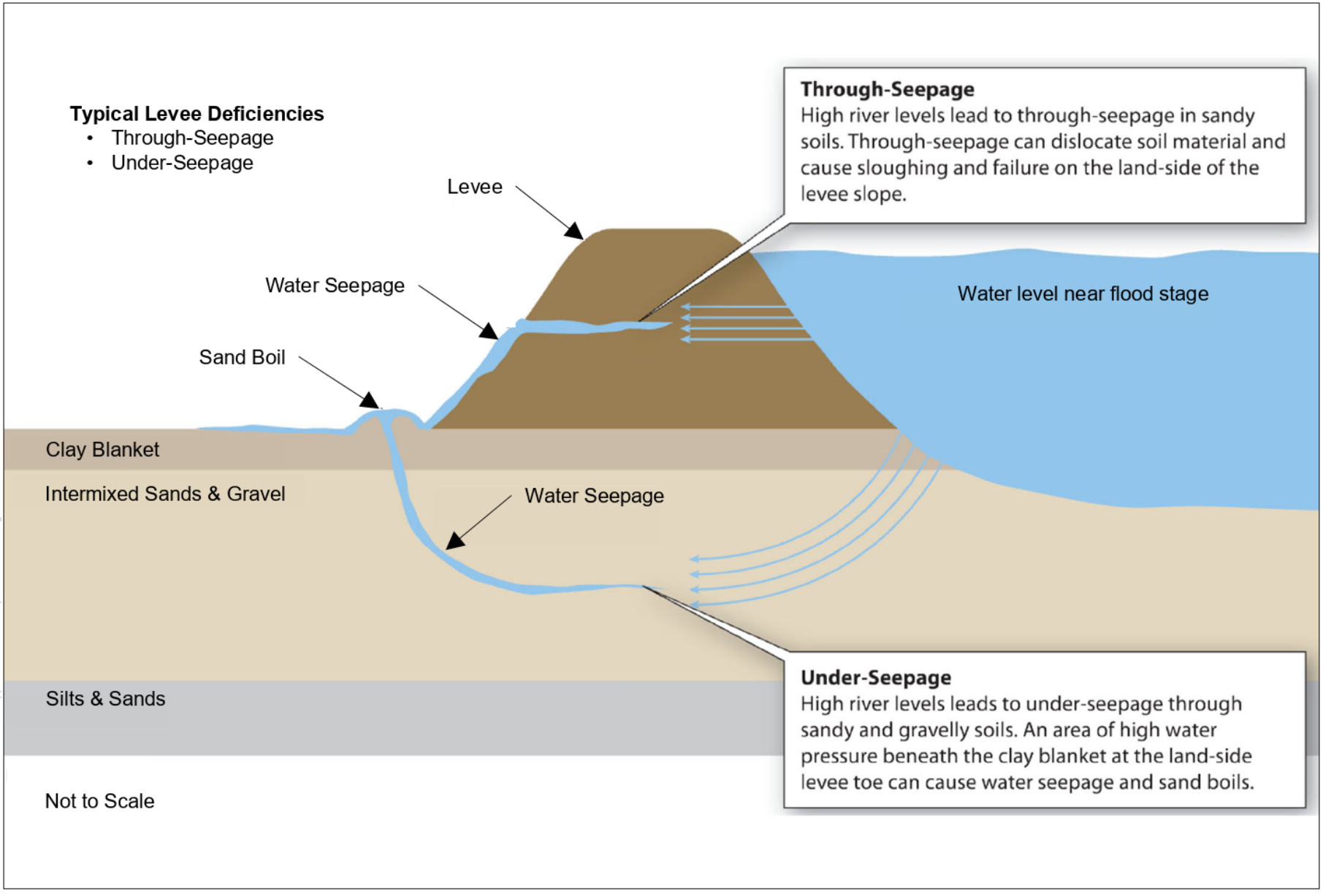
SOURCE: Kjeldsen, Sinnock, and Neudeck 2022

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Figure 2-5a
Diagram of Typical Levee Deficiencies

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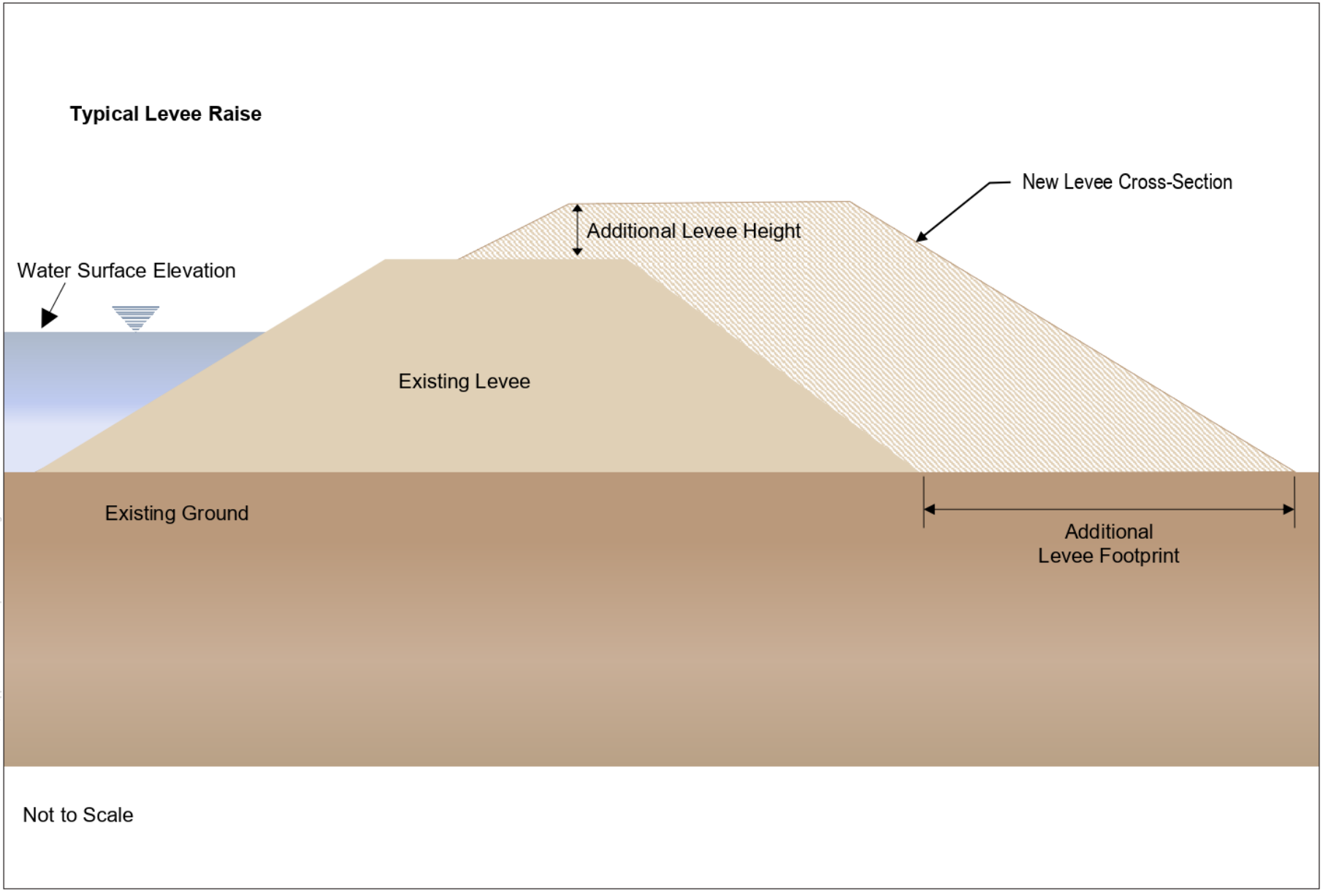


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SOURCE: Kjeldsen, Sinnock, and Neudeck 2022

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Figure 2-5b
Diagram of Typical Levee Deficiencies

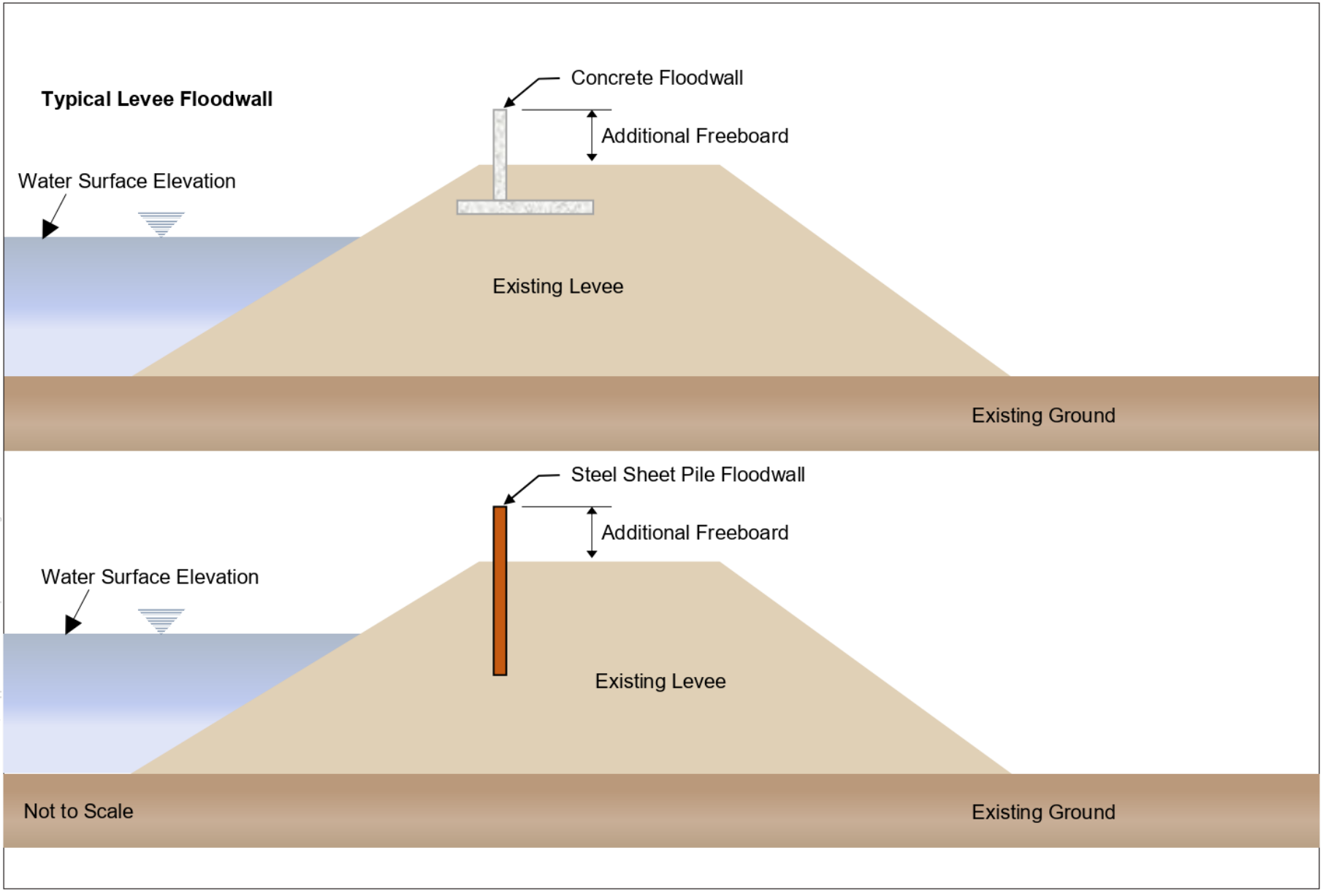


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SOURCE: Kjeldsen, Sinnock, and Neudeck 2022

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Figure 2-6
Diagram of Levee Raise



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SOURCE: Kjeldsen, Sinnock, and Neudeck 2022

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Figure 2-7
Diagram of Levee Floodwalls

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centerline to depths that would tie into existing lower permeability soil layers in the levee foundation below the permeable material. In general, the depths would be sufficient to minimize seepage both through the levee and beneath it to meet or exceed U.S. Army Corps of Engineers (USACE) and State of California Central Valley Flood Protection Board (CVFPB) levee design criteria.

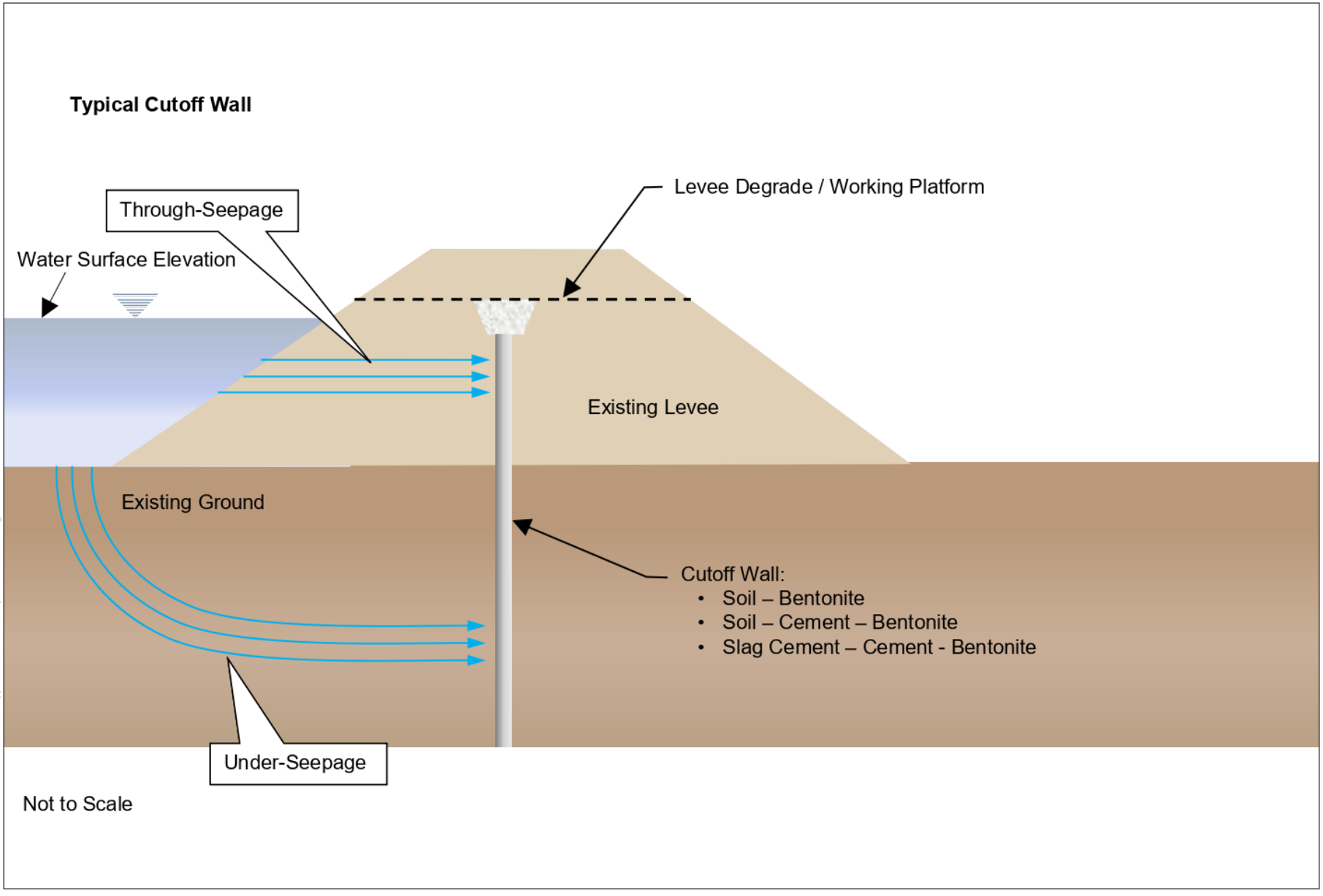
Cutoff walls would be installed along approximately 5.4 miles of levee. The cutoff walls would be constructed using an excavator with a long-stick boom capable of digging a trench to a maximum depth of approximately 85 feet in the centerline of the levee. A working platform of approximately 30- to 40-feet wide would be established by partially degrading (cutting down) the top of the existing levee to provide adequate working width. Excavated soil would be mixed on-site with bentonite on the working platform and reintroduced in the trench. For the proposed project, it is assumed that either a soil-bentonite mix, a slag cement-cement-bentonite mix, a soil-cement mix using a deep mixing method, or a combination of these would be used to construct the cutoff walls. Soil is expected to be purchased from available commercial sources. Bentonite slurry would be mixed at the batch plants located in staging areas adjacent to the segments of levee requiring cutoff walls and then pumped into the trench during trench excavation to prevent caving while the backfill material is mixed and placed. Excavated soil would then be mixed with the bentonite clay to achieve the required cutoff wall strength and permeability properties and then backfilled into the trench. A sample design schematic of a cutoff wall installed along the levee centerline is shown in **Figure 2-8**.

At the conclusion of construction, the levee crown would be rebuilt to its design height using appropriately conditioned soil fill. The reconstructed levee height could differ slightly from the pre-construction levee height along some segments of the levee that may have been affected by prior settlement or other changes after their initial construction, but the visual appearance of the levee would remain similar to the existing condition. Each lift would be moisture-conditioned and compacted to the specified density using a suitable compactor, such as a tamping-foot or smooth-drum roller. The levee reconstruction would include a homogeneous section of imported low-permeability material. After the levee is reconstructed, aggregate base or asphalt concrete would be placed on the levee crown patrol road, similar to existing conditions, and the disturbed slopes would be planted with native vegetation that meets federal and state levee safety criteria.

Seepage Berm

Seepage berms address shallow foundation and/or levee embankment through-seepage. A seepage berm is a prism of compacted soil that acts as a buttress to increase stability factors of safety and, in some cases, includes an inclined filter/drain zone placed on the landside slope of a levee to capture seepage that would otherwise exit on and potentially erode the unprotected levee slope. For the proposed project, approximately 2.7 miles of seepage berms would be constructed at a height of 5 feet and widths between 50 and 100 feet (depending on the height of the levee). See **Figure 2-9** for a diagram of a typical seepage berm. The seepage berms for the proposed project would be drained seepage berms, which contain a filter/drain zone within the berm to collect underseepage and convey it away from the levee toe.

The drained seepage berms would also include a component to intercept through-seepage by excavating the landside levee slope, constructing a filter/drain zone, then rebuilding the levee slope to approximately the original grade with compacted soil fill. Seepage berms would be constructed using engineered soil fill,



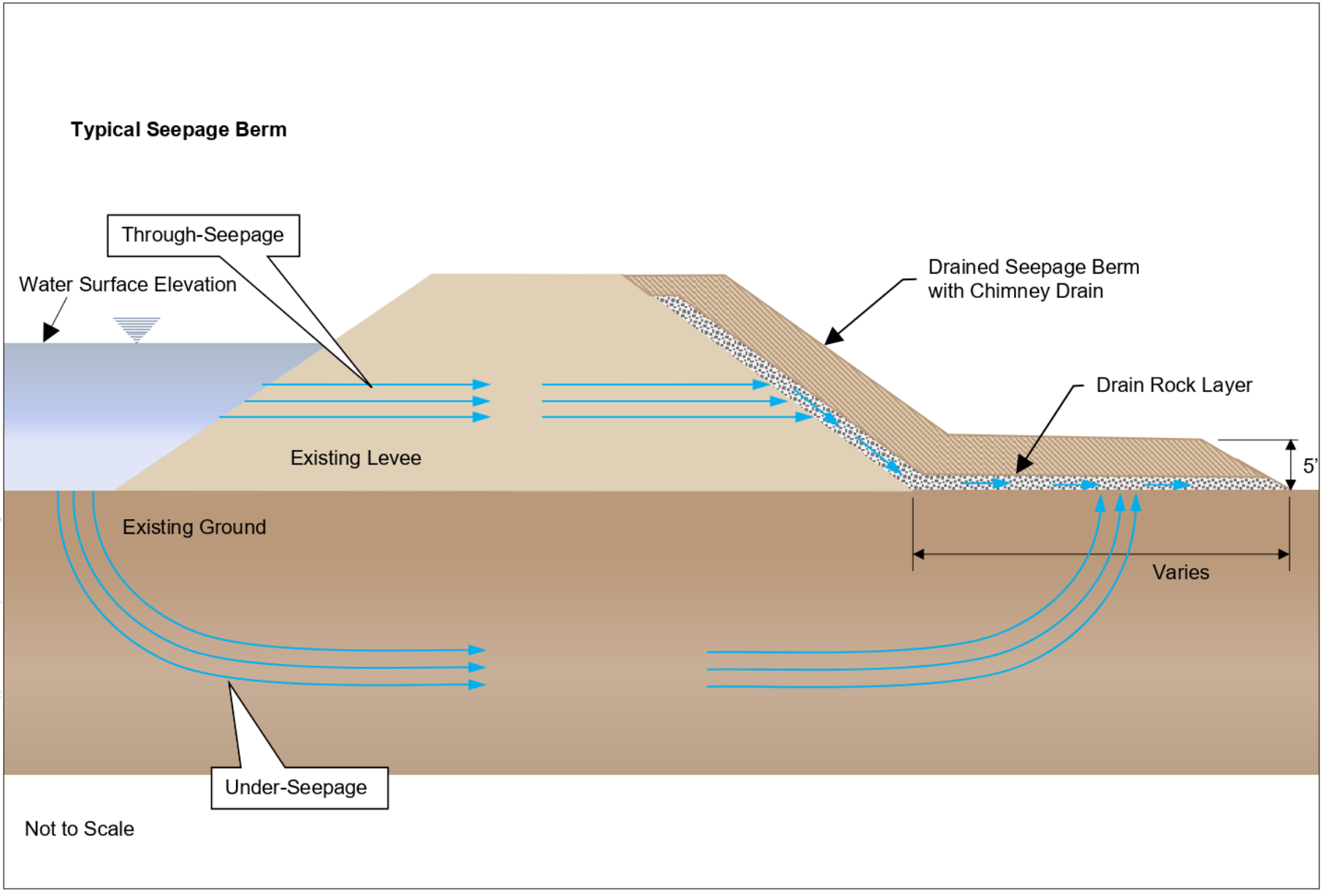
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SOURCE: Kjeldsen, Sinnock, and Neudeck 2022

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Figure 2-8
Diagram of Cutoff Wall

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SOURCE: Kjeldsen, Sinnock, and Neudeck 2022

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Figure 2-9
Diagram of Seepage Berm

a geotextile fabric, clean drain rock, and filter sand, with the fill placed in horizontal lifts consistent with USACE and CVFPB requirements for lift thickness and compaction densities. Each lift would be moisture-conditioned and compacted to the specified density using a suitable compactor, such as a tamping-foot or smooth-drum roller.

Erosion Protection

Erosion protection would consist of supplementing riprap rock slope protection on the waterside of the levee along portions of the existing levee alignment during construction of other adjacent flood risk reduction component, as indicated in Figure 2-2. Some existing revetments comprise broken concrete and other construction debris; those sections would be excavated, removed, and replaced with new quarry stone riprap. New quarry stone would be hauled on the top of levee road and placed above the ordinary high-water mark (OHWM) in the designated areas by excavator and dozer. For the proposed project, erosion protection would be placed along 3,700 linear feet of the riverbank above the OHWM at a variable slope length of up to 40 feet.

Encroachment Remediation

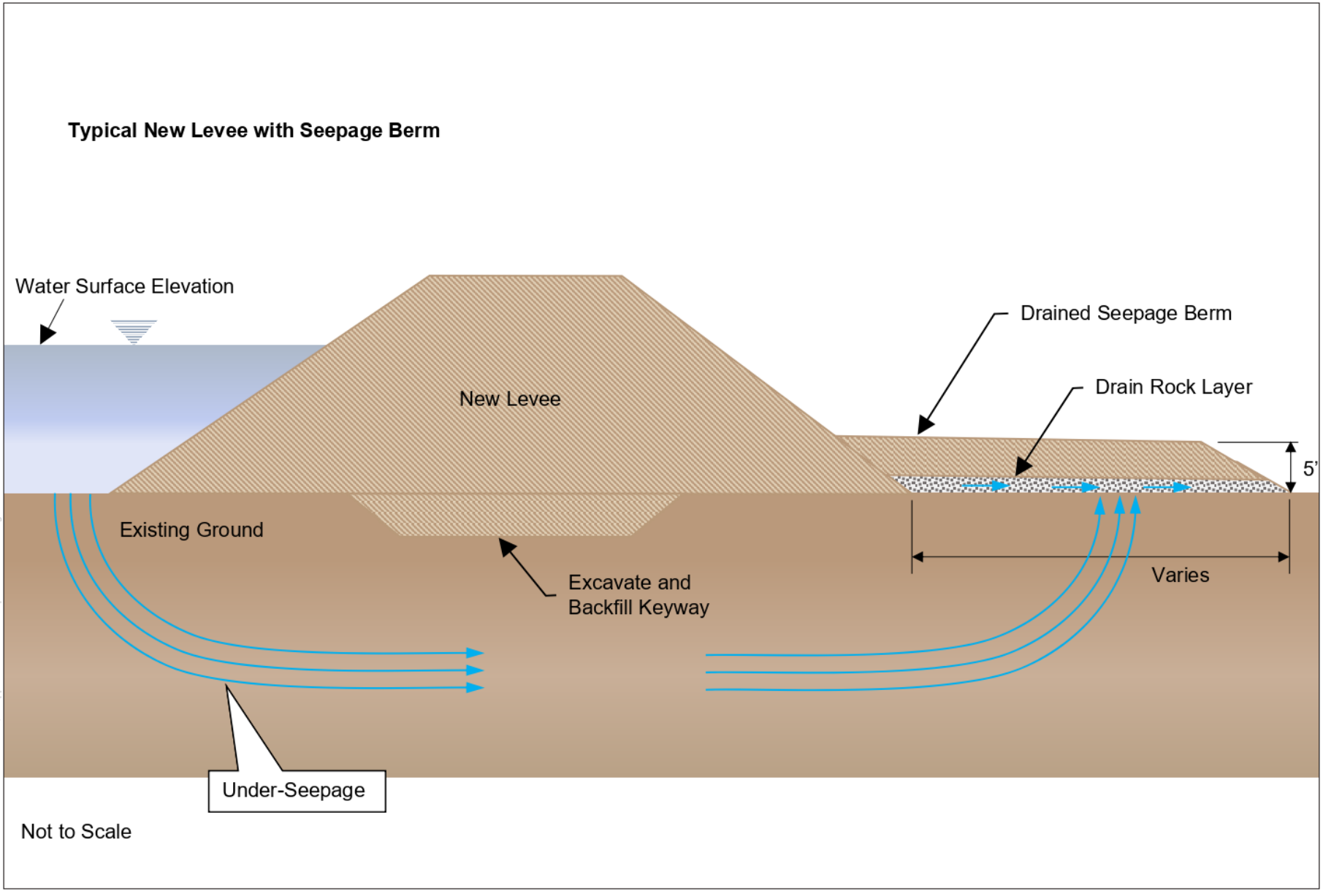
The proposed project would require removal of high-hazard encroachments within the footprint of the levee and adjacent maintenance easement (20 feet from the landside toe of the levee), as well as demolition of certain existing features to construct the new levee improvements. Demolition would include buildings, barns, and other agricultural structures, fencing, gates, stairs, posts, standpipes, woody vegetation, and other minor features in the levee easement. More extensive demolition, including existing asphalt pavement, would be required at the Mossdale Crossing County Park and for removal of approximately 17 modular homes and appurtenances at the Oakwood Lake Mobile Estates at the end of Aplicella Court. Debris resulting from demolition activities would be disposed of at local landfills permitted to accept this type of material.

Pipe Penetration Replacement

As shown in Figure 2-2, where pipes or other utilities penetrate the levee prism, the proposed project would remove all pipes and replace them to the appropriate height above the Design Water Surface Elevation conforming to current USACE and CVFPB requirements.

Dryland Levee Extension and Seepage Berm

The proposed dryland levee extension would include construction of a new approximately 2.9-mile-long levee east to Tinnin Road (see Figure 2-2), as needed to prevent flood waters from going around the existing dryland levee and flooding the Mossdale Tract area during extreme flood events. The new dryland levee extension would be approximately 4 to 18 feet high with a crown width of 20 feet and a base width of 50 to 200 feet. The proposed dryland levee extension would also include an approximately 100-foot-wide and 5-foot-high seepage berm on the dryland side, as well as a 20-foot-wide O&M corridor on both sides of the levee. The proposed dryland levee extension alignment intersects several public paved roads within San Joaquin County, including Airport Way, Oleander Avenue, Fig Road, and Union Road. Development of this proposed project component would require demolition and reconstruction of portions of these roadways, as well as the relocation and/or reconstruction of existing utilities, such as South San Joaquin Irrigation District irrigation and drainage facilities. Debris resulting from demolition activities would be disposed of at local landfills permitted to accept this type of material. A typical cross section of this proposed project component is shown in **Figure 2-10**.



SOURCE: Kjeldsen, Sinnock, and Neudeck 2022

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Figure 2-10
Diagram of Dryland Levee Extension

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2.4.2 Multi-Benefit Components

The multi-benefit components of the proposed project include: (1) ecosystem restoration; and (2) other multi-benefit recreational features along the levee system, as described below. Figure 2-3 shows the proposed ecosystem restoration sites and recreational components of the proposed project.

Ecosystem Restoration

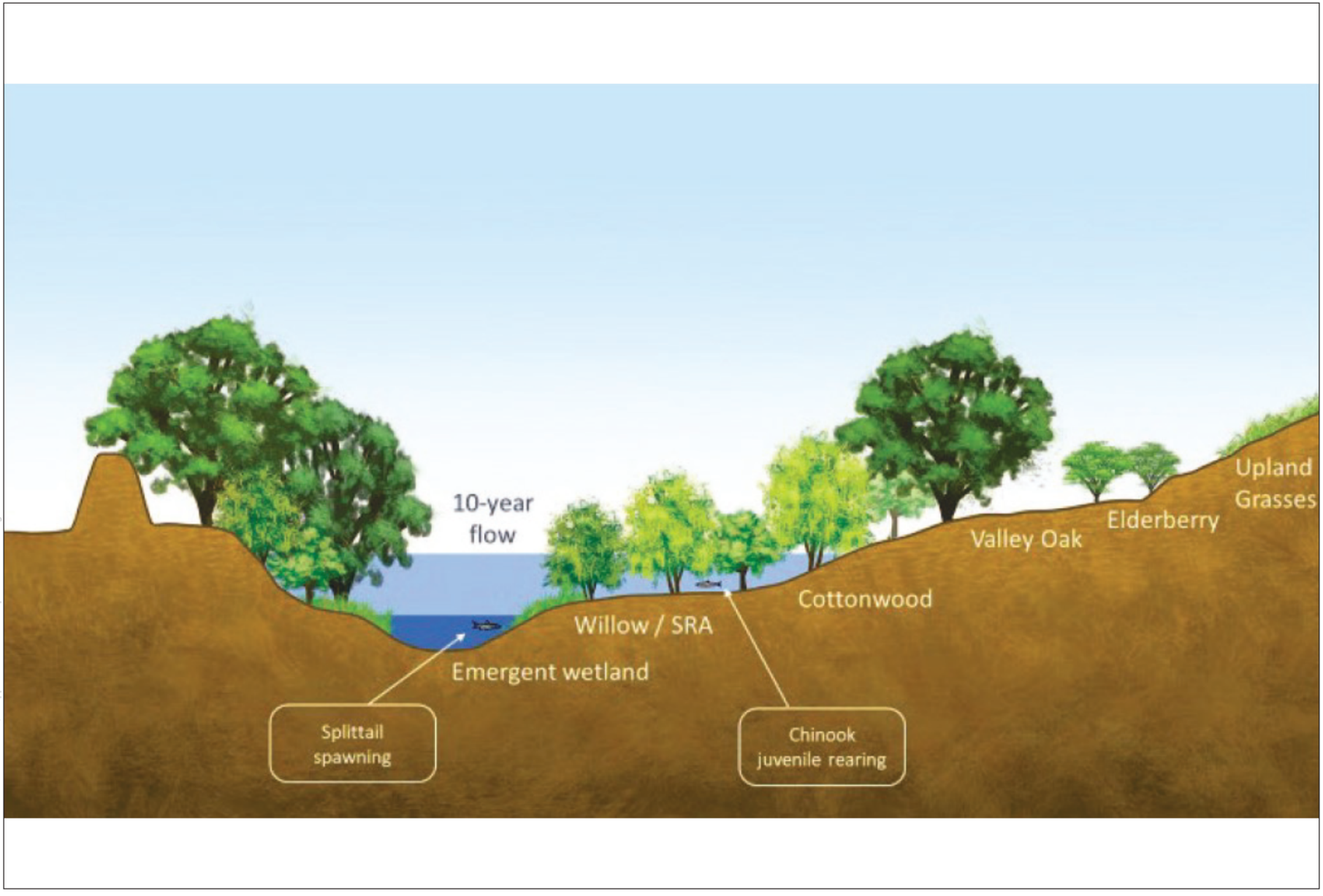
Numerous ecosystem restoration sites were considered that could possibly meet the multi-benefit objectives of the proposed project. Parcels of land were considered for meeting restoration criteria based on existing land habitats, elevations, and other opportunities for gaining natural ecosystem functions appropriate for the lower San Joaquin River. Conceptual restoration plans were developed for eight sites designated as having medium or high restoration potential. These sites are presented in **Table 2-2**, along with type of restoration, habitat acreage, and approximate grading volumes. For each site, evaluations of existing topography relative to the target elevations for different habitats (represented schematically in **Figure 2-11**) were used to estimate the potential area of habitat that could self-sustain at each site following initial replanting and removal of invasive vegetation, if needed.

TABLE 2-2
SUMMARY OF POTENTIAL ECOSYSTEM RESTORATION SITES AND APPROXIMATE GRADING VOLUMES

Ecosystem Restoration Site Number	Restoration Description	Proposed Habitat Acreage			Approximate Grading Volume (CY)
		Wetlands	Riparian	Transitional	
2	Revegetation at existing grade to expand upland habitat.	0	1.3	0	0
5	Selective grading and revegetation to expand area of active floodplain habitat, plus some revegetation at existing grade.	0	0.4	0	1,450
6	Selective grading and revegetation to restore secondary channel connection to San Joaquin River and expand area of floodplain.	2.0	4.7	0	53,000
9	Preserve existing secondary channel and regrade to expand floodplain area	0.6	2.9	0	25,800
13	Replant at existing grade for Elderberry and Valley Oak/upland habitat and regrade part of site to expand riparian woodland along Walthall Slough. Export excess cut.	0	13.9	141.2	255,200
14, 16	Grade and replant to create active floodplain and ecotones, Site 14 to export excess cut, Site 16 to balance cut and fill on-site	2.5	36	0.7	277,700
17	Preserve existing vegetated bank but selectively breach bank and grade area behind to create active floodplain. Balance cut and fill on-site.	1.0	24.4	0	192,100

NOTE: CY = cubic yards

SOURCE: Data complied by Environmental Science Associates 2025



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SOURCE: Kjeldsen, Sinnock, and Neudeck 2022

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Figure 2-11
Vegetation and Elevation Schematic

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Of the potential ecosystem restoration sites considered, Sites 13, 14, and 16 have been developed in more detail and are evaluated at a project level in this EIR. The remaining sites are evaluated at a programmatic level. Proposed restoration features at Sites 13, 14, and 16 would include the following:

- Excavated floodplains.
- Floodplain side channels.
- Brush mat.
- Habitat wood structures.
- Willow baffles.
- Upland brush piles.

Each of these features is described below.

Excavated Floodplains

Excavated floodplains involves the excavation and grading of lands adjacent to existing or proposed channels to increase the frequency of floodplain inundation and expand upon riparian and freshwater emergent wetland habitats.

Excavation of Site 13 would involve lowering approximately 37 acres of floodplain by 4–6 feet and selectively lowering or "notching" portions of the existing agricultural berm adjacent to Walthall Slough to reconnect the slough to the excavated floodplain (**Figure 2-12**). The slope of the floodplain to Walthall Slough would be gradual (150:1) to maximize riparian habitat and generate significant fill material for the construction of the Dryland Levee Extension described in Section 2.4.1. The backslope of the inset floodplain would be contoured at a 5:1 slope to existing grade.

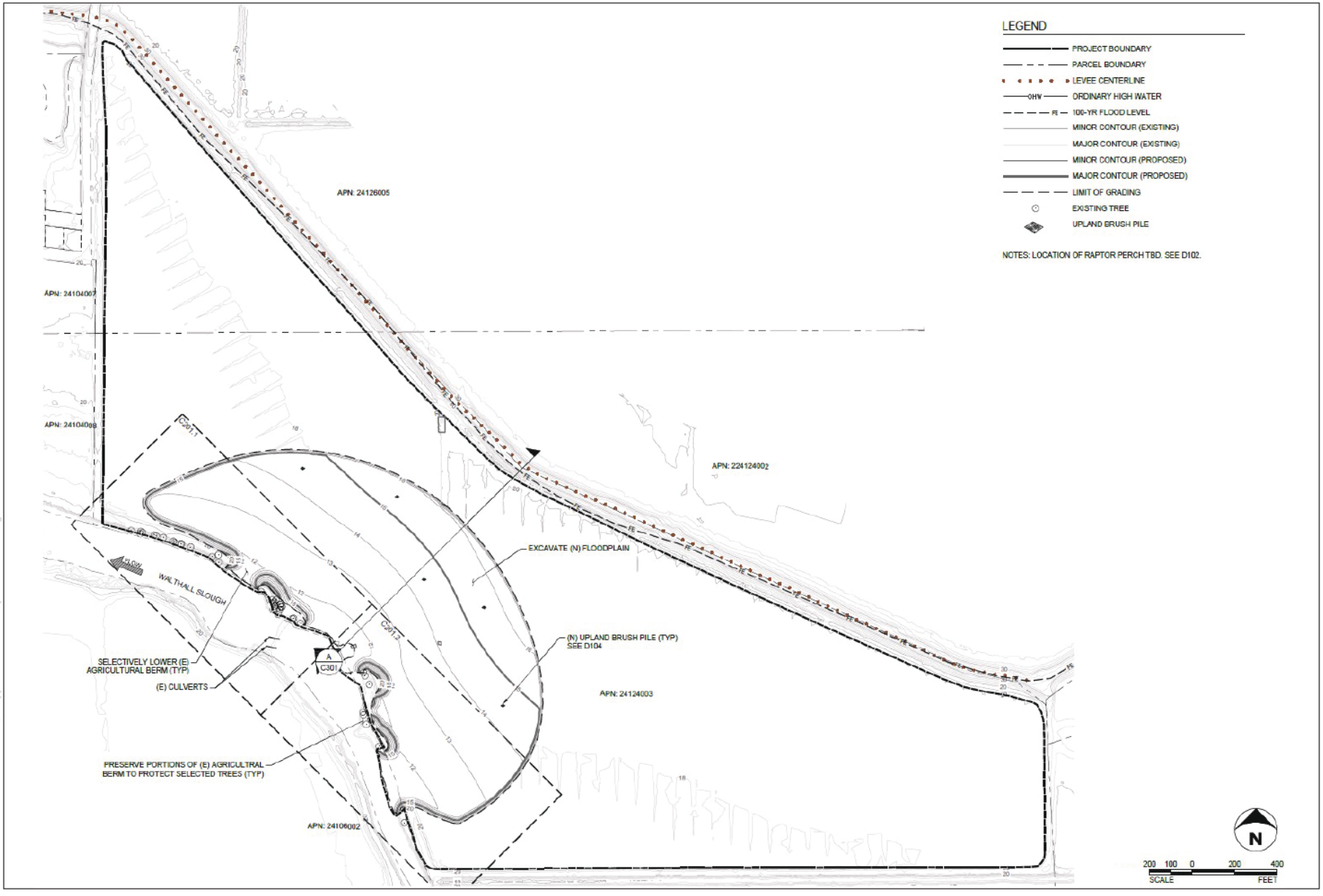
Excavation of Site 14 would involve lowering approximately 18 acres of existing agricultural lands to create an inset floodplain and side channel system connected to the San Joaquin River (**Figure 2-13**). The floodplain would be graded at a 50:1 slope from the top of the excavated side channel to the toe of the inset floodplain. The backslope of the inset floodplain would be contoured at a 5:1 slope to existing grade.

Excavation of Site 16 would be smaller in scale, and the channel excavation would result in a backwater alcove with one point of connection to the San Joaquin River (Figure 2-13). Approximately 2 acres of land along the banks of the river would be excavated to create the inset floodplain and alcove. As with Site 14, the floodplain would be graded at a 50:1 slope from the top of the excavated side channel to the toe of the inset floodplain. The backslope of the inset floodplain would be contoured at a 5:1 slope to existing grade.

Excavated soils would be stockpiled at one or more of the proposed project's staging areas (see Figure 2-2) and evaluated for reuse in levee construction. Excess material would be hauled off-site for disposal or reuse at local permitted facilities.

Floodplain Side Channels

Side channels would be graded into the excavated floodplains of Sites 14 and 16 approximately 2.5 feet deep with 2:1 side slopes. The shallow depth of excavation would allow for near continuous inundation except for the lowest of tidal conditions but discourage predatory non-native fish from using these features. As stated for excavated floodplains, excavated soils would be stockpiled at one or more of the proposed project's staging areas for use on the proposed project and/or hauled off-site for disposal or reuse.



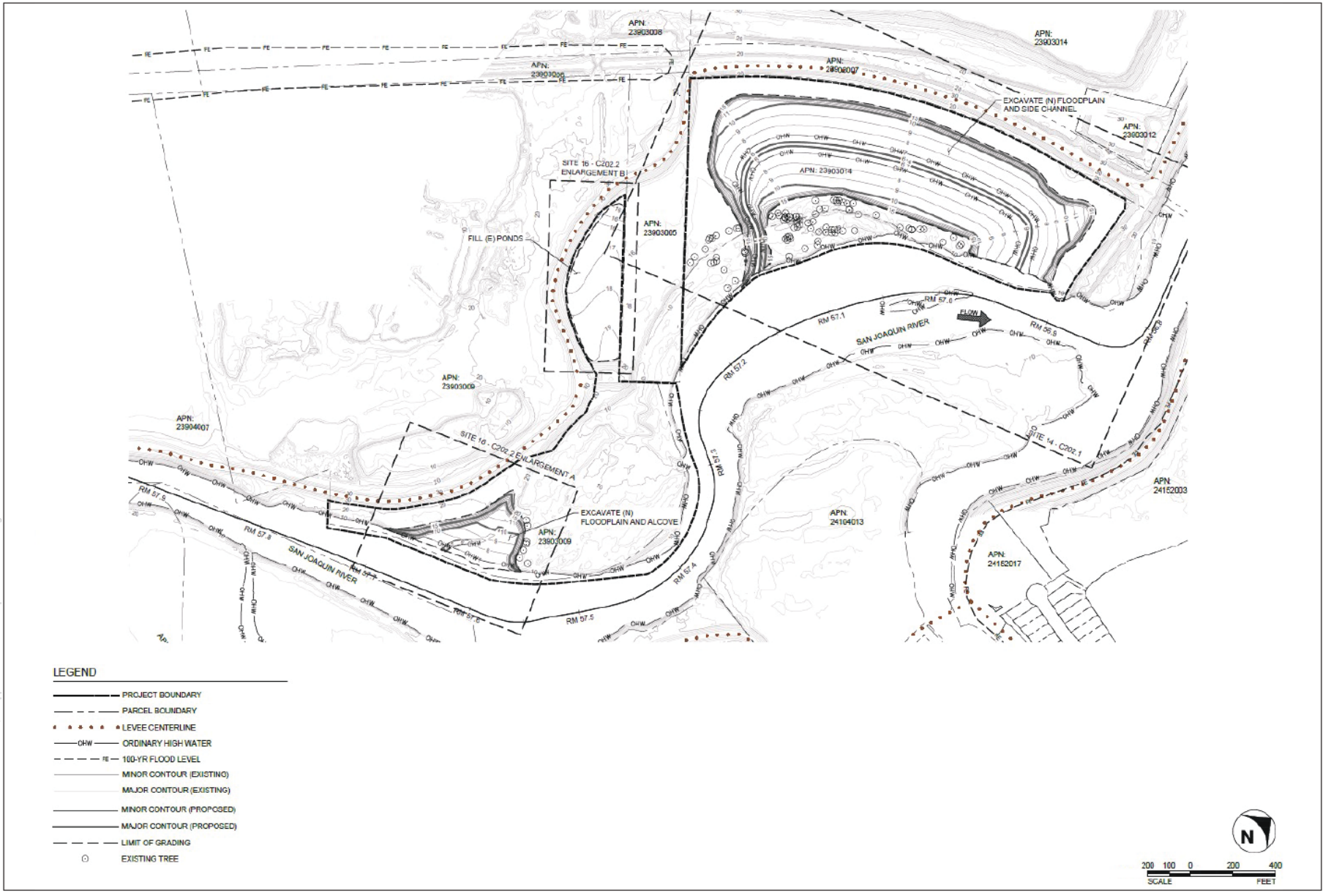
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SOURCE: San Joaquin Area Flood Control Agency

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Figure 2-12
Site 13 Grading and Enhancement Plan

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SOURCE: San Joaquin Area Flood Control Agency

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Figure 2-13
Site 14 and 16 Grading and Enhancement Plan

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Brush Mat

Installation of brush mat is proposed along the side slopes of excavated side channels to initially stabilize the banks and promote growth of planted and recruited riparian vegetation. Construction of brush mat entails excavating a series of trenches at the toe, brown, and end of each feature, placement of willow stems on the bank perpendicular to the excavated side channels, placement of a 3-foot gravel layer on top of the stems, covering the gravel with coir fabric, using a rope and stake system to secure the coir fabric, and backfilling trenches with cobble-soil mix. **Figure 2-14** provides an overview of brush mat components, typical sequence of installation, and a photograph of a recently installed feature.

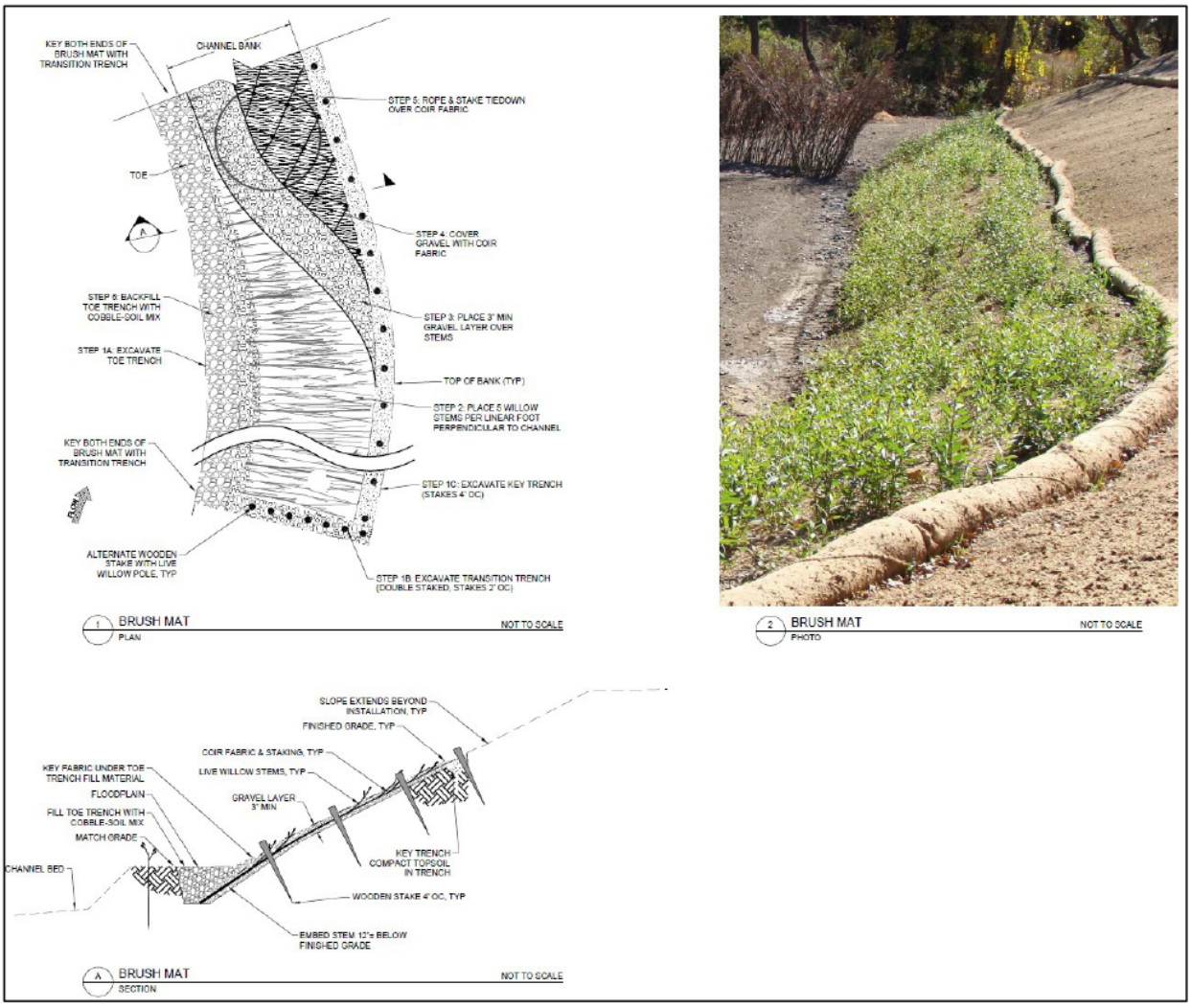


Figure 2-14
Brush Mat Detail

Habitat Wood Structures

Sites 14 and 16 would include habitat wood structures along the margins of newly excavated side channels to create instream habitat complexity and cover for juvenile Chinook salmon and other aquatic species accessing the floodplains. The habitat wood structures would consist of projected root wads that

would be placed approximately every 50 feet on alternating sides of the channels to encourage local scour and deposition to create more complex channel habitat including pools and shallower areas and provide basking areas adjacent to the water for amphibians and reptiles. The base of each root ball would be submerged when the water level is around 5–6 feet North American Vertical Datum of 1988 (NAVD88; a typical high tide elevation). It is expected that the log structures would be keyed into the bank of the channels and be ballasted with rock to achieve an appropriate factor of safety. **Figure 2-15** shows a typical plan view and section of the single log structure and a photograph of a recently installed feature.

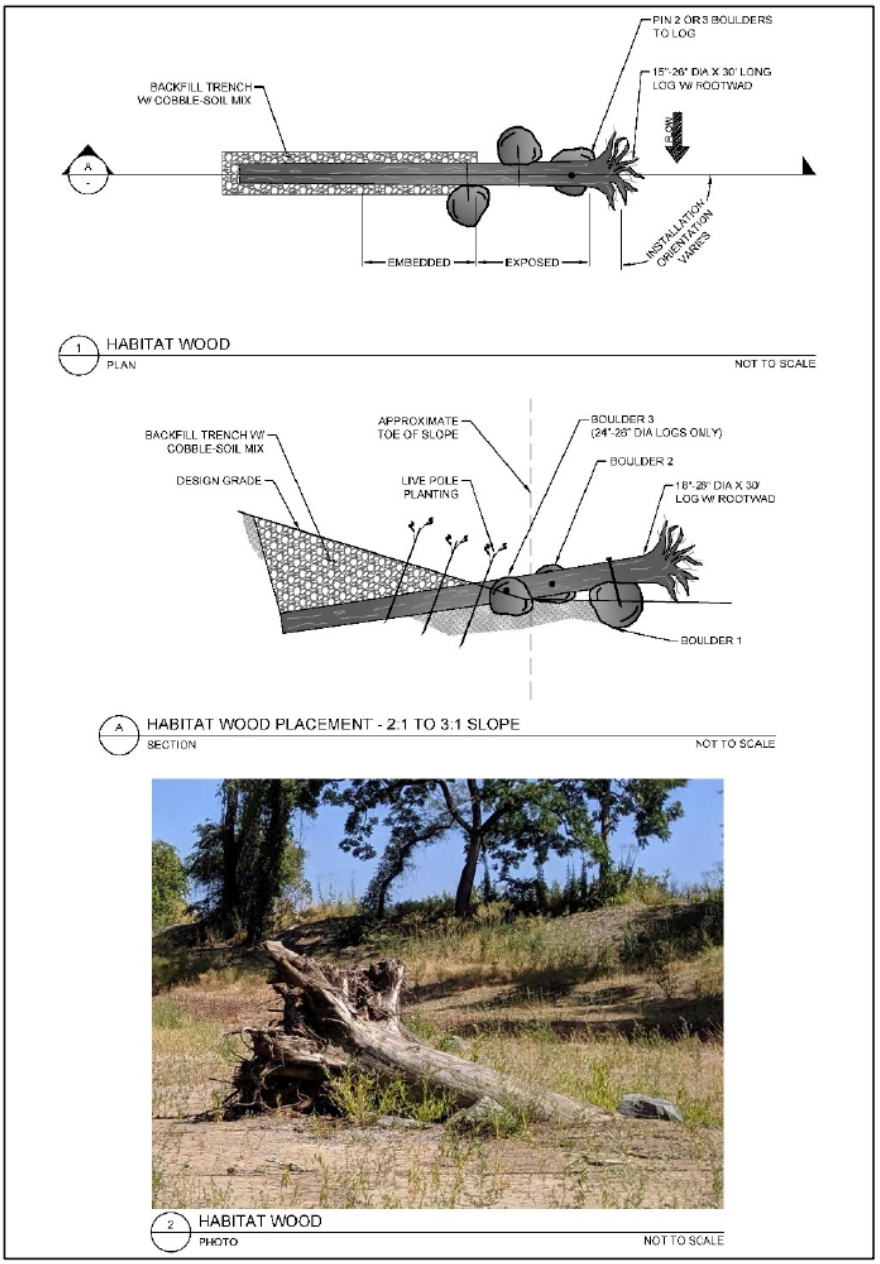


Figure 2-15
Habitat Wood Detail

In addition, a smaller number of habitat wood structures would be keyed into the banks of the San Joaquin River at select locations to provide edge habitat and cover for juvenile Chinook salmon migrating along the banks of the San Joaquin River. These structures are intended to function at low flows (tidal elevation range of around 4-6 feet NAVD88) when there is the least cover from inundated vegetation and other sources. Because these structures would be exposed to higher velocities than the structures along the floodplain channels, they would require stabilizing methods including vertical pinning members, keying into the banks, and attaching rock ballast by cabling or pinning.

Willow Baffles

Willow baffles are proposed to be installed up-slope of a habitat wood structures and brush mats and above the OHWM (approximately 7 feet NAVD88) surrounding the proposed side channel of Site 14. Installation would include excavation of a small trench, approximately 2 feet deep, placement of live willow stems along one side of the trench, then backfilling the trench with rock-soil mix and covering the rock-soil mix with native fill. **Figure 2-16** shows a typical plan view and section of the willow baffle feature and a photograph of a recently installed feature.

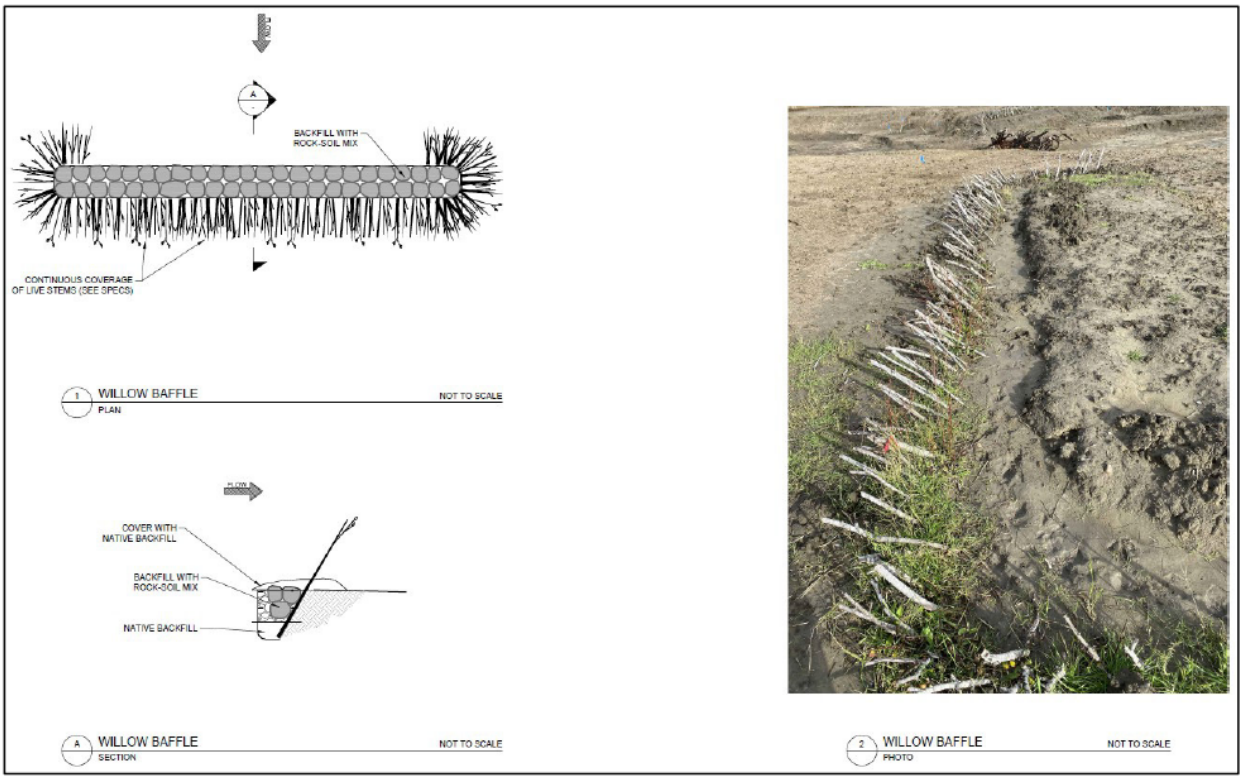


Figure 2-16
Willow Baffle Detail

Upland Brush Piles

Upland brush piles are proposed along excavated floodplains between the willow baffles and backslope of the excavated floodplain of Site 14. These features involve large bundles of 5- to 15-feet-long tree stems and branches, ranging 2- to 8-inches in diameter, placed intermittently along the slope and perpendicular

to flow path of the excavated side channel and floodplain. **Figure 2-17** shows a typical plan view and section of an upland brush pile and a photograph of several recently installed features.

Sites 13, 14, and 16 would be planted using a mixture of native plants from seed, container plants, and live willow posts. A temporary irrigation system would be installed for the first 3 to 5 years to support plant establishment. Existing water supplies would be used for irrigation as available. At locations where no existing irrigation water supply is available, surface and groundwater options would be identified for consideration during design.

Erosion control at Sites 13, 14, and 16 would be installed using a mixture of biodegradable fabric in high erosion risk areas, with straw wattles and mulch used in areas of lower erosion risk.



Figure 2-17
Upland Brush Pile Detail

Recreational Features

This multi-benefit component would develop recreational features, including recreational paths, along the top of levee and landside toe. Proposed project recreational components south of Dos Reis Regional Park include the following:

1. Completing a Class I shared-use path between Dos Reis and Mossdale Crossing Regional Parks through a combination of gravel levee-top path segments and at-grade paved paths behind levees, as illustrated in Figure 2-3.

2. Levee-top trail access improvements at two locations between Dos Reis and Mossdale Crossing Regional Parks.
3. A gravel path on top of the dryland levee extension and two new levee-top access points where the levee crosses Airport Way and where it terminates at Union Road, as illustrated in Figure 2-3.

All shared-use paths included in the proposed project would meet Americans with Disabilities Act and California Title 24 guidelines and be consistent with existing California Department of Transportation and City of Lathrop standards, which include the following:

- Gradient: 5 percent sustained, up to 12.5 percent for 10 feet with landings.
- Landings not recommended by the American Association of State Highway and Transportation Officials.
- Railings typically not used.
- Cross slope: 2 percent.
- Surface: Smooth, gaps 0.5 inch maximum.
- Separation of users (where merited).
- Clearance: Vertical = 10 feet, Horizontal = 2 feet.

The proposed recreational enhancements, including the levee-top trail, shared-use path, and path access and parking improvements, are illustrated in Figures 2-3 and estimated material quantities are presented in **Table 2-3**.

TABLE 2-3
QUANTIFICATION OF PROPOSED RECREATIONAL ENHANCEMENTS

Path/Trail	Lathrop (LF)	San Joaquin County and City of Manteca (LF)	Total (LF)	Total (acres)
Levee-Top Path (10 feet wide)	23,370	23,080	46,450	10.66
Multi-Use Trail (8 feet wide)	12,200	0	12,200	2.24
Access Point	**(EA)**	**(EA)**	**Total (EA)**	
Levee Access (Not ADA)	4	1	5	
Levee Access (ADA)	4	2	6	

NOTES: ADA: Americans with Disabilities Act; EA = each; LF = linear feet
SOURCE: Data compiled by Environmental Science Associates 2025

Because the locations and designs of the recreational features are still under development, analysis of these additional multi-benefit proposed project components is evaluated at a programmatic level in this EIR.

2.5 Construction Activities and Other Considerations

This section outlines the activities, equipment, materials, and other resources required for proposed project area preparation, access, staging, construction, and demobilization. Project-level details are

provided for the fix-in-place levee improvements, dryland levee extension, and restoration of Sites 13, 14, and 16. Proposed project components evaluated at a programmatic level in this EIR (i.e., construction of additional ecosystem restoration sites and development of recreational features) are not discussed in detail.

2.5.1 Site Preparation and Mobilization

Site preparation would begin with trimming and/or removal of vegetation and demolition of structures, hardscape, and surface features where construction access and activities would occur. Vegetation would be removed between October and February of each year as feasible, before the nesting season of birds (see *Construction Workers and Schedule* section). Next, grubbing would occur in order to remove stumps, root balls, and underground infrastructure. Clearing and grubbing activities would include the stripping of aggregate base material at the existing levee crown patrol roads, as well as some degree of stripping of the organic topsoil and vegetation. The landside levee slopes would generally require minor stripping as well as any adjacent agricultural land. Where erosion repair with riprap would occur the waterside levee slopes would require some degree of removal of ruderal grasses and weeds, shrubs, and saplings less than 2 inches in diameter. Generally, trees on the waterside slopes that are not dead and/or downed would be avoided and not affected by erosion protection installation. No clearing and grubbing is expected to occur below the OHWM.

The proposed project would require the demolition of certain existing features to facilitate the construction of proposed levee improvements. Demolition would include buildings, barns, and other agricultural structures, fencing, gates, stairs, posts, standpipes, woody vegetation, and other minor appurtenances. More extensive demolition, including existing removal of asphalt pavement, would be required at the Mossdale Crossing County Park and for removal of approximately 17 modular homes and appurtenances at the Oakwood Lake Mobile Estates at the end of Aplicella Court. Portions of public paved roads would be demolished where the proposed dryland levee extension crosses Woodward Avenue, Airport Way, Oleander Avenue, Fig Road, and Union Road. Pre-construction surveys would be conducted for those structures that would be demolished. Any hazardous materials would be removed according to hazardous materials regulations, and hazardous and/or demolished debris would be hauled to the nearest landfill licensed to accept this type of material.

Site preparation activities would include the relocation of utilities infrastructure to accommodate proposed project construction. Existing electric utility poles within the footprint of the fix-in-place levee improvements and the dryland levee extension would be relocated. Modifications to the existing South San Joaquin Irrigation District irrigation pipelines and ditches, and relocation of potential gas lines would occur along the dryland levee extension alignment and at road crossings at Woodward Avenue, Airport Way, Oleander Avenue, Fig Road, and Union Road. Additional private irrigation and drainage pipes penetrating the existing levee would be relocated, rehabilitated, and/or replaced. In addition, site preparation could include the relocation of drinking and agricultural water wells located within the proposed project footprint.

All generated material or debris would be hauled off-site and disposed of at a suitable landfill. After these activities, mobilization would include the application of temporary best management practices for the control of off-site stormwater runoff and sedimentation, building temporary access roads and ramps, preparing staging areas, and installing signage for traffic and alternate transportation routes that would be

affected by construction activities (e.g., bicycle routes). All work would be conducted according to site-specific construction plans that would identify areas for clearing, grading, and revegetation so that ground disturbance would be minimized.

Specifically for restoration activities at Sites 13, 14, and 16, unwanted vegetation would be cleared and grubbed, and avoidance and minimization measures would be implemented to avoid and preserve designated high value trees or habitat such as mature live oaks, elderberries, cottonwoods, willows, and wetland areas. Mass grading in unvegetated areas would be performed using large construction equipment that could include scrapers, bulldozers, excavators, loaders, rubber track carriers, and dump trucks. More detailed grading around preserved trees and on side channels would be performed using small excavators, bobcats, and other similar sized equipment. Finish grading would be performed using excavators to bring each ecosystem restoration site to the design elevations. Where feasible, cut material would be reused on-site to create higher elevation upland areas and high-flow wildlife habitat, and soil would be compacted to allow for replanting. For sites where it is not feasible to balance cut and fill or where excess cut material may be beneficially reused off-site, excess fill would be removed using haul trucks with end-dump trailers or similar equipment.

2.5.2 Site Access, Haul Routes, and Staging Areas

Haul routes for riprap, bedding, gravel, soil, and other construction materials are depicted on Figure 2-2 and listed in **Table 2-4**. The neighborhoods along the routes would be notified of haul routes, ingress and egress points, staging areas, detours, lane closures (if any), and closed recreational areas (including bike paths) approximately one week prior to commencement of construction activities. Signage would be installed at all ingress and egress locations to alert the public of construction activities and potential restrictions on access during construction activities. Security fencing would be installed around areas under active construction to prevent public from entry into areas with construction hazards.

Haul trucks would travel along the top of the levee roads to unload materials at staging areas or directly adjacent to construction activities. Traffic within and adjacent to active construction areas would be controlled by dedicated flaggers to prevent collisions from local traffic and recreationist occurring. All other areas along the top of levee roads would be closed to pedestrian and bicycle traffic for safety reasons. Haul trucks would enter main ingress points and use either the downstream or upstream temporary construction access ramps to deliver their loads at each of the flood risk reduction component sites and then continue along the top of the levee to exit at either end of each component. Haul routes shown in Figure 2-2 would be used in both directions to prevent construction delays due to traffic or road closures that could occur for unforeseen reasons (e.g., emergencies, road construction) during the construction period. Construction worker parking would occur at staging areas, off-street locations within the construction limits, and available on-street locations immediately adjacent to the construction limits within urban areas.

Potential staging areas shown in **Table 2-5**. All staging areas are within portions of existing levee maintenance easements, RD 17 property, and private property. Following completion of construction activities, staging areas and local haul roadways would be repaired to existing conditions.

TABLE 2-4
ANTICIPATED HAUL ROUTES AND DIRECTIONS TO PROPOSED PROJECT COMPONENTS

Access/Haul Road	From	To	Proposed Project Component
Carolyn Weston Blvd.	Interstate 5	Existing RD 17 levee	Fix-in-place levee improvements
French Camp Road	Interstate 5	Existing RD 17 levee	Fix-in-place levee improvements
Mathews Road	Interstate 5	Existing RD 17 levee	Fix-in-place levee improvements
Bowman Road	Manthey Road	Existing RD 17 levee	Fix-in-place levee improvements
Frewart Road	Manthey Road	Existing RD 17 levee	Fix-in-place levee improvements
De Lima Road	Manthey Road	Existing RD 17 levee	Fix-in-place levee improvements
Dos Reis Road	Manthey Road	Existing RD 17 levee	Fix-in-place levee improvements
S. Lathrop Road/Spartan Way	Interstate 5	Existing RD 17 levee	Fix-in-place levee improvements
Louise Avenue/River Islands Parkway/Barbara Terry Blvd.	Interstate 5	Existing RD 17 levee	Fix-in-place levee improvements
Golden Valley Parkway	Louise Avenue	Town Centre Drive	Fix-in-place levee improvements
Town Centre Drive	Manthey Road	Existing RD 17 levee	Fix-in-place levee improvements
Manthey Road	Mathews Road	Lathrop Road	Fix-in-place levee improvements
Manthey Road	Towne Centre Drive	Existing RD 17 levee	Fix-in-place levee improvements
Sadler Oak Drive	Manthey Road	Existing RD 17 levee	Fix-in-place levee improvements
Queirolo Road	Manthey Road	Existing RD 17 levee	Fix-in-place levee improvements
Yosemite Avenue/ Glacier Street	State Route 120	Existing RD 17 levee	Fix-in-place levee improvements
Airport Way	State Route 120	Existing RD 17 levee	Fix-in-place levee improvements
Airport Way/ Woodward Avenue	State Route 120	Existing RD 17 levee	Fix-in-place levee improvements
Airport Way/McKinley Avenue	State Route 120	Existing RD 17 levee	Fix-in-place levee improvements
Airport Way/Fig Avenue	State Route 120	Proposed RD 17 dryland levee extension	Dryland levee extension
Union Road/Fig Avenue	State Route 120	Proposed RD 17 dryland levee extension	Dryland levee extension
Peach Avenue	Airport Way	Union Road	Dryland levee extension
Oleander Avenue	Union Road	Fig Avenue	Dryland levee extension
Union Road/Woodward Avenue/Tinnin Road	State Route 120	Proposed RD 17 dryland levee extension	Dryland levee extension
Main Street/Sedan Avenue / Tinnin Road	State Route 120	Proposed RD 17 dryland levee extension	Dryland levee extension

Access/Haul Road	From	To	Proposed Project Component
Airport Way/Woodward Ave./ Dredger Cut (Existing RD 17 levee)	State Route 120	Ecosystem Restoration Site 13	Ecosystem Restoration
Mossdale Road/Existing RD 2107 levee	Interstate 5	Ecosystem Restoration Site 14	Ecosystem Restoration
Mossdale Road/Existing RD 2107 levee	Interstate 5	Ecosystem Restoration Site 16	Ecosystem Restoration
Dredger Cut (Existing RD 17 levee)/Woodward Ave/ Joshua St/W Atherton Dr / Airport Way	Ecosystem Restoration Site 13	Staging Area 13	Dryland levee extension
Existing RD 2107 levee/ Mossdale Road/Interstate 5/ State Route 120/Airport Way	Ecosystem Restoration Site 14	Staging Area 13	Dryland levee extension

SOURCE: KSN 2025; data compiled by Environmental Science Associates 2025

TABLE 2-5
POTENTIAL STAGING AREAS

Number	Street	Acreage
2	French Camp Road	48.9
3	Mathews Road	25.0
4	Bowman Road	2.1
5	De Lima Road	10.9
6	Dos Reis Road	13.1
7	Lathrop Road	9.7
9	Sadler Oak	16.8
10	Queirolo Road	6.2
11	Yosemite Avenue	15.2
13	Airport Way	15.4
14	W Woodward Avenue	4.7
15	Mossdale Road	6.4
16	Mossdale Road	2.0
17	Oleander Avenue	4.8

SOURCE: KSN 2025

2.5.3 Construction Materials and Equipment

Excavation and Demolition Materials

Excavation and demolition related to the flood risk reduction components would include the top several feet of the levee crown being degraded prior to the construction of the cutoff walls, to provide a suitable working platform and to minimize the risk of a slurry blowout at the top of the cutoff walls. The construction of the slurry cutoff walls would generate an additional minor quantity of earthen spoils.

Minor grading of the levee would occur for reconstruction of the existing dryland levee and other fix-in-place levee improvements, in which spoils would be generated. The dryland levee extension consists of a brand-new levee, which requires the excavation and backfill of a wide, foundation keyway prior to the construction of the levee embankment.

Excavation activities associated with ecosystem restoration of Sites 13, 14, and 16 would include the top 0.25 inch of all sites being scrapped. Excavation of earthen materials, including, but not limited to, the excavation of new floodplain, side channels, and alcoves would also be required. Notching of agricultural berms is required to connect new floodplain, side channels, and alcoves to the San Joaquin River and Walthall Slough. Scrapings, removed vegetation, and miscellaneous other minor clear and grub materials would not be reused for other proposed project improvements, but instead would be off hauled prior to excavation activities. All other earthen materials from site excavation would be transported to Staging Area 13 for use during construction of the dryland levee extension.

The expected volume (in cubic yards [CY]) of excavation materials and soil-related and vegetation grubbing and stripping waste to be hauled off-site are provided in **Table 2-6**. It is expected that some existing pumps, water, irrigation, and other utilities may be encountered on-site and will require removal or relocation.

TABLE 2-6
ESTIMATED VOLUME OF EXCAVATION AND DEMOLITION MATERIALS TO BE HAULED OFF-SITE

Source of Material	Volume of Material (CY)
Levee Degrade	176,000
Dryland Levee Extension Keyway Excavation	41,500
Levee Grading	27,500
Slurry Cutoff Wall	4,700
Existing Aggregate Base	12,500
Vegetation Grubbing and Stripping (for levee improvements)	61,700
Demolition of Structures	6,280
Asphalt Pavement Removal	900
Vegetation Clearing and Grubbing (for ecosystem restoration sites)	77,500
Ecosystem Restoration Site Excavation (stockpiled on-site for dryland levee extension)	509,600
Total	**918,180**

NOTE: CY = cubic yards
SOURCE: KSN 2025

Construction Materials

Various types of material would be imported to construct the flood risk reduction components of the proposed project. Imported levee fill (i.e., soil that meets federal levee design criteria) would be used for levee raising, seepage berms, and the permanent cap over the proposed cutoff walls. Historically, imported soil for RD 17 projects has often been purchased by various quarries in the Vernalis area (e.g., Teichert, Granite, Knife River) in the form of overburden material and from the Port of Stockton

facility on Lower Roberts Island in the form of dredge spoils. Levee fill could also be provided by grading activities to accommodate restoration of proposed Sites 13, 14, and 16. Drain rock and sand would be used for seepage berms. Aggregate base would be used for all-weather patrol roads and as a base for paved public roads. Riprap would be used as rock slope protection on the waterside levee slopes. All processed materials (e.g., aggregate base, riprap, asphaltic concrete) would be purchased from available commercial sources.

Other materials would be used in the construction of the flood risk reduction components as well, including concrete and/or steel sheet piles (approximately 12,500 square feet) for floodwalls, asphaltic concrete for surfacing paved public roads, steel pipe (approximately 11,800 linear feet) for the rehabilitation and/or replacement of levee pipe penetrations, and bentonite for the slurry cutoff walls.

In addition, imported aggregate base fill would be used for dirt/gravel road repair after restoration construction has occurred for Sites 13, 14, and 16. Other materials to be used for these restoration activities include large hardwood logs for habitat wood structures (approximately 62 logs) and miscellaneous gravel, plantings, and brush for habitat enhancement and erosion protection. Temporary items, such as pumps, piping, and sprinklers, would be needed during vegetation establishment periods for temporary irrigation.

During construction of all proposed project components (flood risk reduction components, ecosystem restoration sites, and other multi-benefit components), water would be sourced from locally available sources of non-potable water and/or municipal fire hydrants regionally based on the vicinity to the proposed project area and at volumes based on the size of the construction site.

The expected volume (in CY) of imported materials is provided in **Table 2-7**.

TABLE 2-7
ESTIMATED VOLUME OF CONSTRUCTION MATERIALS TO BE IMPORTED

Source of Material	Volume of Material (CY)
Levee Fill	1,167,500
Drain Rock	112,400
Filter Sand	28,300
Aggregate Base	32,900
Riprap	18,600
Concrete	500
Asphaltic Concrete	800
Bentonite	8,700
Aggregate Base	8,900
Total	**1,378,600**

NOTE: CY = cubic yards
SOURCE: KSN 2025

Equipment

Construction equipment and the number of each that would likely be used for the flood risk reduction components and restoration of Sites 13, 14, and 16 by pre- and post-construction phases in **Table 2-8**. Each piece of equipment identified in Table 2-8 could be expected to operate the majority of each workday (see information on schedule that follows). The haul trucks used for most of the materials would likely consist of some combination of double-bottom dump trucks, transfer dump trucks, and end dump trucks. Other vehicles not listed in Table 2-8 that could be used for furnishing materials and equipment may include flatbed trucks, lowboys, and pickup trucks. Construction personnel would also use pickup trucks and mechanic trucks for fueling, maintaining, and servicing the construction equipment.

TABLE 2-8
CONSTRUCTION EQUIPMENT LIST

Construction Activity/Proposed Project Component	Anticipated Equipment
Demolition	Excavator (1), front-end loader (1), water truck (1), haul trucks (2)
Clearing and grubbing (flood risk components)	Scrapers (3), front-end loaders (2), crawler/tractors tree pusher (2), motor grader (1), chippers/grinders (2), water truck (1), haul trucks (6)
Seepage berm	Scrapers (2), compactor-sheep's foot roller (1), front-end loaders (2), motor graders (2), bulldozer (1), excavator (1), water trucks (2), haul trucks (12)
Cutoff wall – degrade levee step	Scrapers (2), motor grader (1), bulldozer (1), haul trucks (12), water truck (1)
Cutoff wall – bentonite cutoff wall step	Long reach excavator (1), front-end loader (1), bulldozer (1), generators (2), slurry pumps (2)
Cutoff wall – levee fill step	Scraper (1), compactor-sheep’s foot roller (1), front-end loader (1), motor grader (1), bulldozer (1), dump truck (1), water trucks (2), haul trucks (12)
Floodwall (cast-in-place concrete)	Concrete machine (1), ready-mix trucks (4)
Floodwall (steel sheet pile)	Crane (1), impact type drop hammer (1) or vibratory hammer (1) or hydraulic press installer (1), excavator (1), generator (1)
Levee raise	Scraper (1), compactor-sheep's foot roller (1), front-end loader (1), motor graders (2), bulldozer (1), water trucks (2), haul trucks (12)
New dryland levee extension	Scrapers (3), compactor-sheep's foot roller (1), front-end loader (1), motor graders (2), bulldozer (1), water trucks (2), haul trucks (12)
Erosion repair / rock slope protection	Long reach excavator (1), loader (1), water truck (1)
Pipe replacement	Excavator (1), loader (1), water truck (1)
Asphalt pavement	Asphalt paving machine (1), asphalt pickup machine (1), steel drum rollers (2)
Site restoration	Front-end loader (1), hydroseeding truck (1), motor grader (1), water truck (1), haul trucks (2)
Clearing and grubbing (ecosystem restoration sites)	Scrapers (4), mower (4), front-end loaders (2), chippers/grinders (1), water truck (3), haul trucks (10)
Ecosystem Restoration Site Grading	Scrapers (6), bulldozer (6), front-end loaders (6), excavator (4), water trucks (3), haul trucks (20), pump (3)
Site Restoration and Revegetation	Hydroseeding truck (3), excavator (2), water truck (3)

SOURCE: KSN 2025

2.5.4 Construction Workforce, Vehicle Trips, and Hours of Activity

Construction Workforce

All workers would access the site by regional and local roadways. Each piece of equipment identified in Table 2-8 would require an operator. In addition, it is expected that one foreperson and two laborers would also be needed for each proposed project component. It is anticipated that most of the workers would travel to the proposed project area via freeways (e.g., Interstate 5, State Route 120) and the expected access routes identified in Table 2-4. Workers who live closer to the proposed project area would likely also use local, surface streets. Most of the workers would likely live in San Joaquin County. The estimated distance to the proposed project area from each of the nearby cities is as follows:

- Stockton: 13 miles.
- Manteca: 8 miles.
- Lathrop: 2 miles.
- Tracy: 13 miles.
- Lodi: 26 miles.

Vehicle Trips

The anticipated number of daily truck trips for materials, waste, and vendors for construction of each proposed project component is shown in **Table 2-9**. The truck trips were calculated based on a set of double-bottom dumps with approximately 20 CY of loose capacity per truck. It was assumed that a single truck could legally carry the following:

- Strippings, degrade material, and levee fill: 14 CY per truck.
- Filter rock, sand, riprap, and aggregate base: 12.5 CY per truck.

Hours of Activity

Construction hours would comply with the cities of Stockton, Lathrop, and Manteca's and San Joaquin County's noise ordinances. Therefore, construction would occur during the following days and times for proposed project components located within the following local jurisdictions: any day between 6:00 a.m. and 9:00 p.m. for proposed project components in unincorporated San Joaquin County; Monday through Thursday between 7:00 a.m. and 10:00 p.m. and Fridays and Saturdays between 9:00 a.m. and 11:00 p.m. in the City of Lathrop; any day between 7:00 a.m. and 8:00 p.m. in the City of Manteca; and any day between 7:00 a.m. and 10:00 p.m. in the City of Stockton. Depending on the allowable duration/schedule for the proposed project and/or each phase, night work could be necessary. If so, lighting would be required in order to continue operations and provide safety.

TABLE 2-9
TRUCK TRIPS

Proposed Project Component ID	Materials (trips per day)	Waste (trips per day)	Vendors (trips per day)	Total Daily Truck Trips (trips per day)
1	44 to 160	29 to 123	1	161
2	30 to 153	17 to120	1	151
3	57 to 152	29	2	154
4	8 to 167	10	1	168
5	42 to 165	27	1	166
6	80 to 170	34 to 119	2	172
7	69 to 168	27 to 124	3	171
8.a	71 to 168	31 to 121	3	171
8.b	21 to 92	19	1	93
8.c	14 to 68	6	1	69
8.d	34 to 157	17 to 124	1	158
8.e	36 to 158	3	1	159
11	27 to 84	10	1	85
12	55 to 168	30	2	199
*13	1 to 24	32 to 160	1	161
*14	1 to 8	32 to 160	1	161
15.a	51 to 170	29 to 125	3	294
15.b	24 to 150	29 to 70	2	152
*16	1 to 2	24 to 56	1	57

NOTES:
* Indicate multi-benefit proposed project area.
SOURCE: KSN 2025

Construction Schedule

Construction activities for the flood risk reduction components are estimated to take place over a minimum 5-year period. Construction of fix-in-place levee components, except for the dryland levee component, would occur between July 16 and October 31 each year to meet restrictions for construction on federal levees. It is expected that construction of the dryland levee extension may not have any seasonal restrictions.

Construction of floodplains, secondary channels, and alcoves associated with restoration of Sites 13, 14, and 16 would occur over a 1-year period, and all planting, irrigation, and monitoring would occur over the following 3 years. Construction of ecosystem restoration at Sites 13, 14, and 16 would occur during the dry season, from July 16 to October 31, when there is low flow and no connectivity to the San Joaquin River. This construction season has been designated in order to create an appropriately dry workspace for construction activities, as well as to comply with California Code of Regulations Title 23, Section 120,

which regulates construction in the floodway and on levees during flood season and other regulatory requirements.

2.5.5 Demobilization and Cleanup

Any staging area and construction access ramps (portions outside of the proposed project design footprint) would be restored to original pre-existing contour and condition or as agreed upon by the property owner. To avoid erosion, staging areas would be hydro-seeded and layered with wood mulch to prevent encroachment of invasive species. Any roads or other access areas damaged by construction would be repaired and restored to prior conditions. All trash, excess construction materials, and construction equipment would be removed.

2.6 Operations and Maintenance

This section outlines activities, equipment, and materials required for proposed project O&M. Project-level details are provided for the fix-in-place levee improvements, dryland levee extension, and restoration of Sites 13, 14, and 16. Proposed project components evaluated at a programmatic level in this EIR (i.e., construction of additional ecosystem restoration sites and development of recreational features) are not discussed in detail.

2.6.1 Flood Risk Reduction Components

Once construction is complete for the flood risk reduction components and the performance standards have been met, SJAFCA and/or RD 17 would likely be responsible for O&M of the proposed project, and all land used for staging areas would be returned to current condition and original ownership. Regular O&M activities would consist of inspections, weed abatement, removal of encroachments, and high-hazard vegetation to ensure levee integrity, replacement and re-working of displaced or launched revetment following large flood events, and adequate levee access along the levee toe road. The levee maintenance roads would be used, as they are currently used, to access the length of the levee during these activities and during high-flow events for flood-fighting purposes. O&M activities would not require heavier or noisier equipment than under current conditions. O&M inspections would consist of a patrol vehicle traveling along the levee and small machinery for weed abatement such as mowers and weed whackers/trimmers. These activities would only occur periodically, as under existing conditions. O&M activities would not introduce new land uses into the area. Therefore, O&M of the flood risk reduction components would not result in any change from baseline conditions.

2.6.2 Ecosystem Restoration Sites

Once the construction of Sites 13, 14, and 16 is complete, a planting contractor would install container plants and grasses. A temporary irrigation system would be installed for the establishment and maintenance period of the transplants and associated plant materials. An irrigation main line to pump water from the river edge or from a domestic water source would be used for irrigation. Water would be applied by drip or spray irrigation, and the irrigation system may be partially or entirely removed for seasonal high-water flows. If water is pumped from the river, the pump system and fish screen would

conform to the anadromous salmonid passage facility design criteria[1] issued by National Marine Fisheries Service in July 2011 (NMFS 2011).

The planting contractor would also be required to provide maintenance and irrigation over the following 3 years during the plant establishment period, as outlined in **Table 2-10**. Maintenance activities would start immediately following completion of the initial planting. General cleanup maintenance of the sites would occur throughout the year. Cleanup maintenance would generally include picking up trash, vandalism repairs, and the removal of used planting accessories (e.g., bamboo stakes, ties, browse guards). For watering maintenance, crews would connect the pump to the irrigation system for each irrigation cycle per the irrigation schedule outlined in Table 2-10. Crews would weed within the watering basins of the transplants and within an 18-inch radius of each woody and grass associated plant, so non-native herbaceous growth would not compete for soil moisture per the schedule in Table 2-10. Maintenance crews would mow weeds to below 6 inches in height during the growing season.

[1] Perforated plate: Circular or square openings shall not exceed 0.094 inch (2.38 millimeters [mm]), measured on a side. Slotted or rectangular screen face openings must not exceed 1.75 mm (approximately 0.06 inch) in the narrow direction. Screen material shall provide a minimum of 27 percent open area. Approach velocity must not exceed 0.20 feet per second for passive screens.

TABLE 2-10
THREE-YEAR MAINTENANCE SCHEDULE FOR MULTI-BENEFIT ECOSYSTEM RESTORATION SITES

Monitoring Year	Watering (Yrs 1 and 2: Mar 15–Nov 15) (Yr 3: Apr 1–Oct 31)		Weeding (Yrs 1–3: Mar 1–Sept 30)	Mowing (4 times per year)	
	Transplants	Associated Plants	Transplants and Associates	Tractor	String Trimmer
Year 1 (March 15–November 15)	Minimum of 50 gallons of water no more than 1 week apart or as required to maximize growth rates.	Minimum of 10 gallons per plant twice a week or as required to maximize growth rates.	As needed to keep weeds less than 12 inches in planting basins.	80%	20%
Year 2 (March 15–November 15)		Minimum of 30 gallons per plant every week to 10 days or as required to maximize growth rates.	As needed to keep weeds less than 12 inches in planting basins.	60%	40%
Year 3		Minimum of 50 gallons per plant every 10 to 14 days or as required to maximize growth rates.	As needed to keep weeds less than 12 inches in planting basins.	40%	60%

NOTES:

1. Adjustments may be made to species if it appears a particular species was not successful on a site.

SOURCE: Data compiled by Environmental Science Associates 2025

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CHAPTER 3
Environmental Setting, Impacts, and Mitigation Measures

3.1 Approach to the Analysis

3.1.1 Introduction and Approach to the Environmental Analysis

As discussed in Chapter 2, *Project Description*, the proposed project includes the construction and O&M of flood risk reduction and multi-benefit components in and adjacent to the proposed project area. In summary, the flood risk reduction components include the construction of a number of fix-in-place levee improvements including raising and widening the existing dryland levee and extending its length; raising the existing levee; installing cutoff walls; placing erosion protection; installing seepage berms; and replacing pipe penetrations in the levee. In addition, these components include the relocation of conflicting utilities and encroachments. The multi-benefit components include ecosystem restoration at multiple sites and construction of recreational features along the levee system.

This section presents the structure of the resource topics for which additional environmental analyses are provided. See Chapter 1, *Introduction*, for more information on the use of this Draft EIR and the CEQA process.

Approach to the Analysis

The analysis in this Draft EIR provides a project-level analysis of the flood risk reduction components and multi-benefit ecosystem restoration Sites 13, 14, and 16. The additional multi-benefit restoration sites and the recreation components (other multi-benefit components) are evaluated at a program level in this Draft EIR because the specific locations and design are not known at this time. As the design and locations are determined, potential environmental impacts associated with their construction and O&M will be subject to subsequent environmental review documents.

3.1.2 Resource Topics Evaluated in the Draft EIR

This Draft EIR evaluates the physical environmental effects related to the following resource topics that have the potential to occur with implementation of the proposed project:

- Section 3.2, *Aesthetics*
- Section 3.3, *Agricultural and Forestry Resources*
- Section 3.4, *Air Quality*
- Section 3.5, *Biological Resources—Aquatic*

- Section 3.6, *Biological Resources—Terrestrial*
- Section 3.7, *Cultural Resources*
- Section 3.8, *Energy*
- Section 3.9, *Geology, Soils, and Mineral Resources*
- Section 3.10, *Greenhouse Gas Emissions*
- Section 3.11, *Hazards and Hazardous Materials*
- Section 3.12, *Hydrology and Water Quality*
- Section 3.13, *Land Use and Planning*
- Section 3.14, *Noise*
- Section 3.15, *Public Services*
- Section 3.16, *Recreation*
- Section 3.17, *Transportation*
- Section 3.18, *Tribal Cultural Resources*
- Section 3.19, *Utilities and Service Systems*
- Section 3.20, *Wildfire*

3.1.3 Resource Section Format

Each resource section in this chapter describes the environmental setting, regulatory setting, methods of analysis, thresholds of significance, and impact analysis for the resource topic being addressed. Where required, potentially feasible mitigation measures are identified to lessen or avoid significant impacts.

The environmental setting and regulatory setting descriptions provide a point of reference for assessing the environmental impacts of implementing the proposed project. Consistent with CEQA Guidelines Section 15125, the physical environmental conditions (as they existed on April 6, 2022, when the NOP was published) are described in this Draft EIR and used as the baseline by which the proposed project is measured for environmental impacts.

The environmental setting described varies by resource area. For example, the environmental setting for the noise analysis discusses acoustic fundamentals, the effects of noise on humans, and noise-sensitive land uses within the study area near proposed construction and operational activities. The regulatory setting discussion presents relevant information about federal, state, regional, and/or local laws, regulations, plans, or policies that pertain to the environmental resources addressed in each section.

Following the regulatory setting is the discussion of impacts and mitigation measures. In this discussion, a "method of analysis" description presents the analytical methods and key assumptions used in the evaluation of the proposed project. This is followed by the thresholds of significance, which identify the standards used to determine the significance of effects of the proposed project. The thresholds of significance used for this analysis were derived from Appendix G of the CEQA Guidelines. Any effects for a resource topic determined to not be affected by the proposed project (i.e., no impact) are discussed under a subsection in each section entitled *Impacts Not Evaluated Further*.

The impacts and mitigation measures portion of each section includes impact statements (addressing construction and O&M of the proposed project), prefaced by a number in **boldfaced** type. Each impact discussion is organized with the following headers to clearly describe the effects associated with proposed project components:

Flood Risk Reduction Components: A project-level evaluation of impacts associated with the construction and O&M of the proposed fix-in-place levee improvements and the dryland levee extension.

Restoration Sites 13, 14, and 16: A project-level evaluation of impacts associated with the construction and O&M of ecosystem restoration at Sites 13, 14, and 16.

Other Multi-benefit Components: A programmatic evaluation of impacts associated with the construction and O&M of ecosystem restoration at other identified sites and recreation components.

All Project Components: If impacts and conclusions are the same for all proposed project components.

Impact conclusions and statements of significance are presented at the end of the discussion. An **Impact Conclusion** header is used, as needed, to summarize the analysis in support of the conclusion that applies to the proposed project components.

For identified potential significant impacts, applicable mitigation measure(s) are presented followed by a statement of significance after mitigation. Each mitigation measure identifies the component of the proposed project to which it applies, using the following abbreviations:

FRR: Flood risk reduction components.

RS: Ecosystem restoration Sites 13, 14, and 16.

MB: Other multi-benefit components.

Cumulative impacts are discussed in Chapter 4 of this Draft EIR. Chapter 5, *Other CEQA Considerations*, addresses growth-inducing impacts, significant unavoidable impacts on the environment, and significant irreversible environmental changes. Chapter 6, *Project Alternatives*, discusses a range of reasonable alternatives to the proposed project.

3.1.4 Definitions of Terms Used in the Draft EIR

This Draft EIR uses a number of terms that have specific meaning under CEQA. Among the most important of the terms used are those that refer to the significance of environmental impacts. The following terms are used to describe the environmental effects of the proposed project:

- **Thresholds of Significance:** A set of criteria used by SJAFCA, as the lead agency, to determine the level or threshold at which an impact would be considered significant. Thresholds (or standards) of significance used in this Draft EIR include those standards provided in Appendix G of the CEQA Guidelines. In determining the level of significance, the analysis assumes that construction and O&M of the proposed components would comply with relevant existing federal, state, and local regulations and ordinances.

- **Potentially Significant Impact:** The level of significance identified for an impact of the proposed project that may cause a substantial adverse change in the environment, depending on certain unknown conditions related to the proposed action or the affected environment. Potentially significant impacts are identified by comparing the evaluation of a project-related physical change to specified significance criteria.
- **Less-than-Significant Impact:** The level of significance identified when the physical change caused by the proposed project would not exceed the applicable significance criterion.
- **Significant and Unavoidable Impact:** The level of significance identified if the proposed project would result in a substantial adverse physical change in the environment that cannot be feasibly avoided or mitigated to a less-than-significant level.
- **Mitigation Measure:** An action that could be taken that would avoid or reduce the magnitude of a significant impact. CEQA Guidelines Section 15370 defines "mitigation" as any of the following:
  - Avoiding the impact altogether by not taking a certain action or parts of an action.
  - Minimizing impacts by limiting the degree of magnitude of the action and its implementation.
  - Rectifying the impact by repairing, rehabilitating, or restoring the affected environment.
  - Reducing or eliminating the impact over time by preservation and maintenance operations during the life of the action.
  - Compensating for the impact by replacing or providing substitute resources or environments.

3.2 Aesthetics

3.2.1 Introduction

This section includes a description of the existing visual characteristics of the proposed project area and vicinity and an analysis of the potential effects of the proposed project on views and aesthetics in the project vicinity. A discussion of cumulative impacts related to aesthetics is provided in Chapter 4, *Cumulative Impacts*, of this Draft EIR.

The analysis of potential impacts related to aesthetics in this section qualitatively compares the existing built and natural environment of the proposed project area to the future built and natural environment that would result from implementation of the proposed project. The analysis is based on review of existing published documents and relevant sources of information that are listed in Chapter 8, *References*.

No comments specifically addressing aesthetics were received in response to the NOP. See Appendix A to this Draft for NOP comment letters.

3.2.2 Environmental Setting

Visual Character of the Region

San Joaquin County is centrally located in California's San Joaquin Valley and encompasses roughly 1,440 square miles of relatively level agricultural land interspersed with several urban centers, including the cities of Stockton, Manteca, and Lathrop. The county's major rivers—the San Joaquin, the Mokelumne, the Calaveras, and the Stanislaus—all flow toward the Sacramento–San Joaquin Delta (Delta) in the western half of the county. San Joaquin County has a predominantly rural character. With the exception of some taller buildings in downtown Stockton, most structures are low to medium rise and include rural residences, residential subdivisions, multi-family residential buildings, and commercial, office, and industrial buildings of a multitude of ages, colors, materials, and architectural styles. Most segments of major highways in the county, including Interstate 5 (I-5), State Route (SR) 99, and SR 120, are located at a higher elevation than surrounding lands for flood protection, providing motorists with views of adjacent urban development, agriculture, river corridors, and open land.

Scenic Views, Scenic Vistas, and Scenic Resources

Scenic views offer visual appreciation and enjoyment of elements of the broader viewshed, such as mountain ranges, valleys, and ridgelines. Scenic views are typically available from a range of locations, often along roadways or other corridors. Scenic vistas generally consist of specific locations, often an elevated point or open area, that afford expansive views of natural or built features of high value to a community. From a regional perspective, views of the Delta, the Diablo Range, and the Sierra Nevada are considered important scenic views by San Joaquin County and the cities of Stockton, Lathrop, and Manteca (City of Lathrop 2022; City of Manteca 2024; City of Stockton 2018; San Joaquin County 2016).

Due to the overall flat terrain, intervening natural features (e.g., trees and other vegetation) and built elements (e.g., buildings, flood control infrastructure), and often poor air quality resulting from ozone (smog) and particulate pollution, the proposed project area provides limited long-range views of mountain ranges and other distant geographical features. There are no designated scenic vistas in the proposed

project area (City of Lathrop 2022; City of Manteca 2024; City of Stockton 2018; San Joaquin County 2016).

Scenic resources are specific features of a viewing area (or viewshed) such as trees, rock outcroppings, and historic buildings. They are specific features that act as the focal point of a viewshed and are usually foreground elements. Specific features in the proposed project area and vicinity that are considered scenic resources by San Joaquin County and the cities of Stockton, Lathrop, and Manteca include the San Joaquin River, trees and riparian vegetation, agricultural land, and open space (City of Lathrop 2022; City of Manteca 2024; City of Stockton 2018; San Joaquin County 2016).

Existing Light and Glare Conditions

Nighttime lighting is necessary to provide and maintain safe, secure, and attractive environments. However, these lights have the potential to produce spillover light and glare, and if designed incorrectly, could be considered unattractive. Although nighttime light is a common feature of urban areas, spillover light can adversely affect light-sensitive uses, such as residential units at nighttime.

Glare results when a light source directly in the field of vision is brighter than the eye can comfortably accept. Squinting or turning away from a light source is an indication of glare. The presence of a bright light in an otherwise dark setting may be distracting or annoying, referred to as discomfort glare, or it may diminish the ability to see other objects in the darkened environment, referred to as disability glare. Reflective glare, such as the reflected view of the sun from a window or mirrored surface, can be distracting during the day.

The majority of the proposed project area contains minimal existing sources of lighting and is dark at night. Lighting from rural residences and more concentrated residential and other urban uses in the cities of Stockton, Lathrop, and Manteca generate minimal nighttime illumination in the proposed project area. These residential and other urban uses generally do not include substantial amounts of mirrored glass or other features that produce reflective glare within the proposed project area.

Visual Character of the Proposed Project Area

The proposed project area covers 22,400 acres and includes RD 17; portions of the cities of Stockton, Lathrop, and Manteca; and unincorporated San Joaquin County (see Figure 2-1 in Chapter 2, *Project Description*). The majority of the proposed project area consists of agricultural land, much of which is devoted to expansive fields of row crops sparsely interspersed with rural residences and accessory structures. Numerous irrigation and drainage canals and ditches are located in the proposed project area. Pole-mounted overhead electrical transmission lines, oriented north-south and east-west, and pockets of mature trees along roads and near residential uses are the primary aboveground visible elements. The visual character of the proposed project area is also defined but the RD 17 levee system which includes approximately 19 miles of continuous levee along the San Joaquin River. More concentrated urban uses, primarily residential subdivisions comprising one- and two-story detached homes, are located in the northernmost portion of the proposed project area within the City of Stockton and in the southern portions of the proposed project area in the cities of Lathrop and Manteca.

The San Joaquin River varies between 150 and 400 feet in width within the proposed project area. The right bank of the river is bounded by an earthen levee, approximately 100 feet wide and 15 feet high.

Views of the river corridor within the proposed project area can be seen briefly along local roads, along bikeways and trails, and by river recreationists. Major public viewpoints of the river corridor and natural features within the proposed project area are generally limited to road and highway crossings.

3.2.3 Regulatory Setting

Federal

There are no federal regulations pertaining to aesthetics that are applicable to the proposed project.

State

California's Scenic Highway Program was created by the Legislature in 1963 with the purpose to preserve and protect scenic highway corridors from changes that would diminish the aesthetic value of lands adjacent to highways. The State Scenic Highway System includes highways that are either eligible for designation as scenic highways or have been designated as such. The status of a state scenic highway changes from eligible to officially designated when the local jurisdiction adopts a scenic corridor protection program, applies to the California Department of Transportation for scenic highway approval, and receives the designation. While local jurisdictions may propose adding routes with outstanding scenic elements to the list of eligible highways, state legislation is required for them to become officially designated. The State Scenic Highway Program identifies the segment of Interstate 580 from I-5 to SR 205 as the only officially designated state scenic highway in San Joaquin County. This segment is generally located southwest of the City of Tracy and approximately 10 miles southwest of the proposed project area. No officially designated state scenic highways are located in or easily visible from any portion of the proposed project area (Caltrans 2018).

Local

The proposed project area includes lands in San Joaquin County and the cities of Stockton, Lathrop, and Manteca. Each of these jurisdictions have general plans with goals and policies that address protection of scenic views and visual quality (**Table 3.2-1**). Applicable general plan goals and policies are summarized below along with relevant local regulations.

TABLE 3.2-1
APPLICABLE GENERAL PLAN GOALS AND POLICIES—AESTHETICS

General Plan	Goals and Policies
San Joaquin County	Natural and Cultural Resources Element, Policies NCR-7, NCR-7.1, NCR-7.2, NCR-7.4, and NCR-7.7; Community Development Element, Policy LU-3.10.
City of Stockton	Land Use Chapter, Policies LU-1.3C, LU-5.1, LU-5.2, LU-5.3, and LU-6.3D
City of Lathrop	Recreation and Resources Element, Policies RR-1.6, RR-2, and RR-2.3
City of Manteca	Resource Conservation Element, Policies CD-6, CD-6.2, and RC-6.10

SOURCES: City of Lathrop 2022; City of Manteca 2024; City of Stockton 2018; San Joaquin County 2016

San Joaquin County

San Joaquin County 2035 General Plan

The Natural and Cultural Resources Element and the Community Development Element of the San Joaquin County 2035 General Plan include goals and policies related to aesthetics that are relevant to the proposed project. Relevant goals and policies address maintaining views of the Coast Ranges and the Sierra Nevada as the primary scenic resources in the San Joaquin Valley; ensuring that views of waterways, hilltops, and oak groves from public land and public roadways are protected; encouraging new development to maintain views of hillsides, creeks, and other distinctive natural areas; and encouraging project designs, lighting configurations, and operational practices that reduce light pollution and preserve views of the night sky.

City of Stockton

Envision Stockton 2040 General Plan

The Land Use chapter of the Envision Stockton 2040 General Plan includes goals, policies, and supporting actions related to aesthetics that are relevant to the proposed project. Relevant goals, policies, and supporting actions address incorporation of scenic views, including open space features like waterways, wetlands, natural landscapes, and parks, into the design of the built environment; integrating nature into the city and thus improving visual quality; working to protect natural resource areas, fish and wildlife habitat, scenic areas, open space areas, agricultural lands, parks; and to define discrete and clear city edges that preserve agriculture. Open space, and scenic views; and design of public facilities and infrastructure to maintain and improve the visual quality of the urban environment.

City of Stockton Municipal Code

Title 16, Development Code, of the Stockton Municipal Code implements the City's General Plan by classifying and regulating the uses of land and structures within the city; by protecting and promoting the public health, safety, and general welfare; and by preserving and enhancing the aesthetic quality of the city. Section 16.32.070, Light and Glare, establishes standards to prevent spillover illumination or glare onto adjoining properties and prohibit interference with the normal operation or enjoyment of adjacent property. Chapter 16.36, General Development Standards, sets forth standards to address the details of site planning and project design to ensure that all development produces an environment of stable and desirable character that is harmonious with existing and future development, and protects the use and enjoyment of neighboring properties, consistent with the General Plan.

City of Lathrop

City of Lathrop General Plan

The Recreation and Resources Element of the City of Lathrop General Plan includes goals, policies, and implementation actions related to aesthetics that are relevant to the proposed project. Relevant goals, policies, and implementation actions address implementation of established design, construction, and facility maintenance standards to ensure that existing and future parks, recreational facilities, open space, and trails are of high quality in regard to safety, utility, environmental stewardship, and aesthetic quality; protect and manage natural open space areas to provide scenic beauty and community enjoyment; and to protect the city's scenic resources including scenic corridors along roads and views of the hillsides, waterways, and other significant natural features.

City of Lathrop Municipal Code

The City of Lathrop's Zoning Ordinance (City of Lathrop Municipal Code Title 17) is the primary tool meant to implement the City of Lathrop General Plan. The Zoning Ordinance establishes specific, enforceable standards with which development must comply, including provisions pertaining to visual resources such as site-specific design standards, preservation of open space, landscaping, and trees.

City of Manteca

City of Manteca General Plan

The Community Design and Resource Conservation Element of the City of Manteca General Plan includes goals and policies related to aesthetics that are relevant to the proposed project. Relevant goals and policies address transitions between land uses to avoid conflicts and perpetuate the community's harmonious character; encourage the use of creative and functional landscape design to create visual interest and reduce conflicts between different land uses; and maximizing the potential for open space and visual experiences.

City of Manteca Municipal Code

The City of Manteca's Zoning Code (City of Manteca Municipal Code Title 17) sets forth and coordinates City regulations governing the development and use of land in accordance with the City of Manteca General Plan. Site planning requirements (e.g., landscaping, lighting) are listed in Article III (Site Planning Standards) of the Zoning Code. Development within the city is also subject to compliance with all adopted Uniform Building and Fire Codes.

3.2.4 Impacts and Mitigation Measures

Methods of Analysis

The analysis of potential impacts related to aesthetics in this EIR relies on qualitatively comparing the existing built and natural environment of the proposed project area to the future built and natural environment that may result from implementation of the proposed project, based on information provided in the project description and supporting project data. Whether an adverse environmental effect on aesthetics occurs is based on whether the proposed project would result in substantial interference or obstruction of a scenic view from a public vantage point or have a substantial demonstrable negative aesthetic effect. The obstruction of views from private property is not considered a significant environmental impact under CEQA. As a result, the analysis generally does not consider or evaluate the proposed project's impact on views from private residences or other private vantage points. A significance determination for impacts related to scenic vistas (e.g., broad expansive views of natural features and landscapes) and scenic resources (e.g., river corridors, trees and riparian vegetation, and agricultural land) is based on whether construction or operation of the proposed project would prominently obstruct or block the majority of the expanse of a scenic vista or scenic resource as seen by most viewers from public locations while taking into account the view as a whole. With respect to visual character, for a project to have significant visual impacts, the project must have a substantial demonstrable negative aesthetic effect. The analysis also addresses whether construction or operation of the proposed project would create a new source of substantial light or glare.

U.S. Census Bureau Urban Area maps were reviewed to determine which proposed project components would be in urbanized areas, as defined in CEQA Guidelines Section 15387. The results of this review indicate that the proposed project is in both the "Stockton, CA Urban Area" and areas mapped as unurbanized. Because the proposed project corridor traverses both urbanized settings (e.g., residential neighborhoods and limited commercial) and non-urbanized settings (e.g., open space areas and agricultural land), the analysis under Impact 3.2-1 considers the proposed project's effects in both types of landscapes. Consistent with the CEQA Guidelines, and similar to the approach used in non-urbanized areas, the impacts to visual quality and character are based on the proposed project's effects on the visual characteristics of line, form, color, and texture, as well as the visual contrast created by the proposed project components within both urbanized and non-urbanized contexts. The applicable general plans and zoning ordinances of San Joaquin County and the cities of Stockton, Lathrop, and Manteca were reviewed for policies, regulations, or other enforceable guidance relative to aesthetics and visual resources.

Thresholds of Significance

In accordance with Appendix G of the CEQA Guidelines, an impact is considered significant if the proposed project 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.
- In non-urbanized areas, substantially degrade the existing visual character or quality of public views of the site and its surroundings (public views are those that are experienced from publicly accessible vantage point). In an urbanized area, conflict with applicable zoning and other regulations governing scenic quality.
- Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area.

Impacts Not Evaluated Further

Substantially Damage Scenic Resources Within a State Scenic Highway

As discussed above in the *Regulatory Setting*, the State Scenic Highway Program identifies the segment of Interstate 580 from I-5 to SR 205 as the only officially designated state scenic highway in San Joaquin County. This segment is generally located southwest of the City of Tracy and approximately 10 miles southwest of the proposed project area. No officially designated state scenic highways are located in or easily visible from any portion of the proposed project area (Caltrans 2018). Therefore, no impact would occur related to substantial damage to scenic resources within a state scenic highway, and this issue is not further evaluated in the EIR.

Impacts and Mitigation Measures

Table 3.2-2 summarizes the impact conclusions presented in this section.

TABLE 3.2-2
SUMMARY OF IMPACT CONCLUSIONS—AESTHETICS

Impact Statement	Flood Risk Reduction Components	Restoration Sites 13, 14, and 16	Other Multi-Benefit Components
3.2-1: Implementation of the proposed project could have a substantial adverse effect on scenic views, scenic vistas, and scenic resources.	LS	LS	LS
3.2-2: Implementation of the proposed project could substantially degrade the existing visual character or quality of the site and its surroundings or conflict with applicable zoning and other regulations governing scenic quality.	LS	LS	LS
3.2-3: Implementation of the proposed project could create a new source of substantial light or glare which would adversely affect day or nighttime views in the area.	LSM	LSM	LSM

NOTES: LS = Less than Significant; LSM = Less than Significant with Mitigation

Impact 3.2-1: Implementation of the proposed project could have a substantial adverse effect on scenic views, scenic vistas, and scenic resources.

As discussed above in subsection 3.2.2, *Environmental Setting*, due to the overall flat terrain, intervening natural features (e.g., trees and other vegetation) and built elements (e.g., buildings, flood control infrastructure) and often poor air quality, the proposed project area provides substantially limited long-range views of mountain ranges and other distant geographical features. However, while also limited by the aforementioned existing physical conditions, short- and medium-range views of river corridors, trees and riparian vegetation, and surrounding rural and agricultural landscapes are available within the proposed project area. Views of these features can be seen from local roads, along bikeways and trails, and by river recreationists. Major public viewpoints of river corridors and natural features within the proposed project area are generally limited to road and highway crossings. There are no designated scenic vistas in the proposed project area (City of Lathrop 2022; City of Manteca 2024; City of Stockton 2018; San Joaquin County 2016).

Flood Risk Reduction Components

The proposed flood risk reduction components include raising the height of levees along portions of the existing levee alignment, construction of a dryland levee extension and drained seepage berm, placement of riprap rock slope protection, and various staging areas. Each of these components are described in detail in Chapter 2, *Project Description*, and are presented on Figure 2-2.

Implementation of the proposed flood risk reduction components, particularly raised or new levee construction (see Figure 2-2) could alter or reduce existing public views of river corridors, trees and riparian vegetation, and surrounding rural and agricultural landscapes in portions of the proposed project area due to the introduction of taller and/or wider flood risk reduction components than which currently exist at these locations. Specifically, reconstruction of the existing dryland levee would consist of raising the levee by up to 2 feet high and widening the levee by approximately 10–20 feet wide at the base. The levee raise component of the proposed project would require the existing levee footprint to be widened at its base on the land side only. The proposed dryland levee extension would include construction of a new approximately 2.9-mile-long levee to the east, as needed to prevent flood waters from going around the existing dryland levee and flooding the Mossdale Tract area during extreme flood events. The new

dryland levee extension would be approximately 4–18 feet high with a crown width of 20 feet and a base width of 50–200 feet. The proposed dryland levee extension would also include a 100-foot-wide, 5-foot-high seepage berm.

While implementation of these proposed flood risk reduction components could alter existing public views of river corridors, trees and riparian vegetation, and surrounding rural and agricultural landscapes in the portions of the proposed project area where they would be constructed, the physical change would not be to the extent that it would prominently obstruct or block the majority of existing available views from public locations within the proposed project area, and abundant views of these features would remain. In addition, the proposed new components generally would not be broader or higher than existing flood risk reduction features in the proposed project area. In addition, as discussed previously, there are no designated scenic vistas in the proposed project area. Consequently, and considering existing views as a whole, the proposed flood risk reduction components would not result in a substantial adverse effect on scenic views, scenic vistas, and scenic resources.

Construction of the proposed flood risk reduction components (e.g., site preparation, development of the proposed project components, hauling of materials) and O&M activities (e.g., inspections, weed abatement, and maintenance) would result in the presence and movement of construction equipment, vehicles, and personnel for varying periods of time in various locations in the proposed project area. The proposed O&M activities would be consistent with existing practices, involving periodic use of light equipment and patrol vehicles, and would not introduce any new or noisier activities beyond those already routinely performed at the project locations. These activities could result in temporary alteration or blockage of existing views of river corridors, trees and riparian vegetation, and surrounding rural and agricultural landscapes. However, these limited and short-term visual changes would not result in a substantial adverse effect on scenic views, scenic vistas, and scenic resources.

Therefore, construction and O&M of the proposed flood risk reduction components would not have a substantial adverse effect on scenic views, scenic vistas, and scenic resources, and impacts would be **less than significant**.

Restoration Sites 13, 14, and 16 and Other Multi-benefit Components

Proposed ecosystem restoration features at Sites 13, 14, and 16 would include excavated floodplains, floodplain side channels, brush mat, habitat wood structures, willow baffles, and upland brush piles. The proposed project also includes implementation of other multi-benefit components including additional ecosystem restoration sites, and recreation features along the levee system. These proposed multi-benefit components are described in Chapter 2, *Project Description*, and are presented on Figure 2-3.

Construction activities would involve regrading, revegetation, and other similar actions to restore or enhance natural and recreational values within the proposed project area. Table 2-2 in Chapter 2, *Project Description* lists the type of ecosystem restoration, habitat acreage, and approximate grading volumes for Sites 13, 14, and 16 and for the additional proposed ecosystem restoration sites. Proposed recreational features include the development of recreational paths along the top of levee and landside toe within the San Joaquin River corridor. While installation of ecosystem restoration and recreation features would involve minimal changes to the elevation of the existing grade and landforms in the proposed project area, the potential creation of higher elevation upland areas on currently undeveloped land could alter or reduce

existing public views of river corridors, trees and riparian vegetation, and surrounding rural and agricultural landscapes in these portions of the proposed project area. However, installation of these features would not result in a physical change that would obstruct or block existing available views in the proposed project area. As discussed previously, there are no designated scenic vistas in the proposed project area. Therefore, implementation of proposed ecosystem restoration features at Sites 13, 14, and 16 and at the additional ecosystem restoration sites, and implementation of proposed recreation features would not result in a substantial adverse effect on scenic views, scenic vistas, and scenic resources.

Construction of proposed ecosystem restoration and recreation features (e.g., site preparation, development of the proposed project components, hauling of materials) and O&M activities (e.g., planting, irrigation, inspections and maintenance) would result in the presence and movement of light construction equipment, vehicles, and personnel for varying periods of time at these sites. Maintenance activities would include general clean-up (e.g., trash removal, vandalism repairs, and removal of planting materials), routine irrigation using a pump system, and targeted weeding around planted vegetation. The proposed maintenance activities would not result in a significant effect on visual resources, as they are consistent with ongoing site conditions, involve only temporary and low-visibility actions, and do not include permanent visual alterations or introduce new elements that would degrade the area's scenic quality. These activities could result in temporary alteration or blockage of existing views of river corridors, trees and riparian vegetation, and surrounding rural and agricultural landscapes. However, these limited and short-term visual changes would not result in a substantial adverse effect on scenic views, scenic vistas, and scenic resources.

Therefore, construction and O&M of proposed ecosystem restoration and recreation features would not have a substantial adverse effect on scenic views, scenic vistas, and scenic resources, and impacts would be **less than significant**.

Mitigation Measures

Mitigation Measures (FRR/RS/MB): None required.

Impact 3.2-2: Implementation of the proposed project could substantially degrade the existing visual character or quality of the site and its surroundings or conflict with applicable zoning and other regulations governing scenic quality.

The aesthetic quality of an area is determined by the variety and contrasts of the area's visual features, the character of those features, and the scope and scale of the scene. The aesthetic quality of an area also depends on the relationships between its features and their importance in the overall view. Sensitive viewers located within the proposed project area include people recreating at parks and open spaces along the levee system, people at nearby residences, farmers, and motorists traveling along adjacent and perpendicular roadways. In general, for a project to have significant impacts related to visual character, the project must have a substantial demonstrable negative aesthetic effect. As discussed above in Impact 3.2-1, there are no designated scenic vistas in the proposed project area; however, there are scenic resources. Specific features in the proposed project area and vicinity that are considered scenic resources include the San Joaquin River, trees and riparian vegetation, agricultural land, and open space.

The proposed project would be consistent with applicable general plan policies and zoning regulations related to aesthetics and scenic quality in San Joaquin County and the surrounding cities. The San Joaquin

County 2035 General Plan emphasizes protecting views of the Coast Ranges, Sierra Nevada, waterways, and other distinctive natural features, as well as reducing light pollution. The Envision Stockton 2040 General Plan and Stockton Municipal Code promote integrating scenic views and open space into the built environment and include development standards for lighting, landscaping, and site planning to maintain visual quality. The City of Lathrop General Plan and Zoning Ordinance require protection of scenic corridors, waterways, and open space, and implementation of design standards that enhance visual character. The City of Manteca General Plan and Zoning Code call for transitions between land uses, creative landscape design, and site planning standards that support community character and scenic resources.

Flood Risk Reduction Components

Implementation of the proposed flood risk reduction components, particularly raised or new levee construction (see Figure 2-2) could alter existing public views of river corridors, trees and riparian vegetation, and surrounding rural and agricultural landscapes in these portions of the proposed project area due to the introduction of taller and/or wider flood risk reduction components than which currently exists at these locations. While implementation of the proposed flood risk reduction components would result in visual changes in the proposed project area, the visual character and quality of the proposed project area would not be altered substantially. With implementation of the proposed project, the proposed project area would continue to appear as a heavily vegetated river corridor developed with flood risk reduction infrastructure (e.g., levees) surrounded by agricultural land, rural residential uses, and more concentrated urban uses (e.g., residential subdivisions). Sensitive viewers (e.g., recreationalists, residents) would have similar views toward the river and levee system from both the landside and waterside with implementation of the proposed project, and the overall quality and visual character of the proposed project area would remain the same as under existing conditions. Taking into account existing views as a whole, the proposed flood risk reduction components would not substantially degrade the existing visual character or quality of the site and its surroundings.

Construction of the proposed flood risk reduction components (e.g., site preparation, development of the proposed project components, hauling of materials) and O&M activities (e.g., inspections, weed abatement, and maintenance) would result in the presence and movement of construction equipment, vehicles, and personnel for varying periods of time in various locations in the proposed project area. These activities could result in temporary, short-term loss of visual quality and cohesion within the proposed project area for sensitive viewers (e.g., recreationists and residents), but these transient and temporary effects would not result in permanent or substantial effects on the existing visual character or quality of the proposed project area. No permanent structures, grading, or removal of significant natural features would occur. As such, the existing visual character and scenic quality of the proposed project area would remain consistent once maintenance activities are complete.

Therefore, construction and O&M of the proposed flood risk reduction components would not substantially degrade the existing visual character or quality of the site and its surroundings, and impacts would be **less than significant**.

Restoration Sites 13, 14, and 16 and Other Multi-benefit Components

The proposed project includes implementation of proposed ecosystem restoration features at Sites 13, 14, and 16. The proposed project also includes implementation of other multi-benefit components including

additional ecosystem restoration sites, and recreation features along the levee system. These proposed multi-benefit components are described in Chapter 2, *Project Description*, and are presented on Figure 2-3.

Construction activities would involve regrading, revegetation, and other similar actions to restore or enhance natural and recreational values within the proposed project area. Table 2-2 in Chapter 2, *Project Description* lists the type of ecosystem restoration, habitat acreage, and approximate grading volumes for Sites 13, 14, and 16 and for the additional proposed ecosystem restoration sites. Proposed recreational features include the development of recreational paths along the top of levee and landside toe within the San Joaquin River corridor.

Implementation of proposed ecosystem restoration features at Sites 13, 14, and 16 as well as at the additional ecosystem restoration sites are intended to increase the net quantity, diversity, and connectivity of riparian and floodplain habitats along the lower San Joaquin River corridor. In addition, proposed recreation features are intended to enhance recreation opportunities for the surrounding communities. As described above, proposed ecosystem restoration features at Sites 13, 14, and 16 would include excavated floodplains, floodplain side channels, brush mat, habitat wood structures, willow baffles, and upland brush piles. Ecosystem restoration features at the additional ecosystem restoration sites would vary based on the specific site and range from enhancement with replanting but minimal or no regrading to enhancement with extensive regrading and replanting. Proposed ecosystem restoration sites would be cleared and grubbed to remove existing unwanted vegetation, and restoration actions would be conducted to avoid and preserve designated high-value trees or habitat such as mature live oaks, elderberries, cottonwoods, willows, and wetland areas.

Ecosystem restoration sites would be planted using a mixture of native plants. Sites 13, 14, and 16 would introduce a range of low-profile, naturalistic features into the landscape that would generally be compatible with the surrounding natural and rural visual character. Features such as excavated floodplains and floodplain side channels would result in minor alterations to landform and vegetation patterns but would generally appear consistent with the natural processes of river landscapes. The installation of brush mats, willow baffles, and habitat wood structures, which mimic natural woody debris and riparian vegetation, would be visually subtle and blend with the existing environment, especially as native vegetation becomes established. Similarly, upland brush piles would be small in scale and visually unobtrusive, appearing as part of the natural habitat structure rather than prominent visual elements. While the majority of the proposed ecosystem restoration sites and other multi-benefit components would involve minimal changes to the elevation of the existing grade and landforms in the proposed project area. The potential creation of higher elevation upland areas at ecosystem restoration sites and the potential construction of a levee setback on currently undeveloped land could alter existing public views of river corridors, trees and riparian vegetation, and surrounding rural and agricultural landscapes in these portions of the proposed project area.

While implementation of the proposed ecosystem restoration sites and other multi-benefit components would result in visual changes in the proposed project area, the visual character and quality of the proposed project area would not be altered substantially. With implementation of the ecosystem restoration sites and multi-benefit components, the proposed project area would continue to appear as a heavily vegetated river corridor developed with flood risk reduction infrastructure (e.g., levees) surrounded by agricultural land, rural residential uses, and other urban uses. Sensitive viewers (e.g.,

recreationalists and residents) would have similar views toward the river and levee system from both the landside and waterside with implementation of the proposed multi-benefit components, and the overall quality and visual character of the proposed project area would remain the same as under existing conditions. Taking into account existing views as a whole, the proposed ecosystem restoration sites and other multi-benefit components would not substantially degrade the existing visual character or quality of the site and its surroundings.

Construction of proposed ecosystem restoration and recreation features (e.g., site preparation, development of the proposed project components, hauling of materials) and O&M activities (e.g., planting, irrigation, inspections and maintenance) would result in the presence and movement of construction equipment, vehicles, and personnel for varying periods of time at these sites. The proposed maintenance activities would not result in a significant effect on visual resources, as they are consistent with ongoing site conditions, involve only temporary and low-visibility actions, and do not include permanent visual alterations or introduce new elements that would degrade the area's scenic quality. These activities could result in temporary, short-term loss of visual quality and cohesion within the proposed project area for sensitive viewers (e.g., recreationists and residents), but these transient and temporary effects would not result in permanent or substantial effects on the existing visual character or quality of the proposed project area. O&M of proposed ecosystem restoration and recreation features would not substantially degrade the existing visual character or quality of the site and its surroundings, and impacts would be **less than significant**.

Mitigation Measures

Mitigation Measures (FRR/RS/MB): None required.

Impact 3.2-3: Implementation of the proposed project could create a new source of substantial light or glare which would adversely affect day or nighttime views in the area.

As discussed in subsection 3.2.2, *Environmental Setting*, the majority of the proposed project area is undeveloped, contains minimal existing sources of lighting, and is dark at night. Lighting from rural residences and more concentrated residential and other urban uses in the cities of Stockton, Lathrop, and Manteca generate minimal nighttime illumination in the proposed project area. These residential and other urban uses generally do not include substantial amounts of mirrored glass or other features that produce reflective glare within the proposed project area.

Flood Risk Reduction Components

These proposed flood risk reduction components are described in Chapter 2, *Project Description*, and are presented on Figure 2-2.

Occasional nighttime maintenance activities or levee patrolling activities that generate minimal light (e.g., from vehicle headlights) would not be expected to increase beyond what currently takes place within the proposed project area with implementation of the proposed flood risk reduction components. Consequently, the operation of the proposed flood risk reduction components would not create a new source of substantial light or glare which would adversely affect day or nighttime views in the area.

Construction activities for the flood risk reduction components are anticipated to occur over a 5-year period and would include use of staging areas for the storage of equipment and vehicles and other construction-

related materials (see Figure 2-2 for the locations of the staging areas). Staging areas would have lighting to ensure the security of construction equipment and stored materials, creating new sources of nighttime light that would be visible by neighboring residences and vehicles passing near the staging areas. In addition, depending upon the allowable duration/schedule for the proposed project and/or each phase, night work could be necessary. If so, then lighting would be required to continue operations and provide safety. Some of this lighting could potentially illuminate adjacent residences, including residences adjacent to proposed project staging areas in the cities of Stockton, Lathrop, and Manteca and rural residences. This would result in a potentially **significant** impact.

Restoration Sites 13, 14, and 16 and Other Multi-benefit Components

The proposed project includes implementation of proposed ecosystem restoration features at Sites 13, 14, and 16. The proposed project also includes implementation of other multi-benefit components including additional ecosystem restoration sites, and recreation features along the levee system. These proposed multi-benefit components are described in Chapter 2, *Project Description*, and are presented on Figure 2-3.

No new light fixtures or highly reflective features would be installed as part of the proposed ecosystem restoration and recreation features. Occasional nighttime maintenance activities that generate minimal light (e.g., from vehicle headlights) would not be expected to increase beyond what currently takes place within the proposed project area. Therefore, O&M of the proposed ecosystem restoration and recreation features would not create a new source of substantial light or glare which would adversely affect day or nighttime views in the area.

Construction activities for Sites 13, 14, and 16 are estimated to take place over a 4-year period. Depending upon the allowable duration/schedule for the proposed project and/or each phase, including the proposed ecosystem and recreation features, night work could be necessary. If so, then lighting would be required to continue operations and provide safety. This could create new sources of nighttime light that could be visible by neighboring residences and vehicles passing near the staging areas. Some of this lighting could potentially illuminate adjacent residences, including residences adjacent to proposed project staging areas in the cities of Lathrop, Manteca, and rural residences. This would result in a potentially **significant** impact.

Mitigation Measures

Mitigation Measure 3.2-3 (FRR/RS/MB):

SJAFCA shall require its construction contractors to ensure that all temporary lighting used for security of the staging areas is shielded or directed away from nearby residences to avoid or minimize any direct illumination onto light-sensitive receptors located outside of the proposed project area.

Significance After Mitigation: Implementation of Mitigation Measure 3.2-3 would ensure that all temporary lighting used for security of the staging areas is shielded or directed to avoid or minimize any direct illumination onto light-sensitive receptors located outside of the proposed project area, thereby reducing impacts of new sources of nighttime lighting installed for security at the staging areas to a **less-than-significant level**.

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3.3 Agricultural and Forestry Resources

3.3.1 Introduction

This section discusses existing agricultural resources within the proposed project area and surrounding areas; identifies applicable federal, state, regional, and local laws, regulations, and policies relevant to agricultural and forestry resources; and includes an analysis of the potential impacts of the proposed project on agricultural and forestry resources.

The analysis included in this section was developed based on a review of information provided by mapping the proposed project components over existing designated agricultural resources to determine whether the proposed project would impact agricultural resources and the location(s) of those impacts, as well as comparing the proposed project's compliance with applicable agricultural policies, regulations, ordinances, and mitigation fees.

Comments addressing agricultural and forestry resources were received in response to the NOP. See Appendix A to this Draft for NOP comment letters. These comments requested that the analyses within the Draft EIR include review of project compliance with the Delta Protection Commission's Land Use and Resource Management Plan (LURMP) policies, particularly related to the conversion of agricultural land to wildlife habitat; and a request to include the Delta Stewardship Council's Good Neighbor Checklist and other best management practices to minimize impacts on surrounding agricultural operations.

3.3.2 Environmental Setting

The specific agricultural resources relevant for the proposed project are discussed in greater detail below.

Important Farmland

Farmland Mapping and Monitoring Program-designated Farmland

The California Department of Conservation (DOC), Office of Land Conservation maintains a statewide inventory of farmlands, which are mapped and provided for public use under the Farmland Mapping and Monitoring Program (FMMP). As part of the FMMP, the DOC produces Important Farmland maps that identify the suitability of agricultural lands in California on a county-by-county basis. Maps are updated every 2 years by the U.S. Department of Agriculture's Natural Resources Conservation Service (NRCS), with current land use information gathered from aerial photographs, a computer mapping system, public review, and field reconnaissance. The FMMP prepares maps for approximately 47.9 million acres of land in 49 counties in California.

Agricultural land is rated and classified according to the soil quality and irrigation status. FMMP designations do not affect local land use decisions; rather, they are identification tools that can be used for policy purposes by local governments. The classification of Important Farmlands is divided into the following five categories:

- **Prime Farmland –** Land that has the best combination of physical and chemical characteristics for crop production. It has the soil quality, growing season, and moisture supply needed to produce sustained high yields of crops when treated and managed.

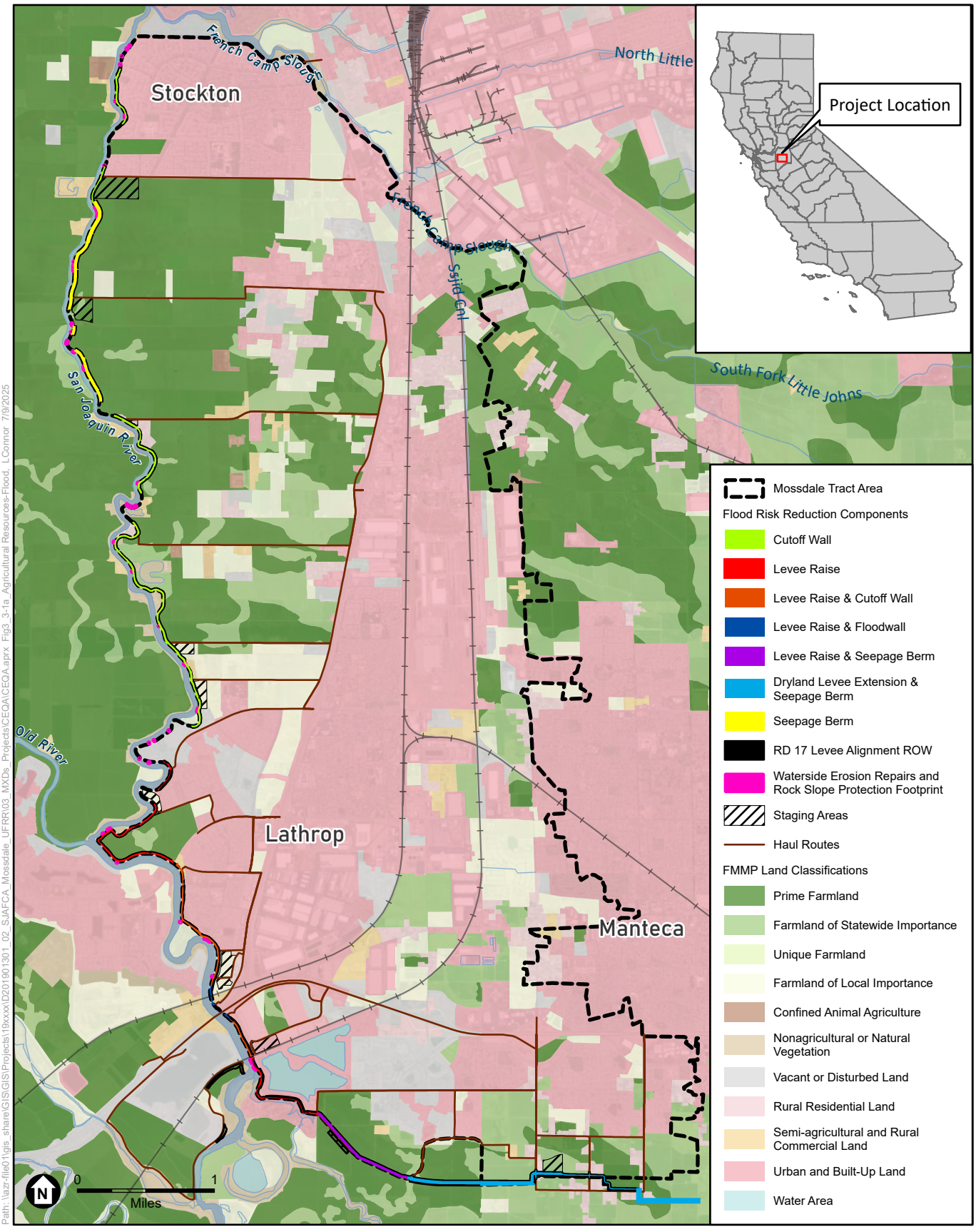
- **Farmland of Statewide Importance** – Land other than Prime Farmland that has a good combination of physical and chemical characteristics for crop production.
- **Unique Farmland –** Land that does not meet the criteria for Prime Farmland or Farmland of Statewide Importance but has been used for the production of specific crops with high economic value.
- **Farmland of Local Importance –** Land that currently is either producing crops or has the capability of production but does not meet the criteria of the categories above.
- **Grazing Land –** Land on which the vegetation is suited to the grazing of livestock.

California Public Resources Code [PRC] Section 21060.1 defines agricultural land to mean "prime farmland, farmland of statewide importance, or unique farmland, as defined by the U.S. Department of Agriculture land inventory and monitoring criteria as modified for California," and CEQA Guidelines Appendix G specifically defines "Farmland" as Prime Farmland, Unique Farmland, or Farmland of Statewide Importance "as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency." Therefore, for the purposes of this environmental analysis, the term Important Farmland refers to the FMMP map categories Prime Farmland, Farmland of Statewide Importance, and Unique Farmland (hereafter collectively referred to as "Important Farmland"). Generally, any conversion of land from one of these categories to a lesser quality category or a nonagricultural use would be an adverse impact.

Existing Important Farmland

As mentioned above, Important Farmland consists of parcels designated as Prime Farmland, Farmland of Statewide Importance, and Unique Farmland. According to the DOC, Important Farmland in California decreased by 56,186 acres between 2016 and 2018, where 11,465 net acres were converted to urban uses; 24,339 net acres were converted to other non-irrigated agricultural uses (e.g., Farmland of Local Importance, Grazing Land); and 20,382 net acres were converted to other non-urban land uses and water areas (DOC 2018).

Figure 3.3-1a and **Figure 3.3-1b**, *FMMP Land Classifications*, show FMMP land classifications, including designated Important Farmlands, within the proposed project area. As mentioned above, the proposed project area encompasses areas of unincorporated San Joaquin County as well as the cities of Lathrop, Manteca, and Stockton. As shown in **Figures 3.3-1a and -1b**, the majority of Important Farmland that is adjacent to the proposed project's flood risk reduction and multi-benefit components is within areas of unincorporated San Joaquin County. **Table 3.3-1** lists the total acreage of designated Important Farmland within San Joaquin County by jurisdiction (approximately 547,160 acres in total), as well as the acreage of designated Important Farmland out of that total that is located in the proposed project area (approximately 7,290 acres, or approximately 1.3 percent of the overall total for San Joaquin County).

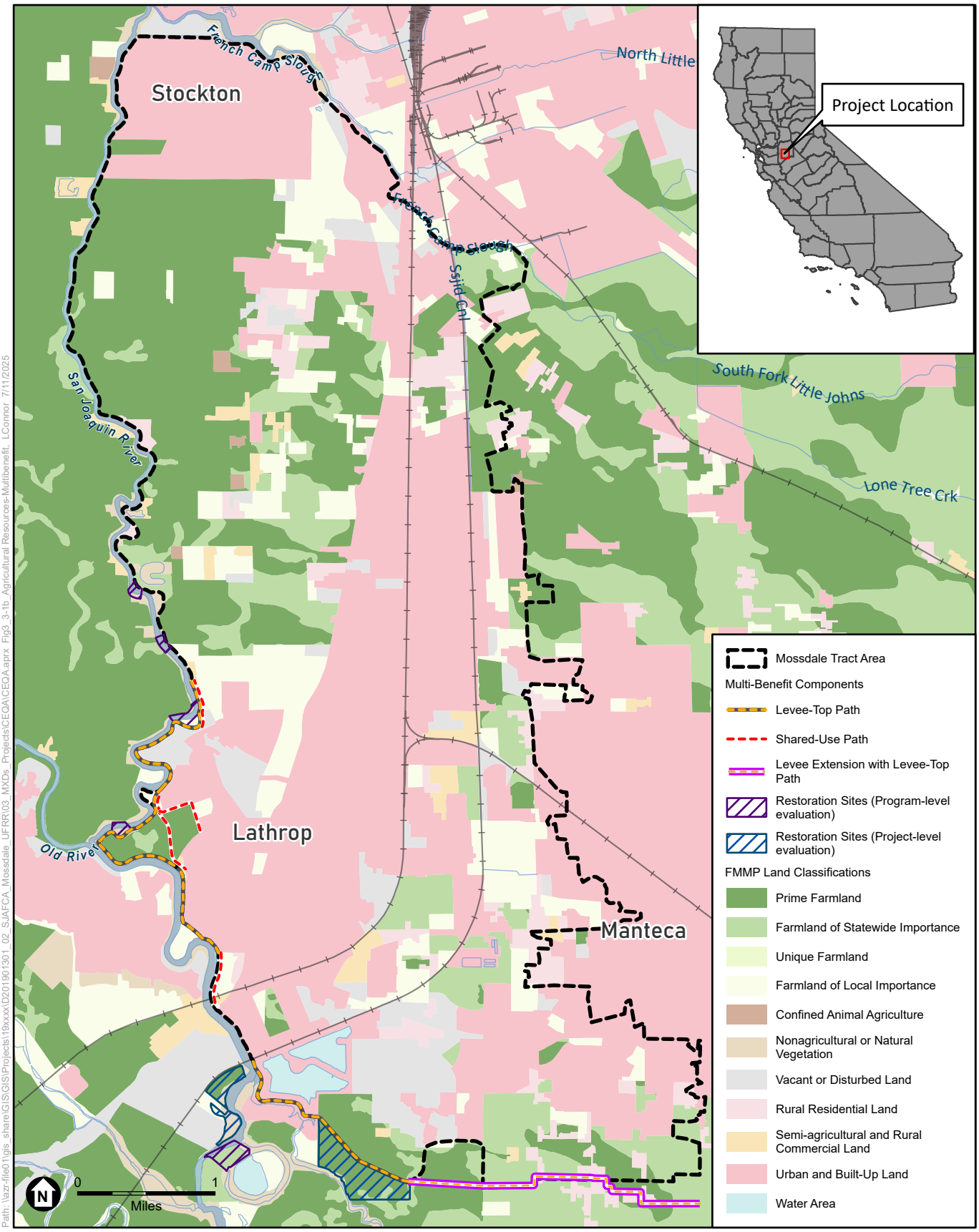


SOURCE: MAXAR, 2021; KSN, 2022; PBI, 2022; ESA, 2022

Mossdale Tract Area Urban Flood Risk Reduction Project

Figure 3.3-1a
Designated FFMP Lands
Flood Risk Reduction Components

ESA



SOURCE: MAXAR, 2021; KSN, 2022; PBI, 2022; ESA, 2022

Mossdale Tract Area Urban Flood Risk Reduction Project

Figure 3.3-1b
Designated FMMP Lands
Multi-Benefit Components

ESA

TABLE 3.3-1
IMPORTANT FARMLAND ACREAGE IN SAN JOAQUIN COUNTY

	Important Farmland Acreage by Jurisdiction/Area			Important Farmland Total Acreage
	Prime	Statewide Importance	Unique	
San Joaquin County (includes unincorporated areas)	378,008	79,971	89,181	547,160
City of Stockton	2,111	1,233	42	3,386
City of Manteca	675	1,899	0	2,574
City of Lathrop	3,219	555	135	3,909
Proposed Project Area	5,057	2,231	2	7,290

SOURCE: DOC 2022a, 2022b, 2022c, 2022d

Agricultural Land Designations

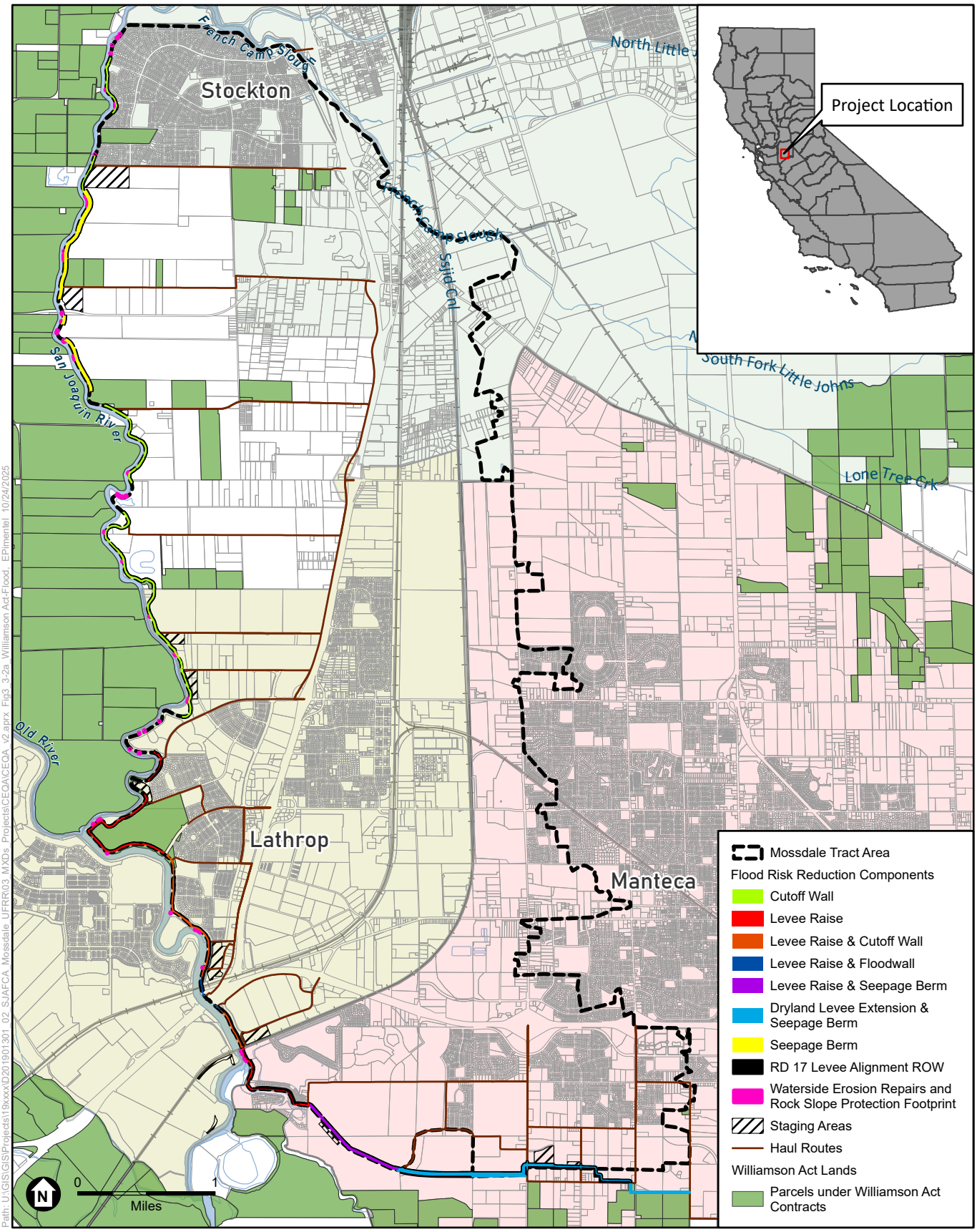
Agricultural land designations within the proposed project area include Open Space/Agriculture under the City of Stockton; Agriculture under the City of Manteca; and Agriculture/General, Agriculture/Limited, and Agriculture/Urban Reserve under San Joaquin County. The City of Lathrop does not have any lands specifically designated for agricultural use within the proposed project area. See Figures 3.13-1a through 3.13-1f in Section 3.13, *Land Use and Planning*, for maps of local jurisdictions' land use designations depicted alongside the flood risk reduction and multi-benefit components of the proposed project. Similarly, see Figures 3.13-2a through 3.13-2f in Section 3.13, *Land Use and Planning*, for maps of local jurisdictions' zoning classifications depicted alongside the proposed project components.

Williamson Act Lands

The Williamson Act, also known as the California Land Conservation Act of 1965, has helped preserve agricultural and open space lands since 1965. Under the Williamson Act, local governments and landowners enter into voluntary contracts to restrict enrolled lands to agricultural and open space uses, typically for 10-year rolling terms, in exchange for property tax reductions (DOC 2025a). The aim of the program is to support California's conservation, food security, and orderly growth goals while helping farmers and ranchers to stay in production.

The amount of Williamson Act contracted lands within the San Joaquin Valley region increased by 137 percent from 2020 to 2021, where the total of Williamson Contract lands was 2,985,970 acres in 2020 and 4,095,553 acres in 2021 (DOC 2022e). As of 2024, San Joaquin County alone reported a total of approximately 515,241 acres of enrolled land under the Williamson Act, where 282,840 acres consisted of Prime Farmland (DOC 2025b).

Figure 3.3-2a and **Figure 3.3-2b**, *Parcels Subject to Williamson Act Contracts,* show the parcels designated as Williamson Act lands in the proposed project area. As shown in Figure 3.3-2a and -2b, the majority of the Williamson Act lands located within the proposed project area are in areas of unincorporated San Joaquin County. **Table 3.3-2** lists the acreage of Williamson Act contracted lands within San Joaquin County by jurisdiction (approximately 515,241 acres in total), as well as the acreage of Williamson Act contracted lands out of that total that is located in the proposed project area (approximately 845 acres, or approximately 0.2 percent of the overall total for San Joaquin County).

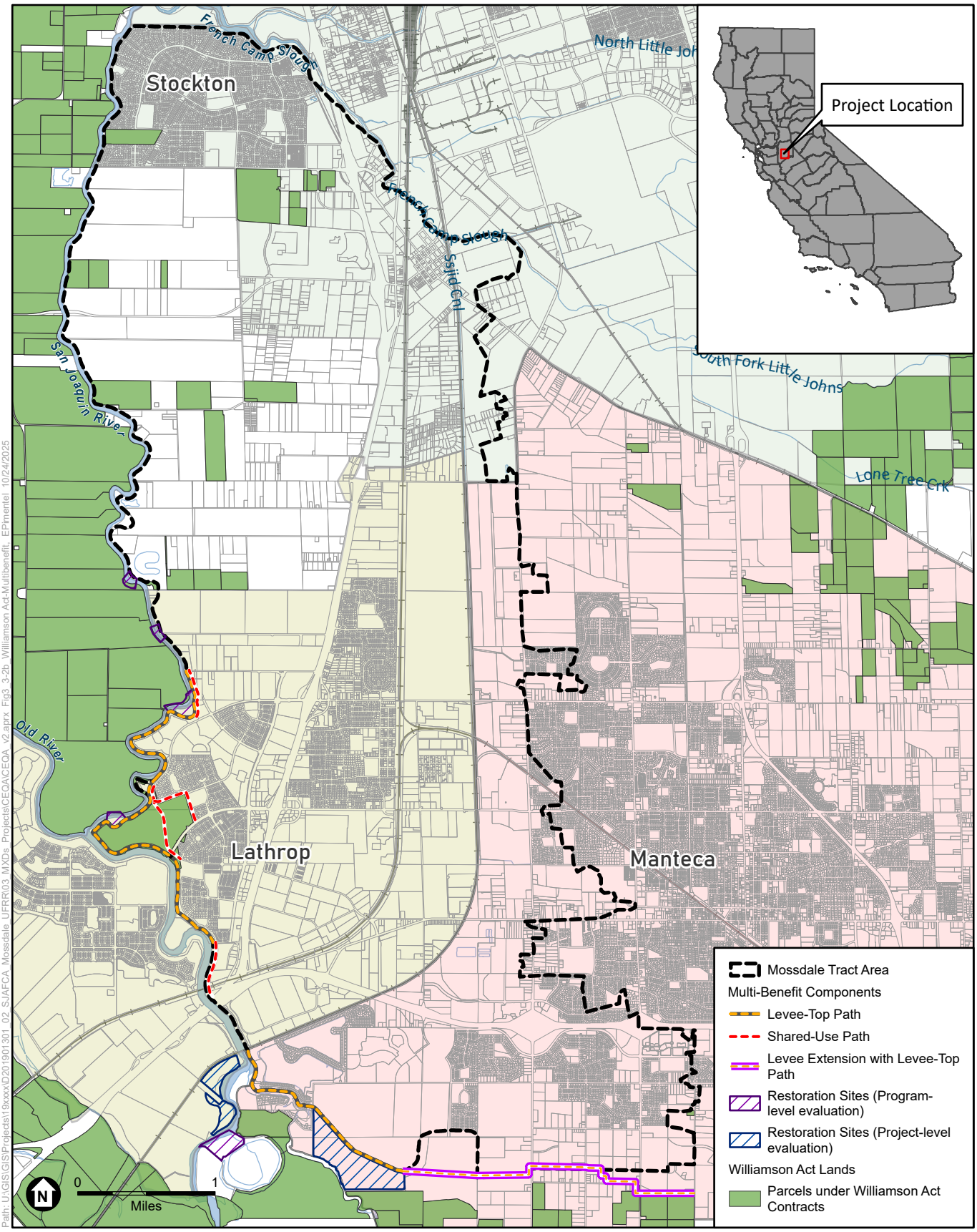


SOURCE: San Joaquin County, 2024; KSN, 2025; PBI, 2025; ESA, 2025

Mossdale Tract Area Urban Flood Risk Reduction Project

Figure 3.3-2a
Parcels Subject to Williamson Act Contracts
Flood Risk Reduction Components

ESA



SOURCE: San Joaquin County, 2024; KSN, 2025; PBI, 2025; ESA, 2025

Mossdale Tract Area Urban Flood Risk Reduction Project

Figure 3.3-2b
Parcels Subject to Williamson Act Contracts
Multi-Benefit Components

ESA

TABLE 3.3-2
WILLIAMSON ACT LANDS ACREAGE

	Farmland Security Zone	Prime Agricultural Land	Non-Prime Agricultural Land	Non-Renewal	Williamson Act Lands Total Acreage
San Joaquin County	66,551	282,840	161,105	4,746	515,241
City of Stockton		120	7	42	169
City of Manteca		1	0		1
City of Lathrop		40		202	242
Proposed Project Area	76	517	12	240	845

SOURCE: DOC 2025b

Agricultural Trends

From 2016 to 2018, approximately 74,641 acres of agricultural land uses in California were converted to nonagricultural uses; urban development, including solar facility construction, contributed to 30,919 acres of this conversion, while the rest was converted to other non-urban land uses (DOC 2018). Approximately 33 percent of the overall conversion of agricultural lands to urban uses occurred in the San Joaquin Valley (DOC 2018). In addition, long-term land idling, which is the process of converting irrigated land to non-irrigated land due to a lack of irrigation over time or conversion to dry farming, was responsible for the conversion of 24,339 acres of California's irrigated lands (Prime Farmland, Farmland of Statewide Importance, and Unique Farmland) to non-irrigated farmland (DOC 2018). Irrigated land conversions due to idling are often associated with water resource limitations, market conditions, and salinity-related land idling.

Historically, San Joaquin County, including the proposed project area, has maintained a rural, small-town character surrounded by open space and agricultural land (San Joaquin County 2016). The county is California's seventh largest producer of agriculture, producing around $3 billion in agriculture sales in 2020 (SJCOG 2022a). The top 10 agricultural products produced in the county consists of almonds, milk, grapes, walnuts, cherries, chickens and eggs, cattle, tomatoes, blueberries, and hay in 2020 (San Joaquin County 2020).

However, as population growth and urbanization has occurred over the last few decades and continues to occur in the county, development and land idling has resulted in lower densities and rapid conversion of agricultural lands (San Joaquin County 2016). From 1992 to 2016, 7,824 acres of agricultural lands in unincorporated San Joaquin County were converted to urban/built-up land (SJCOG 2022b). In the same time period, 6,792 acres of agricultural land in the City of Stockton, 3,135 acres of agricultural land in the City of Manteca, and 1,980 acres of agricultural land in the City of Lathrop were all converted to urban/built-up lands (SJCOG 2022b). Similar to the trends at the state level, both urban development and land idling were responsible for the conversion of agricultural land to nonagricultural uses in the county. In the 2016–2018 time period, a total of 60,329 acres of land in the San Joaquin Valley were reclassified from irrigated land to Grazing Land or Farmland of Local Importance due to land idling, which comprised 51 percent of the statewide total for that time period (DOC 2018).

Within the proposed project area, agricultural land consists mostly of row crops, orchards, vineyards, as well as agricultural infrastructure, such as rural residences, barns, outbuildings, other operational buildings, rural public roads, and dirt access roads. In addition, a small amount of irrigated pasture is used for livestock grazing.

Forestry Land

PRC Section 12220(g) defines "Forest land" as land that can support 10 percent native tree cover of any species, including hardwoods, 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. As shown on **Figure 3.3-3**, *Designated Forestry Lands*, there are no designated forestry lands within or adjacent to the proposed project area.

3.3.3 Regulatory Setting

Federal

Farmland Protection Policy Act (7 USC 4201 et seq.)

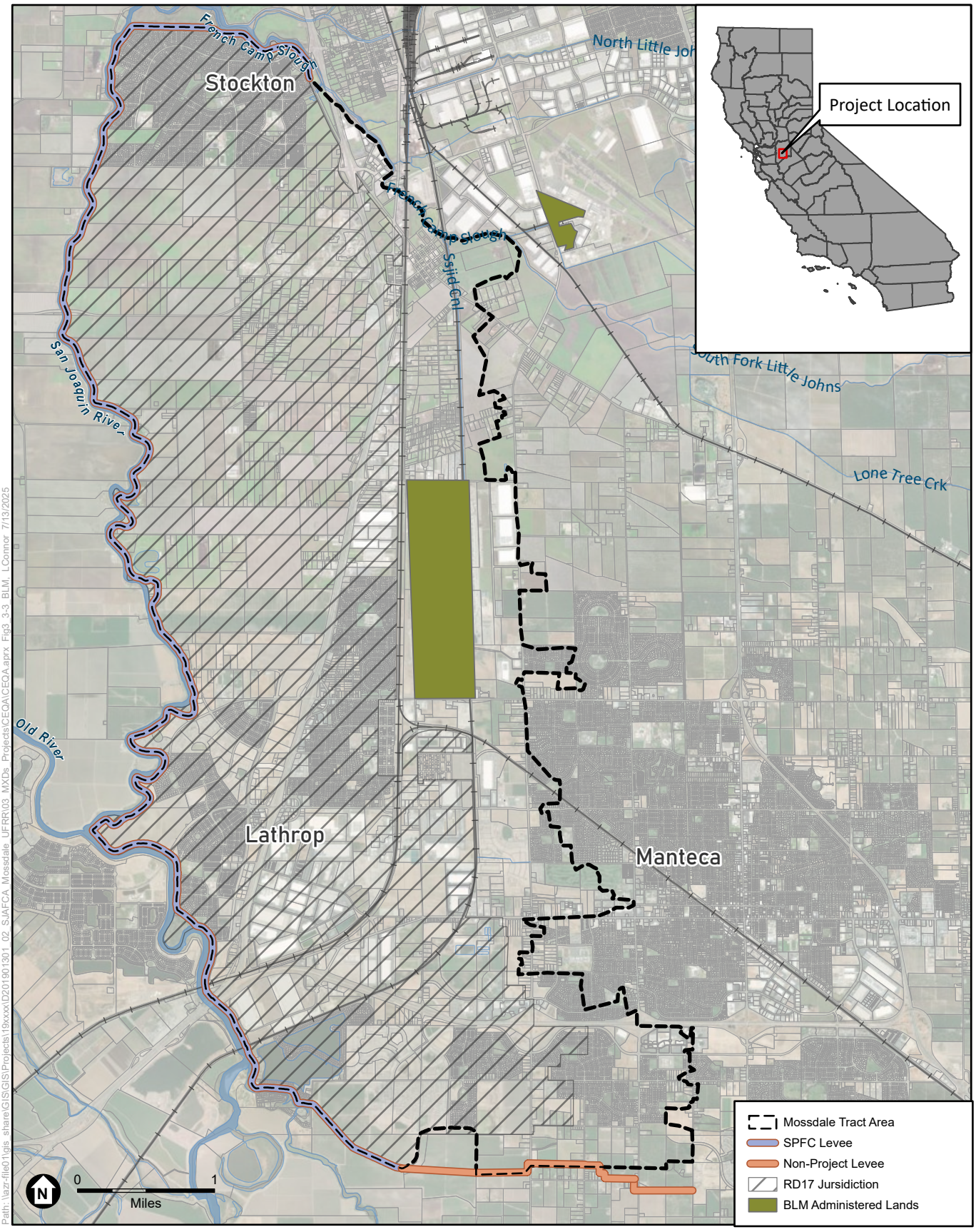
The U.S. Department of Agriculture administers the Farmland Protection Policy Act of 1981. The act discourages federal activities that would convert farmland to nonagricultural purposes and assures to the extent possible that federal programs are administered to be compatible with state, local government, and private programs and policies to protect farmland. For purposes of the act, farmland includes land defined as prime, unique, or farmlands of statewide or local importance as well as forest land, pastureland, or cropland; it does not include water or urban built-up land. Projects are subject to Farmland Protection Policy Act requirements if they could irreversibly convert farmland (directly or indirectly) to nonagricultural use and are completed by a federal agency or with assistance from a federal agency (NRCS 2022). The NRCS is the federal agency responsible for ensuring compliance with these laws and policies.

Federal agency representatives of projects that have the potential to convert farmland to non-farm use coordinate with their local office of the NRCS or U.S. Department of Agriculture Service Center. The NRCS uses a land evaluation and site assessment (LESA) system to establish a farmland conversion impact rating score on proposed sites of federally funded and assisted projects. The resulting score is used as an indicator for the project sponsor to consider alternative sites if the potential adverse impacts on the farmland exceed the recommended allowable level. The LESA system, as adopted for use in California, is described further below.

State

California Important Farmland Inventory System and Farmland Mapping and Monitoring Program

The DOC, Office of Land Conservation maintains a statewide inventory of farmlands. This land is mapped by the Division of Land Resource Protection as part of the FMMP. The FMMP produces maps and statistical data used for analyzing impacts on California's agricultural resources. The maps are updated every 2 years with the use of aerial photographs, a computer mapping system, public review, and field reconnaissance. Existing Important Farmland mapped in the proposed project area as part of the FMMP is described in subsection 3.3.2, *Environmental Setting*.



SOURCE: MAXAR, 2021; KSN, 2022; PBI, 2022; ESA, 2022

Mossdale Tract Area Urban Flood Risk Reduction Project

Figure 3.3-3
Designated Forestry Lands

ESA

California Land Conservation Act (Williamson Act)

The California Land Conservation Act of 1965, Sections 51200 et seq. of the California Government Code, commonly referred to as the "Williamson Act," enables local governments to restrict the use of specific parcels of land to agricultural or related open space use. The Williamson Act provides tax incentives to retain prime agricultural land and open space in agricultural use, thereby slowing its conversion to urban and suburban development. The program requires a 10-year contract between the county where the subject land is located and the landowner. While subject to contract, the land is taxed on the basis of its agricultural use rather than its market value. The land becomes subject to certain enforceable restrictions, and certain conditions need to be met prior to approval of an agreement. The goal of the Williamson Act is to protect agriculture and open space. Williamson Act lands in the proposed project area are described in subsection 3.3.2, *Environmental Setting*.

Delta Protection Commission's Land Use and Resources Management Plan for the Primary Zone of the Delta

The Delta Protection Act of 1992 (PRC Section 29760 et seq.) recognized the Sacramento-San Joaquin Delta (Delta) as a natural resource of statewide, national, and international significance, containing irreplaceable resources. The LURMP for the Primary Zone of the Delta was adopted in 1995, and most recently updated in 2010, to create policies to recognize, preserve, and protect those resources as established by the Delta Protection Commission. The LURMP provides direction for local jurisdictions in the Delta region on land use decisions. In regard to agriculture, the LURMP includes goals and policies to support the long-term viability of agricultural uses and to discourage inappropriate development of agricultural lands within the Delta (DPC 2010).

Local

The proposed project area includes lands in San Joaquin County and the cities of Stockton, Lathrop, and Manteca. Each of these jurisdictions have general plans with goals and policies that address agricultural resources (see **Table 3.3-3**). Applicable general plan goals and policies are summarized below along with other relevant local regulations.

TABLE 3.3-3
APPLICABLE GENERAL PLAN GOALS AND POLICIES – AGRICULTURAL AND FORESTRY RESOURCES

General Plan	Goals and Policies
San Joaquin County	Community Development Element, Goal LU-7, Policies LU-2.15, LU-2.17, LU-7.1, LU-7.7, LU-7.10 to LU-7.12; Natural and Cultural Resources Element, Goal D-3 Policies D-3.2 and D-3.4, Goal D-7
City of Stockton	Land Use Element, Policy LU-5.3, Action LU-5.3B and LU-5.3C
City of Lathrop	Land Use Element, Goal LU-7, Policies LU-7.1 and LU-7.2
City of Manteca	Land Use Element, Goal LU-1 and Policy LU-1.3, Goal LU-2 and Policy LU-2.6; Resource Conservation Element, Goal RC-7 and Policies RC-7.4, RC-7.5, RC-7.6, RC-7.8, RC-7.10 and RC-7.11

SOURCES: City of Lathrop 2022; City of Manteca 2024a; City of Stockton 2018; San Joaquin County 2016

San Joaquin County

San Joaquin County General Plan 2035

The San Joaquin County General Plan 2035 includes goals and policies that address protecting existing agricultural lands and promoting future agricultural lands within the county through smart planning and growth in combination with enforcing mitigation for impacted agricultural lands. The General Plan also provides goals and policies related to agriculture that support the agricultural goals of the Delta Plan, which aims to increase the economic growth of agriculture, recreation, and tourism while preserving the natural resources of the Delta.

San Joaquin County Multi-Species Habitat Conservation and Open Space Plan

The San Joaquin Multi-Species Habitat Conservation and Open Space Plan (SJMSCP) includes provisions for the conservation of agricultural lands (defined as FMMP-designated Prime Farmland, Farmland of Statewide Importance, Unique Farmland, Farmland of Local Importance, and Grazing Land) as a component of its broader open space preservation goals. While the plan is primarily designed to protect species and natural habitats, it recognizes the value of agriculture as compatible open space and requires mitigation for the conversion of agricultural lands to urban development. Under the SJMSCP, agricultural mitigation is generally required at a 1:1 ratio, meaning that for every acre of agricultural land permanently converted to nonagricultural use, one acre of comparable agricultural land must be preserved in perpetuity through a conservation easement or similar mechanism. The preserved land must remain in productive agricultural use and be protected from future development. These requirements apply to covered projects within the SJMSCP boundaries and are implemented through land dedication or payment of in-lieu mitigation fees, which are used by the implementing agency to acquire and manage conservation easements on qualifying agricultural parcels.

City of Stockton

Envision Stockton 2040 General Plan

The City of Stockton 2040 General Plan includes goals and policies that aim to clearly define areas designated for agricultural uses and that address different planning strategies to preserve and promote agricultural uses within the city. The General Plan also includes policies that require mitigation for impacted agricultural land either through the dedication of an agricultural conservation easement or payment of in-lieu agricultural mitigation fees for conversion of Important Farmland within the city, which is reference to a 2007 City of Stockton ordinance that outlined an Agricultural Land Mitigation Program. This ordinance is no longer included in the City of Stockton's Municipal Code; rather, the city addresses agricultural land mitigation primarily through its participation in the SJMSCP.

City of Lathrop

City of Lathrop General Plan

The City of Lathrop's General Plan does not explicitly state a fixed planning horizon, but it aims to provide a framework for the city's growth and development over the next 20–25 years. It includes goals and policies that address the protection of agricultural lands outside of the urban center of the city as a way to control urban development from expanding past planned subarea boundaries and provides guidance on agricultural operations in combination with other surrounding uses. The City of Lathrop

General Plan goals and policies related to agricultural resources address maintaining the city's current agricultural operations as well as appropriately siting land uses adjacent to designated agricultural uses.

City of Lathrop Municipal Code Chapter 3.40: Agricultural Mitigation Fee

The City of Lathrop's Agricultural Mitigation Fee is laid out in Chapter 3.40 of the city's Code of Ordinances. It aims to mitigate for the loss of productive agricultural lands converted for new development through the payment of the Agricultural Mitigation Fee. This fee would apply to new development projects (i.e., any project requiring a discretionary permit from the city) that cause the loss of, or conversion of, agricultural lands within or adjacent to the City of Lathrop. Agricultural land (or farmland) is defined by the city in Section 3.40.050 as "land areas upon which agricultural activities, uses, operations or facilities exist or could exist at the time of adoption of the ordinance…" (City of Lathrop 2023). The Agricultural Mitigation Fee is intended to permanently protect agricultural lands planned for agricultural use and to work with farmers who voluntarily wish to place conservation easements on their land with fair compensation for such easements. The fee would be applicable to flood risk reduction components and ecosystem restoration sites located within the City of Lathrop's jurisdiction.

City of Manteca

City of Manteca General Plan Update

The City of Manteca's General Plan Update generally establishes planning goals and policies through 2040. It includes goals and policies that encourage the continuation of agricultural uses and discourage the premature conversion of agricultural land to nonagricultural uses. The City of Manteca General Plan includes policies which aim to preserve agricultural land in and around Manteca by promoting phased urban growth, protecting farmland from premature development, and encouraging long-term conservation through programs like the Williamson Act. They also seek to minimize conflicts between urban and agricultural uses, support sustainable farming practices, and promote agricultural education and innovation. The General Plan also includes a policy (RC-7.11) requiring use of the City's Agricultural Mitigation Fee (Municipal Code Chapter 13.42) to reduce impacts on agricultural lands.

City of Manteca Municipal Code Chapter 13.42: Agricultural Mitigation Fee

The City of Manteca's Agricultural Mitigation Fee is laid out in Chapter 13.42 of the city's Code of Ordinances. It aims to mitigate for the loss of productive agricultural lands converted for new development through the payment of the Agricultural Mitigation Fee. This fee would apply to new development projects (i.e., any project requiring a discretionary permit from the city) that cause the loss of, or conversion of, agricultural lands within or adjacent to the City of Manteca. Agricultural land (or farmland) is defined by the city in Section 13.42.050 as "land areas upon which agricultural activities, uses, operations or facilities exist or could exist at the time of adoption of the ordinance…" (City of Manteca 2024b). The Agricultural Mitigation Fee is intended to permanently protect agricultural lands planned for agricultural use and to work with farmers who voluntarily wish to place conservation easements on their land with fair compensation for such easements. The fee would be applicable to flood risk reduction components and ecosystem restoration sites located within the City of Manteca's jurisdiction.

3.3.4 Impacts and Mitigation Measures

Methods of Analysis

The analysis of agriculture and forestry resources in this section is based on a review of available literature and maps from state and local agencies. The analysis focuses on the existing agricultural uses within the proposed project area, applicable goals and policies related to agricultural resources in San Joaquin County and the cities of Stockton, Manteca, and Lathrop, and whether the proposed project components result in physical impacts on agriculture and forestry resources.

Thresholds of Significance

In accordance with Appendix G of the CEQA Guidelines, an impact is considered significant if the proposed project would:

- Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to nonagricultural use.
- Conflict with existing zoning for agricultural use, with a designated Agricultural Resource Area, or with a Williamson Act contract.
- Conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code Section 12220 (g)), timberland (as defined in Public Resources Code Section 4526), or timberland zoned Timberland Production (as defined in Government Code Section 51104(g));
- Result in the loss of forest land or conversion of forest land to non-forest use.
- Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland, to nonagricultural use or conversion of forest land to non-forest use.

Impacts Not Further Evaluated

Conflict With Zoning for or Result in Loss of Forestry Lands

As shown on Figure 3.3-3 and discussed in subsection 3.3.2, *Environmental Setting*, there are no designated forestry lands within the proposed project area. Therefore, implementation of the proposed project would not conflict with or result in the loss of any designated forestry lands and this issue will not be further evaluated in the EIR.

Conversion of Forestry Lands to Non-Forestry Lands

As stated above, there are no designated forestry lands within the proposed project area. Therefore, implementation of the proposed project would not result in the conversion of designated forestry to non-forestry land and this issue will not be further evaluated in the EIR.

Impacts and Mitigation Measures

Table 3.3-4 summarizes the impact conclusions presented in this section.

TABLE 3.3-4
SUMMARY OF IMPACT CONCLUSIONS – AGRICULTURAL AND FORESTRY RESOURCES

IMPACT STATEMENT	Flood Risk Reduction Components	Restoration Sites 13, 14, and 16	Other Multi-Benefit Components
3.3-1: Implementation of the proposed project could convert existing Important Farmland to nonagricultural uses.	SU	SU	SU
3.3-2: Implementation of the proposed project could conflict with existing zoning for agricultural use, or a Williamson Act contract.	LS	LS	LS
3.3-3: Implementation of the proposed project could involve other changes in the existing environment that could result in the conversion of Important Farmland to nonagricultural use.	LS	LS	LS

NOTES: LS = Less than Significant; SU = Significant and Unavoidable

Impact 3.3-1: Implementation of the proposed project could convert existing Important Farmland to nonagricultural uses.

Flood Risk Reduction Components

The proposed flood risk reduction components include raising the height of levees along portions of the existing levee alignment, construction of a dryland levee extension and drained seepage berm, placement of riprap rock slope protection, and various staging areas. Each of these components are described in detail in Chapter 2, *Project Description*, and are presented on Figure 2-2.

As presented in Table 3.3-1, the proposed project area contains approximately 7,290 acres of designated Important Farmland. Figure 3.3-1a shows the location of the proposed flood risk reduction components as well as parcels currently designated as Important Farmland in the proposed project area. Figure 3.3-1a shows that staging areas 2, 3, 11, 13, 14 and 16 are located on Important Farmland, and the majority of improvements for the flood risk reduction components would take place on or adjacent to Important Farmland as well.

Development of staging areas would be temporary and these areas would be restored to their current condition and to original ownership after the completion of construction. The staging areas would remain available for use as Important Farmland once construction is complete, and no additional O&M activities would be required. Thus, these areas are not anticipated to permanently convert existing Important Farmland to nonagricultural uses.

While some of the improvements required for the flood risk reduction components could be constructed within the existing easements and/or rights-of-way of the existing levee, some of the proposed improvements would require a wider levee footprint, which could encroach onto adjacent Important Farmland. Specifically, portions of the existing levee to be raised would require the existing levee footprint to be widened and, at times, seepage berms with widths of 50 to 100 feet are to be added. The existing dryland levee would also be widened by 10 to 20 feet at its base with a seepage berm of approximately 50 feet wide. In addition, the proposed 2.9-mile-long dryland levee extension would be constructed on land designated as Important Farmland and would require an area approximately 340 feet wide, including a seepage berm and O&M corridor. These project features are designed to support flood control, which would protect areas of agricultural lands. Despite these benefits to surrounding agricultural

lands, proposed project improvements would cause conversion of approximately 35 acres of Important Farmland to nonagricultural uses (i.e., flood protection) where they encroach upon lands with this designation, which would result in a potentially significant impact.

O&M activities would consist of inspections, weed abatement, removal of encroachments and high-hazard vegetation to ensure levee integrity, replacement and re-working of displaced or launched revetment following large flood events, and adequate levee access along the levee toe road. O&M inspections would consist of a patrol vehicle traveling along the levee and small machinery for weed abatement such as mowers and weed whackers/trimmers. O&M activities would occur within all existing and acquired easements and rights-of-way and would not include any off-site activities, including on designated Important Farmland. Therefore, long-term O&M activities associated with the flood risk reduction components would not impact any additional Important Farmland and would not include further conversion of existing agricultural lands to nonagricultural uses.

While impacts associated with development of the staging areas and long-term operation of the levee improvements would be less than significant, the permanent conversion of Important Farmland where it overlaps with the footprint of the flood risk reduction components would result in a significant impact.

Restoration Sites 13, 14, and 16 and Other Multi-benefit Components

Proposed ecosystem restoration features at Sites 13, 14, and 16 would include excavated floodplains, floodplain side channels, brush mat, habitat wood structures, willow baffles, and upland brush piles. The proposed project also includes implementation of other multi-benefit components including additional ecosystem restoration sites, and recreation features along the levee system. These proposed multi-benefit components are described in Chapter 2, *Project Description*, and are presented on Figure 2-3. The recreational features along the top of the levee and landside toe (i.e., shared-use paths and levee-top trails) would not result in any impacts beyond what was discussed for the flood risk reduction components above and are not discussed further in this section.

Figure 3.3-1b shows the location of the proposed ecosystem restoration sites as well as parcels currently designated as Important Farmland in the proposed project area. Figure 3.3-1b shows that Sites 13 and 14, as well as Site 17 (evaluated at a program level), are located on Important Farmland. Development of ecosystem restoration sites would not impact the underlying soil quality or characteristics that are considered when designating Important Farmland, and they would not fragment surrounding agricultural lands or disrupt drainage or irrigation of surrounding agricultural lands, as all irrigation supply structures would be restored after construction. However, despite these mitigating circumstances, the ecosystem restoration sites would be managed and maintained for habitat and not for agriculture, resulting in a conversion of approximately 206 acres of Important Farmland to nonagricultural uses, which is considered a potentially significant impact.

O&M activities would occur within all ecosystem restoration areas and would not include any off-site activities, including on designated Important Farmland. Therefore, O&M of the proposed ecosystem restoration areas would not impact any Important Farmland and would not include the conversion of existing agricultural lands to nonagricultural uses.

While impacts associated with long-term operation of the ecosystem restoration sites would be less than significant, the permanent conversion of Important Farmland where it overlaps with ecosystem restoration sites, particularly Sites 13 and 14, would result in a **significant** impact.

Mitigation Measures

Mitigation Measure 3.3-1 (FRR/RS/MB):

Permanent conversion of Important Farmland shall be mitigated by adhering to the requirements of the San Joaquin County Multi-Species Habitat Conservation and Open Space Plan, as well as other local ordinances, related to agricultural conservation and mitigation. Specifically, any loss or conversion of Important Farmland due to implementation of the proposed project shall be mitigated by preserving other Important Farmland of equal or greater value in perpetuity by acquiring an agricultural conservation easement, or by contributing funds to a land trust or other entity qualified to preserve Important Farmland in perpetuity at a ratio of 1:1.

Significance After Mitigation: Implementation of Mitigation Measure 3.3-1 would reduce impacts related to permanent conversion of Important Farmland to a nonagricultural use (i.e., flood protection and/or habitat restoration) by preserving in perpetuity an equivalent amount of Farmland of equal or greater quality. However, because placement of agricultural conservation easements preserves existing Farmland but does create new Farmland, the mitigation measure does not fully offset or compensate for the conversion. Fully offsetting the conversion of agricultural land in San Joaquin County is not feasible. The supply of land in the region that is suitable for agricultural use (but not currently being used for agriculture) and commercially available is extremely limited; therefore, identification of financially feasible property (or properties) to accomplish the required offset is not feasible. Accordingly, despite the significant regional benefits associated with the proposed project, the permanent conversion of Important Farmland due to the construction of flood protection and habitat restoration features would be a **significant and unavoidable** impact.

Impact 3.3-2: Implementation of the proposed project could conflict with existing zoning for agricultural use or a Williamson Act contract.

All Project Components

As discussed above under Impact 3.3-1, some of the proposed improvements for the flood risk reduction components would require a wider levee footprint and/or extend past the existing easement/right-of-way footprints onto surrounding lands, some of which are zoned for agriculture or have Williamson Act contracts. Similarly, some of the ecosystem restoration sites and staging areas would be developed on or adjacent to lands zoned for agriculture by local jurisdictions or under Williamson Act contract.

Development of staging areas would be temporary and these areas would be restored to their current condition and to original ownership after the completion of construction. The staging areas would remain available for agricultural use once construction is complete, and no additional O&M activities would be required. Thus, these areas are not anticipated to conflict with existing zoning for agricultural use or a Williamson Act contract and are not discussed further. In addition, the recreational features along the top of the levee and landside toe (i.e., shared-use paths and levee-top trails) would not result in any impacts beyond what is discussed for the flood risk reduction components below and are not discussed further in this section.

Within the City of Stockton, the only project feature near agriculturally zoned land is limited to waterside erosion repairs, which, due to their location on the waterside of the levee, would not affect agricultural uses on the landside (see Figures 3.13-1a, 3.13-1d, 3.13-2a, and 3.13-2d in Section 3.13, *Land Use and Planning*). The City of Lathrop has no lands zoned for agriculture that would be affected by proposed project components (see Figures 3.13-1b, 3.13-1e, 3.13-2b, and 3.13-2e in Section 3.13). In the City of Manteca, portions of the dryland levee extension overlap with land zoned for general agriculture (see Figures 3.13-1c, 3.13-1f, 3.13-2c, and 3.13-2f in Section 3.13). Similarly, in San Joaquin County, the dryland levee extension and portions of the fix-in-place levee improvements intersect with lands designated for General Agriculture and Agriculture/Urban Reserve (see Figures 3.13-1a through 3.13-1f and Figures 3.13-2a through 3.13-2f in Section 3.13).

The fix-in-place levee improvements for the existing levee could encroach upon the edges of agriculturally zoned parcels, depending on the levee footprint and right-of-way, and the dryland levee extension would remove corridors of areas zoned for agriculture as well; however, the proposed project would not result in full parcel conversion or prevent continued agricultural use. In addition, these improvements are consistent with the allowable uses within these designations. Public infrastructure projects, including flood control levees constructed by public agencies that do not convert agricultural land to a conflicting use, are considered compatible with agricultural zoning under San Joaquin County and the City of Manteca zoning. These uses support both the continued viability of agricultural operations and the long-term land use goals of the jurisdictions.

The ecosystem restoration at Sites 14 and 16 would occur on land designated Agriculture/Urban Reserve by San Joaquin County. Although this designation generally supports agricultural uses and future urban development, it also allows for public-benefit uses such as habitat restoration by public agencies. This restoration work is consistent with the county's land use policies and is covered under the SJMSCP; therefore, the implementation of these proposed project features is not considered an incompatible conversion of agricultural land and would not conflict with county zoning.

With respect to Williamson Act contracts, several parcels (estimated at 5–6) adjacent to flood risk reduction components and ecosystem restoration sites being considered at a program level (Sites 2, 5, 6, and 9) are enrolled in the Williamson Act. Figure 3.3-2a and 3.3-2b show existing parcels designated under Williamson Act contracts with the potential locations of proposed flood risk reduction components and multi-benefit components. As can be seen in the figures, only minor encroachments—limited to narrow portions of affected parcels—are anticipated. These activities would not convert the properties to nonagricultural use nor require contract cancellation. Therefore, the proposed project would not result in a conflict with any Williamson Act contract. In addition, related specifically to the flood risk reduction components, the Williamson Act determines that the construction of flood control works is compatible with the purpose of the Williamson Act and enhances the land within an established agricultural preserve (California Government Code Section 51293[e][1]). Specific to the ecosystem restoration sites, the Williamson Act defines "compatible use" to include "any use determined… to be compatible with the agricultural, recreational, or open-space use of land within the preserve …unless the board or council finds after notice and hearing that the use is not compatible with the agricultural, recreational or open-space use to which the land is restricted by contract" (California Government Code Section 51201[e]). Accordingly, open space use is generally compatible with the Williamson Act, unless such use is specifically restricted by the contract.

Once construction is complete and the performance standards have been met and habitat has successfully reestablished, O&M of the proposed project components would occur within all existing and acquired easements, rights-of-way, and/or restored areas and would not require any off-site activities. Therefore, long-term O&M activities associated with the proposed project components would not impact any additional lands zone for agricultural use or under Williamson Act contract.

In summary, while some proposed project components would occur on or near lands zoned for agriculture or under Williamson Act contracts, the proposed activities would not convert these lands to incompatible uses or conflict with applicable zoning or land use designations. Public flood control infrastructure is considered a compatible use under both San Joaquin County and City of Manteca zoning, and the proposed habitat restoration is consistent with the county's Agriculture/Urban Reserve designation and covered under the SJMSCP. SJAFCA will furthermore work closely with local jurisdictions and participate in mitigation fee programs should they become applicable. Minor encroachments on Williamson Act lands would not require contract cancellation or conversion to nonagricultural use. Therefore, impacts related to agricultural zoning and Williamson Act contracts would be **less than significant**.

Mitigation Measures

Mitigation Measure (FRR/RS/MB): None required.

Impact 3.3-3: Implementation of the proposed project could create other changes in the existing environment that could result in the conversion of Important Farmland to nonagricultural use.

All Project Components

While the construction of proposed project components would impact Important Farmland as discussed under Impact 3.3-1, the proposed project itself would not introduce new uses into the existing environmental setting of the proposed project area that would result in pressure for additional Important Farmland to be converted to non-agricultural use, nor develop conflicting uses, such as urban development. The flood risk reduction components would only impact Important Farmland due to the need for additional area to construct modified flood protection facilities as discussed in Impact 3.3-1. The ecosystem restoration areas would create areas of protected open space for habitat restoration, and the other recreational facilities could attract residents and visitors to the levees as an opportunity for walking, bicycling, and other recreational activities, but neither of these uses would further convert Important Farmland. O&M of the proposed project components would occur within all existing and acquired easements, rights-of-way, and/or restored areas and would not require any off-site activities nor result in additional Important Farmland conversion.

However, as discussed in Section 3.12, *Hydrology and Water Quality*, under Impact 3.12-4, the proposed dryland levee extension that is part of the proposed flood risk reduction infrastructure would introduce a new approximately 2.9 mile-long-levee east to Tinnin Road to prevent flood waters from going around the existing dryland levee and flooding the Mossdale Tract area during extreme flood events (e.g., a 200-year event). Hydraulic modeling was conducted (see Appendix G to the Draft EIR) for the proposed project, which indicates no change in flooded area between the with- and without-project conditions under more frequent, lower-magnitude events (the 2-year, 5-year, 10-year, 50-year, and 100-year flood events). That is, the proposed project would not cause any new flooding under more frequent, lower-

magnitude events as the existing levees provide adequate protection for these flood scenarios both with and without the proposed project. Under the less frequent, higher magnitude 200-year event, the proposed project would redirect flood flows away from approximately 3,650 acres in the Mossdale Tract and back into the San Joaquin River system. This redirection of flow slightly raises in-channel water surface elevations in Old River and the San Joaquin River (0.1 foot and 0.2 foot, respectively). While these increases are relatively small, many levees are already being overtopped under existing, without-project conditions and the surrounding topography is relatively flat, which results in shallow overland flooding primarily west of the San Joaquin River under the with-project condition, as depicted in Figure 3.12-4 in Section 3.12, *Hydrology and Water Quality*. Under a 200-year event, the with-project condition would result in approximately 2,970 acres of previously dry land experiencing new inundation due to redirected flood flows, potentially resulting in land fallowing or conversion of these lands. Approximately 2,730 acres[1] of this newly inundated area is designated Important Farmland, spread across approximately 350 individual land parcels. Of these, only approximately 37 individual parcels would experience new inundation on Important Farmland that represents over 50 percent of their total land area.

As further discussed under Impact 3.12-4, flood depths in these newly inundated areas would generally remain shallow (less than three feet). The water would be temporarily ponded and would reduce in depth and area over a short period of time due to infiltration (based on soil type) and evaporation (based on time of year). The predominant soil type in the affected area is Hydrologic Soil Group C which has an average infiltration rate of 0.1 inch per hour. At this rate, it is estimated that one foot of standing water would take about five days to infiltrate into the soil. In addition, depending on ambient air temperatures, some reduction in ponded depth would also occur due to evaporation. As a result, the duration of flooding impacts in these flat existing agricultural use areas could be shortened.

Therefore, changes in flooding would occur only under infrequent 200-year storm events and would not result in regular or sustained inundation of agricultural land. Because the proposed project does not alter flooding behavior under more frequent storm events, it is not expected to affect routine agricultural operations or lead to the fallowing or conversion of farmland. While 37 individual parcels may experience new inundation on Important Farmland over more than half their total area, most affected parcels would experience minimal proportions of new flooding, and that flooding that would occur would remain shallow, dissipating within 5 to 15 days. Shallow, infrequent flooding during extreme events is not anticipated to compromise long-term agricultural viability or lead to indirect conversion of Important Farmland to nonagricultural use. Therefore, impacts related to other changes in the environment that could result in the conversion of Important Farmland would be **less than significant**.

Mitigation Measures

Mitigation Measure (FRR/RS/MB): None required.

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[1] Only parcels containing greater than 0.01 acre of Important Farmland were included in calculations.

3.4 Air Quality

3.4.1 Introduction

This section describes the existing ambient air quality in and around the proposed project area. It evaluates changes to air quality conditions that could result from implementation of the proposed project.

Specifically, this section assesses the potential air quality effects caused by stationary, mobile, and area sources related to construction of the proposed project, as well as the potential for the proposed project to generate objectionable odors, in consideration of the updated 2019 CEQA Guidelines questions. This section also describes the climate in the proposed project area; existing air quality conditions in the proposed project area for criteria air pollutants and toxic air contaminants (TACs); odors; and applicable federal, state, and regional air quality standards. Mitigation is provided where necessary and appropriate to address impacts. The analysis included in this section was developed based on review of information provided in the San Joaquin County, the cities of Stockton, Lathrop, and Manteca General Plans, project-specific construction information and assumptions, California Emissions Estimator Modeling (CalEEMod) results, and guidance from the San Joaquin Valley Air Pollution Control District's (SJVAPCD) *Guidance for Assessing and Mitigating Air Quality Impacts* (GAMAQI) (SJVAPCD 2015a).

No comments specifically addressing air quality were received in response to the NOP. See Appendix A to this Draft for NOP comment letters.

Greenhouse gas emissions (GHG) are addressed in Section 3.10, *Greenhouse Gas Emissions*.

3.4.2 Environmental Setting

Air quality is a function of both the rate and location of pollutant emissions under the influence of meteorological conditions and topographic features that influence pollutant movement and dispersal. Atmospheric conditions such as wind speed, wind direction, atmospheric stability, and air temperature gradients interact with the physical features of the landscape to determine the movement and dispersal of air pollutants, which affects air quality.

The San Joaquin Valley Air Basin (SJVAB) occupies the southern half of California's Central Valley and comprises eight counties: San Joaquin, Stanislaus, Fresno, Merced, Madera, Kings, Tulare, and portions of Kern County. The SJVAB is approximately 250 miles long and 35 miles in width (on average) and is bordered by the Coast Range Mountains on the west, the Sierra Nevada on the east, and the Tehachapi Mountains to the south. On the valley floor, SJVAB is open only to the north, which heavily influences prevailing winds (SJVAPCD 2015b). Although marine air generally flows into the air basin from the San Francisco Bay Area through the Carquinez Strait (a gap in the Coast Range Mountains) and low mountain passes such as Altamont Pass and Pacheco Pass, the mountain ranges restrict air movement through the air basin. Additionally, most of the surrounding mountains are above the normal height of summer inversion layers (1,500 to 3,000 feet). These topographic features result in weak airflow and poor dispersion of pollutants. As a result, SJVAB is highly susceptible to pollutant accumulation.

Criteria Air Pollutants

The U.S. Environmental Protection Agency (U.S. EPA) has identified criteria pollutants that are a threat to public health and welfare. These pollutants are called "criteria" air pollutants because standards have been established for each of them to meet specific public health and welfare criteria. The following criteria air pollutants are a concern in the SJVAB.

Ozone

Ozone is a respiratory irritant and an oxidant that increases susceptibility to respiratory infections and can cause substantial damage to vegetation and other materials. Ozone is not emitted directly into the atmosphere but is a secondary air pollutant produced in the atmosphere through a complex series of photochemical reactions involving reactive organic gases (ROG) and oxides of nitrogen (NO_x), including nitrogen dioxide (NO_2), and the presence of sunlight. ROG and NO_x are known as precursor compounds for ozone. Significant ozone production generally requires ozone precursors to be present in a stable atmosphere with strong sunlight for approximately three hours.

Ozone is a regional air pollutant because it is not emitted directly by sources but is formed downwind of sources of ROG and NO_x under the influence of wind and sunlight. Ozone concentrations tend to be higher in the late spring, summer, and fall, when the long sunny days combine with regional subsidence inversions to create conditions conducive to the formation and accumulation of secondary photochemical compounds, like ozone. Exposure to elevated ozone concentrations can cause eye irritation, airway constriction, and shortness of breath and can aggravate existing respiratory diseases, such as asthma, bronchitis, and emphysema.

Nitrogen Oxides

NO_2 is one of a group of highly reactive gases known as oxides of nitrogen or NO_x. Other nitrogen oxides include nitrous acid and nitric acid. NO_2 is used as the indicator for the larger group of nitrogen oxides.

NO_2 is formed in the air from the burning of fuel in cars, trucks and buses, power plants, and off-road equipment. Breathing air with a high concentration of NO_2 can irritate airways in the human respiratory system. Such exposures over short periods can aggravate respiratory diseases, particularly asthma, leading to respiratory symptoms, hospital admissions, and visits to emergency rooms. Longer exposures to elevated concentrations of NO_2 may contribute to the development of asthma and potentially increase susceptibility to respiratory infections. People with asthma, as well as children and the elderly are generally at greater risk for the health effects of NO_2.

NO_2 along with other NO_x reacts with other chemicals in the air to form both particulate matter and ozone. Both of these are also harmful when inhaled due to effects on the respiratory system.

Particulate Matter

Respirable particulate matter (PM_{10}) and fine particulate matter ($PM_{2.5}$) represent fractions of particulate matter that can be inhaled into air passages and the lungs and can cause adverse health effects. Particulate matter in the atmosphere results from many kinds of dust- and fume-producing industrial and agricultural operations, fuel combustion, and atmospheric photochemical reactions. Some sources of particulate matter, such as demolition and construction activities, are more local in nature, while others, such as vehicular traffic, have a more regional effect. Very small particles of certain substances (e.g., sulfates and

nitrates) can cause lung damage directly, or can contain absorbed gases (e.g., chlorides or ammonium) that may be injurious to health. Particulates can also damage materials and reduce visibility.

Other Criteria Pollutants

Carbon monoxide (CO) is a non-reactive pollutant that is a product of incomplete combustion and is mostly associated with motor vehicle traffic. High CO concentrations develop primarily during winter when periods of light winds combine with the formation of ground-level temperature inversions (typically from the evening through early morning). These conditions result in reduced dispersion of vehicle emissions. Motor vehicles also exhibit increased CO emission rates at low air temperatures. When inhaled at high concentrations, CO combines with hemoglobin in the blood and reduces the oxygen-carrying capacity of the blood. This results in reduced oxygen reaching the brain, heart, and other body tissues. This condition is especially critical for people with cardiovascular diseases, chronic lung disease, or anemia.

Sulfur dioxide (SO_2) is produced through combustion of sulfur or sulfur-containing fuels such as coal. SO_2 is also a precursor to the formation of atmospheric sulfate and particulate matter (PM_{10} and $PM_{2.5}$) and contributes to potential atmospheric sulfuric acid formation that could precipitate downwind as acid rain.

Lead has a range of adverse neurotoxin health effects and was formerly released into the atmosphere primarily via leaded gasoline. The phase-out of leaded gasoline has resulted in decreasing levels of atmospheric lead.

Hydrocarbons are organic gases that are formed from hydrogen and carbon and sometimes other elements. Hydrocarbons that contribute to formation of ozone are referred to and regulated as ROGs. ROG in itself is not a criteria air pollutant, but is a precursor the ozone, a criteria air pollutant. Sources of ROGs include evaporation from petroleum fuels, solvents, dry cleaning solutions, and paint. The primary health effects of ROGs result from the formation of ozone and its related health effects.

Toxic Air Contaminants

TACs are airborne substances that are capable of causing short-term (acute) and/or long-term (chronic or carcinogenic, i.e., cancer-causing) adverse human health effects (i.e., injury or illness). TACs include both organic and inorganic chemical substances. They may be emitted from a variety of common sources including gasoline stations, automobiles, dry cleaners, industrial operations, and painting operations. The current California list of TACs includes nearly 200 compounds, including Diesel Particulate Matter (DPM) emissions from diesel-fueled engines (CARB 2025a).

Valley Fever

Valley Fever (formally known as Coccidioidomycosis) is an infectious disease caused by the fungus *Coccidioides immitis*. Valley Fever is also known as San Joaquin Valley Fever, Desert Fever, or Cocci. Infection is caused by inhalation of *Coccidioides immitis* and *Coccidioides posadasii* spores that have become airborne when dry, dusty soil or dirt is disturbed by natural processes such as wind or earthquakes, or by human induced ground disturbing activities such as construction and farming. High winds can carry dust that contains the spores over long distances.

Most people infected with Valley Fever have no symptoms; however, if symptoms develop, they usually develop in the lung and initially resemble the flu or pneumonia (e.g., fatigue, cough, shortness of breath, chest pain, fever, rash, headache, and joint aches). Valley Fever is not contagious, and secondary infections are rare. On average, there were approximately 200 Valley Fever-associated deaths each year

(deaths in which Valley Fever was listed as a primary or contributing cause on a death certificate) in the United States between 1999 and 2019 (CDC 2024a). Those most at risk of developing severe symptoms include Hispanics, African Americans, Filipinos, pregnant women, adults of older age groups, and people with weakened immune systems.

Coccidioidomycosis is highly endemic in the San Joaquin Valley and remains an important public health problem in California. In 2019, there were 281 cases of Valley Fever per 100,00 people in San Joaquin County, which is considered highly endemic (CDC 2024a). The CDCP reports that farm workers, construction workers, others who engage in soil-disturbing activities, and anyone spending time outdoors in San Joaquin County are at risk for Valley Fever (CDCP 2025).

Odors

Although offensive odors from stationary sources rarely cause any physical harm, they remain unpleasant and can lead to public distress, generating complaints by residents to local governments. The occurrence and severity of odor impacts depend on the nature, frequency, and intensity of the source; wind speed and direction; and the sensitivity of receptors. The CEQA Guidelines recommend considering odor impacts for any new odor sources proposed near existing receptors, and for any new sensitive receptors located near existing odor sources. SJVAPCD provides examples of odor sources, which include wastewater treatment plants, landfills, confined animal facilities, composting stations, food manufacturing plants, refineries, and chemical plants. Generally, increasing the distance between the receptor and the odor source would mitigate odor impacts.

Sensitive Receptors

Air quality does not affect every individual in the population in the same way, and some groups are more sensitive to adverse health effects than others. More sensitive population groups include the elderly and the young; those with respiratory disease, such as asthma and chronic obstructive pulmonary disease; and those with other environmental or occupational health exposures (e.g., indoor air quality) that affect cardiovascular or respiratory diseases. SJVAPCD defines sensitive land uses as schools, parks and playgrounds, day care centers, nursing homes, hospitals, and residential dwelling units. Workers are not considered sensitive receptors because they have other legal protections; specifically, employers must follow regulations set forth by the Occupation Safety and Health Administration (OSHA) to ensure the health and well-being of employees. Existing sensitive receptors in the vicinity of the proposed project area include residential neighborhoods and a local day care center. Specifically, proposed project component ID 1, 8a-e, and 9 are located along the levee line, adjacent to residential neighborhoods. ID 2, 7, 12, and 15 are located along the levee line and are also nearby residential neighborhoods. See Chapter 2, *Project Description*, Table 2-1 for the proposed project components associated with these IDs.

Sensitive receptors in the form of scattered residences are located along parts of the alignment with the nearest residence (along W Aplicella Ct.) located as close as 40 feet from the proposed project alignment. In addition, residential uses are also located along Barbra Terry Boulevard, Upper Pasture, River Island Parkway, Sadler Oak, Woodward Avenue, and Joshua Street from the proposed staging areas.

Existing Air Quality

The SJVAPCD maintains a regional monitoring network that measures the ambient concentrations of criteria pollutants in the SJVAB. Ambient air quality measurements from air monitoring stations

maintained by SJVAPCD help to determine the level of air quality in the local area. There are several active air monitoring stations located within the SJVAB. The closest station to the proposed project area is the Stockton-University Park air monitoring station, approximately 10 miles northeast of the proposed project area. **Table 3.4-1** shows a 3-year (2021–2023) summary of ozone, NO_2, $PM_{2.5}$, and PM_{10}, data monitored at the Stockton-University Park air monitoring station. The table also compares monitored data to the California ambient air quality standards (CAAQS) and National ambient air quality standards (NAAQS).

TABLE 3.4-1
AMBIENT AIR QUALITY MONITORING DATA

Pollutant Standards	2021	2022	2023
Ozone			
Maximum 1-hour concentration (ppm)	0.040	**0.141**	0.086
Maximum 8-hour concentration (ppm)	0.036	**0.113**	0.068
Number of days standard exceeded[a]			
NAAQS 1-hour (>0.12 ppm)	0	1	0
CAAQS 1-hour (>0.07 ppm)	0	1	0
NAAQS 8-hour (>0.07 ppm)	0	1	0
Nitrogen Dioxide (NO_2)			
Maximum 1-hour concentration (ppm)	34.0	44.2	45.0
Number of days standard exceeded[a]			
NAAQS 1-hour (>.100 ppm)	0	0	*
CAAQS 1-hour (>.18 ppm)	0	0	0
Particulate Matter ($PM_{2.5}$)[b]			
Maximum 24-hour concentration (µg/m^3)	**39.5**	**51.9**	**40.6**
Annual average concentration (µg/m^3)[e]	*	10.1	*
Number of days standard exceeded[a]			
NAAQS 24-hour (>150 µg/m^3)[f]	**1**	**6**	**6**
CAAQS 24-hour (>50 µg/m^3)[f]	*	*	*
Particulate Matter (PM_{10})[b]			
Maximum 24-hour concentration (µg/m^3)	**73.2**	**81.3**	**81.5**
Annual average concentration (µg/m^3)[e]	*	*	*
Number of days standard exceeded[a]			
NAAQS 24-hour (>150 µg/m^3)[f]	0	0	0
CAAQS 24-hour (>50 µg/m^3)[f]	**3**	**24**	**23**

NOTES: CAAQS = California ambient air quality standards. NAAQS = national ambient air quality standards.

Values in **bold** font indicate an exceedance.

The national 1-hour ozone standard was revoked in June 2005. Statistics related to the national 1-hour ozone standard are shown in *italics*

* Insufficient data to determine a value
a. An exceedance is not necessarily a violation. It should be noted that the federal ozone 1-hour standard has been revoked by U.S. EPA.
b. Measurements usually are collected every 6 days.
c. National statistics are based on standard conditions data. In addition, national statistics are based on samplers using federal reference or equivalent methods.
d. State statistics are based on local conditions data, except in the South Coast Air Basin, for which statistics are based on standard conditions data. In addition, state statistics are based on California-approved samplers.
e. State criteria for ensuring that data are sufficiently complete for calculating valid annual averages are more stringent than the national criteria.
f. Mathematical estimate of how many days concentrations would have been measured as higher than the level of the standard had each day been monitored.

SOURCE: CARB 2025b

3.4.3 Regulatory Setting

Air quality within the SJVAB is addressed through the efforts of various federal, state, and local government agencies. These agencies work jointly, as well as individually, to improve air quality through legislation, regulations, planning, policymaking, education, and a variety of programs. The air pollutants of concern and agencies primarily responsible for improving the air quality within the SJVAB and the pertinent regulations are discussed below.

Federal

Clean Air Act and National Ambient Air Quality Standards as Amended (42 USC 7401 et seq.)

The federal Clean Air Act (CAA) requires the U.S. EPA to establish NAAQS to protect public health and the environment. The U.S. EPA has set NAAQS for several criteria air pollutants: ozone, NO_2, SO_2, CO, PM (PM_{10} and $PM_{2.5}$), and lead. The U.S. EPA classifies geographic areas as either attainment or non-attainment for each criteria air pollutant, based on whether the NAAQS have been achieved. Air districts in areas that are designated non-attainment must prepare regional air quality plans, discussed in further detail below, to be included in the overall State Implementation Plan. Areas that have a "maintenance" designation have been non-attainment for a certain criteria pollutant but have been re-designated as attainment. The SJVAB is currently classified as non-attainment for the federal 8-hour ozone and the federal $PM_{2.5}$ standards (SJVAPCD 2025).

State

The California Air Resources Board (CARB) is responsible for establishing and reviewing the CAAQS, compiling the California State Implementation Plan, which includes strategies from all California air districts to meet the CAAQS and NAAQS, and securing approval of that plan from the U.S. EPA, conducting research and planning, and identifying TACs. CARB also regulates mobile sources of emissions in California, such as construction equipment, trucks, and automobiles, and oversees the activities of California's air quality districts, which are organized at the county or regional level. County or regional air quality management districts are primarily responsible for regulating stationary sources at industrial and commercial facilities within their geographic areas and for preparing the air quality plans that are required under the federal CAA and California CAA.

California's Diesel Risk Reduction Plan/Diesel Fuel Regulations

As part of California's Diesel Risk Reduction Plan, CARB has issued numerous regulations to reduce diesel emissions from vehicles and equipment that are already in use. Combining these retrofit regulations with new engine standards for diesel-fueled vehicles and equipment, CARB intended to reduce DPM emissions by 85 percent from year 2000 levels by 2020. California Diesel Fuel Regulations (Title 13, Sections 2281–2285 of the California Code of Regulations [13 CCR Sections 2281–2285]; 17 CCR Section 93114) provide standards for diesel motor vehicle fuel and non-vehicular diesel fuel.

CARB has also adopted a regulation for in-use off-road diesel vehicles that is designed to reduce emissions from diesel-powered construction and mining vehicles by imposing idling limitations on owners, operators, renters, or lessees of off-road diesel vehicles. The regulation requires an operator of

applicable off-road vehicles (self-propelled diesel-fueled vehicles 25 horsepower and up that were not designed to be driven on-road) to limit idling to no more than 5 minutes.

Regional

SJVAPCD Air Quality Plans

The SJVAB is designated as a non-attainment area for the federal one-hour ozone, federal $PM_{2.5}$, state one-hour ozone, state 8-hour ozone, state PM_{10}, and state $PM_{2.5}$ standards. As a result, the SJVAPCD is required to prepare air quality plans under the federal and California CAA to meet the NAAQS and CAAQS for these pollutants. Maintenance plans are required for attainment areas that had previously been designated non-attainment to ensure continued attainment of the standards.

Current air quality plans for the SJVAB include:

- The 2024 Plan for the 2012 PM2.5 Standards (SJVAPCD 2024a).
- The 2007 PM10 Maintenance Plan and Request for Redesignation (SJVAPCD 2007).
- The 2020 Reasonably Available Control Technology (RACT) Demonstration for the 8-Hour Ozone State Implementation Plan (SJVAPCD 2020).
- The 2022 Plan for the 2015 8-Hour Ozone Standard (SJVAPCD 2022).
- The Ozone Contingency Measure State Implementation Plan Revisions for the 2008 and 2015 8-Hours Ozone Standards (SJVAPCD 2024b).

The air quality plans include emissions inventories that identify sources of air pollutants, evaluations for feasibility of implementing potential opportunities to reduce emissions, sophisticated computer modeling to estimate future levels of pollution, and a strategy for how air pollution will be further reduced.

SJVAPCD Rules and Regulations

The proposed project would be located within the jurisdiction of the SJVAPCD, which regulates air pollutant emissions from all sources throughout the SJVAB other than motor vehicles. The SJVAPCD enforces regulations and administers permits governing stationary sources. The following SJVAPCD rules and regulations could apply to the proposed project.

Regulation VIII (Fugitive PM10 Prohibitions)

Regulation VIII contains rules developed pursuant to U.S. EPA guidance for serious PM_{10} non-attainment areas. Rules included under this regulation limit fugitive PM_{10} emissions from the following sources: construction, demolition, excavation, extraction and other earth moving activities, bulk materials handling, carryout and track-out, open areas, paved and unpaved roads, unpaved vehicle/equipment traffic areas, and agricultural sources. **Table 3.4-2** lists the control measures that the proposed project would be required to implement during construction, and O&M activities that involve ground disturbance pursuant to Rule 8021, Construction, Demolition, Excavation, Extraction, and Other Earthmoving Activities. The proposed project would be subject to this regulation and construction activities would be required to comply with measures listed in Table 3.4-2 to reduce fugitive dust emissions.

TABLE 3.4-2
SJVAPCD RULE 8021 MEASURES APPLICABLE TO THE PROPOSED PROJECT

No.	Measure
A1	Pre-water site sufficient to limit visible dust emissions to 20 percent opacity.
A2	Phase work to reduce the amount of disturbed surface area at any one time.
B1	Apply water or chemical/organic stabilizers/suppressants sufficient to limit visible dust emissions to 20 percent opacity; or
B2	Construct and maintain wind barriers sufficient to limit visible dust emissions to 20 percent opacity. If using wind barriers, control measure B1 above shall also be implemented.
B3	Apply water or chemical/organic stabilizers/suppressants to unpaved haul/access roads and unpaved vehicle/equipment traffic areas sufficient to limit visible dust emissions to 20 percent opacity and meet the conditions of a stabilized unpaved road surface.
C1	Restrict vehicular access to the area.
C2	Apply water or chemical/organic stabilizers/suppressants, sufficient to comply with the conditions of a stabilized surface. If an area having 0.5 acre or more of disturbed surface area remains unused for seven or more days, the area must comply with the conditions for a stabilized surface area as defined in Section 3.58 of Rule 8011.
5.3.1	An owner/operator shall limit the speed of vehicles traveling on uncontrolled unpaved access/haul roads within construction sites to a maximum of 15 miles per hour.
5.3.2	An owner/operator shall post speed limit signs that meet state and federal Department of Transportation standards at each construction site's uncontrolled unpaved access/haul road entrance. At a minimum, speed limit signs shall also be posted at least every 500 feet and shall be readable in both directions of travel along uncontrolled unpaved access/haul roads.
5.4.1	Cease outdoor construction, excavation, extraction, and other earthmoving activities that disturb the soil whenever visible dust emissions exceeds 20 percent opacity. Indoor activities such as electrical, plumbing, dry wall installation, painting, and any other activity that does not cause any disturbances to the soil are not subject to this requirement.
5.4.2	Continue operation of water trucks/devices when outdoor construction excavation, extraction, and other earthmoving activities cease, unless unsafe to do so.
6.3.1	An owner/operator shall submit a Dust Control Plan to the Air Pollution Control Officer prior to the start of any construction activity on any site that will include 10 acres or more of disturbed surface area for residential developments, or 5 acres or more of disturbed surface area for non-residential development, or will include moving, depositing, or relocating more than 2,500 cubic yards per day of bulk materials on at least three days. Construction activities shall not commence until the Air Pollution Control Officer has approved or conditionally approved the Dust Control Plan. An owner/operator shall provide written notification to the Air Pollution Control Officer within 10 days prior to the commencement of earthmoving activities via fax or mail. The requirement to submit a dust control plan shall apply to all such activities conducted for residential and non-residential (e.g., commercial, industrial, or institutional) purposes or conducted by any governmental entity.
6.3.3	The Dust Control Plan shall describe all fugitive dust control measures to be implemented before, during, and after any dust generating activity.
6.3.4	A Dust Control Plan shall contain all the [administrative] information described in Section 6.3.6 of this rule. The Air Pollution Control Officer shall approve, disapprove, or conditionally approve the Dust Control Plan within 30 days of plan submittal. A Dust Control Plan is deemed automatically approved if, after 30 days following receipt by the District, the District does not provide any comments to the owner/operator regarding the Dust Control Plan.

SOURCE: SJVAPCD 2004

Rule 4101 (Visibility). Rule 4101 limits the visible plume from any source to 20 percent opacity. The proposed project would be subject to this rule.

Rule 4102 (Nuisance). Rule 4102 prohibits the discharge of air contaminants or other materials in quantities that may cause injury, detriment, nuisance, or annoyance to any considerable number of persons or to the public or which endanger the comfort, repose, health, or safety of any such person or the public. The proposed project would be subject to this rule.

Rule 9510 (Indirect Source Review). Rule 9510 requires certain development projects to mitigate exhaust emissions from construction equipment greater than 50 horsepower to 20 percent below statewide average NO_x emissions and 45 percent below statewide average PM_{10} exhaust emissions. This rule also requires applicants to reduce baseline emissions of NO_x and PM_{10} emissions associated with operations by 33.3 percent and 50 percent respectively over a period of 10 years (SJVAPCD 2017). The proposed project may be subject to the requirements of this rule if it qualifies as a development project under the rule based on a determination made by the SJVAPCD (**Table 3.4-3**).

TABLE 3.4-3
SJVAPCD RULE 9510 MEASURES APPLICABLE TO THE PROPOSED PROJECT

No.	Measure
6.1.1	The exhaust emissions for construction equipment greater than fifty (50) horsepower used or associated with the development project shall be reduced by the following amounts from the statewide average as estimated by CARB:
6.1.1.1	20% of the total NOx emissions, and
6.1.1.2	45% of the total PM10 (or less) exhausts emissions.
6.1.2	An applicant may reduce construction emissions on-site by using less-polluting construction equipment, which can be achieved by utilizing add-on controls, cleaner fuels, or newer lower emitting equipment.

SOURCE: SJVAPCD 2017

In addition to reducing a portion of the development project's impact on air quality through compliance with District Rule 9510, an applicant can further reduce the project's impact on air quality by entering into a "Voluntary Emission Reduction Agreement" (VERA) with SJVAPCD to address the mitigation requirements under CEQA. Under a VERA, the applicant may fully mitigate project emission impacts by providing funds to SJVAPCD, which then are used by SJVAPCD to administer emission reduction projects on behalf of the project proponent (SJVAPCD 2015b). Emission reduction projects funded by the VERA program include replacement of older equipment such as tractors for small-scale agriculture and other small business operations and buses for school districts where equipment replacement would be otherwise prohibitively expensive. To determine emissions reductions credited to the VERA, the SJVAPCD tracks each piece of equipment purchased with the VERA funds and the emissions reductions anticipated from the use of that equipment compared to the replaced older equipment. Those direct reductions are credited to the VERA. No reductions are credited to the VERA until replacement equipment has been purchased with VERA funds.

Local

The proposed project area includes lands in San Joaquin County and the cities of Stockton, Lathrop, and Manteca. Each of these jurisdictions have general plans with goals and policies that address air quality

(see **Table 3.4-4**). Applicable general plan goals and policies are summarized below along with relevant local regulations.

TABLE 3.4-4
APPLICABLE GENERAL PLAN GOALS AND POLICIES – AIR QUALITY

General Plan	Goals and Policies
San Joaquin County	Public Health and Safety Element, Policies PHS 5.7, PHS 5.9, PHS 5.11, PHS 5.13
City of Stockton	Safety Element, Policy SAF-4.1
City of Lathrop	Recreation and Resources, Policies RR-6.3, RR-6.7
City of Manteca	Land Use Element, Policy LU-5e, Policy LU-9a, Resource Conservation, Policies RC-5.3, RC-5.5

SOURCES: City of Lathrop 2022; City of Manteca 2024; City of Stockton 2018; San Joaquin County 2016

San Joaquin County

San Joaquin County General Plan

The San Joaquin County General Plan includes goals and policies that are aimed at improving local and regional air quality through the implementation of best management practices.

City of Stockton

Envision Stockton 2040 General Plan

The City of Stockton General Plan includes goals and policies that address air quality impacts and aim to reduce emissions from proposed land use projects.

City of Lathrop

City of Lathrop General Plan

The City of Lathrop General Plan includes goals and policies that address air quality impacts and emission standards and aim to reduce the impacts through mitigation and management strategies.

City of Manteca

City of Manteca General Plan

The City of Manteca General Plan includes goals and policies that address the health and welfare of city residents by promoting development projects that are in compliance with air quality standards and regulations with efforts to improves overall air quality.

3.4.4 Impacts and Mitigation Measures

Methods of Analysis

Flood Risk Reduction Components and Restoration Sites 13, 14, and 16

The construction of the flood risk reduction components and ecosystem restoration features at Sites 13, 14, and 16 would result in emissions of the non-attainment pollutants: (ROG and NO_x, which are ozone precursors, and particulate matter (PM_{10} and $PM_{2.5}$). These pollutant emissions would be generated in the

form of fugitive dust (PM_{10} and $PM_{2.5}$) and in the form of exhaust by construction equipment, on-road vehicle trips of haul trucks for delivering construction material, and construction worker commutes to and from the proposed project area.

Construction-related criteria air pollutant emissions from equipment and on-road vehicle exhaust were estimated using CalEEMod (version 2022.1.1.29). There are two construction schedule scenarios proposed: one with a 3-year timeframe and one with a 5-year timeframe. Project emissions were based on the 5-year timeframe, as it is a more reasonable project timeline and accounts for resource availability, seasonality of construction to account for flood season, and the need for certain proposed project components. Construction activities associated with the flood risk reduction components and ecosystem restoration features at Sites 13, 14, and 16 would occur in proximity to existing sensitive receptors, which could pose a health risk.

Construction Emissions

Emissions from the construction of the proposed project would be generated primarily from heavy-duty equipment, which includes equipment such as excavators, cranes, dozers, and rollers. Construction activities associated with the flood risk reduction components include vegetation clearing and grubbing, and demolition; seepage berm draining; cutoff wall degrade and fill; erosion repairs; pipe rehabilitation; site cleanup, seeding, and demobilization. Construction of ecosystem restoration features at Sites 13, 14, and 16 would include clearing and grubbing, site grading, berm removal, site restoration and revegetation, and access road restoration. Construction activities would occur along the levee alignment, in the staging areas, and in proposed ecosystem restoration at Sites 13, 14, and 16. Proposed project flood risk reduction components and associated Project Component IDs are shown on Figure 2-2 and summarized in Table 2-1 in Chapter 2, *Project Description*. Potential ecosystem restoration sites and associated restoration site numbers are shown on Figure 2-3 and summarized Table 2-2. Of the potential ecosystem restoration sites, only Sites 13, 14, and 16 are evaluated at a project level and modeled in this Draft EIR.

Construction equipment associated with each activity for the flood risk reduction components and sites 13, 14, and 16 can be found in Table 2-8 in Chapter 2, *Project Description*. Emissions were modeled for each type of activity, then summarized as total emissions for each year of construction. Criteria air pollutant and TAC emissions from equipment and on-road vehicle exhaust were estimated using CalEEMod (version 2022.1.1.29). Inputs to the model and modeling output files are included in Appendix B to this Draft EIR. Emissions from on-site equipment were modeled for the construction activities associated with each proposed flood risk reduction component and the ecosystem restoration features at Sites 13, 14, and 16, as well as worker, haul and vendor truck trips associated with construction activities.

During each of the 5 years of construction, a four-month construction season was assumed from July 1 through October 31 for all flood risk reduction components except for Project Component IDs 12 and 15 in Table 2-1 (proposed levee raise and dryland levee extension to Tinnin Road with seepage berm) to account for the flood season within the proposed project area. Project Component IDs 12 and 15 do not include work on a federal levee within the State Plan of Flood Control and therefore do not have to cease construction during flood season. Construction of Sites 13, 14, and 16 in Table 2-2 would occur in year one, conservatively assumed to be 2026 for this analysis. Total emissions for each activity type were divided by the number of construction days in the year to determine average annual emissions. SJVAPCD

rules and regulations require the implementation of measures listed in Table 3.4-2 as part of the proposed project to reduce fugitive dust impacts.

SJVAPCD's GAMAQI is an advisory document that provides lead agencies, consultants, and project proponents with procedures for assessing air quality impacts and preparing environmental review documents (SJVAPCD 2015a). The document recommends thresholds for use in determining whether projects would have significant adverse environmental impacts, identifies methods for predicting project emissions and impacts, and identifies measures that can be used to avoid or reduce air quality impacts. The analysis used methodology and guidance from the GAMAQI.

Operations and Maintenance Emissions

Operational activities would include routine maintenance involving a few light-duty pickup trucks and the application of herbicides for invasive plant control. Emissions from these would be minimal and would decrease in frequency and intensity as the sites become more self-sustaining over time. As there will be minimal activity in the operational lifetime of the proposed project, air pollutant emissions resulting from operations have not been quantified.

Health Risk Assessment

The proposed project would result in a short-term increase of TAC emissions over the 5 years of construction. The main TAC of concern for the proposed project is diesel exhaust, a complex mixture of chemicals and particulate matter identified by the CARB as a TAC with potential cancer and chronic non-cancer effects. As DPM is the TAC emitted in the largest quantity, it is used as a surrogate for other TACs within diesel exhaust. The operation of off-road construction equipment (e.g., excavators, loaders, cranes, graders) and on-road diesel-fueled heavy-duty vehicles would emit DPM.

A health risk assessment (HRA) was conducted to evaluate the health risk impacts of DPM emissions generated by construction equipment and vehicles associated with the proposed project on existing sensitive receptors located in the vicinity of the proposed project alignment and construction areas. Though other exposure pathways exist (ingestion and dermal contact), the inhalation pathway is the dominant exposure pathway from DPM for both cancer risk and chronic non-cancer health effects. Consequently, the HRA only evaluated the inhalation cancer and chronic non-cancer effects of inhaling DPM.

The HRA was conducted using guidelines from SJVAPCD and the California Environmental Protection Agency's Office of Environmental Health Hazard Assessment (OEHHA), and estimated cancer risks and chronic health hazards from proposed project-related DPM emissions at nearby off-site residences located within 1,000 feet of the proposed project area, the zone of influence within which health risk impacts are more pronounced. U.S. EPA's AMS/EPA Regulatory Model (AERMOD) dispersion model (version 21112) was used to predict concentrations at receptor locations defined by a Cartesian coordinate system using:

- Site-specific terrain and elevation data imported from the U.S. Geological Survey's National Elevation Dataset (USGS 2018, with ⅓ arc-second resolution and a horizon datum of the North American Datum of 1983.
- Five years (2013–2017) of meteorological data from the Stockton Metropolitan Airport station.

A conservative representation of the on-site construction equipment was modeled as a line area source. In addition, the access routes used by construction vehicles to deliver materials and equipment and transport off-haul material were modeled as line area sources. The modeling parameters used are as follows:

- On-site Construction: The construction areas for Project Component IDs 1 through 12 and 15 (see Table 2-1) were modeled as line area sources with;
  - Release height of 5 meters for construction equipment exhaust;
  - Initial vertical dimension of 1.4 meters;
- On-site Construction: The construction areas for Sites 13, 14, and 16 (see Table 2-2) were modeled as polygon area sources with;
  - Release height of 5 meters for construction equipment exhaust;
  - Initial vertical dimension of 1.4 meters;
- Off-site Construction Truck Routes: Each truck route was modeled as a line area source with dimensions overlaying the width of the roadway. The proposed project alignment would be accessed via multiple truck routes; however, only those truck routes with sensitive receptors within 1,000 feet of the proposed project alignment were modeled with
  - Release height of 2.55 meters for truck exhaust;
  - Initial vertical dimension of 2.37 meters;
- Receptor flagpole height of 1.5 meters (ground-level receptor at breathing height)

The sources were modeled with an emission rate of one gram per second to obtain a dispersion factor (unit concentration) at each receptor location. The DPM concentrations at receptors were calculated using the dispersion factors and the annual PM_{10} exhaust emission rates derived from the CalEEMod runs. Exhaust PM_{10} from diesel-fueled vehicles and equipment is conservatively used as a surrogate for DPM emissions.

Finally, the DPM concentrations at the receptors calculated for each construction year were applied to the unit risk methodologies specified by OEHHA to calculate the potential increase in lifetime cancer risk from activities over the duration of construction (OEHHA 2015). The Maximally Exposed Individual Receptor (MEIR) was identified for the proposed project and the estimated increase in lifetime cancer risk was compared to SJVAPCD's project-level threshold of 20 in 1 million.

Non-cancer health hazards for chronic diseases are expressed in terms of a Hazard Index, a ratio of TAC concentration to the reference exposure level—the level below which no adverse health effects are expected, even for sensitive individuals. OEHHA has recommended an ambient concentration of 5 $\mu g/m^3$ as the chronic inhalation reference exposure level for DPM exhaust. The maximum chronic Hazard Index, calculated as the ratio of maximum annual DPM concentration to the reference exposure level, was compared to SJVAPCD's threshold of 1.0 to determine significance. No short-term, acute relative exposure values for DPM are established and regulated, and, therefore, were not addressed in the HRA. OEHHA equations and the health impact calculations are detailed in Appendix B to this Draft EIR.

As the proposed project would not include any operational sources of TACs, operational health risk impacts have been addressed qualitatively.

Other Multi-benefit Components

The proposed project would also include implementation of other multi-benefit components including additional recreation features along the levee system. These other multi-benefit components would require construction activity similar to that of the flood risk reduction components and the ecosystem restoration sites and would cover approximately 720 acres within the proposed project area. Construction activity will require diesel-powered equipment such as haul trucks, graders, and loaders. Construction equipment and associated heavy-duty truck traffic generate criteria air pollutants and diesel exhaust, which is a known TAC. Construction exhaust emissions may pose health risks for sensitive receptors. Impacts of the multi-benefit components were evaluated on a program level.

Thresholds of Significance

In accordance with Appendix G of the CEQA Guidelines, an impact is considered significant if the proposed project would:

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

For the evaluation of significance, the GAMAQI has established emissions-based thresholds of significance for criteria air pollutants (SJVAPCD 2015a), which are shown in **Table 3.4-5**. The SJVAPCD has the same significance thresholds for construction and operational emissions and recommends evaluating impact significance for these categories separately. These thresholds of significance are based on a calendar-year basis, although construction emissions are assessed on a rolling 12-month period.

TABLE 3.4-5
SJVAPCD AIR QUALITY THRESHOLDS OF SIGNIFICANCE – CRITERIA AIR POLLUTANTS

Pollutant	Construction Emissions (tons per year)	Operational Emissions (tons per year)
CO	100	100
NO_x	10	10
ROG	10	10
SO_x	27	27
PM_{10}	15	15
$PM_{2.5}$	15	15

SOURCE: SJVAPCD 2015c

These thresholds of significance are based on the SJVAPCD's New Source Review (NSR) offset requirements for stationary sources and are applicable to both stationary and non-stationary emissions sources, including project-level sources of criteria air pollutants (SJVAPCD 2015a).

If construction emissions from the proposed project exceed 100 pounds per day even after any and all enforceable mitigation measures, SJVAPCD recommends that an ambient air quality analysis be performed.

In addition, the SJVAPCD has established thresholds of significance for combined TAC emissions from the operations of both permitted and non-permitted sources (SJVAPCD 2015a). Projects that have the potential to expose the public to TACs in excess of the following thresholds would be considered to have a significant air quality impact:

- Probability of contracting cancer for the maximally exposed individual equals or exceeds 20 in 1 million people.
- Hazard Index for acute and chronic non-carcinogenic TACs equals or exceeds 1 for the maximally exposed individual.

The SJVAPCD does not have health risk thresholds for construction activities. Therefore, the operational thresholds have been used for the evaluation of construction health risk impacts in this analysis.

Impacts and Mitigation Measures

Table 3.4-6 summarizes the impact conclusions presented in this section.

TABLE 3.4-6
SUMMARY OF IMPACT CONCLUSIONS – AIR QUALITY

Impact Statement	Flood Risk Reduction Components	Restoration Sites 13, 14, and 16	Multi-Benefit Components
3.4-1: Implementation of the proposed project could conflict or obstruct the implementation of air quality plans adopted by the SJVAPCD and any other applicable air quality plans.	LSM	LSM	LSM
3.4-2: Implementation of the proposed project could result in an increase of criteria pollutants for which the project region is non-attainment under an applicable federal or state ambient air quality standard.	LSM	LSM	LSM
3.4-3: Implementation of the proposed project could result in health risk impacts from exposure of sensitive receptors to substantial pollutant concentrations.	LSM	LSM	LSM
3.4-4: Implementation of the proposed project could result in emissions (such as those leading to odors) that would affect a substantial number of people.	LS	LS	LS
3.4-5: Implementation of the proposed project could expose workers and sensitive receptors to the risk of Valley Fever.	LS	LS	LS

NOTES: LS = Less than Significant; LSM = Less than Significant with Mitigation

Impact 3.4-1: Implementation of the proposed project could conflict or obstruct the implementation of air quality plans adopted by the SJVAPCD and any other applicable air quality plans.

As discussed previously, the SJVAB is currently designated as a non-attainment area for federal and state standards with regard to $PM_{2.5}$ and ozone. It is also designated as a non-attainment area for state PM_{10} standards. The SJVAPCD is responsible for implementing programs and regulations required by the federal CAA and the California CAA within the SJVAB. In this capacity, the SJVAPCD has prepared plans to attain federal and state ambient air quality standards for which it has been designated as non-attainment including the 2024 Plan for the 2012 $PM_{2.5}$ standards; 2007 PM_{10} Maintenance Plan and Request for Redesignation; 2020 Reasonably Available Control Technology (RACT) Demonstration for the 8-Hour Ozone State Implementation Plan; the 2022 Plan for the 2015 8-Hour Ozone Standard; and the Ozone Contingency Measure State Implementation Plan Revisions for the 2008 and 2015 8-Hours Ozone Standards.

Based on the GAMAQI, the proposed project's air quality impacts would be considered significant if emissions generated exceed the thresholds of significance presented in the GAMAQI and listed above. The GAMAQI states that "the District's [SJVAPCD's] attainment plans demonstrate that project-specific emissions below the District's [SJVAPCD's] offset thresholds would have a less-than-significant impact on air quality. Thus, the [SJVAPCD's] concludes that use of NSR Offset thresholds as thresholds of significance for criteria air pollutants under CCR Section 15064.7 is an appropriate and effective means of promoting consistency in significance determinations within the environmental review process" (SJVAPCD 2015a). Therefore, projects with emissions below the thresholds of significance for criteria pollutants would be determined to not conflict with or obstruct implementation of SJVAPCD's air quality plans.

Flood Risk Reduction Components and Restoration Sites 13, 14, and 16

Construction

Emissions from the construction of the flood risk reduction components and the ecosystem restoration sites would be generated primarily from heavy-duty equipment, which includes equipment such as excavators, cranes, dozers, and rollers. Construction activities associated with the flood risk reduction components include vegetation clearing and grubbing, and demolition; seepage berm draining; cutoff wall degrade and fill; erosion repairs; pipe rehabilitation; site cleanup, seeding, and demobilization. Construction of ecosystem restoration features at Sites 13, 14, and 16 would include clearing and grubbing, site grading, berm removal, site restoration and revegetation, and access road restoration.

As shown in Table 3.4-9 under Impact 3.4-2, the total emissions generated from construction activities associated with the flood risk reduction components and the ecosystem restoration features at Sites 13, 14, and 16 would exceed the SJVAPCD's threshold for NO_x emissions in construction year 2026 and 2027. Consequently, construction activities would generate emissions that conflict with or obstruct the implementation of SJVAPCD's air quality plans, which would be a **significant** impact.

Operations and Maintenance

Regular O&M activities would consist of inspections, weed abatement, removal of encroachments and high-hazard vegetation to ensure levee integrity, replacement and re-working of displaced or launched revetment following large flood events, general cleanup maintenance, and adequate levee access along the levee toe road. Activities would include routine maintenance involving a few light-duty pickup trucks and

the application of herbicides for invasive plant control. These activities would only be required on an intermittent basis and would result in a minor increase in motor vehicle trips.

As discussed under Impact 3.4-2 below, the flood risk reduction components and the ecosystem restoration sites would not generate emissions from O&M that would exceed the SJVAPCD thresholds of significance therefore, the flood risk reduction components and ecosystem restoration at Sites 13, 14, and 16 would not conflict with or obstruct the implementation of the SJVAPCD's air quality plans and this impact would be **less than significant**.

Other Multi-benefit Components

Construction

The proposed project includes implementation of other multi-benefit components including additional ecosystem restoration sites, and recreation features along the levee system. Construction of these components would not require unusual or excessive construction and activities would be at most similar to or lesser than the efforts for the construction of the flood risk reduction components and ecosystem restoration at Sites 13, 14, and 16. As a result, there is potential for emissions generated by construction activities associated with the other multi-benefit components of the proposed project to exceed SJVAPCD significance thresholds, primarily for NO_x emissions, resulting in a **significant** impact.

Operations and Maintenance

Activities associated with the O&M of the additional ecosystem restoration sites, and recreation features along the levee system would be similar to or lesser than the efforts for the O&M of the flood risk reduction components and ecosystem restoration sites. Therefore, emissions would not exceed SJVAPCD thresholds of significance and would not conflict with or obstruct the implementation of SJVAPCD's air quality plans, and this impact would be **less than significant**.

Mitigation Measures

Mitigation Measure 3.4-1 (FRR/RS/MB):

Before starting onsite construction activities, construction contractors shall be required to submit a Construction Emissions Minimization Plan (Plan) to the SJAFCA for review and approval. The Plan shall state, in reasonable detail, how the contractor will achieve fleet reduction of 20 percent in NOx emissions over the statewide fleet average. The Plan shall rely on any combination of the following measures to meet this requirement:

1. *Engine Requirements.* All off-road equipment greater than 25 horsepower and operating for more than 20 total hours over the entire duration of construction activities shall meet the following requirements:

    a. Portable equipment, such as generators, shall be powered by grid electricity. If grid electricity is not available, propane or natural gas generators shall be used

    b. Electric engines shall be used for all equipment that is commercially available (i.e., inventory is available for the contractor team to rent or buy at the time needed based on the construction schedule) as plug-in or battery-electric equipment during each construction phase and activity.

    c. Engines that cannot be electrically powered must meet or exceed either U.S. EPA or CARB Tier 4 Final off-road emission standards.

d. Engines shall be fueled with alternative fuels as commercially available during each construction phase and activity. This may include natural gas, propane, hydrogen fuel cell, and electricity.

e. Any other control technology available in the future may be included in the Plan as substitutions for the above items a–d, provided that it can be documented that (1) the technology would result in comparable NO_X emissions reductions and (2) it would not increase other pollutant emissions or result in other additional impacts, such as noise. This may include new alternative fuels or engine technology for off-road equipment (such as electric or hydrogen fuel cell equipment) that is not available as of 2022.

2. *Emissions Estimates.* The Plan shall include estimates of the construction timeline by phase, with a description of each piece of off-road equipment required for every construction phase. The description may include, but is not limited to: equipment type, equipment manufacturer, equipment identification number, engine model year, engine certification (Tier rating), horsepower, engine serial number, expected fuel type (e.g., diesel, gasoline, electric, propane, natural gas), and hours of operation.

   The Plan shall also include an updated calculation of expected annual construction NO_X emissions. The Plan shall document the project's performance in relation to the threshold of 10 tons of NO_X per year.

3. *Reporting.* After start of construction activities, the SJAFCA shall submit biannual reports to the SJAFCA documenting compliance with the Plan. The biannual reports shall include a calculation of NO_X emissions for all construction activities completed prior to the biannual report for all phases of construction completed. Emissions shall be reported in tons per year for each calendar year.

   Within six months of the completion of construction activities, SJAFCA shall submit to the SJAFCA a final report summarizing construction activities. The final report shall indicate the start and end dates and duration of each construction phase (or Reach and Activity). For each phase, the report shall include detailed information required above. The report shall also include a final inventory of NO_X emissions for all construction activities completed. Emissions shall be reported in average daily pounds (for each construction period during each calendar year) and total tons per calendar year.

4. *Certification Statement and Onsite Requirements.* Prior to commencing construction activities, SJAFCA shall certify (1) compliance with the Plan, and (2) all applicable requirements of the Plan have been incorporated into contract specifications.

Significance After Mitigation: Implementation of Mitigation Measure 3.4-1 would reduce construction emissions associated with the proposed project to below the SJVAPCD significance thresholds by implementing an emissions minimization plan using a combination of electric, alternative fueled and construction equipment meeting Tier 4 Final emissions standards. This would reduce impacts of the proposed project associated with consistency with SJVAPCD air quality plans to a **less-than-significant level**.

Impact 3.4-2: Implementation of the proposed project could result in an increase of criteria pollutants for which the project region is non-attainment under an applicable federal or state ambient air quality standard.

Flood Risk Reduction Components and Restoration Sites 13, 14, and 16

Construction

Emissions from construction activities associated with the flood risk reduction components and the ecosystem restoration features at Sites 13, 14, and 16 were estimated as described above, for each year of activity. Results of the construction emissions modeling are summarized in **Tables 3.4-7, 3.4-8, and 3.4-9** and are compared to the SJVAPCD thresholds. These emissions incorporate the reduction in PM_{10} and $PM_{2.5}$ from the quantifiable measures required by SJVAPCD Regulation VIII during construction to help reduce fugitive dust emissions listed in Table 3.4-2. The modeling estimates that these dust control measures would reduce fugitive emissions by approximately 55 percent. Furthermore, the proposed project may be subject to the requirements of Indirect Source Review (ISR) Rule 9510, which would require a reduction in NO_x emissions by 20 percent, and PM_{10} emissions by 45 percent. Table 3.4-9 shows that the total emissions that would be generated from the construction of the proposed project without implementation of emission reduction requirements in ISR Rule 9510. As shown in Table 3.4-9, NO_x emissions in 2026 and 2027 would exceed the SJVAPCD construction threshold of 10 tons per year. Emissions of other pollutants would be below the applicable SJVAPCD thresholds of significance for criteria pollutants. Therefore, this impact would be **significant**.

TABLE 3.4-7
CONSTRUCTION EMISSIONS – FLOOD RISK REDUCTION COMPONENTS (TONS PER YEAR)

Construction Year	ROG	NO_x	NO_x with MM 3.4-1	PM_{10}	$PM_{2.5}$
2026	1.43	15.3	4.9	2.88	1.26
2027	1.01	10.8	3.89	2.28	0.99
2028	1.06	9.93	2.83	2.02	0.90
2029	0.41	3.39	1.60	0.80	0.34
2030	0.59	5.46	2.03	1.08	0.45

SOURCE: Appendix B to this Draft EIR

TABLE 3.4-8
ERS CONSTRUCTION EMISSIONS – ECOSYSTEM RESTORATION SITES 13, 14, AND 16 (TONS PER YEAR)

Construction Year	ROG	NO_x	NO_x with MM 3.4-1	PM_{10}	$PM_{2.5}$
2026	1.25	11.6	2.63	2.16	1.09

SOURCE: Appendix B

TABLE 3.4-9
TOTAL PROJECT EMISSIONS SUMMARY (TONS PER YEAR)

Construction Year	ROG	NO_x	NO_x with MM 3.4-1	PM_{10}	$PM_{2.5}$
2026	2.67	**26.9**	7.52	5.04	2.35
2027	1.01	**10.8**	3.89	2.28	0.99
2028	1.06	9.93	2.83	2.02	0.90
2029	0.41	3.39	1.60	0.80	0.34
2030	0.59	5.46	2.03	1.08	0.45
SJVAPCD Thresholds	10	10	10	15	15
Exceeds threshold?	No		No	No	No

NOTES: Values in **bold** show exceedance of thresholds
SOURCE: Appendix B to this Draft EIR

Operations and Maintenance

Regular O&M activities would consist of inspections, weed abatement, removal of encroachments and high-hazard vegetation to ensure levee integrity, replacement and re-working of displaced or launched revetment following large flood events, general cleanup maintenance, and adequate levee access along the levee toe road. O&M inspections would consist of a patrol vehicle traveling along the levee and small machinery for weed abatement such as mowers and weed whackers/trimmers. These activities would only be required on an intermittent basis and would result in a minor increase in motor vehicle trips. As a practical matter, these vehicle trips would result in negligible increases in air pollutant emissions. Therefore, this operational impact would be **less than significant**.

Other Multi-benefit Components

Construction Activities

The proposed project includes implementation of other multi-benefit components including additional ecosystem restoration sites, and recreation features along the levee system. Construction activities would include the use of heavy-duty equipment such as scrapers, bulldozers, excavators, and loaders. Where feasible, cut material would be repurposed on-site, and would not require as many haul trucks as needed for the flood risk reduction components or the ecosystem restoration sites. In general, the multi-benefit component efforts toward restoration and the recreational features would be similar to or lesser than the efforts for the construction of the flood risk reduction components and ecosystem restoration at Sites 13, 14, and 16, and would not utilize as many haul trucks. However, without a quantification of emissions, it cannot be determined with certainty that emissions would not exceed the SJVAPCD thresholds. Therefore, the impact of emissions associated with the multi-benefit components would be **significant**.

Operations and Maintenance

While conservation management actions could require O&M activities to inspect project features and/or evaluate program effectiveness, these activities would only be required on an intermittent basis and would result in a minor increase in motor vehicle trips. Once operational, recreational features such as path alone

the top of the levee would not introduce any new sources of air pollutant emissions. Therefore, the vehicle trips associated with any O&M would result in a negligible increase in air pollutant emissions and would have a **less-than-significant** impact.

Mitigation Measures

Mitigation Measure (FRR/RS/MB): Implement Mitigation Measure 3.4-1.

Significance After Mitigation: Mitigation Measure 3.4-1 would reduce construction emissions associated with the proposed project to below SJVAPCD significance thresholds by requiring implementation of an emissions minimization plan that use a combination of electric, alternative fueled and construction equipment meeting Tier 4 Final emissions standards. This would ensure that the proposed project's impact with respect to generation of criteria air pollutants for which the project region is non-attainment under an applicable federal or state ambient air quality standard would be mitigated to a **less-than-significant level**.

Impact 3.4-3: Implementation of the proposed project could result in health risk impacts from exposure of sensitive receptors to substantial pollutant concentrations.

Flood Risk Reduction Components

Construction

Construction activities associated with the flood risk reduction components include vegetation clearing and grubbing, and demolition; seepage berm draining; cutoff wall degrade and fill; erosion repairs; pipe rehabilitation; site cleanup, seeding, and demobilization. Emissions from the construction of the flood risk reduction components would be generated primarily from heavy-duty equipment, which includes equipment such as excavators, cranes, dozers, and rollers. **Table 3.4-10** presents the health risks at the MEIR from exposure to uncontrolled DPM emissions from construction activities for the flood risk reduction components. The table includes lifetime excess cancer risk (chances per million) and the chronic Hazard Index at the MEIR and compares them to the respective SJVAPCD thresholds.

TABLE 3.4-10
MAXIMUM CONSTRUCTION HEALTH RISKS – FLOOD RISK REDUCTION COMPONENTS

Receptor	Lifetime Excess Cancer Risk (chances per million)	Chronic Hazard Index (unitless)
Resident MEIR – Infant	16.3	0.21
SJVAPCD Threshold	20	1.0
Significant?	No	No

NOTES: MEIR = Maximally Exposed Individual Receptor; SJVAPCD = San Joaquin Valley Air Pollution Control District

SOURCE: Appendix B of this Draft EIR

As shown in the table, the increase in lifetime cancer risk and non-cancer chronic hazard index would be less than the respective SJVAPCD thresholds. Thus, the impact related to exposure of sensitive receptors to substantial concentrations of DPM emissions during the construction of the proposed flood risk reduction components would be **less than significant**.

Operations and Maintenance

Regular O&M activities of the flood risk reduction components of the proposed project would consist of inspections, weed abatement, removal of encroachments and high-hazard vegetation to ensure levee integrity, replacement and re-working of displaced or launched revetment following large flood events, and adequate levee access along the levee toe road. O&M activities would require similar equipment as those used under current conditions. O&M inspections would consist of a patrol vehicle traveling along the levee and small machinery for weed abatement such as mowers and weed whackers/trimmers. These activities would only occur periodically, as under existing conditions, and would not result in substantial generation of DPM emissions. Given the low level of emissions generated and the intermittent nature of O&M activities, health risk impacts to sensitive receptors in the vicinity would be **less than significant**.

Restoration Sites 13, 14, and 16

Construction

Construction activities associated with the ecosystem restoration sites would be similar to activities associated with construction of flood risk reduction components. Emissions would be generated primarily from heavy-duty equipment, which includes equipment such as excavators, cranes, dozers, and rollers. **Table 3.4-11** presents the health risks at the MEIR from exposure to uncontrolled DPM emissions from proposed ecosystem restoration site construction activities. The table includes lifetime excess cancer risk (chances per million) and the chronic Hazard Index at the MEIR and compares them to the respective SJVAPCD thresholds.

As shown in the table, the increase in lifetime cancer risk and non-cancer chronic hazard index associated with construction of Sites 13, 14, and 16 would be less than the respective SJVAPCD thresholds. Thus, the impact related to exposure of sensitive receptors to substantial concentrations of DPM emissions during the construction of the proposed ecosystem restoration sites would be **less than significant**.

TABLE 3.4-11
MAXIMUM CONSTRUCTION HEALTH RISKS – ECOSYSTEM RESTORATION SITES 13, 14, AND 16

Receptor	Lifetime Excess Cancer Risk (chances per million)	Chronic Hazard Index (unitless)
Resident MEIR – Infant	3.16	0.01
SJVAPCD Threshold	20	1.0
Significant?	No	No

NOTES: MEIR = Maximally Exposed Individual Receptor; SJVAPCD = San Joaquin Valley Air Pollution Control District

SOURCE: Appendix B of this Draft EIR

Operations and Maintenance

Regular O&M activities of the ecosystem restoration sites of the proposed project would consist of general cleanup maintenance of the sites and would include picking up trash, vandalism repairs, and the removal of used planting accessories. O&M activities would require similar equipment as those used under current conditions. O&M inspections would consist of a patrol vehicle traveling along the levee and small machinery for weed abatement such as mowers and weed whackers/trimmers. These activities

would only occur periodically, as under existing conditions, and would not result in substantial generation of DPM emissions. Given the low level of emissions generated and the intermittent nature of O&M activities, health risk impacts to sensitive receptors in the vicinity would be **less than significant**.

Other Multi-benefit Components

Construction

The proposed project also includes implementation of other multi-benefit components including additional ecosystem restoration sites, and recreation features along the levee system. Construction activities would involve regrading, revegetation, and other similar actions to restore or enhance natural and recreational values within the proposed project area. Based on data provided in Chapter 2, *Project Description*, earthwork volumes at most sites where regrading is involved are anticipated to be balanced on-site thereby generating no haul truck trips. For sites where it is not feasible to balance cut and fill or where excess cut material may be beneficially reused off-site, excess fill would be removed using haul trucks with end-dump trailers or similar equipment. The multi-benefit components would develop recreational features, including recreational paths, along the top of levee and landside toe and improve safety and access to the proposed project area.

Construction activities would generate DPM emissions from the use of construction equipment and diesel-fueled vehicles. Construction activities would use similar equipment as those used for the flood risk reduction components and the intensity of construction would be similar if not lower. In addition, only two of the 10 identified sites are located adjacent to sensitive receptors. Therefore, health risk impacts from exposure of sensitive receptors to DPM emissions generated by construction activities associated with the multi-benefit components are likely to be similar to the health risk impact of flood risk reduction components. This impact would be **less than significant**.

Operations and Maintenance

Ecosystem restoration sites would require ongoing maintenance following construction including temporary irrigation of new plants, focused application of herbicides to control invasive plants, weeding with hand tools, and erosion control. Over time frequency and intensity of maintenance activities is expected to decrease as the sites become more self-sustaining with removal of irrigation and less frequent activities to control invasive plants. These activities would require minimal use of construction equipment and generate no additional truck trips. There would be no new operational sources of TACs introduced to the sites by the multi-benefit components of the proposed project. Therefore, this impact would be **less than significant**.

Health Impacts of Criteria Air Pollutants – All Project Components

In a 2018 decision (*Sierra Club v. County of Fresno*, 6 Cal.5th 502, also referred to as *Friant Ranch*), the California Supreme Court held that CEQA requires disclosure of the potential for a project's emissions to affect human health when the project's criteria air pollutant emissions exceed applicable thresholds and contribute considerably to a significant cumulative impact. The decision requires EIRs to either: (1) make a "reasonable effort" to substantively connect the estimated amount of a given air pollutant a project will

produce and the health effects associated with that pollutant, or (2) explain why such an analysis is infeasible.[1]

The Court also clarified that CEQA "does not mandate" that EIRs include "an in-depth risk assessment" that provides "a detailed comprehensive analysis … to evaluate and predict the dispersion of hazardous substances in the environment and the potential for exposure of human populations and to assess and quantify both the individual and population wide health risks associated with those levels of exposure."[2]

The health effects associated with emissions of criteria pollutants and ozone precursors are described under subsection 3.4.2, *Environmental Setting*. The main health concern of exposure to ground-level ozone formed from ROG and NO_x, the ozone precursors, is the effect on the respiratory system, especially on lung function. As discussed above, the proposed project would generate criteria pollutant emissions of ROG, NO_x, and particulate matter during construction and operation.

Typically, the potential health impacts of a particular criteria pollutant are analyzed by air districts on a regional scale in establishing ambient air quality standards. Because SJVAPCD's attainment plans and supporting air quality modeling tools are regional in nature, they are not typically used to evaluate the impacts of individual projects on ambient concentrations of criteria air pollutants, or to correlate those impacts to potential resultant effects on public health. The complex nature of dispersion of criteria air pollutants and the complex atmospheric chemistry (especially in the case of ozone and fine particulate matter) limit the usefulness of applying the available models to predict health impacts on a project level. The accumulation and dispersion of air pollutant emissions within an air basin depends on the size and distribution of emission sources in the region and meteorological factors such as wind, sunlight, temperature, humidity, rainfall, atmospheric pressure, and topography. Various air districts in California agree that it is difficult to quantify health impacts of criteria air pollutants of individual projects and that the specific tools and methods to use are still under development.

The ambient air quality standards adopted at the state and federal levels are health protective standards. Air districts such as the SJVAPCD have established thresholds of significance for project-level emissions at levels to ensure continued progress toward the attainment of these ambient air quality standards. Hence, projects that generate less than the significance thresholds can be considered to not cause exceedances of the standards or associated health impacts. As discussed above, NO_x emissions in 2026 and 2027 would exceed the SJVAPCD construction threshold of 10 tons per year. Emissions of other pollutants would be below the applicable SJVAPCD thresholds of significance for criteria pollutants. Therefore, this impact would be **significant**.

Mitigation Measures

Mitigation Measure (FRR/RS/MB): Implement Mitigation Measure 3.4-1.

Significance After Mitigation: Mitigation Measure 3.4-1 would reduce construction emissions associated with the proposed project to below SJVAPCD significance thresholds by requiring implementation of an emissions minimization plan that use a combination of electric, alternative fueled and construction equipment meeting Tier 4 Final emissions standards. This would ensure

1 *Sierra Club v. County of Fresno*, 6 Cal.5th at 510–511.
2 *Sierra Club V. County of Fresno*, 6 Cal.5th at 521.

that the proposed project's impact with respect to health risk impacts would be mitigated to a **less-than-significant level**.

Impact 3.4-4: Implementation of the proposed project could result in emissions (such as those leading to odors) that would affect a substantial number of people.

Flood Risk Reduction Components, Restoration Sites 13, 14, and 16

Construction

Activities associated with the construction of the flood risk reduction components and the ecosystem restoration sites may create temporary odors from combustion of diesel fuel in equipment engines; however, these types of odors are in general not offensive. In addition, the proposed flood risk reduction components are primarily linear in nature and construction activities would not occur in one location for an extended period of time and would cease at the conclusion of construction. Land uses that are commonly identified as odor sources include wastewater treatment facilities, sanitary landfills, transfer stations, composting facilities, petroleum refineries, asphalt batch plants, chemical manufacturing, fiberglass manufacturing, painting/coating operations, food processing facilities, feed lots/dairies, and rendering plants. None of these land uses would be developed by the proposed project; therefore, the impact would be **less than significant**.

Operations and Maintenance

O&M inspections and general maintenance would consist of a patrol vehicle traveling along the levee and small machinery for weed abatement such as mowers and weed whackers/trimmers. These activities would only be required on an intermittent basis and would result in a minor increase in motor vehicle trips. Activities would not create odors and the land use would not fall under any category that is identified as an odor source. Therefore, the operational impact would be **less than significant**.

Other Multi-benefit Components

Construction

The proposed multi-benefit components may also create temporary construction odors from the combustion of diesel fuel from the required equipment. However, construction would not occur in one location for an extended period of time and would cease at the conclusion of construction. Neither the ecosystem restoration nor the recreational features are considered to be odor sources by the SJVAPCD. The impact would be **less than significant**.

Operations and Maintenance

While conservation management actions could require O&M activities to inspect project features and/or evaluate program effectiveness, these activities would only be required on an intermittent basis and would result in a minor increase in motor vehicle trips. Activities would not create odors and the land use would not fall under any category that is identified as an odor source. Therefore, the operational impact would be **less than significant**.

Mitigation Measures

Mitigation Measure (FRR/RS/MB): None required.

Impact 3.4-5: Implementation of the proposed project could expose workers and sensitive receptors to the risk of Valley Fever.

All Project Components

Construction

As discussed earlier, the Central Valley is the region of California considered to be of highest risk for the development of Valley Fever; therefore, Valley Fever is a health risk of concern in relation to the proposed project. While Valley Fever is a risk for anyone living or working in the vicinity of the proposed project, dust from ground disturbance activities associated with the proposed project would not increase this risk for the existing residences due to distance separating these residences from the proposed project's work areas. However, this is a concern for construction workers and other project personnel that would be on-site during earthwork and material transport.

Project construction activities that would result in the greatest risk would be those involving the excavation and transport of soils, such as grading and trenching. These activities, along with localized wind conditions, create work conditions with the highest risk. According to the California Department of Public Health (CDPH) and the Centers for Disease Control and Prevention (CDC), avoiding working in soils and dusty conditions is the best preventative measure. Since some construction workers cannot avoid participating in soil disturbance activities, minimizing fugitive dust as well as other engineering controls are the primary preventative measures. Pursuant to AB 203, the proposed project would be required to provide effective awareness training on Valley Fever to all construction workers annually and before beginning work that is reasonably anticipated to cause substantial dust disturbance. In addition, Occupational Health Branch of the CDPH and the CDC make recommendations for the protection of workers. The primary protection measures relate to the following: worker training, dust suppression, and personal protective equipment (PPE). With respect to dust suppression, SJVAPCD Rule 8021 would require the proposed project to reduce visible dust emissions to less than 20 percent opacity. Use of PPE and compliance with Rule 8021 would ensure the proposed project's compliance with these regulatory requirements and would ensure that the potential impacts from Valley Fever would be **less than significant**.

Operations and Maintenance

O&M activities associated with the flood risk reduction components, Sites 13, 14, and 16, and multi-benefit components of the proposed project would not result in ground disturbance activities that could generate dust and cause the Coccidioides fungus spores to become airborne. Therefore, O&M activities would not expose workers and sensitive receptors to the risk of Valley Fever. This impact would be **less than significant**.

Mitigation Measures

Mitigation Measure (FRR/RS/MB): None required.

3.5 Biological Resources—Aquatic

3.5.1 Introduction

This section addresses the potential impact of implementation of the proposed project on aquatic biological resources. The potential impacts of implementation of the proposed project on terrestrial biological resources is discussed in Section 3.6, *Biological Resources—Terrestrial*.

The aquatic biological resources impact analysis was developed based on review of information provided in published documents, database searches, and data collected in the field.

Comments addressing aquatic resources were received in response to the NOP and were considered in development of the impact analysis.The California State Lands Commission (CSLC) requested the EIR should disclose and analyze all potentially significant effects on sensitive species and habitats in and around the proposed project area and identify feasible mitigations measures to reduce those impacts. The CSLC asked that the EIR consider the proposed project's potential to encourage invasive species introductions and include appropriate mitigation. The CSLC also recommended that the EIR should evaluate noise and vibration impacts on fish and identify in-water work windows if necessary. The Delta Stewardship Council (DSC) requested review of the Delta Plan Policy Appendix O and inclusion of all feasible mitigation measures adopted and incorporated into the Delta Plan. The DSC shares the same opinion as the CSLC in that the EIR should consider and mitigate for potential new introductions of nonnative, invasive species, including invasive fish species and aquatic weeds. See Appendix A to this Draft for NOP comment letters.

3.5.2 Environmental Setting

The major water bodies associated with the proposed project include the San Joaquin River, French Camp Slough, and Walthall Slough. The RD 17 levee system is comprised of State-Federal Project levees (also referred to as State Plan of Flood Control) along the San Joaquin River, French Camp Slough, and Walthall Slough, which form the west and north borders of RD 17 and the proposed project area.

The San Joaquin River is characterized as a wide channel (approximately 300 feet) with little riparian canopy of overhead vegetation and minimal bank cover. Aquatic habitat in the San Joaquin River is characterized primarily by slow-moving glides and pools, is depositional in nature, and has limited water clarity and habitat diversity. Sloughs provide fish spawning, rearing and/or migratory habitat for a diverse number of native, nonnative, and special-status species. Many of the nonnative resident fish species are more tolerant of warm water, low dissolved oxygen and disturbed environments than native species as encountered in the sloughs during most of the year.

While limited, there are still important attributes of the aquatic habitat present within the San Joaquin River. These are aquatic vegetation and shaded riverine aquatic (SRA) habitat. Aquatic vegetation is represented by floating, submerged, and emergent vegetation, which serves as hiding cover and an invertebrate food production base for nearly all aquatic species. SRA habitat is defined as the nearshore aquatic habitat occurring at the interface between a river and adjacent woody riparian habitat. The principal attributes of this cover type are: (1) an adjacent bank composed of natural, eroding substrates supporting riparian vegetation that either overhang or protrude into the water; and (2) water that contains

variable amounts of woody debris, such as leaves, logs, branches, and roots and has variable depths, velocities, and currents. SRA cover is considered essential habitat to a variety of fish species and is used as cover, forage, spawning, and rearing habitat for fishes, both anadromous species and resident native and nonnative fishes. Riparian habitat provides structure (through SRA habitat) and food for fish species. Shade decreases water temperatures, while low overhanging branches can provide sources of food by attracting terrestrial insects. As riparian areas mature, the vegetation sloughs off into the rivers, creating structurally complex habitat that furnishes refugia from predators, creates variable water velocities, and provides habitat for aquatic invertebrates. For these reasons, many fish species are attracted to SRA habitat (USFWS 1992).

Altered flow regimes, flood control, and bank protection efforts along much of the San Joaquin River have reduced riparian vegetation and SRA habitat, sediment transport, channel migration and avulsion, and large woody debris recruitment, and have isolated the San Joaquin River channel from its floodplain. This has resulted in a decline in habitat quality for fish species using the San Joaquin River near the proposed project area.

SRA habitat field surveys were conducted by ESA biologists in early June of 2022 using the ESRI Field Maps version 22.3.1 mobile application on an iPad by utilizing the Field Maps geolocation technology to track location in the field. Field surveys used a customized Field Maps map with capabilities to hand draw and attribute features, such as large woody debris and aquatic vegetation, over aerial imagery in the field. SRA cover was characterized using three variables: (1) vegetation properties, (2) bank properties, and (3) structure. The total length of the survey area was 13 miles, with 11 substrate sample points taken and 12 SRA polylines recorded along the San Joaquin River in the proposed project area.

Results of the SRA habitat surveys are presented below in a series of tables. Within the entire reach, tree cover ranged from 0 to 100 percent of the shoreline, with the majority of segments with 40 percent or greater coverage. Shrub cover was also highly variable, ranging from 0 to 100 percent of the shoreline. Herbaceous cover ranged from 0 to 20 percent of the shoreline (**Tables 3.5-1 through 3.5-3**). In most cases, when SRA cover was present, trees and shrubs were the dominate SRA cover, with herbaceous cover occurring sporadically and in small percentages. Bank shape was dominated by undercut banks. Sediment type was split fairly evenly between riprap, cobble, sand, and silt. Organic structure was dominated by branches.

Ultimately, the study area is a patchwork of riparian, ruderal, and open, disturbed habitat types. The best SRA cover is found in the areas that are dominated by riparian species like Fremont's cottonwood, valley oak, and sandbar willow that provide shade and help keep water temperatures cooler. The habitat quality in riparian dominant areas is accentuated with the presence of large woody debris that provides structure and cover for fish.

The reconnaissance level surveys and available data indicate there is suitable habitat and the potential for state and federally listed fish species to occur within the study area. No special-status fish species were observed during these surveys, however these surveys were designed to assess potential habitat, not detect individual fish.

TABLE 3.5-1
SRA VEGETATION PROPERTIES DATA SUMMARY FOR ENTIRE REACH

Segment	Average % Tree Cover	Average % Shrub Cover	Average % Herbaceous Cover
1	75	15	10
2	25	60	15
3	75	20	5
4	95	0	5
5	40	50	10
6	65	25	10
7	0	80	20
8	0	100	0
9	40	50	10
10	100	0	0
11	90	10	0
12	10	90	0

SOURCE: Data compiled by Environmental Science Associates 2025.

TABLE 3.5-2
SRA BANK PROPERTIES DATA SUMMARY FOR ENTIRE REACH

Segment	Bank Shape	Sediment Type
1	smooth slope	cobble
2	smooth slope	sand
3	step	riprap
4	step	cobble
5	step	silt
6	undercut	riprap
7	undercut	cobble
8	undercut	riprap
9	smooth slope	sand
10	undercut	riprap
11	undercut	silt
12	undercut	sand

SOURCE: Data compiled by Environmental Science Associates 2022.

TABLE 3.5-3
SRA STRUCTURE PROPERTIES DATA SUMMARY FOR ENTIRE REACH

Segment	Organic Structure	Variable Depth
1	branches	boulders
2	branches	none
3	trunks	cut bank
4	branches	cut bank
5	branches	none
6	branches	none
7	leaves	none
8	branches	none
9	branches	none
10	branches	none
11	branches	none
12	leaves	none

SOURCE: Data compiled by Environmental Science Associates 2025.

Fish Species Considered

The lower San Joaquin River serves as a migration corridor and/or provides other types of habitat (e.g., rearing, spawning) for Central Valley fall-/late fall–run Chinook salmon evolutionary significant unit (ESU) (*Oncorhynchus tshawytscha*) and Central Valley steelhead distinct population segment (DPS) (*Oncorhynchus mykiss*). The San Joaquin River is also home to numerous other resident native and nonnative species including hardhead (*Mylopharodon conocephalus*), threespine stickleback (*Gasteroseus aculeatus*), prickly sculpin (*Cottus asper*), golden shiner (*Notemigonus crysoleucas*), striped bass (*Morone saxatilis*), and largemouth bass (*Micropterus salmoides*). A list of special-status species that have the potential to occur within the proposed project area is presented in **Table 3.5-4**. These species are described in the sections that follow, along with six species known to occur within the region, but that have a low potential to occur in the proposed project area: Central Valley spring-run Chinook salmon ESU (*Oncorhynchus tshawytscha*), delta smelt (*Hypomesus transpacificus*), North American green sturgeon (*Acipenser medirostris*), white sturgeon (*Acipenser transmontanus*), Pacific lamprey (*Lampetra tridentata*), and river lamprey (*Lampetra ayresi*).

Data from the past 10 years (2014–2023) was compiled from a collection of 10 Interagency Ecological Program (IEP) fish monitoring studies (Bashevkin et al. 2024). This data was filtered by selecting all sampling sites that occurred in the proposed project area and was used to help make an assessment of the potential of occurrence within the proposed project area.

TABLE 3.5-4
SPECIAL-STATUS FISH SPECIES WITH THE POTENTIAL TO OCCUR IN THE PROPOSED PROJECT AREA

Scientific Name	Common Name	Listing Status: Federal/State/ Other	Habitat Description	Potential for Occurrence within the Proposed Project Area
Oncorhynchus tshawytscha	Chinook salmon–Central Valley fall-/late fall–run ESU	--/CSC/--	Adults require cold, freshwater streams with suitable gravel for spawning. Juveniles rear in seasonally inundated floodplains, rivers, and tributaries in the Central Valley, and in the Delta.	**High.** Occur in proposed project area as adults migrating upstream to spawning habitat or as juveniles rearing and migrating downstream toward ocean.
Oncorhynchus tshawytscha	Chinook salmon Central Valley spring-run ESU	FT/ST/--	Sacramento River below Keswick Dam. Spawns in the Sacramento River but not in tributary streams. Requires clean, cold water over gravel beds with water temperatures between 6°C and 14°C for spawning.	**Low.** Only likely to occur as stray juveniles and adults during migratory periods. Experimental, non-essential population reintroduced into the San Joaquin River.
Oncorhynchus tshawytscha	Chinook salmon Sacramento River winter-run ESU	FE/SE/--	Adult numbers depend on pool depth and volume, amount of cover, and proximity to gravel. Water temperatures greater than 27°C is lethal to adults. Federal listing refers to populations spawning in the Sacramento River and tributaries.	**Unlikely.** Only known to occur in the mainstem of the Sacramento River. May occur in the proposed project area as strays during migration.
Oncorhynchus mykiss	Central Valley steelhead DPS	FT/--/--	This evolutionarily significant unit enters the Sacramento and San Joaquin rivers and their tributaries from July to May; spawning occurs from December to April. Young move to rearing areas in and through the Sacramento and San Joaquin rivers, Delta, and San Pablo and San Francisco Bays.	**High.** Occur in proposed project area as adults migrating upstream to spawning habitat or as juveniles rearing and migrating downstream toward ocean.
Acipenser medirostris	North American green sturgeon southern DPS	FT/CSC/--	Adults require cold, freshwater streams with suitable gravel for spawning. Juveniles rear in seasonally inundated floodplains, rivers, and tributaries in the Central Valley, and in the Delta.	**Low.** Historic green sturgeon spawning in the San Joaquin River is not well documented.
Acipenser transmontanus	white sturgeon	--/SC/--	Adults require cold, freshwater streams with suitable gravel for spawning. Juveniles rear in seasonally inundated floodplains, rivers, and tributaries in the Central Valley, and in the Delta.	**Low.** White sturgeon primarily spawn in the Sacramento River, however, there have been recent observations of spawning in the lower San Joaquin River.
Hypomesus transpacificus	Delta smelt	FT/SE/--	Open surface waters in the Sacramento–San Joaquin Delta. Seasonally in Suisun Bay, Carquinez Strait, and San Pablo Bay. Found in Delta estuaries with dense aquatic vegetation and low occurrence of predators. May be affected by downstream sedimentation.	**Low.** May occur in the proposed project area, especially in lower reaches below Mossdale, during spawning migration between January and July, with peak spawning occurring from April through mid-May. However, low abundances make their presence unlikely.
Pogonichthys macrolepidotus	Sacramento splittail	--/CSC/--	Endemic to the lakes and rivers of the Central Valley, but now confined to the Delta, Suisun Bay, and associated marshes. Prefers slow-moving river sections and dead-end sloughs. Requires flooded vegetation for spawning and foraging for young.	**Moderate.** Little information is available to how far upstream splittail occur in the San Joaquin River, but adults and juveniles have been reported as far upstream as Modesto.

Scientific Name	Common Name	Listing Status: Federal/State/ Other	Habitat Description	Potential for Occurrence within the Proposed Project Area
Spirinchus thaleichthys	Longfin smelt	FC/ST/--	Found in open waters of estuaries, mostly in middle or bottom of water column. Prefer salinities of 15–30 parts per thousand but can be found in completely freshwater to almost pure seawater.	**Unlikely.** Spawning rarely occurs upstream from Medford Island in the San Joaquin River, and the proposed project area is well upstream.
Mylopharodon conocephalus	Hardhead	--/CSC/--	Reside in low to mid-elevation streams and prefer clear, deep pools and runs with slow velocities.	**Moderate.** Hardhead are broadly distributed throughout the Sacramento and San Joaquin river systems.
Lavinia symmetricus symmetricus	Central California roach	--/CSC/--	Found in small, warm streams at mid-elevations with dense populations observed in isolated pools. Also known to occur in cooler, large streams under diverse conditions. Spawn over small rock substrates in riffles during late spring.	**Unlikely.** Historically found in tributaries to the Sacramento and San Joaquin rivers; however, habitat change and nonnative predators have caused a decline in population.
Lampetra tridentata	Pacific lamprey	SC/SSC/--	Adults need clean, gravelly riffles in permanent streams to spawn successfully. Ammocoetes live in silty backwaters and eddies with muddy or sandy substrate into which they burrow.	**Low.** Can occur in the lower Sacramento and San Joaquin rivers, including the Delta.
Lampetra ayresi	River lamprey	--/CSC/--	Found in large river systems from Alaska to the San Francisco Bay. Spawn in tributaries in winter and spring. Larval lamprey spend 3–5 years in freshwater before metamorphosing into adults and migrating downstream toward the ocean.	**Low.** Can occur in tributaries of the San Joaquin River.

NOTES: CDFW = California Department of Fish and Wildlife; CNDDB = California Natural Diversity Database; Delta = Sacramento–San Joaquin Delta; ESU = evolutionarily significant unit; DPS = distinct population segment; USFWS = U.S. Fish and Wildlife Service

Federal: (USFWS)
- FE = Listed as Endangered by the federal government
- FT = Listed as Threatened by the federal government
- FC = Candidate for listing by the federal government

State: (CDFW)
- SE = Listed as Endangered by the State of California
- ST = Listed as Threatened by the State of California
- SR = Listed as Rare by the State of California (plants only)
- SC = Candidate for listing by the State of California
- CSC = California Species of Special Concern
- FP = CDFW Fully Protected Species
- WL = Species on the CDFW Watch List

CRPR: (California Rare Plant Rank)
- Rank 1A = Plants presumed extinct in California
- Rank 1B = Plants rare, threatened, or endangered in California and elsewhere
- Rank 2 = Plants rare, threatened, or endangered in California but more common elsewhere
- Rank 3 = Need more information
- Rank 4 = Limited distribution – a watch list
  - 0.1 = Seriously endangered in California
  - 0.2 = Fairly endangered in California
  - 0.3 = Not very endangered in California
- – = No Listing

SOURCES: USFWS 2025a and 2025b, CDFW 2025, NMFS 2025; Moyle et al. 1995, 2015

Special-Status Fish Species

Central Valley Fall-/Late Fall–run Chinook Salmon ESU

Central Valley fall-/late fall–run Chinook salmon are currently the most abundant and widespread salmon runs in California (Mills et al. 1997). This species is not listed under the Federal Endangered Species Act (FESA). On March 9, 1998, National Marine Fisheries Service (NMFS) issued a proposed rule to list fall-run Chinook salmon as threatened (NMFS 1998a). However, on September 16, 1999, NMFS determined that the species did not warrant listing (NMFS 1999). On April 15, 2004, NMFS classified Central Valley fall-/late fall–run Chinook salmon as a species of concern (NMFS 2004).

Additionally, Essential Fish Habitat (EFH) is designated for this species. EFH is defined as those waters and substrate necessary for spawning, breeding, feeding, or growth to maturity. EFH includes currently and historically accessible habitat.

Adult fall-run Chinook salmon migrate into the Sacramento and San Joaquin rivers and their tributaries from June through December in mature condition and spawn from late September through December, soon after arriving at their spawning grounds (Yoshiyama et al. 1998). The spawning peak occurs in October and November. Emergence occurs from December through March, and juveniles migrate downstream to the ocean soon after emerging, rearing in fresh water for only a few months. Smolt outmigration typically occurs from March through July (Yoshiyama et al. 1998).

Late fall–run Chinook salmon migrate upstream before they are sexually mature and hold near spawning grounds for 1 to 3 months before spawning. Upstream migration takes place from October through April and spawning occurs from late January through April, with peak spawning in February and March (Yoshiyama et al. 1998). Fry emerge from April through June. Juvenile late fall–run Chinook salmon rear in their natal streams during the summer, and they remain in some streams throughout the year. Smolt outmigration can occur from November through May (Yoshiyama et al. 1998).

Fall-/late fall–run Chinook salmon adults have the high potential to occur in the proposed project area during their upstream migration to spawn in tributaries of the San Joaquin River (Stanislaus, Merced, and Tuolumne rivers) and during juvenile downstream migration from tributaries and through the San Joaquin River. Juvenile Chinook salmon were captured each year during IEP surveys during last 10 years in the proposed project area. Juvenile Chinook salmon might also utilize French Camp Slough and Walthall Slough for rearing as they migrate downstream (Moyle 2002).

Central Valley Spring-run Chinook Salmon ESU

The Central Valley spring-run Chinook salmon was federally listed as threatened on September 16, 1999 (NMFS 1999). Their threatened status was reaffirmed in NMFS's final listing determination issued on June 28, 2005 (NMFS, 2005a). Critical habitat for Central Valley spring-run Chinook salmon was designated by NMFS on September 2, 2005 (NMFS 2005b).

Historically, spring-run Chinook salmon occupied the upstream reaches of all major river systems in the Central Valley where no natural barriers existed. With completion of Friant Dam in 1942, the San Joaquin River began to seasonally run dry as more water was being diverted into canals for agricultural irrigation. By the 1950s, spring-run Chinook salmon populations in the San Joaquin River had been extirpated (Yoshiyama et al. 1998). Loss of access and holding areas due to the construction of dams was a major contributing factor.

As part of restoration efforts, NMFS issued an experimental non-essential population of Central Valley spring-run Chinook salmon (NMFS 2013a). Since the population is considered experimental and non-essential, if this population does not survive, it won't threaten the spring-run ESU as a whole. Therefore, the experimental non-essential population can be used for reintroduction efforts in the San Joaquin River with take exceptions for the population (NMFS 2013b). In 2014, the first reintroductions of spring-run in the San Joaquin River occurred and ongoing monitoring of the experimental, non-essential population continues today.

Central Valley spring-run Chinook salmon are only likely to occur in the proposed project area as stray juveniles and adults during migratory periods (October through March for juveniles, March through August for adults [CDFG 1998]). The experimental, non-essential population may also occur in the proposed project area during migration periods, but the likelihood is low.

Central Valley Steelhead DPS

Central Valley steelhead was federally listed as threatened on March 19, 1998 (NMFS 1998b). The threatened status of Central Valley steelhead was reaffirmed in NMFS's final listing determination on January 5, 2006 (NMFS 2006a). Critical habitat for Central Valley steelhead was designated by NMFS on September 2, 2005 (NMFS 2005b).

Central Valley steelhead occur in the proposed project area, either as adults migrating upstream to their spawning habitat, or as juveniles rearing and migrating toward the ocean. Juvenile steelhead tend to use bank habitat more frequently than the main channel, because bank habitat provides increased protection, shade, and food. Juveniles would also likely use the sloughs in the proposed project area for rearing as they emigrate (Moyle 2002).

Steelhead exhibit highly variable life history patterns throughout their range but are broadly categorized into winter and summer reproductive ecotypes. Winter steelhead are the most widespread reproductive ecotype and the only type currently present in Central Valley streams (McEwan and Jackson 1996). Winter steelhead become sexually mature in the ocean, enter spawning streams in summer, fall or winter, and spawn a few months later in winter or late spring (Meehan and Bjornn 1991; Behnke 1992). In the San Joaquin River, adult winter steelhead migrate upstream during most months of the year, beginning in July, peaking in September, and continuing through February or March (Hallock 1987). Spawning occurs primarily from January through March but may begin as early as late December and may extend through April (Hallock 1987). Individual steelhead may spawn more than once, returning to the ocean between each spawning migration.

Juvenile steelhead rear a minimum of one and typically two or more years in fresh water before migrating to the ocean as smolts. Juvenile migration to the ocean generally occurs from December through August. The peak months of juvenile migration are January to May (McEwan 2001). The importance of main channel and floodplain habitats to steelhead in the San Joaquin River and Delta is not well understood. The major factor influencing steelhead populations in the San Joaquin River is loss of habitat due to construction of dams.

While in low abundance, steelhead have a high potential to occur in the proposed project area. Juvenile steelhead were captured in low numbers in most years during IEP surveys during last 10 years in the proposed project area, and the aquatic portions of the proposed project area are a known migration corridor for steelhead adults and juveniles.

Green Sturgeon

In North America, green sturgeon is found from Ensenada, Mexico to Southeast Alaska. On April 7, 2006, NMFS determined that the southern DPS of green sturgeon was threatened under the Federal ESA (NMFS 2006b). On October 9, 2009, NMFS designated critical habitat for the green sturgeon southern DPS throughout most of its occupied range (NMFS 2009). Green sturgeon was classified as a Class 1

Species of Special Concern by the California Department of Fish and Wildlife (CDFW) in 1995 (Moyle et al. 1995). Class 1 Species of Special Concern are those that conform to the state definitions of threatened or endangered and could qualify for addition to the official list.

Historic green sturgeon spawning in the San Joaquin River is not well documented. Adults typically migrate upstream into rivers between late February and late July. Spawning occurs from March to July, with peak spawning from mid-April to mid-June. Green sturgeon are believed to spawn every 3 to 5 years, although recent evidence indicates that spawning may be as frequent as every 2 years (NMFS 2005c). Little is known about the specific spawning habitat preferences of green sturgeon. Adult green sturgeon are believed to broadcast their eggs in deep, fast water over large cobble substrate, where the eggs settle into the interstitial spaces (Moyle 2002). Spawning is generally associated with water temperatures from 46 to 57 degrees Fahrenheit (°F).

Little is known about movements, habitat use and feeding habits of juvenile rearing green sturgeon. Green sturgeon juveniles have been salvaged at the state and federal fish collection facilities in every month, indicating that they are present in the Delta and possibly within the proposed project area year-round. Juveniles and adults are reported to feed on benthic invertebrates, including shrimp and amphipods, and small fish (Moyle et al. 1995).

Due to the limited observance of green sturgeon in the San Joaquin River, green sturgeon have a low potential to occur in the proposed project area. No green sturgeon have been captured in IEP surveys in the last 10 years in the proposed project area.

White Sturgeon

Like green sturgeon, white sturgeon are found from Ensenada, Mexico, to southeast Alaska. The San Francisco Estuary population of white sturgeon—the only reproducing population of white sturgeon in California—was previously classified as a Species of Special Concern by CDFW. On July 12, 2024, CDFW approved white sturgeon as a candidate species for listing as threatened under CESA. Candidate species for listing under CESA are granted full protections during the review process. Currently, there is no federal listing for white sturgeon.

White sturgeon primarily inhabit estuaries of large river systems, migrating to freshwater to spawn. The spawning success of white sturgeon has been hindered by the construction of dams, and as such is now limited to the Sacramento River between Knights Landing and Colusa (Moyle 2002; Moyle et al. 2015) with observations of periodic spawning in the Feather and San Joaquin rivers (Beamesderfer et al. 2004; Jackson et al. 2015). Before spawning, white sturgeon move into the lower reaches of rivers during the winter and migrate upstream to spawning areas between December and early June (Moyle et al. 2015). Like green sturgeon, white sturgeon broadcast their eggs in deep, fast water over large cobble substrate, where the eggs settle into the interstitial spaces (Moyle 2002). Larvae hatch from eggs between 4 and 12 days after spawning if temperature conditions are optimal (Wang 1986). Larvae and young of year forage and rear in riverine areas until they gain the ability to tolerate higher salinity concentrations (McCabe and Tracy 1994). Recruitment success of juvenile white sturgeon is correlated with high spring flows and Delta outflow. High spring flows during juvenile rearing (i.e., between April and July) assist in moving larval sturgeon downstream into suitable rearing habitat quicker than years with low spring flows (Stevens and Miller 1970).

White sturgeon typically inhabit deep water over soft bottom substrates, feeding on or near the bottom (Moyle 2002). White sturgeon remain in the San Francisco Estuary throughout most of their lives (Klimley et al. 2015), but more evidence is showing that white sturgeon may move into marine environments as well (Sellheim et al. 2022; Scott and Crossman 1973).

Due to the limited observance of white sturgeon in the San Joaquin River, white sturgeon have a low potential to occur in the proposed project area. No white sturgeon have been captured in IEP surveys in the last 10 years in the proposed project area.

Delta Smelt

Delta smelt was federally listed as threatened on March 5, 1993 (USFWS 1993) and critical habitat was designated on December 19, 1994 (USFWS 1994). Delta smelt are endemic to the Sacramento–San Joaquin estuary and are found seasonally in Suisun Bay and Suisun Marsh. They typically are found in shallow water (less than 10 feet) where salinity ranges from 2 to 7 parts per thousand (ppt), although they have been observed at salinities between 0 and 18.4 ppt. Delta smelt have relatively low fecundity and most live for 1 year. They feed on planktonic copepods, cladocerans, amphipods, and insect larva (Moyle 2002).

Delta smelt are semi-anadromous. During their spawning migration, adults move into the freshwater channels and sloughs of the Delta between December and January. Spawning occurs between January and July, with peak spawning and potential presence in the proposed project area from April through mid-May (Moyle 2002). Spawning locations in the Delta have not been identified and are inferred from larval catches (Bennett 2005). Historically, Delta smelt was one of the most common pelagic fish in the Delta and occurred in the San Joaquin River downstream from Mossdale.

Delta smelt have a low potential to occur in the proposed project area. No Delta smelt have been captured in IEP surveys in the last 10 years at stations in the proposed project area.

Sacramento Splittail

Sacramento splittail was listed as threatened under FESA in 1999 and was subsequently delisted in 2003; however, it is a California Species of Special Concern (Moyle et al. 2015). It is a relatively large, long-lived cyprinid, endemic to sloughs, rivers, backwaters, and lakes in the Central Valley and most typically is found in tidally influenced freshwater and estuarine habitats (e.g., the Delta and Suisun Bay) with salinities as high as 10 to 18 ppt (Moyle et al. 2004). Nonbreeding splittail can survive wide fluctuations in temperature and low dissolved oxygen levels (less than 1 milligram of oxygen per liter), allowing them to live in slow-moving sections of rivers and sloughs (Moyle et al. 2004). Adults begin a gradual upstream migration toward spawning areas sometime between late November and late January. The migration is associated with flow events from February through April that inundate floodplains and riparian areas used for spawning and rearing (Moyle et al. 2004). Spawning is associated with conditions such as changing water levels, lower water temperatures, and increasing length of day (Moyle et al. 2004).

Little information is available as to how far upstream splittail occur in the San Joaquin River (Wang 1986), but adults and juveniles have been reported upstream of Modesto (USFWS 1996). Furthermore,

high catch of splittail has been recorded during IEP surveys in the last 10 years. Therefore, there is a moderate potential for Sacramento splittail to occur in the proposed project area.

Hardhead

Although no federal designation has been made, hardhead is listed as a California Species of Special Concern (Moyle et al. 2015). Hardhead are broadly distributed throughout the Sacramento and San Joaquin river systems (Moyle 2002). These fish tolerate relatively high water temperatures (Cech et al. 1990) and may actively select warmer water (Moyle 2002), although oxygen concentration becomes increasingly critical at higher water temperatures (Myrick and Cech 2000). Moyle (2002) suggests that hardhead are a good indicator species for environmental quality; they are present or even abundant where human activities and introduced species are reduced or absent.

Population-level declines for hardhead are probably attributable largely to habitat loss and predation by introduced fish species, and previously robust populations appear to have suffered localized extirpations, resulting in increasingly isolated populations (Moyle 2002). Substantial pools in medium to large streams appear to be critical for this species, and the loss of this habitat from dam construction, channelization, and the creation of diversions is thought to be the principal factor in declining hardhead populations (Moyle 2002; Brown and Moyle 1993). Nonnative fishes appear responsible for the extirpation of hardhead in many areas where they were previously abundant (Mayden et al. 1991; Brown and Moyle 1993). Further perturbations to preferred spawning and rearing habitat would likely contribute to their decline.

Hardhead are omnivorous, consuming algae and aquatic insects, mostly from the bottom. In rivers and streams, adult hardheads prefer deeper portions of the water column, rarely straying from the bottom of a pool, while juveniles occupy shallow water close to stream banks (Moyle et al. 1995).

In the last 10 years, there have been low abundance records for hardhead in the proposed project area during IEP surveys. However, there is a moderate potential for hardhead to occur in aquatic portions of the proposed project area.

River Lamprey

River lamprey are considered a California Species of Special Concern (Moyle et al. 2015). River lamprey are found in large river systems from Juneau, Alaska to the San Francisco Bay, California. River lamprey appear to be concentrated only in particular rivers and only in the lower portions of these rivers.

River lamprey are anadromous, spending about 3 to 4 months in the ocean before migrating to fresh water in the fall. Adults spawn in small tributaries in the winter and spring, creating depressions in the gravel substrates of riffle systems. Once hatched, ammocetes (larval lamprey), move to silt sand back waters and bury themselves tail first. It is believed that ammocetes spend 3 to 5 years in freshwater before metamorphosing into adults. Metamorphosis occurs over a 9–10-month period. Once this occurs, river lamprey aggregate in large numbers and migrate toward the ocean in the spring (Moyle 2002).

Little information is available on the life history of river lamprey in the Sacramento and San Joaquin river systems. Furthermore, a total of eight individuals have been captured during IEP surveys in the past 10 years at stations near the proposed project area. Therefore, river lamprey have a low potential to occur in the proposed project area.

Pacific Lamprey

Pacific lamprey are the largest lampreys in California and are anadromous (although some evidence of freshwater residence exists (Moyle et al. 2015). Pacific lamprey may have highly diverse life histories and may have more than one run or individuals that do not migrate back to the ocean within the same river (Anglin 1994). The spawning period is usually from early March to late June, with some upstream migration observed as early as January and February (Entrix Inc. 1996; Trihey and Associates 1996). Ammocoetes hatch after 2–3 weeks and drift downstream to mud/silt substrate habitats where they rear for 4 to 7 years (Anglin 1994). After rearing, ammocoetes undergo metamorphosis and enter the ocean, although there is some evidence that some populations remain resident in freshwater (Moyle et al. 2015). Very little is known about the extent of Pacific lamprey distribution in the San Joaquin River and overall abundance estimates throughout California suggest a declining trend (Moyle et al. 2015). However, Pacific lamprey is considered still widespread throughout their range and IEP survey data in the past 10 years shows presence in the San Joaquin River adjacent to the proposed project area. Therefore, Pacific lamprey is assumed to be present in the aquatic portions of the proposed project area.

Critical Habitat

Critical habitat includes those that are of special concern to resource agencies or are afforded specific consideration through FESA, CEQA, Section 1602 of the California Fish and Game Code, Section 404 and 401 of the Clean Water Act (CWA), or the Magnuson-Stevens Fishery Conservation and Management Act. These habitats are of special concern because they may be of high value to fish species and may have a higher potential to support special-status fish species. Three designated critical habitats occur within the proposed project area and are described below.

Delta Smelt Critical Habitat

There is no EFH designated for Delta smelt. Critical habitat for delta smelt consists of all water and all submerged lands below ordinary high water and the entire water column bounded by and contained in Suisun Bay, including all contiguous water bodies contained within the statutory definition of the Delta, including the San Joaquin River (USFWS 1994). Critical habitat for delta smelt is designated in the following California counties: Alameda, Contra Costa, Sacramento, San Joaquin, Solano, and Yolo (USFWS 2003). Critical habitat for delta smelt occurs in the proposed project area.

Central Valley Steelhead Critical Habitat

There is no EFH designated for Central Valley steelhead. Critical habitat for Central Valley steelhead includes the stream channels in the designated stream reaches and the lateral extent as defined by the ordinary high-waterline or bank-full elevation in the Sacramento and San Joaquin rivers, their tributaries, and the Delta (NMFS 2006b). Critical habitat for Central Valley steelhead occurs within the proposed project area.

North American Green Sturgeon Critical Habitat

There is no EFH designated for green sturgeon. Designated critical habitat for the southern DPS of green sturgeon includes select waters in the Sacramento and San Joaquin river basins (NMFS 2009), including a segment of the San Joaquin River in the proposed project area.

3.5.3 Regulatory Setting

The following federal and state laws and regulations apply to the resources covered in this chapter.

Federal

Federal Endangered Species Act

FESA prohibits the unauthorized take of any fish or wildlife species listed as threatened or endangered, including the destruction of habitat that could hinder species recovery. The term *take* is defined by FESA as to "harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or attempt to engage in any such conduct."

Clean Water Act

The federal government regulates waters of the United States, including many wetlands, under the CWA. The federal government defines wetlands in Section 404 of the CWA as "areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions" (33 Code of Federal Regulations [CFR] 328.3[c] and 40 CFR 230.3). Under normal circumstances, the federal definition of wetlands requires the presence of three wetland identification parameters: wetland hydrology, hydric soils, and hydrophytic vegetation. Examples of wetlands include freshwater marsh, seasonal wetlands, and vernal pool complexes.

USACE is the responsible agency for regulating wetlands under Section 404 of the CWA, while the U.S. Environmental Protection Agency has overall responsibility for the CWA. CDFW does not normally have direct jurisdiction over wetlands unless they are subject to regulation under streambed alteration agreements or they support state-listed species; however, CDFW has trust responsibility for wildlife and habitats pursuant to California law.

"Other waters of the United States" refers to those hydric features that are regulated by the CWA but are not wetlands (33 CFR 328.4). To be considered jurisdictional, these features must exhibit a defined bed and bank and an ordinary high-water mark. Examples of other waters of the United States include rivers, creeks, intermittent and ephemeral channels, ponds, and lakes.

Magnuson-Stevens Fishery Conservation and Management Act (Magnuson-Stevens Act)

The Magnuson-Stevens Act requires that all federal agencies consult with NMFS regarding actions or proposed actions permitted, funded, or undertaken that may adversely affect EFH.

State

California Endangered Species Act

The California Endangered Species Act (CESA) prohibits the take of plant and animal species that the California Fish and Game Commission has designated as either threatened or endangered in California. *Take* in the context of CESA means to hunt, pursue, kill, or capture a listed species, and any other actions that may result in adverse impacts when a person is attempting to take individuals of a listed species. The take prohibitions also apply to candidates for listing under CESA.

Lake and Streambed Alteration Agreement (California Fish and Game Code Section 1602)

Under Section 1602 of the California Fish and Game Code, any person, government agency, or public utility proposing any activity that will divert or obstruct the natural flow or change the bed, channel or bank of any river, stream, or lake, or proposing to use any material from a streambed, is required to first notify CDFW of such proposed activity. If CDFW determines that the activity which will affect a river, stream or lake may substantially adversely affect an existing fish or wildlife resource, it may issue a lake or streambed alteration agreement that includes reasonable measures necessary to protect the fish or wildlife resource.

Local

The proposed project area includes lands in San Joaquin County and the cities of Stockton, Lathrop, and Manteca. Each of these jurisdictions have general plans with goals and policies that address special-status species that occur in the city and/or county limits and how to protect and conserve those species and their associated habitats (see **Table 3.5-5**). Applicable general plan goals and policies are summarized below along with relevant local regulations.

TABLE 3.5-5
APPLICABLE GENERAL PLAN GOALS AND POLICIES—BIOLOGICAL RESOURCES–AQUATIC

General Plan	Goals and Policies
San Joaquin County	Natural and Cultural Resources Element, Goals NCR-2.1, NCR-2.5, NCR-2.8, NCR-2.9, and D-5.2
City of Stockton	Land Use Element, Policies LU-5.1B, LU-5.2B, and LU-5.2C
City of Lathrop	Recreation and Resources Element, Policies RR-4.1, RR-4.4, and RR-4.5 and Implementation Actions RR-4a, RR-4b, RR-4c, and RR-4e
City of Manteca	Resource Conservation Element, Policies RC-1.1, RC-1.5, RC-1.6, RC-1.8, RC-9.1, RC-9.2, RC-9.5, and RC-9.7 and Implementation RC-9g

SOURCES: City of Lathrop 2022; City of Manteca 2024; City of Stockton 2018; San Joaquin County 2016

San Joaquin County

San Joaquin County General Plan

The San Joaquin County General Plan includes goals and policies that address the conservation of the county's fish and wildlife species and their associated habitats. The main focus is to protect and enhance areas that provide important habitat for the county's fish and wildlife communities.

City of Stockton

Envision Stockton 2040 General Plan

The City of Stockton General Plan includes goals and policies that address Stockton's natural resources and how to best protect and maintain special-status species and their associated habitats.

City of Lathrop

City of Lathrop General Plan

The City of Lathrop General Plan includes goals and policies that address protecting and maintaining biological resources and habitat with the City of Lathrop.

City of Manteca

City of Manteca General Plan

The City of Manteca General Plan includes goals and policies that address the protection of native wildlife communities, including fish, and sensitive habitat in Manteca.

3.5.4 Impacts and Mitigation Measures

Methods of Analysis

This section presents the methodology used to assess the potential impacts of the proposed project on fisheries and aquatic resources. Impacts on biological resources resulting from implementation of the proposed project were analyzed based on data collected during biological field surveys and review of literature pertaining to the proposed project area.

Thresholds of Significance

In accordance with Appendix G of the CEQA Guidelines, an impact is considered significant if the proposed project would:

- Have substantial adverse effect, either directly or through habitat modification, on any species identified as endangered, threatened, candidate, rare, or of special concern in local or regional plans, policies, regulations, or on lists compiled by the CDFW, USFWS, or NMFS.
- Interfere substantially with the movement of any native resident or migratory fish or wildlife species, or with established native fish or wildlife migratory or dispersal corridors, or impede the use of native wildlife or fish nursery sites.

Impacts related to riparian habitat or other sensitive natural communities are addressed in Section 3.6, *Biological Resources—Terrestrial*.

Impacts and Mitigation Measures

Table 3.5-6 summarizes the impact conclusions presented in this section.

TABLE 3.5-6
SUMMARY OF IMPACT CONCLUSIONS – BIOLOGICAL RESOURCES—AQUATIC

Impact Statement	Flood Risk Reduction Components	Restoration Sites 13, 14, and 16	Other Multi-Benefit Components
3.5-1: Implementation of the proposed project could result in direct or indirect impacts to listed fish species and their associated habitat and could interfere with movement of native resident or migratory fish or impede the use of fish hatchery sites.	LS	LS	LS

NOTE: LS = Less than Significant

Impact 3.5-1: Implementation of the proposed project could result in direct or indirect impacts to listed fish species and their associated habitat and could interfere with movement of native resident or migratory fish or impede the use of fish hatchery sites.

As discussed above in the Environmental Setting, the lower San Joaquin River serves as a migration corridor for Central Valley fall-/late fall–run Chinook salmon ESU and Central Valley steelhead DPS, as well as provides habitat for numerous other native resident species. Because of the proposed project's location, several other species are not expected to occur or have a low potential to occur in the proposed project area. This is because the proposed project area does not provide suitable habitat for those species, or the proposed project area is outside the species' current distribution and/or known range. Therefore, the following fish species are not further evaluated in this EIR: Chinook salmon Central Valley spring-run ESU, Chinook salmon Sacramento winter-run ESU, North American green sturgeon southern DPS, delta smelt, Sacramento splittail, longfin smelt, central California roach, and river lamprey.

Furthermore, no in-water work, including work from a barge, would be conducted over the course of the proposed project. All work would occur on land, above the ordinary high-water mark (OHWM). Additionally, ecosystem restoration activities would occur during the dry season where there is low flow and no connectivity to the San Joaquin River. Therefore, impacts related to in-water work are not further evaluated.

Flood Risk Reduction Components

All Construction Activities

The proposed flood risk reduction components include raising the height of levees along portions of the existing levee alignment, construction of a dryland levee extension and drained seepage berm, placement of riprap rock slope protection, and various staging areas. Each of these components are described in detail in Chapter 2, *Project Description*, and are presented on Figure 2-2. Construction of the proposed flood risk reduction components would include site preparation (vegetation clearing, demolition, utilities relocation), grading, excavation, compaction and hauling and placement of materials. These activities could result in the temporary modification of habitat. Indirect effects, although not directly resulting in mortality, could result in physiological stress, rendering affected fishes more susceptible to disease or predation or reduced reproductive fitness; disrupt spawning or foraging behavior; reduce the availability or quality of spawning and foraging habitat; and potentially expose special-status fishes to predation and other forms of mortality (e.g., due to entrapment or exposure in shallow or restricted water) when temporarily displaced from their preferred habitats. In addition, fish could be temporarily displaced from their habitats by noise, vibrations, chemicals (e.g., spilled fuel), or similar effects, or their habitats could be temporarily altered in quality or quantity.

Furthermore, the removal of streamside vegetation may temporarily impair the movement of special-status fish species. Streamside vegetation provides shade and reduces water temperatures. Removing cover would increase solar radiation exposure and that may result in thermal stress on migratory fish, which could negatively affect fish movement along these corridors. The removal of riparian vegetation, broadly exposing streams, may also increase the visibility of migratory fishes to potential predators, and increase fish mortality rates during migration through these locations. However, trees on the waterside slopes that are not dead and/or downed would be avoided and not impacted by rock slope protection efforts. Additionally, no clearing and grubbing would occur below the OHWM (see subsection 2.5.1,

Site Preparation and Mobilization, in Chapter 2, *Project Description*), thereby limiting impact on the most valuable riparian habitat used as fish cover for migrating fish.

All construction activities that use machinery and heavy equipment within or directly adjacent to occupied habitat have the potential to produce vibrations and acoustic disturbance that can temporarily disrupt fish movement or harass fish and reduce their ability to use certain aquatic habitats (Myrberg 1990; Hastings and Popper 2005). However, it is expected that this impact would be localized to areas adjacent to the disturbance, with listed fish species able to avoid the area, limiting the expected impact on fish species.

Sediment Disturbance and Water Quality Effects

Implementation of the proposed flood risk reduction components would involve earth-disturbing activities (e.g., excavation, grading, erosion repairs, etc.) that could result in the release of sediments into the San Joaquin River, French Camp Slough, and Walthall Slough. Suspended sediments in the water column have the potential to affect fish by disrupting normal feeding behavior, reducing growth rates, increasing stress levels, and reducing respiratory functions. Increased suspended solids can also affect aquatic organisms by reducing dissolved oxygen levels and light transmission, and when the sediment in the suspended solids resettles, it could have the potential to smother aquatic habitats and organisms. Changes in light transmission have the potential to limit photosynthesis and reduce foraging abilities for organisms that rely on visual signals for feeding (e.g., salmonids) (Anchor Environmental 2003). Substantially depressed oxygen levels (i.e., below 5.0 mg/l) may cause respiratory stress to aquatic life, and levels below 3.0 mg/l may cause mortality.

Research with salmonids has shown that high turbidity concentrations can: reduce feeding efficiency, decrease food availability, reduce dissolved oxygen in the water column, result in reduced respiratory functions, reduce tolerance to diseases, and can also cause fish mortality (Berg and Northcote 1985; Gregory and Northcote 1993; Velagic 1995; Waters 1995). Even small pulses of turbid water will cause salmonids to disperse from established territories (Waters 1995), which can interrupt normal movement patterns, displace fish into less suitable habitat, and/or increase competition and predation, decreasing chances of survival. Nevertheless, much of the research mentioned above focused on turbidity levels significantly higher than those likely to result from the proposed project activities, especially with implementation of the proposed mitigation measures. Therefore, the small pulses of moderately turbid water expected from the proposed flood risk reduction activities will likely cause only minor physiological and behavioral effects, such as dispersing listed fish from established territories, potentially increasing interspecific and intraspecific competition, as well as predation risk for the small number of affected fish.

Furthermore, turbidity increases would be relatively brief and generally confined to within a few hundred feet of the activity. Turbidity levels would initially be higher than baseline levels; however, the sediment would disperse and be re-deposited, and background levels would be expected to be restored within hours of the disturbance. Therefore, fish would be able to use their preferred habitats and continue their normal migration routes in a matter of hours. However, construction activities could also accidentally introduce contaminants such as fuels, oils, hydraulic fluids, and other chemicals/compounds into the wetted environment either directly through spills or incrementally through surface runoff from haul routes and staging areas. Such alterations to aquatic habitats could affect fish by altering water temperature, pH,

clarity, or chemical composition, as well as stream substrates, most likely by introducing silt, sand, soil, or gravel. These alterations could render otherwise suitable habitat unsuitable for fish, at least temporarily, or they could introduce contaminants that would affect fish health, reproductive success, and juvenile survivorship. If present in sufficient concentrations, contaminants could be toxic to fish and prey organisms occupying adjacent aquatic habitats. Contaminants could also alter oxygen diffusion rates and cause acute and chronic toxicity to aquatic organisms, thereby reducing growth and survival and possibly causing mortality of listed fish. As described in Section 3.12, *Hydrology and Water Quality*, Impact 3.121, to minimize the potential effects of construction runoff on receiving water quality, the state requires that any construction activity affecting one acre or more obtain coverage under the Construction General Permit ([CGP]; Order No. 2022-0057-DWQ, effective September 1, 2023).

In accordance with National Pollutant Discharge Elimination System regulations, SJAFCA would obtain coverage under the CGP and require contractors to comply with the permit's conditions. Compliance with the CGP would require the development and implementation of a storm water pollution prevention plan that would include standard BMPs required for all projects and any additional measures determined necessary to control stormwater run-on/runoff and sediment. Examples of typical construction BMPs include scheduling or limiting certain activities to dry weather periods, using erosion controls such as hydroseeding or erosion control blankets, installing sediment barriers such as silt fence and fiber rolls, implementing dust control measures, maintaining equipment and vehicles used for construction, storing and handling of chemicals and toxic materials to prevent spills from entering the aquatic environment. These BMPs are designed to avoid or reduce stormwater and water quality effects caused by construction site runoff.

Erosion Repair Activities

Erosion repair activities could have indirect impacts on listed fish species' habitat. Where erosion repair with riprap would occur, the waterside levee slopes would require some degree of removal of ruderal grasses and weeds, shrubs, and saplings less than 2 inches in diameter. However, trees on the waterside slopes that are not dead and/or downed would be avoided and not impacted by rock slope protection efforts (see subsection 2.5.1, *Site Preparation and Mobilization*). Additionally, no clearing and grubbing would occur below the OHWM. Thus, the effects of erosion repairs that would result because of associated vegetation removal would be localized and relatively minor.

Operations and Maintenance

O&M activities for the flood risk reduction components would consist of activities that avoid direct impacts to fish habitat, including inspections, weed abatement, removal of encroachments and high-hazard vegetation to ensure levee integrity, replacement and re-working of displaced or launched revetment following large flood events, and adequate levee access along the levee toe road. O&M activities would not require heavier or noisier equipment than under current conditions. Therefore, any indirect impacts to fish habitat due to O&M activities would be expected to be minimal.

Impact Summary

As described previously, these adverse effects on listed fish species and their habitat could include mortality, injury, and harassment of individuals, along with the temporary loss or modification of habitat. However, indirect effects of construction activities are expected to be temporary, and because erosion repair activities would not occur in the lower waterside levee slope, where the benefits of this vegetation

for fish are greatest, adverse effects on special-status fish are expected to be limited. Further, as discussed in Impact 3.12-1, the proposed project would be subject to mandatory water quality BMPs that would minimize erosion and avoid hazardous materials from entering adjacent waterways. Therefore, the impact would be **less than significant**.

Restoration Sites 13, 14, and 16 and Other Multi-benefit Components

Construction

Proposed ecosystem restoration features at Sites 13, 14, and 16 would include excavated floodplains, floodplain side channels, brush mat, habitat wood structures, willow baffles, and upland brush piles. The proposed project also includes implementation of other multi-benefit components including additional ecosystem restoration sites, and recreation features along the levee system. These proposed multi-benefit components are described in Chapter 2, *Project Description*, and are presented on Figure 2-3.

Ecosystem restoration at Sites 13, 14, and 16 would include excavation and grading of existing agricultural lands and notching of agricultural berms to create an inset floodplain and side channel system connected to the San Joaquin River. These activities could result in the temporary modification of fisheries habitat, with the potential to impact fish movement. The ecosystem restoration sites would be cleared and grubbed to remove existing unwanted vegetation, but this would be conducted in a manner to avoid and preserve designated high value trees or habitat such as mature live oaks, elderberries, cottonwoods, willows, and wetland areas. Even so, clearing and grubbing of ecosystem restoration sites would produce a temporary loss of riparian vegetation. Streamside vegetation contributes overhead cover habitat important for migrating fish and juvenile salmonids that use shallow margin habitats for rearing, and it contributes to winter rearing habitat for special-status fish by providing velocity refuge when inundated during high flows.

Construction activities at the ecosystem restoration sites could lead to temporary, indirect impacts to listed fish species and their habitat through sound disturbance, potential chemical spills, and sedimentation. Expected temporary impacts would be similar to those described above for flood risk reduction components. However, as described in Chapter 2, *Project Description*, subsection 2.5.4, work in the floodplain would occur during the dry season, from July 1 to October 31, when there is low flow and no connectivity to the San Joaquin River. Therefore, any direct or indirect impacts to special-status fish and their habitat due to restoration activities would be expected to be minimal.

Furthermore, development of other multi-benefit recreational features, including paths, would be conducted on the top of levee and landside toe. Because the construction of recreational features would occur above the OHWM, impact on listed fish species and fisheries habitat is expected to be minimal. Excavation, clearing and grubbing, grading, and the use of heavy machinery could lead to temporary, indirect impacts to listed fish species and their habitat through sound disturbance, potential chemical spills, and sedimentation. Expected temporary impacts would be similar to those described above for flood risk reduction components.

Operations and Maintenance

O&M activities for ecosystem restoration at Sites 13, 14, and 16 would consist of activities that avoid direct impacts to fish habitat, including temporary irrigation of new plants, focused application of herbicides to control invasive plants, weeding with hand tools, and erosion control. However, water may

be pumped from the San Joaquin River to be used for irrigation. Operation of the pumps has the potential to entrain or impinge listed fish species such as outmigrating juvenile salmonids by pulling any fish swimming or feeding in the water adjacent to the pump location into the pump system, causing entrainment or impingement. However, as described in Chapter 2, *Project Description*, subsection 2.6.2, the pump system would be fitted with a fish screen designed to meet the NMFS (2011) anadromous salmonid passage facility design criteria. Calculations suggest that a 1.75-millimeter screen opening size would be effective at excluding juvenile salmonids of 22-millimeter standard length and greater (ICF International 2016), which is the equivalent of around 25-millimeter fork length. This would be expected to exclude all juvenile salmonids occurring in the vicinity of the pump intake and therefore, entrainment is unlikely. Therefore, any direct or indirect impacts to special-status fish and their habitat due to O&M activities would be expected to be minimal.

O&M activities for other multi-benefit components would consist of activities that avoid direct impacts to fish habitat including clean-up maintenance of the site such as picking up trash and vandalism repairs. Therefore, any indirect impacts to listed fish and their habitat due to O&M activities would be expected to be minimal.

Impact Summary

Initial construction activities at Sites 13, 14, and 16, as well as other multi-benefit components, would cause temporary impacts to listed fish species and their aquatic habitat. Impacts on special-status fish species from excavation, clearing and grubbing, and grading due to sediment disturbance, increased turbidity, and/or noise disturbance are expected to be relatively brief and confined because of the dry season work window. After initial clearing, grubbing, excavation, and grading activities, plantings of native species would occur at the ecosystem restoration sites, thereby enhancing riparian habitat for listed fish species. Further, as discussed in Impact 3.12-1, the proposed project would be subject to mandatory water quality BMPs that would minimize erosion and avoid hazardous materials (e.g., construction-related chemical spills) from entering adjacent waterways.

While implementation of the restoration activities could result in the temporary modification of habitat for special-status fish, as described above, the restored sites, upon completion, would provide an overall benefit to listed fish species by providing floodplain and side channel habitat for rearing juveniles. Shallow-water floodplain habitats, such as those that would be created by the proposed project, have been observed to favor native species; deeper, more perennial river channel habitat in the Delta (like that present in the San Joaquin River) favors nonnative species, including predatory fish species (Brown et al. 2024). The San Joaquin River is heavily altered with channelized, armored banks and limited fish cover, providing conditions that predatory fish prefer over the side channels and floodplain habitat that would be created in the ecosystem restoration sites.

Furthermore, the proposed project would greatly enhance the connectivity of the ecosystem restoration sites to the San Joaquin River as well as provide habitat wood structures to create instream habitat complexity and provide cover for juvenile salmonids and other aquatic species accessing the floodplains. Overall, implementation of the ecosystem restoration sites would improve ecological function and habitat in the system. Therefore, this impact is expected to be **less than significant**.

Mitigation Measures

Mitigation Measure (FRR/RS/MB): None required.

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3.6 Biological Resources—Terrestrial

3.6.1 Introduction

This section addresses the potential impact of implementation of the proposed project on terrestrial biological resources. The potential impacts of implementation of the proposed project on aquatic biological resources are discussed in Section 3.5, *Biological Resources—Aquatic*.

The evaluation is based on data collected during multiple biological field surveys, reviews of aerial photographs, and information obtained from previously completed studies and analyses that addressed biological resources within or near the proposed project. Surveys were conducted by Environmental Science Associates (ESA) biologists in the proposed project area during June and September 2022, and the winter of 2024–2025. The 2022 surveys included sensitive habitats, potential wildlife habitats, and land cover to document areas that could support special-status species. Focused surveys for elderberry shrubs (*Sambucus* sp.) were conducted along all levee reaches. A resource assessment report with the results of the 2022 surveys was prepared and is available in Appendix C to this Draft EIR. The 2022 surveys covered nearly all the proposed project area except for Sites 13, 14, and 16 and the dryland levee extension between Union Road and Tinnin Road. These areas were covered during the 2024–2025 surveys, which are included in Appendix C-2 to this Draft EIR.

Comments addressing terrestrial plants and wildlife were received in response to the NOP. Comments submitted in response to the NOP were also considered in development of the impact analysis. The California State Lands Commission (CSLC) requested the EIR should disclose and analyze all significant effects on sensitive species and habitats in and around the proposed project area and identify feasible mitigations measures to reduce those impacts. The CSLC asked that the proposed project EIR consider the proposed project's potential to encourage invasive species introductions and include appropriate mitigation. The Delta Stewardship Council (DSC) requested review of the Delta Plan Policy Appendix O and inclusion of all feasible mitigation measures adopted and incorporated into the Delta Plan. The DSC shares the same opinion as the CSLC in that the EIR should consider and mitigate for potential new introductions of nonnative, invasive species, including invasive fish species and aquatic weeds. See Appendix A to this Draft for NOP comment letters.

Fisheries are addressed in Section 3.5, *Biological Resources—Aquatic*.

3.6.2 Environmental Setting

This section describes the biological communities, nonnative and invasive plant species, and special-status plant and animal species of the proposed project area.

Biological Communities

The proposed project area is surrounded by urban development and agriculture, with the San Joaquin River to the west and the communities of Stockton, Manteca, and Lathrop to the north, east and south. The residential developments within these communities include paved roads, and agriculture in the surrounding area includes annual row crops, orchards, and vineyards. Land cover types within the proposed project area include riparian forest, forested wetland, emergent wetland, agricultural, irrigation/drainage ditches, Weatherbee Lake, French Camp Slough, San Joaquin River, development, and

ruderal, and their acreage is provided in **Table 3.6-1**. An updated map of biological communities in the proposed project area (including the 2024–2025 surveys) is in Appendix C-2 to this Draft EIR. Ruderal includes the graded levee road and unvegetated slopes, and graded areas comprised of weedy vegetation.

TABLE 3.6-1
BIOLOGICAL COMMUNITIES

Natural Community	Acreage
Agriculture	501.69
Ruderal	313.52
San Joaquin River	153.84
Development	110.40
Riparian Forest	64.65
Forested Wetland	41.19
Emergent Wetland	5.79
Weatherbee Lake	5.21
Irrigation/Drainage Ditch	3.84
French Camp Slough	3.59
Total	**1,203.72**

Agriculture

This community includes mostly row crops, orchards, and vineyards. It also includes some infrastructure associated with agricultural operations, including rural public roads and dirt access roads, and some rural residences and outbuildings. In addition, a small amount of irrigated pasture used for livestock grazing was included in the agriculture community. Agriculture is not a sensitive natural community.

Ruderal

This community is highly disturbed. Much of the ruderal community consists of dirt levee road or gravel levee slope. Vegetation is controlled on levee slopes with herbicide. Where present, vegetation consists mostly of annual nonnative weeds, including ripgut grass (*Bromus diandrus*), poison hemlock (*Conium maculatum*), summer mustard (*Hirschfeldia incana*), and Bermuda grass (*Cynodon dactylon*). Few trees or shrubs are present. Soils are mostly highly manipulated or compacted, and substantial areas have been covered with gravel. The ruderal community does not qualify as a sensitive natural community per the California Department of Fish and Wildlife (CDFW 2025a).

San Joaquin River

The delineated edge of the San Joaquin River in the proposed project area is an estimate of the high tide line. The proposed project area is in the legal Sacramento-San Joaquin Delta (Delta) along a tidally influenced reach of the San Joaquin River. Trees on the water side of the levee, such as native valley oaks (*Quercus lobata*), are mapped as riparian forest. In many locations the trees have been pruned 6 to 8 feet above the ground and lower vegetation is kept controlled. The high tide line is the limit of Clean Water Act (CWA) Section 404 regulatory jurisdiction in tidal waters (except where adjacent wetlands are present). The high tide line includes high tides that occur with periodic frequency but does not include

storm surges or high-water events (Title 33, Section 328.3[d] of the Code of Federal Regulations [2014 annual edition] [33 CFR 328.3[d]]). An elevation of 7 feet (North American Vertical Datum [NAVD] 1988) was estimated as the high tide line based on work done for project design, including a review of data from the Mossdale Bridge gauge in the San Joaquin River in the proposed project area (DWR 2022). The maximum height of periodic tides, not influenced by wet season high-water events, are below 7 feet in elevation. The San Joaquin River is a waters of the United States and state and is considered a sensitive natural community.

Development

This community consists of commercial and dense residential development. It also includes most of the paved roads in the proposed project area, as well as parks. Maintained landscaping, including trees, associated with urban development is included in this community. Most of the developed areas are residential areas on the land side of the levee. Development is not a sensitive natural community.

Riparian Forest

This biological community is dominated by trees and occurs along waterbodies in the proposed project area. The trees overhang the river and understory vegetation is present. Both areas are mapped as riparian forest. The tallest trees in the canopy are mostly valley oak and Fremont cottonwood (*Populus fremontii*). Other common trees include Northern California black walnut (*Juglans hindsii*), Oregon ash (*Fraxinus latifolia*), box elder (*Acer negundo*), and willow (*Salix* spp.). In most of the riparian forest, especially along the San Joaquin River, the lowest limbs of trees have been pruned, and smaller vegetation is kept controlled. As a result, the understory of much of the riparian forest is largely bare and little shrub or herb layer vegetation is present. Within a few feet of the waterline, the understory vegetation is not controlled and is similar to the understory vegetation of the forested wetland. Most of the riparian forest is on steep levee slopes and is well above the high tide line of nearby waterbodies. Most of the riparian forest rarely experiences inundation and would not qualify as a wetland community. Riparian communities, regardless of wetland status, are considered sensitive natural communities by CDFW.

Forested Wetland

This biological community is similar to riparian forest except that it is lower in elevation relative to nearby waterbodies and more frequently inundated. The tree canopy is dominated by willows and box elder trees that tolerate longer periodic inundation, and less so by valley oak and walnut, trees more common in the upper elevations of riparian areas. Blackberry (*Rubus* spp.) and button willow (*Cephalanthus occidentalis*) are common in the shrub layer. The herb layer may be very sparse where there is deep shade, and in more open areas is dominated by mugwort (*Artemisia douglasiana*), dock (*Rumex* spp.), whiteroot sedge (*Carex barbarae*), and stinging nettle (*Urtica dioica*). Forested wetland is likely to qualify as a wetland under criteria of the USACE, and as a waters of the United States and state since most of the forested wetland is adjacent to tidal waters. Forested wetland is a sensitive natural community.

Emergent Wetland

This biological community is periodically flooded by nearby waterbodies. It is dominated by rooted aquatic emergent plants including bulrush (*Schoenoplectus* sp.) and cattail (*Typha* sp.). There are few trees present. At the margins at slightly higher elevations, the emergent wetland grades into forested

wetland. Emergent wetland qualifies as a wetland under criteria of the USACE, and as a waters of the United States and state since most of the emergent wetland is adjacent to tidal waters. Emergent wetland is a sensitive natural community.

Weatherbee Lake

Weatherbee Lake is a perennial, tidal waterbody formed by alterations made to Walthall Slough. Walthall Slough drains into Weatherbee Lake from the south. Weatherbee Lake consists of a relatively narrow area of open water with residential development on the south side and a steep levee on the north side. Near the waterline the levee has been covered with rock which limits habitat potential for many special-status plants. At the downstream end on the west there is a floodgate. The floodgate was open during fieldwork and allows the passage of water (and small watercraft) between Weatherbee Lake and the San Joaquin River. Weatherbee Lake (and Walthall Slough) is a tributary to the San Joaquin River. Much of Weatherbee Lake was covered with the floating aquatic invasive weed water hyacinth (*Eichhornia crassipes*) during fieldwork. The high tide line was estimated based on the extent of open water visible on aerial photographs. Weatherbee Lake is a waters of the United States and state and is a sensitive natural community.

Irrigation/Drainage Ditches

This community includes ditches used for irrigation or drainage of agricultural fields. This area includes ditches large enough that they appear to be permanent but not ditches reconstructed annually for furrow irrigation. The ditches may be excavated periodically to improve water flow for agricultural operations. Some of the ditches have trees or emergent vegetation along their margins, and some are lined with concrete. A delineation of waters of the United States and state has yet to be completed. Irrigation/drainage ditches that qualify as waters of the United States or state, which some or all in the proposed project area may, would also be considered a sensitive natural community. They may also provide habitat for sensitive plants or wildlife.

French Camp Slough

French Camp Slough is a perennial, tidal waterway that is tributary to the San Joaquin River about 0.3 mile downstream of the proposed project area. The high tide line was estimated based on the extent of open water visible on aerial photographs. French Camp Slough is less constrained by levees than the San Joaquin River and has much more gentle slopes near the high tide line. As a result, there are substantial areas of emergent wetland and forested wetland along French Camp Slough. French Camp Slough is a waters of the United States and state and is a sensitive natural community.

Nonnative and Invasive Species

Terrestrial Animals

Several nonnative terrestrial animal species are likely to be present in the biological communities of the proposed project area. These species may include rats, cats (*Felis catus*), mute swans (*Cygnus olor*), brown-headed cowbird (*Molothrus ater*), starlings (*Sturnus vulgaris*), house sparrows (*Passer domesticus*), red-eared sliders (*Trachemys scripta*), American bullfrogs (*Lithobates catesbeianus*), and

most recently nutria (*Myocastor coypus*) among others (CDFW 2025a).[1] Nonnative species are often abundant and affect special-status species through competition for resources, predation, disease transmittal, and destroying native habitats. CDFW's Invasive Species Program detects and responds to invasive species and educates the public on prevention by maintaining species profiles and informing the public on how to prevent introduction and spread of invasive species.

Plants

Nonnative plants occur in all plant communities. Areas dominated by nonnative vegetation are generally associated with recent human disturbance and include agricultural lands, maintained levee slopes and landscaped areas. Nonnative weeds dominate some areas, especially along the side slopes of the levees. Nonnative plants that adversely affect native species and natural communities (e.g., through competition for resources) are designated invasive plant species.

The California Invasive Plant Council maintains an inventory that categorizes nonnative invasive plants that are determined to be a threat to the state's wildlands (CAL-IPC 2025). The categorization is based on an assessment of the ecological impacts of each plant based on the best available knowledge of invasive plant experts. **Table 3.6-2** lists each invasive plant species encountered during the reconnaissance surveys of general biological resources and its rating in the California Invasive Plant Council's inventory. A complete list of plant species observed within the proposed project area is provided in Appendix C to this Draft EIR.

Special-Status Species

Special-status species are legally protected under the California Endangered Species Act (CESA) and federal Endangered Species Act (FESA) or other regulations or are species that are considered sufficiently rare by the scientific community to qualify for such listing. These species fall into the following categories:

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

[1] A producing pair of Nutria were observed south of Lathrop in 2018 and one was documented on camera at French Camp Slough in 2021 (CDFW 2025a).

8. Plants considered by the California Native Plant Society (CNPS) and CDFW to be "rare, threatened or endangered in California" (California Rare Plant Ranks 1A, 1B, and 2).

TABLE 3.6-2
INVASIVE PLANT SPECIES IN PROPOSED PROJECT AREA

Common Name	Scientific Name	Cal-IPC Rating [a]
Italian thistle	*Carduus pycnocephalus*	Moderate
Yellow star thistle	*Centaurea solstitialis*	High
Bull thistle	*Cirsium vulgare*	Moderate
Bristly ox-tongue	*Helminthotheca echioides*	Limited
Perennial pepperweed	*Lepidium latifolium*	High
Summer mustard	*Hirschfeldia incana*	Moderate
Russian thistle	*Salsola tragus*	Limited
Castor bean	*Ricinus communis*	Limited
Black locust	*Robinia pseudoacacia*	Limited
Pokeweed	*Phytolacca americana* var. *a.*	Limited
Curly dock	*Rumex crispus*	Limited
Himalayan blackberry	*Rubus armeniacus*	High
Tree of heaven	*Ailanthus altissima*	Moderate
Tree tobacco	*Nicotiana glauca*	Moderate
Mexican fan palm (seedling)	*Washingtonia robusta*	Moderate
Brazilian waterweed	*Egeria densa*	High
Iris	*Iris pseudacorus*	Limited
Giant reed	*Arundo donax*	High
Wild oat	*Avena* sp.	Moderate
Ripgut brome	*Bromus diandrus*	Moderate
Red brome	*Bromus rubens*	High
Bermuda grass	*Cynodon dactylon*	Moderate
Pampas grass	*Cortaderia selloana*	High
Annual beard grass	*Polypogon monspeliensis*	Limited
Water hyacinth	*Eichhornia crassipes*	High
Crisp-leaved pondweed	*Potamogeton crispus*	Moderate

NOTES: Cal-IPC = California Invasive Plant Council

a. High = species have severe ecological impacts on the physical processes of plant and animal communities, and vegetation structure. Their reproductive biology and other attributes are conducive to moderate to high rates of dispersal and establishment. Most are widely distributed ecologically.
Moderate = species have substantial and apparent—but generally not severe—ecological impacts on physical processes, plant and animal communities, and vegetation structure. Their reproductive biology and other attributes are conducive to moderate to high rates of dispersal, although establishment is generally dependent on ecological disturbance. Ecological amplitude and distribution may range from limited to widespread.
Limited = species are invasive, but their ecological impacts are minor on a statewide level or there was not enough information to justify a higher score. Their reproductive biology and other attributes result in low to moderate rates of invasiveness. Ecological amplitude and distribution are generally limited, but these species may be locally persistent and problematic.
Watch = species have been assessed as posing a high risk of becoming invasive in the future.

SOURCE: Cal-IPC 2025

Critical Habitat

Critical habitat is defined in Section 3(5)A of FESA as a specific geographic area(s) that contains features essential for the conservation of a threatened or endangered species and that may require special management and protection. No designated critical habitat is present for terrestrial species in the proposed project area and the proposed project would have no impact on terrestrial species critical habitat (USFWS 2025a).

Identification of Special-Status Species with Potential to Occur

Database queries were updated in 2025 (see Appendix D to this Draft EIR). A list of regionally occurring special-status species were compiled from a nine-quadrangle search of the California Natural Diversity Database (CDFW 2025b); a nine-quadrangle search of the CNPS (CNPS 2025) database; a search of the U.S. Fish and Wildlife Service (USFWS) Information for Planning and Consultation endangered species database; and literature regarding the biological resources of the region. The search encompassed the following 7.5-minute U.S. Geological Survey topographic quadrangles:

- Holt
- Stockton West
- Stockton East
- Union Island
- Lathrop
- Manteca
- Tracy
- Vernalis
- Ripon

Field surveys were conducted in the proposed project area plus a 150-foot buffer (approximately 920 acres), mostly on a levee along the San Joaquin River between the cities of Stockton and Lathrop, in San Joaquin County, California. The proposed project area includes smaller segments of levee along French Camp Slough and Weatherbee Lake. The proposed project area also includes several potential staging areas and potential restoration areas.

Surveys for most of the proposed project area occurred in 2022 (see Appendix C to this Draft EIR). Surveys for ecosystem restoration Sites 13, 14, and 16, and parts of the dryland levee occurred from December 2024 to May 2025 (see Appendix C-2 to this Draft EIR). The other ecosystem restoration sites, and some agricultural areas of the dryland levee extension were not surveyed on the ground. See **Table 3.6-3** for a summary of proposed project area access and survey methodology.

TABLE 3.6-3
PROPOSED PROJECT AREA SURVEY METHODOLOGY AND ACCESS

Proposed Project Area	Survey Methodology	Additional Surveys Required
Waterside Existing Levee from Station 0 to 10,000	Surveyed by driving and walking the levee.	None
Waterside Existing Levee from Station 10,000 to 82,000	Surveyed by boat and driving and walking the levee.	None
Landside Existing Levee and Dryland Levee Extension from Station 0 to 92,000	Surveyed by driving and walking the existing levee, and most of the levee extension area.	None
Staging Areas 3, 4, 6, 9, and 13	Surveyed by walking the staging areas.	None
Staging Areas 1, 2, 7, 8, 10, 11, and 12	Not surveyed	No Access: Field Surveys if access approved
Ecosystem Restoration Sites 13, 14, and 16	Surveyed by walking	None
Other Ecosystem Restoration Sites	Not surveyed	No Access: Field Surveys

Species on the lists were assessed on the basis of habitat requirements and distribution relative to the location of and vegetation communities occurring in and around the proposed project area. **Tables 3.6-4** and **3.6-5** provide comprehensive lists of the special-status species considered in this analysis. The following set of criteria has been used to determine the potential of each species to occur in the proposed project area:

The "Potential to Occur" categories are defined as follows:

- **None**: The proposed project area is outside the range or the species is extirpated in the area, or there is no habitat present.
- **Low**: The proposed project area provides only limited and low-quality habitat for a particular species. In addition, the known range for a particular species may be outside of the proposed project area.
- **Moderate**: The proposed project area and/or immediate vicinity provides suitable habitat for a particular species.
- **High**: The proposed project area and/or immediate vicinity provide ideal habitat conditions for a particular species and/or known populations occur in the project area or within its immediate vicinity.
- **Present: The species was observed during the biological surveys within the** proposed project area. Species unlikely to occur within the proposed project area are not discussed further. The analysis below considers those special-status species that have been categorized as likely to occur or are present in the proposed project area.

TABLE 3.6-4
SPECIAL-STATUS PLANTS EVALUATED

Common Name *Scientific Name*	Listing Status USFWS/ CDFW/CRPR	General Habitat	Potential to Occur in the Proposed Project Area
Large-flowered fiddleneck *Amsinckia grandiflora*	FE/CE/1B.1	Annual herb found on grassy slopes in cismontane woodland and valley and foothill grassland from 850 to1,800 feet. Blooms from March through May.	**None.** The proposed project area is outside the range, below the recorded elevation range, and does not have suitable habitat.
Alkali milk-vetch *Astragalus tener* var. *tener*	--/--/1B.2	Annual herb found in alkaline areas of playas, adobe clay valley and foothill grassland, and vernal pools from 5 to 200 feet. Blooms March through June.	**None.** The proposed project area does not have areas of alkaline influence or suitable habitat.
Heartscale *Atriplex cordulata* var. *cordulata*	--/--/1B.2	Annual herb found in alkaline chenopod scrub, meadows and seeps, and valley and foothill grassland below about 1,850 feet. Blooms April through October.	**None.** The proposed project area does not have areas of alkaline influence or suitable habitat.
Lesser saltscale *Atriplex minuscula*	--/--/1B.1	Annual herb found in alkaline, sandy substrates of chenopod scrub, playas, and valley and foothill grassland, from May through October from 50 to 650 feet. Blooms May through October.	**None.** The proposed project area does not have areas of alkaline influence or suitable habitat.
Big tarplant *Blepharizonia plumosa*	--/--/1B.1	Annual herb generally found in clay soils of dry slopes in valley and foothill grassland from 100 to 1,650 feet. Blooms July through October.	**None.** The proposed project area is outside the range and does not have suitable habitat.
Watershield *Brasenia schreberi*	--/--/2B.3	Aquatic perennial rhizomatous herb found in freshwater marshes and swamps below about 7,250 feet. Blooms June through September.	**Moderate.** The proposed project area is in the range and the margins of aquatic habitats may provide potential habitat.
Bristly sedge *Carex comosa*	--/--/2B.1	Perennial rhizomatous herb found in wet areas of coastal prairie, lake margins, and valley and foothill grassland below about 2,050 feet. Blooms May through September.	**Moderate.** The proposed project area is in the range. Emergent wetland and the margins of aquatic habitats may provide potential habitat.
Palmate bracted bird's-beak *Chloropyron palmatum* *(=Cordylanthus palmatus)*	FE/CE/1B.1	Annual herb found in alkaline flats of chenopod scrub and annual and foothill grassland from 10 to 500 feet. Blooms from May through October.	**None.** The proposed project area does not have areas of alkaline influence or suitable habitat.
Slough Thistle *Cirsium crassicaule*	--/--/1B.1	Annual to perennial herb found in freshwater marshes below about 350 feet. Blooms May through August.	**High.** The proposed project area is in the range. Emergent wetland and the margins of aquatic habitats may provide potential habitat.
Recurved larkspur *Delphinium recurvatum*	--/--/1B.2	Perennial herb found in alkaline substrates of chenopod scrub, cismontane woodland, and valley and foothill grassland from 10 to 2,600 feet. Blooms March through June.	**None.** The proposed project area does not have areas of alkaline influence or suitable habitat.
Delta button-celery *Eryngium racemosum*	--/CE/1B.1	An annual to perennial herb found in vernally mesic clay depressions of riparian scrub from about 10 to 100 feet. Blooms June through October, and sometimes as early as May.	**None.** The proposed project area does not have suitable habitat.

Common Name *Scientific Name*	Listing Status USFWS/ CDFW/CRPR	General Habitat	Potential to Occur in the Proposed Project Area
Diamond-petaled California poppy *Eschscholzia rhombipetala*	--/--/1B.1	Annual herb found in alkaline, clay substrates of valley and foothill grassland below 3,200 feet. Blooms March through April.	**None.** The proposed project area does not have areas of alkaline influence or suitable habitat.
San Joaquin spearscale *Extriplex joaquinana*	--/--/1B.2	Annual herb found in alkaline chenopod scrub, meadows and seeps, playas, and valley and foothill grassland below about 2,750 feet. Blooms April through October.	**None.** The proposed project area does not have areas of alkaline influence or suitable habitat.
Woolly rose-mallow *Hibiscus lasiocarpos* var. *occidentalis*	--/--/1B.2	An emergent perennial rhizomatous herb found in freshwater marshes and swamps from about 0 to 400 feet. Often found in riprap on sides of levees. Blooms from June through November.	**Moderate.** The proposed project area is in the range. Emergent wetland and the margins of aquatic habitats may provide potential habitat.
Alkali-sink goldfields *Lasthenia chrysantha*	--/--/1B.1	Annual herb found in alkaline vernal pools from 0 to 650 feet. Blooms February through April.	**None.** The proposed project area does not have areas of alkaline influence or suitable habitat.
Delta tule pea *Lathyrus jepsonii* var. *jepsonii*	--/--/1B.2	Perennial herb found in brackish or freshwater marshes and swamps below 15 feet. Blooms May through July, and sometimes into September.	**Moderate.** The proposed project area is in the range. Emergent wetland and the margins of aquatic habitats may provide potential habitat.
Mason's lilaeopsis *Lilaeopsis masonii*	--/CR/1B.1	Perennial rhizomatous herb found in tidal brackish and freshwater marshes, swamps, and riparian scrub from 0 to 35 feet. Blooms April through November.	**Moderate.** The proposed project area is in the range. The margins of watercourses may provide potential habitat.
Delta mudwort *Limosella australis*	--/--/2B.1	Perennial stoloniferous herb found in mud or sand along streambanks of brackish or freshwater marshes and swamps and riparian scrub below 10 feet. Blooms May through August.	**Moderate.** The proposed project area is in the range. The margins of watercourses may provide potential habitat.
Showy golden madia *Madia radiata*	--/--/1B.1	Annual herb found on grassy open slopes on clay soils (vertisols), and rarely on serpentine from 60 to 4,000 feet. Blooms March through May.	**None.** There are no undisturbed grasslands with natural topography in the proposed project area. All Northern California collections are in the Coast Ranges.
California alkali grass *Puccinellia simplex*	--/--/1B.2	Annual herb found in mesic, alkaline substrates of flats and lake margins or vernal pools within chenopod scrub, meadows and seeps, and valley and foothill grassland below about 3,050 feet. Blooms March through May.	**None.** The proposed project area does not have areas of alkaline influence.
Sanford's arrowhead *Sagittaria sanfordii*	--/--/1B.2	Aquatic emergent perennial rhizomatous herb found in shallow freshwater marshes, swamps, ponds, and ditches from 0 to 2,150 feet. Blooms from May through October.	**Moderate.** The proposed project area is in the range. Emergent wetland and the margins of aquatic habitats may provide potential habitat.
Suisun Marsh aster *Symphyotrichum lentum*	--/--/1B.2	Perennial rhizomatous herb found in brackish and freshwater marshes and swamps from 0 to 10 feet. Blooms from Late April or May through November.	**Moderate.** The proposed project area is in the range. Emergent wetland and the margins of aquatic habitats may provide potential habitat.
Wright's trichocoronis *Trichocoronis wrightii* var. *wrightii*	--/--/1B.2	Annual herb found in alkaline areas of meadows and seeps, marshes and swamps, riparian forest, and vernal pools from 15 to 1,450 feet. Blooms Mary through September.	**None.** The proposed project area does not have areas of alkaline influence.

Common Name *Scientific Name*	Listing Status USFWS/ CDFW/CRPR	General Habitat	Potential to Occur in the Proposed Project Area
Saline clover *Trifolium hydrophilum*	--/--/1B.2	Annual herb found in mesic and alkaline open areas of marshes and swamps, valley and foothill grasslands, and vernal pools from 0 to 985 feet. Blooms April through June.	**None.** The proposed project area does not have areas of alkaline influence.
Caper-fruited tropidocarpum *Tropidocarpum capparideum*	--/--/1B.1	Annual herb found in alkaline hills of valley and foothill grassland below about 1,500 feet. Blooms March through April.	**None.** The proposed project area does not have areas of alkaline influence or suitable habitat.

STATUS CODES:

Federal

FE = listed as endangered under FESA
FT = listed as threatened under FESA

State

SE = listed as endangered under CESA
ST = listed as threatened under CESA
CR = listed as rare under NPPA

California Rare Plant Rank (CRPR)
Rank 1A = Plants presumed extirpated in California and either rare or extinct elsewhere.
Rank 1B = Plants rare, threatened, or endangered in California and elsewhere.
Rank 2A = Plants presumed extirpated in California, but more common elsewhere.
Rank 2B = Plants rare, threatened, or endangered in California, but more common elsewhere.

An extension reflecting the level of threat to each species is appended to each rarity category as follows:

.1 – Seriously endangered in California.
.2 – Fairly endangered in California.
.3 – Not very endangered in California.

SOURCES: CDFW 2025b; CNPS 2025; Jepson 2025; USFWS 2025b

TABLE 3.6-5
SPECIAL-STATUS WILDLIFE EVALUATED

Common Name Scientific Name	Status (Federal/ State)	Habitat Requirements	Potential to Occur in Proposed Project Area
Invertebrates			
Crotch's bumble bee *Bombus crotchii*	--/CC	Inhabits open grassland and scrub habitats, nesting occurs underground.	**Moderate.** Although native grasslands and scrub are not abundant, undeveloped areas and floral resources are present within the proposed project area. Marginal habitat in the agricultural, ruderal, and riparian forest may contain burrows and provide nesting habitat. The nearest occurrence record for this species is located approximately 7 miles east of the study area in Tracy, and was recorded in 2023 (Xerces Society et al. 2025)
Western bumble bee *Bombus occidentalis*	--/CC	Shrubland, grassland, and open grassy urban areas, nesting typically occurs underground and in cavities.	**Low.** Although there are two CNDDB occurrences in the area, they were recorded in 1962. In California, Western bumble bee populations are now largely restricted to high elevation sites in the Sierra Nevada and scattered observations along the California coast (CDFW 2019).

Common Name Scientific Name	Status (Federal/ State)	Habitat Requirements	Potential to Occur in Proposed Project Area
Conservancy fairy shrimp *Branchinecta conservatio*	FE/--	Occurs in large turbid vernal pools, where rooted vegetation is absent. Known from eight populations in CA: Vina Plains, Butte and Tehama cos.; Sacramento National Wildlife Refuge, Glenn Co.; Yolo Bypass Wildlife Area, Yolo Co.; Jepson Prairie, Solano Co.; Mapes Ranch, Stanislaus Co.; University of CA, Merced, Merced Co.; Grasslands Ecological Area, Merced Co.; and Los Padres National Forest, Ventura Co.	**None.** There are no vernal pools and the proposed project area is not in any of the known populations.
Vernal pool fairy shrimp *Branchinecta lynchi*	FT/--	Vernal pools, swales, and ephemeral freshwater habitat. Most commonly found in small (< 0.05 acre), clear to tea-colored vernal pools with mud, grass, or basalt bottoms in unplowed grasslands	**None.** There are no vernal pools in the proposed project area.
Monarch butterfly *Danaus plexippus*	FC/--	Wintering sites are along the coast from Mendocino Co. to Baja California in wind-protected tree groves with nectar and water sources nearby. Milkweed (*Asclepias* spp.) is the larval host plant.	**Moderate.** The proposed project area is in the migration range and provides potential suitable habitat.
Valley elderberry longhorn beetle *Desmocerus californicus dimorphus*	FT/--	Occurs in the Central Valley where mature elderberry shrubs occur.	**High.** The proposed project area is in the range and elderberry shrubs were documented in the proposed project area.
Vernal pool tadpole shrimp *Lepidurus packardi*	FE/--	Typically occurs in large, deep vernal pools but can also make use of smaller pools within larger vernal pool complexes.	**None.** There are no vernal pools in the proposed project area.
Amphibians			
California tiger salamander *Ambystoma californiense*	FT/CT	Agricultural wetlands and other wetlands such as irrigation and drainage canals, low gradient streams, marshes, ponds, sloughs, small lakes, and their associated uplands.	**Low.** The proposed project area does not have suitable habitat. Waterways within the proposed project area contain predators and/or are in highly managed agricultural areas with inconsistent water regimes.
Foothill yellow-legged frog (Central coast DPS) *Rana boylii*	FT/CE	Found in or near rocky streams in a variety of habitats. Egg clusters are attached to gravel or rocks in moving water near stream margins. Rarely encountered far from permanent water. Its elevation range extends from near sea level to 6,370 ft in the Sierra.	**None.** There is no suitable rocky stream habitat and the proposed project area is outside the current range.
California red-legged frog *Rana draytonii*	FT/CSC	Inhabits ponds, quiet pools of streams, marshes, and riparian areas with dense, shrubby, or emergent vegetation. Requires permanent or nearly permanent pools for larval development. Occurs from near sea level to approximately 5,200 ft, though nearly all sightings have occurred below 3,500 ft. Probably extirpated from the floor of the Central Valley before 1960.	**None.** The proposed project area is outside the current range.
Western spadefoot (Northern DPS) *Spea hammondii*	PT/CSC	Occurs primarily in grassland habitats. Vernal pools are essential for breeding and egg-laying.	**Low.** The most recent CNDDB record is from 1922 and the proposed project area no longer has suitable habitat. Species is possibly extirpated from this area.

Common Name Scientific Name	Status (Federal/ State)	Habitat Requirements	Potential to Occur in Proposed Project Area
Reptiles			
California glossy snake Arizona elegans occidentalis	--/CSC	Most common in desert habitats but also occurs in chaparral, valley-foothill hardwood, pine/juniper woodland, and grasslands. Occurs throughout southern CA, and in the interior Coast Range as far north as the Bay Area.	**None.** The proposed project area is outside the range.
Northwestern pond turtle *Actinemys marmorata*	PT/CSC	Agricultural wetlands and other wetlands such as irrigation and drainage canals, low gradient streams, marshes, ponds, sloughs, small lakes, and their associated uplands.	**High.** The proposed project area is in the range. Wetlands and the margins of aquatic habitats may provide potential habitat.
San Joaquin coachwhip *Masticophis flagellum ruddocki*	--/CSC	Open, dry habitats with little or no tree cover. Found in valley grassland and saltbush scrub in the San Joaquin Valley.	**Low.** The proposed project area occurs outside of the known range identified by USFWS.
Coast horned lizard *Phrynosoma blainvillii*	--/CSC	Occurs in valley-foothill hardwood, conifer and riparian habitats, as well as in pine-cypress, juniper and annual grassland habitats, especially sandy areas, washes, flood plains and wind-blown deposits. Needs loose soil for cover and reproduction. Negatively associated with nonnative Argentine ant presence; positively associated with presence of native ants and chaparral. Occurs in the Sierra foothills from Butte Co. to Kern Co. and throughout the central and Southern California coast. Found up to 4,000 ft in the northern end of its range and 6,000 ft in the south.	**None.** The proposed project area is outside the current range.
Giant garter snake *Thamnophis gigas*	FT/CT	Prefers freshwater marsh and low gradient streams. Has adapted to drainage canals and irrigation ditches. This is the most aquatic of the garter snakes in California.	**Low.** Potential aquatic habitat occurs in the backwater areas of the San Joaquin River, slow moving waters of French Camp Slough, and Weatherbee Lake, irrigation ditches and freshwater marsh. However, the larger waterbodies contain predatory fish and adjacent upland habitat consists mainly of urban and agricultural land not suitable as potential upland habitat. Additionally, there are no current or historic giant garter snake occurrences between State Route 4 and Modesto, thought to be because of the lack of rice fields and other suitable aquatic habitat (USFWS 2015; Fouts et al. 2020). The closest current CNDDB record is from 2018 and is 7.5 miles to the northwest.
Birds			
Tricolored blackbird *Agelaius tricolor*	--/CT	High colonial species, requires open water, protected nesting substrate, and foraging area with insect prey within a few km of the colony.	**Low.** There are historic CNDDB occurrences in the proposed project area; however, the proposed project area has been modified and fragmented by agricultural and urban development and the remining habitat is likely too small to support a breeding population.

Common Name Scientific Name	Status (Federal/ State)	Habitat Requirements	Potential to Occur in Proposed Project Area
Burrowing owl Athene cunicularia	--/CC	Open, dry annual or perennial grasslands, deserts and scrublands characterized by low-growing vegetation. Subterranean nester, dependent upon burrowing mammals, most notably, the California ground squirrel.	**High.** The proposed project area is in the range and provides potential habitat.
Swainson's hawk *Buteo swainsoni*	--/CT	Great Basin grassland, riparian forest, riparian woodland, valley and foothill grassland. Breeds in grasslands with scattered trees, juniper-sage flats, riparian areas, savannahs, and agricultural or ranch lands with groves or lines of trees. Requires adjacent suitable foraging areas such as grasslands, or alfalfa or grain fields supporting rodent populations.	**High.** The proposed project area is in the range and provides habitat for nesting and foraging.
Northern harrier *Circus hudsonius*	--/CSC	Coastal scrub, Great Basin grassland, marsh and swamp, riparian scrub, valley and foothill grassland, and wetlands. Coastal salt and freshwater marsh. Nest and forage in grasslands, from salt grass in desert sink to mountain cienagas. Nests on ground in shrubby vegetation, usually at marsh edge; nest built of a large mound of sticks in wet areas.	**High**. The proposed project area is in the range and provides habitat for nesting and foraging.
Western yellow-billed cuckoo *Coccyzus americanus occidentalis*	FT/CE	Found in cottonwood-willow forest and willow scrub along rivers and streams.	**Low.** The proposed project area is in the range, but riparian habitat is narrow and fragmented and is unlikely to support cuckoos.
White-tailed kite *Elanus leucurus*	--/CFP	Cismontane woodland, marsh and swamp, riparian woodland, valley and foothill grassland, and wetlands. Rolling foothills and valley margins with scattered oaks and river bottomlands or marshes next to deciduous woodland. Open grasslands, meadows, or marshes for foraging close to isolated, dense-topped trees for nesting and perching.	**High.** The proposed project area is in the range and provides habitat for nesting and foraging.
California condor *Gymnogyps californianus*	FE/CE	Once occurred across much of CA, and then extirpated in the wild. Re-introduction has established populations in the mountains around the southern end of the San Joaquin Valley, and in far northern CA.	**None.** The proposed project area is outside the current range.
Loggerhead shrike *Lanius ludovicianus*	--/CSC	Forages and nests in grasslands, shrublands, and open woodlands. Nests in trees and shrubs.	**Moderate.** The proposed project area is in range and may provide potential habitat.
California black rail *Laterallus jamaicensis coturniculus*	--/CT, CFP	Inhabits freshwater marshes, wet meadows and shallow margins of saltwater marshes bordering larger bays. Needs water depths of about 1 inch that do not fluctuate during the year and dense vegetation for nesting habitat.	**Low.** The proposed project area is outside of the current known range.
Modesto song sparrow *Melospiza melodia*	--/CSC	Nests and forages primarily in emergent marsh, riparian scrub, and early successional riparian forest habitats in the north-central portion of the Central Valley; infrequently in mature riparian forest and sparsely vegetated ditches and levees. Forages primarily on exposed ground or in leaf litter.	**Low.** The proposed project area provides marginal habitat. Historically, they were documented near the proposed project area, but the current range is west and north of the proposed project area.

Common Name Scientific Name	Status (Federal/ State)	Habitat Requirements	Potential to Occur in Proposed Project Area
Least Bell's vireo *Vireo bellii pusillus*	FE/CE	Nesting habitat includes willows, mulefat, California wild rose, poison-oak, mugwort, and cottonwood.	**Low.** The proposed project area is outside of the known range identified by USFWS.
Yellow-headed blackbird *Xanthocephalus xanthocephalus*	--/CSC	Nests in freshwater wetlands with dense, emergent vegetation.	**Low.** May use the proposed project area during migration, but do not nest in the Central Valley.
Mammals			
Pallid bat *Antrozous pallidus*	--/CSC	Roosts in crevices in rocky outcrops; caves; mines; trees (including bole cavities of oaks, exfoliating ponderosa pine and valley oak bark, deciduous trees in riparian areas, and fruit trees in orchards); and various human structures, such as bridges, barns, and vacant buildings.	**Moderate.** The proposed project area is in range and may provide potential habitat.
Townsend's big-eared bat *Corynorhinus townsendii*	--/CSC	Found throughout CA in all but subalpine and alpine habitats and may be found at any season throughout range. Most abundant in mesic habitats. Requires caves, mines, tunnels, buildings, or other human-made structures for roosting. May use separate sites for night, day, hibernation, and maternity roosts. Hibernation sites are located in cold, but not freezing, environments. Maternity roosts are located in warm environments. Gleans from brush and trees, or feeds along habitat edges. Extremely sensitive to disturbance of roosting sites.	**Low.** Utilizes human-made structures, but sensitive to disturbance.
Western mastiff bat *Eumops perotis californicus*	--/CSC	Uncommon colonial resident in Cascade/Sierra Nevada, central and southern Coast Ranges, and southern CA. May occur in open, semi-arid to arid habitats, including deciduous woodlands, grasslands, conifer forests, and urban areas. Primarily crevice-dwelling and occurs where there are significant rock features offering suitable roosting habitat such as cliffs or large boulders. Also roosts in buildings. Roosts are generally high above the ground, allowing for a 10 ft vertical drop below the entrance.	**Low.** There are no suitable rock features in the proposed project area. May utilize human-made structures.
Riparian (= San Joaquin Valley) woodrat *Neotoma fuscipes riparia*	FE/CSC	Riparian forest habitats with moderate canopy and moderate to dense understory.	**Low.** The proposed project area is outside of the known range identified by USFWS.
Riparian brush rabbit *Sylvilagus bachmani riparius*	FE/CE	Riparian areas on the San Joaquin River in dense thickets of wild rose, willows, and blackberries.	**High.** The proposed project area is in range and some areas of denser riparian habitat may provide suitable habitat.
American Badger *Taxidea taxus*	--/CSC	Most abundant in drier open stages of most shrub, forest, and herbaceous habitats, with friable soils.	**Low.** The proposed project area is narrow and fragmented by agricultural and urban development and does not have suitable habitat.

Common Name Scientific Name	Status (Federal/ State)	Habitat Requirements	Potential to Occur in Proposed Project Area
San Joaquin kit fox *Vulpes macrotis mutica*	FE/CT	Annual grasslands or grassy open areas with scattered shrubby vegetation. Requires loose-textured sandy soils for burrowing and suitable prey base.	**Low.** The proposed project area does not have suitable habitat and no known extant populations in the project vicinity.

NOTES: CDFW = California Department of Fish and Wildlife; CNDDB = California Natural Diversity Database

Federal	State	State (cont.)
FC: Federal candidate for listing	CC: State candidate for listing	CT: State listed as threatened
FE: Federally listed as endangered	CD: State delisted	CFP: California fully protected species
FT: Federally listed as threatened	CE: State listed as endangered	
PT: Proposed as threatened	CSC: California species of special concern	
FD: Federally delisted		

SOURCES: CDFW 2025b; USFWS 2025b

FESA and CESA Listed and CESA Candidate Plant Species

Under CESA, candidate species are regulated the same as if they were listed. No plants listed under FESA or CESA, or candidate species under CESA, were found during the botanical survey.

Non-Listed Special-Status Plant Species

The species listed below have been designated as species of concern or fully protected by CDFW, or they are candidate or proposed for listing under FESA. Species that are candidate or proposed under the FESA are not subject to take prohibitions until they are listed.

Watershield (*Brasenia schreberi*)

Watershield is a perennial aquatic herb with rhizomes that root in mud and floating leaves found in ponds or slow streams. In California watershield is known from below about 7,250 feet in elevation in the Klamath and north Coast Ranges, high Cascade Range and Sierra Nevada, Modoc Plateau, and Sacramento Valley. The only record of watershield near the proposed project area is a geographically imprecise mention of a site name in a 1925 flora, mapped by the California Natural Diversity Data Base (CNDDB) as a "best guess" near downtown Stockton (Occurrence 7). There are other CNDDB records farther north in the Delta from 1893 (Occurrence 10, believed to be extirpated) and 1976 (Occurrence 11).

The aquatic edges of waterbodies in the proposed project area provide potential habitat for watershield. The habitat is marginal because (1) many areas along the edges are covered in riprap, (2) most areas are relatively steep and most records of watershield are from more gently sloped aquatic beds, (3) the waterbodies, particularly the San Joaquin River sometimes experiences strong and fast currents, and (4) the best potential habitat areas for watershield are heavily invaded by the nonnative water hyacinth (*Eichhornia crassipes*). Watershield was not found during the botanical survey.

Bristly sedge (*Carex comosa*)

Bristly sedge is a perennial cespitose herb that grows in moist to wet places in coastal prairie, marshes, and grassland. In California bristly sedge is known from below about 2,050 feet in elevation in the Klamath and inner north Coast Ranges, high Cascade Range, Modoc Plateau, Central Valley, Bay Area and northern central coast, and San Bernardino Mountains. The only record of bristly sedge near the proposed project area is a geographically imprecise 1928 collection mapped by CNDDB near Holt,

approximately 4.9 miles east of the proposed project area (Occurrence 3). There are other more recent CNDDB records farther north in the Delta.

The edges of waterbodies, margins of emergent wetland, and more open and sunny areas of forested wetland in the proposed project area provide potential habitat for bristly sedge. Good habitat in the proposed project area is limited because many areas along the edges of waterbodies are covered in riprap. Bristly sedge was not found during the botanical survey.

Slough thistle (*Cirsium crassicaule*)

Slough thistle is an annual or biennial herb found in freshwater marshes or wet areas in chenopod or riparian scrub. Slough thistle is known from below about 350 feet in elevation in the San Joaquin Valley. Most records are from much farther south near Bakersfield, but three collections from 1893–1896 are from very near or in the proposed project area (Jepson 2025). Slough thistle was reported from the shallow water of a canal along the San Joaquin River in the vicinity of Lathrop. CNDDB (Occurrence 2) notes slough thistle was last seen near this occurrence in 1933 and the area was searched again unsuccessfully in 1974. Another CNDDB record (Occurrence 1) of fewer than 10 plants along the San Joaquin River from 1974 is about 5 air miles south of the proposed project area.

The edges of waterbodies, margins of emergent wetland, and more open and sunny areas of forested wetland in the proposed project area provide potential habitat for slough thistle. Good habitat in the proposed project area is limited because many areas along the edges of waterbodies are covered in riprap. Slough thistle was not found during the botanical survey.

Woolly rose-mallow (*Hibiscus lasiocarpos var. occidentalis*)

Woolly rose-mallow is a perennial rhizomatous herb to sub-shrub that grows in freshwater marshes and is often found in riprap on levees. In California woolly rose-mallow is known from below about 400 feet in elevation in the Central Valley and Cascade foothills. There are hundreds of geographically precise records of woolly rose-mallow regionally, but they are all from lower or farther north in the Delta. The nearest CNDDB record is from about 4 air miles downstream of the proposed project area near the confluence of the Calaveras and San Joaquin rivers (Occurrence 11).

The edges of waterbodies (including areas of riprap), emergent wetland, and forested wetland in the proposed project area provide potential habitat for woolly rose-mallow, although it has not been previously reported as far upstream in the south Delta as the proposed project area. Woolly rose-mallow was not found during the botanical survey.

Delta tule pea (*Lathyrus jepsonii var. jepsonii*)

Delta tule pea is a perennial herb found in brackish or freshwater marshes along coasts or estuaries. Delta tule pea is known from below about 15 feet in elevation in the Delta and Bay Area. There are hundreds of geographically precise records of Delta tule pea regionally, but they are all from farther downstream or farther north in the Delta, or from Suisun Bay or farther west. The nearest CNDDB record to the proposed project area is a geographically imprecise record covering all of Rough and Ready Island near the Port of Stockton based on a 1903 collection (Occurrence 9), about 2.2 air miles northwest of the proposed project area. The nearest recent and geographically precise records are over 10 air miles east and northwest of the proposed project area.

The edges of waterbodies, margins of emergent wetland, and more open and sunny areas of forested wetland in the proposed project area provide potential habitat for Delta tule pea. Delta tule pea was not found during the botanical survey. The more common subspecies, *Lathyrus jepsonii* var. *californicus* was found in a single location in the proposed project area, on a small island in the San Joaquin River. The more common subspecies is differentiated from Delta tule pea primarily by its more puberulent leaves and stems. A collection of *Lathyrus jepsonii* var. *californicus* was made from the proposed project area and deposited at the University of California, Davis herbarium (Accession #DAV240943.

Mason's lilaeopsis (*Lilaeopsis masonii*)

Mason's lilaeopsis is a short (up to a few inches), perennial rhizomatous herb found in the intertidal elevations of brackish or freshwater marshes and streambanks, generally growing on relatively open mud that is not entirely shaded by taller vegetation. Mason's lilaeopsis is known from below about 35 feet in elevation in the Delta and San Francisco Bay Area. There are hundreds of geographically precise records of Mason's lilaeopsis regionally, but they are all from farther downstream or farther north in the Delta, or from Suisun Bay or farther west. The nearest CNDDB records to the proposed project area are 5.5–9.3 air miles north and east of the proposed project area.

The aquatic edges of waterbodies in the proposed project area provide potential habitat for Mason's lilaeopsis. The habitat is marginal because (1) many areas along the edges are covered in riprap, (2) most areas are relatively steep and more gently sloped intertidal mudflats provide better habitat, and (3) the best potential habitat areas for Mason's lilaeopsis are heavily invaded by the nonnative water hyacinth. Mason's lilaeopsis was not found during the botanical survey.

Delta mudwort (*Limosella australis*)

Delta mudwort is a short (up to a few inches), annual herb found in the intertidal elevations of brackish or freshwater marshes and streambanks, generally growing on relatively open mud or sand that is not entirely shaded by taller vegetation. In California Delta mudwort is known from below about 10 feet in elevation in the Delta. There are dozens of geographically precise records of Delta mudwort regionally, but they are all from farther downstream or farther north in the Delta. The nearest CNDDB record to the proposed project area is about 9.4 air miles east of the proposed project area (Occurrence 35).

The aquatic edges of waterbodies in the proposed project area provide potential habitat for Delta mudwort. The habitat is marginal because (1) many areas along the edges are covered in riprap, (2) most areas are relatively steep and more gently sloped intertidal flats provide better habitat, and (3) the best potential habitat areas for Delta mudwort are heavily invaded by the nonnative water hyacinth. Delta mudwort was not found during the botanical survey.

Sanford's arrowhead (*Sanford's arrowhead*)

Sanford's arrowhead is an aquatic emergent perennial herb from tubers that grows in freshwater marshes, ponds, and ditches. Sanford's arrowhead is known from below about 2,150 feet in elevation in the Klamath Ranges, Cascade foothills, Central Valley, and north and south coast. The nearest CNDDB record is a geographically imprecise 1901 collection mapped near downtown Stockton (Occurrence 54). Nearly all regional records are in the north Delta or farther north, or much farther south of the proposed project area near Merced.

The edges of waterbodies and emergent wetland in the proposed project area provide potential habitat for Sanford's arrowhead. Good habitat in the proposed project area is limited because many areas along the edges of waterbodies are covered in riprap. Sanford's arrowhead was not found during the botanical survey.

Suisun marsh aster (*Symphyotrichum lentum*)

Suisun marsh aster is a perennial rhizomatous herb found in brackish or freshwater marshes along coasts or estuaries. Suisun marsh aster is known from below about 10 feet in elevation in the Sacramento Valley (primarily lower Delta), Bay Area, and central coast. There are hundreds of geographically precise records of Suisun marsh aster regionally, but they are all from farther downstream or farther north in the Delta, or from Suisun Bay or farther west. The nearest CNDDB record to the proposed project area is a geographically imprecise record in the lower Calaveras River based on a 1926 collection (Occurrence 200), about 4 air miles north of the proposed project area. The nearest recent and geographically precise records begin about 6.5 air miles northwest of the proposed project area.

The edges of waterbodies and emergent wetland in the proposed project area provide potential habitat for Suisun marsh aster. Suisun marsh aster was not found during the botanical survey.

FESA and CESA Listed and CESA Candidate Wildlife Species

Table 3.6-5 provides a comprehensive list of special-status wildlife species that were considered in the analysis. The descriptions below are for wildlife species that are either listed under FESA or CESA, or are a candidate for listing under FESA or CESA. Under CESA, candidate species are regulated the same as if they were listed.

Western Burrowing Owl (*Athene cunicularia*)

Western burrowing owls are California species of special concern and candidates for listing under CESA. They inhabit grassland, desert, and open shrub habitats throughout the state from sea level to approximately 5,300 feet (Zeiner et al. 1988–1990). Unlike many sensitive species, burrowing owls persist and even thrive in some landscapes that are highly altered by human activity. The characteristics of suitable habitat are burrows for roosting and nesting, and relatively short vegetation with only sparse shrubs and taller vegetation. Individuals in agricultural environments nest along roadsides and water conveyance structures. Breeding occurs February through August (Haug et al. 1993; Thomsen 1971).

Burrowing owls have a high potential to occur in the proposed project area due to their preference of habitat in disturbed and agricultural lands. Occurrences near the proposed project area have been documented on disturbed and ruderal land (CDFW 2025b).

Crotch's bumble bee (*Bombus crotchii*)

Crotch's bumble bee is a candidate for listing as endangered under CESA. It is a ground nester and often makes its nest in abandoned mammal burrows; it can be found in most native habitat types, although it prefers grassland and scrub habitats. The nearest observation of Crotch's bumble bee was reported to Bumble Bee Watch (Xerces Society et al. 2025) in 2023 and is located approximately 7 miles east of the proposed project area in Tracy. Although native grasslands and scrub are not abundant within the proposed project area, undeveloped areas with floral resources and potential nesting habitat (e.g., California ground squirrel [*Otospermophilus beecheyi*] burrows) are present. Due to the presence of

potentially suitable habitat, Crotch's bumble bee has a moderate potential to occur within the proposed project area.

Valley Elderberry Longhorn Beetle (*Desmocerus californicus dimorphus)*

The valley elderberry longhorn beetle (VELB) is listed as threatened and critical habitat was designated on August 8, 1980. In 2017 USFWS issued the *Framework for Assessing Impacts to the Valley Elderberry Longhorn Beetle* (2017 Framework). This Framework provides habitat and life history information as well as information to assist in evaluating the potential effects of projects and developing measures to avoid, minimize, and compensate for adverse effects to VELB or its habitat for most projects (USFWS 2017).

Suitable habitat for the VELB is typically defined as live elderberry (*Sambucus* spp.) stems measuring at least 1 inch in diameter at ground level below 500 feet in elevation (USFWS 2017). VELBs range extends from Shasta County to Fresno County. VELB is completely dependent on its host plant, the elderberry, which is a common component of the riparian forests and adjacent upland habitats of California's Central Valley and foothills. Live stems support the life cycle of the beetle for both food and cover. Elderberry shrubs are generally found along waterways and in floodplains that support remnant stands of riparian vegetation that are not inundated for long periods of time (Talley 2006). Although VELB occurs in both riparian and upland woodland and scrub habitats, VELB occupancy tends to be higher in riparian areas versus upland elderberry locations (USFWS 2017). In addition, because VELB have limited flight range, they are not only dependent on elderberry shrubs, but they also rely on the surrounding riparian and upland habitat to disperse between shrubs. Thus, contiguous intact riparian systems are essential to dispersal and migration of VELB and are the essential habitat for VELB (USFWS 2017).

Fragmentation of habitat leads to loss of subpopulations and decreases the likelihood of colonization of unoccupied habitats. The average distance between shrubs with exit holes is 65–165 feet with up to 0.5 mile between occupied clumps (USFWS 2017). In managed areas, such as rivers with a levee system and modified floodplain, the USFWS considers riparian habitat, and upland woodland and scrub habitat as associated elderberry habitat if it occurs in the floodplain of the waterway (USFWS 2017). Although upland woodland and scrub require different hydrologic regimes, they provide similar connectivity to other riparian habitat in these manipulated systems and are believed to maintain connectivity between occupied and unoccupied habitats.

Several elderberry shrubs were documented within riparian habitat in the proposed project area, but no exit holes were located during the surveys. However, there is still potential for VELB to occur. See Appendix E to this Draft EIR for additional information on VELB surveys.

Swainson's Hawk (*Buteo swainsoni*)

Swainson's hawk once occupied large grassland and shrub steppe habitats, as well as canyons, foothills, and smaller interior valleys in otherwise mountainous regions. Currently, the species is most common in the Central Valley and Great Basin. Nesting habitat for Swainson's hawk includes mature trees with relatively dense canopies such as oaks or cottonwoods in or near riparian habitat, agricultural fields, or suburban neighborhoods near suitable foraging habitat. Individuals forage in grasslands, irrigated pastures, and grain fields. In California, Swainson's hawks begin nesting in late March, and the young usually leave the nest (fledge) by August. The large trees within the riparian corridor and adjacent

properties could provide nesting sites and annual grasslands and nearby agricultural fields provide suitable foraging habitat, and several occurrences of nesting Swainson's hawk have been recorded in CNDDB near the proposed project area.

Riparian Brush Rabbit (*Sylvilagus bachmani riparius*)

In 1986, after surveys along rivers within its historical range indicated that there was only a single, small extant population in Caswell Memorial State Park (Williams and Basey 1986), the riparian brush rabbit was designated as a "Mammalian Species of Special Concern" by the California Department of Fish and Game's Wildlife Management Division and was later listed as a state and federal endangered species. Habitat consists of riparian areas that contain willow thickets (*Salix* sp.), California wild rose (*Rosa californica*), Pacific blackberry (*Rubus ursinus*), wild grape (*Vitis californica*), coyote bush (*Baccharis douglasii*) and various grasses. The rabbits have small home ranges that are limited by the size of available brushy habitat.

There is a known population of riparian brush rabbit adjacent to the proposed project area at the Center for Natural Lands Management (CNLM) owned Oxbow Preserve on the east side of the San Joaquin River, 2 miles southwest of Lathrop. This property is approximately 30 acres of riparian forest dominated by Fremont cottonwood, valley oak, wild rose, blackberry, and annual grasses with sandbar willow, stinging nettle, and blessed milk thistle. CNLM has controlled propagation and ongoing detection activities of the riparian brush rabbit individuals.

Non-listed Special-Status Wildlife Species

The species listed below have been designated as species of concern or fully protected by CDFW, or are candidate or proposed for listing under FESA. Species that are candidate or proposed under FESA are not subject to take prohibitions until they are listed.

Northwestern Pond Turtle (*Actinemys marmorata*)

The northwestern pond turtle is a California species of special concern and proposed threatened by the USFWS. This moderate-sized aquatic turtle is commonly found in ponds, lakes, marshes, rivers, streams, and irrigation ditches with rocky or muddy substrates. Its habitat often exhibits shoreline basking areas that may or may not be bordered by aquatic vegetation. Aquatic sites are often within woodlands, grasslands, and open forests, between sea level and 6,000 feet in elevation. Pond turtles bask on logs or other objects when water temperatures are lower than air temperatures. Their nests are created in upland areas with friable soils, often up to 0.25 mile from an aquatic site (Jennings and Hayes 1994; Stebbins 2003; Zeiner et al. 1988–1990).

Northwestern pond turtles are discontinuously distributed throughout California west of the Cascade-Sierran crest (Jennings and Hayes 1994). They were last documented near the proposed project area on April 16, 2005, approximately 7.7 miles west of the proposed project area (CDFW 2025b). Suitable habitat occurs in the proposed project area at French Camp Slough, Weatherbee Lake, and within emergent wetlands.

Northern Harrier *(Circus hudsonius*)

Northern Harrier is a California species of special concern, primarily due to loss or degradation of breeding habitat. They inhabit coastal salt and freshwater marshes, and nest and forage in grasslands and

are less commonly found in the Central Valley. Northern Harrier can be locally abundant where suitable habitat remains free of disturbance, especially from intensive agriculture. Nests could occur within the proposed project area in more open areas of riparian forest and emergent wetland, but there are no recorded occurrences of this species within the proposed project area.

Monarch Butterfly (*Danaus plexippus)*

The monarch butterfly is a federal proposed threatened species and not yet listed under the Endangered Species Act. In the western United States, monarch butterflies migrate in the fall and overwinter at sites along the Pacific coast. Monarch's host plant, milkweed (*Asclepias* spp.) is required for larval development. Many flowering plant species provide nectar sources for adults during breeding and migration, but they can only lay eggs on milkweed plants (USFWS 2022). The proposed project area is in the migration route of monarch butterflies and individuals may occur. No milkweed plants were observed during the botanical survey or general biological survey (see Appendix C to this Draft EIR).

White-Tailed Kite (*Elanus leucurus*)

The white-tailed kite is a fully protected species under the California Fish and Game Code. This species nests primarily in riparian and lowland habitats often associated with agricultural areas throughout cismontane California. White-tailed kites typically nest in dense vegetation at the tops of oaks, willows, or other native trees. They prey primarily on voles and other diurnal mammals. Their numbers and range have increased in the past few decades (Zeiner et al. 1988–1990).

The proposed project area provides trees suitable for nesting and potential foraging habitat is available along the levees and in nearby agricultural fields and open grasslands. The most recent documented nesting occurrence was an observation of one adult at a nest in April 2008, 12 miles north of the proposed project area 2 miles south of State Route 12 (CDFW 2025b). This species is typically underreported in CNDDB. White-tailed kite is common near the proposed project area but was not documented during surveys.

Loggerhead Shrike (*Lanius ludovicianus*)

The loggerhead shrike is a California species of special concern. They inhabit woodlands, savannah, and riparian woodlands. This species prefers open habitats with scattered shrubs, trees, posts, fences, utility lines or other perches. Loggerhead shrike prefer fairly dense shrubs and brush for nesting and are rarely found in heavily urbanized areas but often found in open cropland (Zeiner et al. 1988–1990). The proposed project area contains marginal habitat for loggerhead shrike. The only recorded occurrence of this species near the proposed project area is of a pair of adults feeding 4 fledglings approximately 1 mile east of the proposed project area near the junction of I-5 and SR 120 in 2016 (CDFW 2025b).

Other Breeding Birds

The Federal Migratory Bird Treaty Act and California Fish and Game Code protect raptors, most native birds, and breeding birds that could be present in the proposed project area. The proposed project area provides nesting opportunities for a variety of resident and migratory birds. Common raptor species that may nest in the mature trees of the proposed project area could include red-tailed hawk, red-shouldered hawk, coopers hawk, and great horned owl. Wading birds such as the great egret, and the great blue heron are known to nest upstream and downstream of the proposed project area. Among the many bird species observed in the proposed project area with the potential to nest are western scrub jay, American crow, Canada goose, and gulls.

Pallid Bat (*Antrozous pallidus*)

The pallid bat, a California species of special concern, occurs throughout California except in parts of the high Sierra and the northwestern corner of the state (Zeiner et al. 1988–1990). The pallid bat inhabits a variety of habitats, such as grasslands, shrublands, woodlands, and forests; however, it is most abundant in open, dry habitats with rocky areas for roosting. Pallid bats roost alone, in small groups, or gregariously. Roosts include caves, crevices in rocky outcrops and cliffs, mines, trees, and various manmade structures (e.g., bridges, barns, porches); they generally have unobstructed entrances/exits and are high above the ground, warm, and inaccessible to terrestrial predators. Year-to-year and night-to-night roost reuse is common; however, bats may switch day roosts on a daily and seasonal basis (Sherwin and Rambaldini 2005).

The pallid bat is common throughout the lower elevations in California. One occurrence was reported in 1951 near Farmington, but the exact location is unknown. The bridges in the proposed project area may provide suitable roosting habitat for this species.

Critical Habitat for Listed Wildlife Species

USFWS defines the term "critical habitat" in FESA as a specific geographic area(s) that contains features essential for the conservation of a threatened or endangered species and that may require special management and protection. The proposed project area is not within designated critical habitat for any listed terrestrial wildlife species.

3.6.3 Regulatory Setting

Federal

Federal Endangered Species Act

FESA prohibits the unauthorized take of any fish or wildlife species listed as threatened or endangered, including the destruction of habitat that could hinder species recovery. The term *take* is defined by FESA as to "harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or attempt to engage in any such conduct."

Migratory Bird Treaty Act

Federal law protects raptors, most species of birds regardless of whether they migrate, and their nests. The federal Migratory Bird Treaty Act (MBTA) (Title 15, Sections 703–711 of the U.S. Code [15 USC 703–711] and 16 USC 7.3, Supp. I 1989, 50 CFR 21, and 50 CFR 10), prohibits killing, possessing, or trading in birds listed under the MBTA. Executive Order 13186 (January 11, 2001) requires that any modified project with federal involvement address the impact of federal actions on migratory birds.

Clean Water Act

The federal government regulates waters of the United States, including many wetlands, under the CWA. The federal government defines wetlands in Section 404 of the CWA as "areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions" (33 CFR 328.3[c] and 40 CFR 230.3). Under normal circumstances, the federal definition of wetlands requires the presence of three wetland identification parameters: wetland hydrology, hydric

soils, and hydrophytic vegetation. Examples of wetlands include freshwater marsh, seasonal wetlands, and vernal pool complexes.

The USACE is the responsible agency for regulating wetlands under Section 404 of the CWA, while the U.S. Environmental Protection Agency (U.S. EPA) has overall responsibility for the CWA.

"Other waters of the United States" refers to those hydric features that are regulated by the CWA but are not wetlands (33 CFR 328.4). To be considered jurisdictional, these features must exhibit a high tide line or an ordinary high-water mark. Examples of other waters of the United States include rivers, creeks, intermittent and ephemeral channels, ponds, and lakes.

State

California Endangered Species Act

CESA prohibits the take of plant and animal species that the California Fish and Game Commission has designated as either threatened or endangered in California. *Take* in the context of CESA means to hunt, pursue, kill, or capture a listed species, and any other actions that may result in adverse impacts when a person is attempting to take individuals of a listed species. The take prohibitions also apply to candidates for listing under CESA.

California Fish and Game Code

Under Section 3503 of the California Fish and Game Code, it is unlawful to take, possess, or needlessly destroy the nest or eggs of any bird, except as otherwise provided by the code or any regulation under it. Section 3503.5 prohibits the take, possession, or destruction of any birds in the orders Falconiformes (hawks) or Strigiformes (owls), or of their nests and eggs. Code Sections 3511 (birds), 4700 (mammals), 5050 (reptiles and amphibians), and 5515 (fish) allow the designation of a species as fully protected. This is a greater level of protection than that afforded by CESA. All take of fully protected species is prohibited except take related to scientific research.

California Native Plant Protection Act

State listing of plant species began in 1977 with the passage of the California Native Plant Protection Act (CNPPA) (California Fish and Game Code Sections 1900–1913), which directed CDFW to carry out the legislature's intent to "preserve, protect, and enhance endangered plants in this state." The CNPPA gave the California Fish and Game Commission the power to designate native plants as endangered or rare. CESA expanded on the original CNPPA and enhanced legal protection for plants. The CESA established threatened and endangered species categories and grandfathered all endangered plants—but not rare plants—into the act as endangered species. Thus, three listing categories for plants are employed in California: rare (CNPPA), threatened (CESA), and endangered (CESA).

Lake and Streambed Alteration Agreement (California Fish and Game Code Section 1602)

Under Section 1602 of the California Fish and Game Code, any person, government agency, or public utility proposing any activity that will divert or obstruct the natural flow or change the bed, channel or bank of any river, stream, or lake, or proposing to use any material from a streambed, is required to first notify CDFW of such proposed activity. If CDFW determines that the activity which will affect a river, stream, or lake may substantially adversely affect an existing fish or wildlife resource, it may issue a lake

or streambed alteration agreement that includes reasonable measures necessary to protect the fish or wildlife resource.

Special-Status Natural Communities

CDFW's Natural Heritage Division identifies special-status natural communities, which are those that are naturally rare and those whose extent has been greatly diminished through changes in land use. The California Natural Diversity Database tracks natural communities in the same way that it tracks occurrences of special-status species: Information is maintained on each site for the natural community's location, extent, habitat quality, level of disturbance, and current protection measures. CDFW is mandated to seek the long-term perpetuation of the areas in which these communities occur. While there is no statewide law that requires protection of all special-status natural communities, CEQA requires consideration of the potential impacts of a project on biological resources of statewide or regional significance.

Waters of the State

Most projects involving water bodies or drainages are regulated by the regional water boards, the principal state agencies overseeing water quality of the state at the regional and local levels. Where waters of the state overlap with waters of the United States, pending verification from the USACE, those waters would be regulated under CWA Section 401, as described in the *Wetlands and Waters of the United States* section of the federal regulatory setting discussion, above.

In the absence of waters of the United States, waters may be regulated under the Porter-Cologne Water Quality Control Act (Porter-Cologne Act) if project activities, discharges, or proposed activities or discharges could affect California's surface, coastal, or ground waters. The application submitted by the applicant and permit issued by the regional water board is either a water quality certification (if waters of the United States are present) or a waste discharge requirement (in the absence of waters of the United States). Whether a water quality certification and/or a waste discharge requirement is necessary, all application information would be required to be submitted in accordance with the State Water Resource Control Board's Procedures for the Discharge of Dredged or Fill Material to Waters of the State (Procedures), which became effective on May 28, 2020. The Procedures define what is considered by the state to be a "wetland" and provides a framework for determining whether a feature that meets the state's definition of a wetland is a jurisdictional water of the state. The Procedures define a wetland as follows:

> *An area is wetland is, under normal circumstances, (1) the area has continuous or recurrent saturation of the upper substrate caused by groundwater, or shallow surface water, or both; (2) the duration of such saturation is sufficient to cause anaerobic conditions in the upper substrate; and (3) the area's vegetation is dominated by hydrophytes or the area lacks vegetation.*

An artificial wetland (i.e., wetland that resulted from human activity) is considered a water of the state if it meets any of the following criteria:

1. Approved by an agency as compensatory mitigation for impacts to other waters of the state, except where the approving agency explicitly identifies the mitigation as being of limited duration.
2. Specifically identified in a water quality control plan as a wetland or other water of the state.
3. Resulted from historic human activity, is not subject to ongoing operation and maintenance, and has become a relatively permanent part of the natural landscape.

4. Greater than or equal to 1 acre in size, unless the artificial wetland was constructed, and is currently used and maintained, primarily for one or more of the following purposes:
   i. Industrial or municipal wastewater treatment or disposal
   ii. Settling of sediment
   iii. Detention, retention, infiltration, or treatment of stormwater runoff and other pollutants or runoff subject to regulation under a municipal, construction, or industrial stormwater permitting program
   iv. Treatment of surface waters
   v. Agricultural crop irrigation or stock watering
   vi. Fire suppression
   vii. Industrial processing or cooling
   viii. Active surface mining—even if the site is managed for interim wetlands functions and values
   ix. Log storage
   x. Treatment, storage, or distribution of recycled water
   xi. Maximizing groundwater recharge (this does not include wetlands that have incidental groundwater recharge benefits)
   xii. Fields flooded for rice growing

Local

The proposed project area includes lands in San Joaquin County and the cities of Stockton, Lathrop and Manteca. Each of these jurisdictions have general plans with goals and policies that address natural resources and conservation (see **Table 3.6-6**). Applicable general plan goals and policies are summarized below along with relevant local regulations.

TABLE 3.6-6
GENERAL PLAN GOALS AND POLICIES – BIOLOGICAL RESOURCES – TERRESTRIAL

General Plan	Goals and Policies
San Joaquin County	Natural and Cultural Resources Element, Goals NCR-2.1, NCR-2.5, NCR-2.8, and D-5.2; San Joaquin County Multi-Species Habitat Conservation and Open Space Plan local regulations
City of Stockton	Land Use Element, Policies LU-5.1B, LU-5.2B, and LU-5.2C
City of Lathrop	Recreation and Resources Element, Policy RR-4.1, Implementation Actions RR-4a, RR-4b, and RR-4e
City of Manteca	Resource Conservation Element, Policies RC-P-31, RC-P-33, RC-P-34, RC-9.1, RC-9.2, Implementation Actions RC-I-32 and RC9g

SOURCES: City of Lathrop 2022; City of Manteca 2024; City of Stockton 2018; San Joaquin County 2016

San Joaquin County

San Joaquin County General Plan

The San Joaquin County General Plan Natural and Cultural Resources Element addresses protection of biological resources, including wetlands; riparian areas; rare, threatened, and endangered species and their habitats; potentially rare or commercially important species; vernal pools; significant oak groves; and heritage trees.

San Joaquin County Multi-Species Habitat Conservation and Open Space Plan

The San Joaquin County Multi-Species Habitat Conservation and Open Space Plan (SJMSCP) was permitted in 2000 and is administered by the San Joaquin Council of Governments. This 50-year plan addresses 97 special-status plant, fish, and wildlife species (47 of which are on the federal permit) throughout most of San Joaquin County (more than 900,000 acres), including a substantial portion of the eastern Delta. The plan participants include the San Joaquin County and the cities of Stockton, Lodi, Manteca, Tracy, Ripon, Escalon, and Lathrop. Activities covered under the plan include urban development, mining, expansion of existing urban boundaries, nonagricultural activities occurring outside of urban boundaries, levee maintenance undertaken by SJAFCA, transportation projects, school expansions, non-federal flood control projects, new parks and trails, maintenance of existing facilities for non-federal irrigation district projects, utility installation, maintenance activities, managing preserves, and similar public agency projects.

On October 10, 1994, the San Joaquin Council of Governments, the California Department of Transportation (Caltrans), USFWS, CDFW, and participating cities listed above, signed a memorandum of understanding (MOU) which established the objectives of the Plan.

The objectives of the San Joaquin County Multi-Species Habitat Conservation and Open Space Plan, as established in the Plan's MOU and resulting from the process described above, are to (SJCOG 2000):

A. Establish a program for managing biological resources which addresses the economic, agricultural, conservation and public interests unique to San Joaquin County (County) while complying with local, state and federal conservation laws;

B. Provide consistent and predictable treatment of development proposals throughout the County to reduce costs and uncertainty and ensure a healthy economic environment for citizens and industries;

C. Lessen or avoid both site specific and cumulative impacts to species by replacing project-by-project reviews with long-term strategies for conserving, protecting and maintaining viable populations of multiple native special-status species;

D. Replace confrontations between local, state and federal individuals and agencies with consensus-building, compromise and partnerships to encourage a streamlined permitting process, eliminate redundant efforts, reduce unnecessary expenditures of funds and manpower, promote the consolidation of scattered resources and replace litigation with effective mitigation.

E. Provide a basis for a County-wide multiple-use Open Space plan which contributes to the quality of life of the residents of San Joaquin County; and

F. Identify a financing and acquisition strategy which spreads implementation costs equitably among all beneficiaries and which is affordable to the region.

City of Stockton

Envision Stockton 2040 General Plan

The City of Stockton General Plan includes goals and policies that address maintaining a balance between advancing economic opportunities of all citizens and protection of the natural environment.

City of Lathrop

City of Lathrop General Plan

The City of Lathrop General Plan includes goals and policies that address not only the retention of virtually all beneficial habitat which now exists, but also to enhance habitat which has been degraded and to create new habitat where feasible.

City of Manteca

City of Manteca General Plan

The City of Manteca General Plan includes goals and policies that address natural resources and vegetation and wildlife include the protection of sensitive native vegetation and wildlife communities and habitat in the Manteca area.

3.6.4 Impacts and Mitigation Measures

Method of Analysis

Impacts on special-status species in the proposed project area were evaluated based on data collected from biological resources surveys conducted in 2022–2025 and from other resources including the following:

- Current and historical topographic maps (USGS 2022).
- Current and historical aerial imagery (Google 2025).
- Soil maps and information from the National Resources Conservation Service (NRCS 2025).
- A list of special-status species with potential to occur in or in the vicinity of the proposed project area that was compiled from a nine-quadrangle search of the CNDDB (CDFW 2025b).
- A USFWS species list for the proposed project area generated using the online Information for Planning and Consultation (IPaC) database (USFWS 2025b).
- A list of special-status plant species with potential to occur in or in the vicinity of the proposed project area that was compiled from a nine-quadrangle search of the CNPS Electronic Inventory of Rare and Endangered Plants of California (CNPS 2025).
- Literature regarding the biological resources of the region.

For this analysis, the proposed project was determined to have a significant impact on special-status species if the proposed project activities would have a substantial adverse effect, either directly or through habitat modification, on any species identified as candidate, sensitive, or special-status in local or regional plans or policies, or regulations, or by CDFW or USFWS. Species that are not currently listed under CESA or FESA as rare, threatened, or endangered, but that can be shown to meet the criteria for such listing, were also considered special-status species (CEQA Guidelines Section 15380[d]). The impact analysis also considered the goals and objectives of the San Joaquin County Multi-Species Habitat Conservation and Open Space Plan and how the proposed project construction would affect those goals and objectives. Impacts on special-status species were evaluated based on anticipated construction activities and changes to habitat types after construction of the proposed project.

Thresholds of Significance

In accordance with Appendix G of the CEQA Guidelines, an impact is considered significant if the proposed project would:

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

Impacts and Mitigation Measures

Table 3.6-7 summarizes the impact conclusions presented in this section.

TABLE 3.6-7
SUMMARY OF IMPACT CONCLUSIONS – BIOLOGICAL RESOURCES—TERRESTRIAL

Impact Statement	Flood Risk Reduction Components	Restoration Sites 13, 14, and 16	Other Multi-Benefit Components
3.6-1: Implementation of the proposed project could result in substantial adverse effects, either directly or through habitat modifications, to species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by CDFW or USFWS.	LSM	LSM	LSM
3.6-2: Implementation of the proposed project could result in adverse effects to riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations, or by CDFW or USFWS.	LSM	LSM	LS
3.6-3: Implementation of the proposed project could result in adverse effects on state or federally protected wetlands (including but not limited to marsh, vernal pool, and coastal) through direct removal, filling, hydrological interruption, or other means.	LSM	LSM	LS
3.6-4: Implementation of the proposed project could interfere with the movement of native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors or impede the use of native wildlife nursery site.	LSM	LSM	LS
3.6-5: Implementation of the proposed project could conflict with local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance.	LSM	LSM	LSM

Impact Statement	Flood Risk Reduction Components	Restoration Sites 13, 14, and 16	Other Multi-Benefit Components
3.6-6: Implementation of the proposed project could conflict with provisions of an adopted habitat conservation plan, natural community conservation plan, or other approved local, regional, or state habitat conservation plan.	LS	LS	LS

NOTES: LS = Less than Significant; LSM = Less than Significant with Mitigation

Impact 3.6-1: Implementation of the proposed project could result in substantial adverse effects, either directly or through habitat modifications, on species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by CDFW or USFWS.

The proposed project area covers over 900 acres of levees, agricultural area proposed for dryland levee construction, staging areas and a buffer. Construction of the proposed project would involve ground disturbance (e.g., excavation, grading, staging). Regular O&M activities would consist of inspections, weed abatement, removal of encroachments and high-hazard vegetation to ensure levee integrity, replacement and re-working of displaced or launched revetment following large flood events, and adequate levee access along the levee toe road. Habitats in the proposed project area could support special-status wildlife species (see Appendices C and C-2 to this Draft EIR). Construction activities associated with the proposed project could result in the temporary modification of habitat or, less frequently, the long-term or permanent loss or modification of habitat. These impacts could result in adverse direct and indirect effects, including the direct take of species, removal of suitable habitats, and disrupting breeding and foraging behaviors. As discussed in Section 3.12, *Hydrology and Water Quality,* the proposed project would be subject to mandatory water quality BMPs that would minimize erosion and avoid hazardous materials from entering adjacent waterways, which would reduce the potential for impacts on special-status species that may occur in these areas. However, potential impacts could still occur. Thus, the potential impacts of the proposed project on the special-status wildlife species that could occur in the proposed project area are discussed below.

Flood Risk Reduction Components

Construction

Crotch's Bumble Bee

The proposed project area contains floral resources for foraging Crotch's bumble bee since the species is a generalist feeder. CDFW considers all flowering vegetation a floral resource (CDFW 2023). Suitable foraging habitat for Crotch's bumble bee is available in the proposed project area and its vicinity. The proposed project would not remove or degrade large areas of floral resources such that a regional population of this species would be impacted. Many proposed project activities would occur in areas that are developed or barren under existing conditions. After the proposed project is complete, vegetation would be managed similarly as before. Agricultural areas that provide foraging habitat under existing conditions are periodically disturbed by annual farming activities such as plowing and harvest. The proposed project impacts on potential floral resources/foraging habitat for Crotch's bumble bee would be less than significant.

Small-mammal burrows that provide potential nesting habitat for Crotch's bumble bee were observed in some areas. Ground disturbance and vegetation removal in areas that contain potential nesting habitat could result in direct loss of Crotch's bumble bee and their nests. Underground bumble bee nests could be crushed or accidentally uncovered and exposed to the elements and predators during vegetation removal, grading, or digging activities if these activities are conducted where nesting habitat is present. Therefore, the destruction of Crotch's bumble bee nests would be a significant impact.

Monarch Butterfly

The proposed project area contains flowering vegetation that could provide a nectar source to migrating monarch butterflies. No larval host milkweed plants were observed. Vegetation removal associated with construction would be minimal and temporary. Much greater amounts of similar vegetation that could provide a nectar source for monarch butterfly would remain both in the proposed project area and outside but near the proposed project area. Therefore, potential impacts on monarch butterflies would be less than significant.

Valley Elderberry Longhorn Beetle

Construction that occurs near elderberry shrubs that would be retained can kill adult beetles if construction equipment is operating between the months of March and June when VELBs have emerged from the elderberry shrubs and are locating mates for reproduction. Additionally, dust from construction could disorient the beetle, which tend to be poor dispersers.

Removal of elderberry shrubs could cause mortality of any beetle larvae within the stems. Although transplanting at the appropriate time of year helps reduce impacts on the shrub and beetle, transplanting the shrub could still result in mortality to larvae within the shrub, particularly if the shrub does not survive transplantation.

Trimming of elderberry shrubs can result in the loss of some habitat for the VELB. Unlike transplantation, however, the shrub remains within the riparian corridor and can provide habitat for the beetle during dispersal. There is potential for one of the pruned stems to contain VELB larvae. While elderberry shrubs do resprout readily, there is a temporal loss of habitat for the beetle in order to provide equipment access.

Although the 2017 Framework provides guidance for large scale projects, such as the proposed project, it recommends additional consultation with the USFWS to determine the most appropriate methods for assessing impacts, conservation measures, and compensation. Therefore, since consultation with the USFWS has yet to occur, this impact assessment assumed a worst-case scenario and presumed that all elderberry shrubs and associated VELB habitat (habitat within 50 meters of an elderberry shrub) that fell within the 30 percent design project footprint would be impacted by the proposed project. In this worst-case scenario, construction could directly affect approximately 0.50 acre of VELB habitat as shown in **Table 3.6-8**. Although the number of shrubs and habitat acreage impacted would likely be revised once the USFWS is consulted and as the design is refined, the proposed project effects are anticipated to fall within this range. Therefore, the loss of VELB habitat would be a significant impact.

TABLE 3.6-8
SUMMARY OF FLOOD RISK REDUCTION COMPONENTS POTENTIAL IMPACTS ON VALLEY ELDERBERRY LONGHORN BEETLE, RIPARIAN HABITAT, AND WATERS OF THE UNITED STATES AND STATE

Impact Type (Acres)	Cutoff Wall (acres)	Levee Raise (acres)	Levee Raise & Cutoff Wall (acres)	Levee Rase & Flood Wall (acres)	Levee Raise & Seepage Berm (acres)	Dryland Levee Extension & Seepage Berm (acres)	Seepage Berm (acres)	Waterside Rock Slope Protection (acres)	Total (acres)
Elderberry Shrub/Clump Impact	0.20	0.00	0.04	0.00	0.00	0.00	0.00	0.00	0.24
Elderberry Associated Habitat Impact[a]	0.11	0.02	0.01	0.00	0.00	0.00	0.00	0.13	0.27
Total VELB Impacts	0.31	0.02	0.04	0.00	0.00	0.00	0.00	0.13	0.51
Non-VELB Riparian Impacts	0.87	0.01	0.15	0.09	0.00	0.16	0.00	0.61	1.88
Wetlands and Other Waters Impacts[a]	0.00	0.00	0.00	0.00	0.00	0.81	0.07	0.00	0.88

NOTES:
a. See Appendix C to this Draft EIR

Swainson's Hawk

As described in subsection 3.6.2 above, the proposed project area possesses suitable roosting and nesting habitat for Swainson's hawk. Although vegetation removal for the flood risk reduction component is anticipated to occur between October and February, which is outside of the nesting season for Swainson's hawks, the proposed project construction could reduce the riparian habitat used by this species for roosting and nesting. Vegetation removal for other components could occur in the nesting season. And, although trees on the water side of the slope that are not dead and/or downed and are over 2 inches on the waterside of the levee would be avoided as much as feasible (as described in Chapter 2, *Project Description*, subsection 2.5.1, *Site Preparation and Mobilization*) Swainson's hawks also nest in trees outside of riparian habitat that may be removed by the proposed project. Assuming that all trees within the 30 percent design footprint would be removed, long-term effects on Swainson's hawk nesting habitat could result from the loss of riparian habitat in the proposed project area with the removal approximately 2.5 acres of riparian habitat for flood risk reduction components. This would include the removal of several trees large enough to support Swainson's hawk nesting. Therefore, the loss of Swainson's hawk nesting habitat would be a significant impact.

Additionally, if Swainson's hawk are nesting within 0.5 mile of the proposed project during construction activities, the potential would exist for short-term, temporary impacts during the nesting season to active nests from construction dust, noise, and vibration and could potentially result in nest abandonment, loss of young, or reduced health and vigor of eggs or nestlings. Loss of foraging habitat due to alteration of the habitat or temporary loss due to avoidance of common foraging areas during construction could also reduce health and vigor of nestlings resulting in reduced survival rates.

Riparian Brush Rabbit

There are five documented records of riparian brush rabbit occurring in the proposed project area and surveys determined that there were sections of suitable habitat for riparian brush rabbits in the proposed project area. Additionally, the adjacent Oxbow Preserve is a wildlife preserve dedicated to the riparian brush rabbit. Construction-related activities and long-term physical alterations of the proposed project

may result in increased potential for direct and indirect effects on riparian brush rabbit and their habitat, should any be present, within the proposed project area. The direct effects on riparian brush rabbits consist of disturbance and displacement of individual rabbits resulting from construction-related activities. The operation of heavy equipment, truck trips, grading, and dumping of soils and gravel may displace riparian brush rabbits from the proposed project area resulting in adverse effects if displacement results in loss of recruitment to the population. Direct mortality is not anticipated as construction traffic, noise, and human disturbance would deter riparian brush rabbits from the work areas. Riparian brush rabbits are most active during the twilight hours, around dawn and dusk when construction activities would not be occurring. However, the loss of riparian brush rabbit habitat would be a significant impact.

Northwestern Pond Turtle

Northwestern pond turtles inhabit rivers, pond, wetlands, and irrigation ditches for aquatic habitat and sandy or grassland areas for upland habitat. Construction equipment accessing areas occupied by northwestern pond turtle could strike turtles that are nesting, basking, or traversing upland habitat, resulting in mortality of these animals. Northwestern pond turtles may also be crushed or entombed when construction equipment causes burrows to collapse. In addition, fuel, oil, other petroleum products, and other chemicals used during maintenance activities could be accidentally introduced into waterways. In sufficient concentrations, these contaminants would be toxic to northwestern pond turtles and their prey species. As discussed in Section 3.12, *Hydrology and Water Quality*, the proposed project would be subject to mandatory water quality BMPs that would minimize erosion and avoid hazardous materials from entering adjacent waterways; however, there is still a potential to adversely affect northwestern pond turtles and as a result, this impact would be significant.

Burrowing Owl

During their nesting period (February 1 through August 15), burrowing owls could use small-mammal burrows in grassland areas that are present on and adjacent to the levees along the proposed project. If burrowing owls are present, ground disturbance (excavation and backfilling) could result in direct mortality or injury of burrowing owls within burrows and similar nesting features. Such features could be disturbed or destroyed during construction in staging areas and as a result, this impact would be significant.

Northern Harrier

The proposed project area contains ruderal grasslands and agricultural lands that if undisturbed, could provide suitable nesting conditions for northern harrier. Noise from heavy construction machinery could prompt nest abandonment and subsequent failure of nests in and near construction activity areas. Vegetation removal for the flood risk reduction components would be outside the nesting season but could occur in the nesting season for other components and as a result, this impact would be significant.

White-tailed Kite

The proposed project area contains large riparian trees that provide suitable nesting conditions for white-tailed kite. Noise from heavy construction machinery could prompt nest abandonment and subsequent failure of nests in and near construction activity areas. Vegetation removal for the flood risk reduction components would be outside the nesting season but could occur in the nesting season for other components and as a result, this impact would be significant.

Loggerhead Shrike

The proposed project area contains large riparian trees that provide suitable nesting conditions for loggerhead shrike. Noise from heavy construction machinery could prompt nest abandonment and subsequent failure of nests in and near construction activity areas. Vegetation removal for the flood risk reduction components would be outside the nesting season but could occur in the nesting season for other components and as a result, this impact would be significant.

Other Breeding and Migratory Birds

Many non-listed bird species that are otherwise protected by the MBTA and the California Fish and Game Code are expected to be present in the proposed project area. These include Cooper's hawk, great blue heron, great egret, and other common passerine, raptor, and wading bird species. General disturbance, including exposure to noise, vibration, and dust, could adversely affect nesting birds by altering their nesting behaviors (e.g., prompting adults to abandon eggs or chicks in nests). Construction activities would occur during a period that overlaps with the nesting season for numerous bird species that are present in the proposed project area. Construction work, including removal of riparian trees, during the nesting season could result in the destruction of nests and eggs and mortality of nestlings; therefore, this impact would be significant.

Pallid Bat

Construction activities could disturb riparian forest, which provides potential roosting habitat for special-status species bats. Potential roosting habitat for pallid bat is also present in the nearby bridges and in the buildings, barns and other agricultural structures that would be removed as part of the encroachment remediation. The period of construction activities would overlap the bat maternity season (generally May 1 to August 31). Tree removal in riparian habitat could adversely affect breeding and non-breeding pallid bats by causing the loss of established roosts and potential roosting habitat. Project construction work around vehicle bridge crossing the San Joaquin River could also disturb pallid bat if they were occupying any of the bridges. General construction-related disturbance, including exposure to noise, vibration, and dust, could adversely affect breeding and non-breeding bats. This would be a significant impact.

Special-Status Plants

The aquatic edges of waterbodies, margins of emergent wetland, and forested wetland in the proposed project area provide potential habitat for special-status plant species. However, protocol level botanical surveys were conducted during the appropriate times of year, within the proposed project footprint and staging areas with approved access, to determine presence or absence of the species. No special-status plants were found to occur in the proposed project areas, surveyed staging areas, or a 150-foot buffer of the areas surveyed. Areas not surveyed include staging areas without access rights. These all occur on the landside of the levee and consist of developed or agricultural lands that do not provide habitat. In general, the habitats in the proposed project area are marginal because (1) many areas along the edges are covered in riprap, (2) most areas are relatively steep (3) the waterbodies, particularly the San Joaquin River sometimes experiences strong and fast currents, and (4) the best potential habitat areas are heavily invaded by the nonnative water hyacinth. Additionally, the majority of the work is confined to previously disturbed ruderal and agricultural areas. Therefore, impacts on special-status plant species associated with construction of the flood risk reduction components would be less than significant.

Impact Summary

In summary, activities associated with the construction of the proposed flood risk reduction components would result in significant impacts on special-status wildlife species, specifically, Crotch's bumble bee, valley elderberry longhorn beetle, Swainson's hawk, riparian brush rabbit, northwestern pond turtle, burrowing owl, northern harrier, white-tailed kites, loggerhead shrike, breeding and migratory birds, and pallid bats; therefore, this impact would be **significant**.

Operations and Maintenance

O&M activities after construction would be consistent with existing O&M practices, so any impacts associated with the proposed O&M activities would also be similar to those resulting from existing O&M activities. Regular O&M activities consist of inspections, weed abatement, removal of encroachments and high-hazard vegetation to ensure levee integrity, replacement and re-working of displaced or launched revetment following large flood events, and adequate levee access along the levee toe road. These O&M activities are all conducted under existing conditions and would not require heavier or noisier equipment than under current conditions and would not be implemented more frequently. Thus, the disruptions of the activities for the special-status wildlife species listed above or effects on soil and vegetation caused by O&M activities would remain similar. Furthermore, O&M activities would not introduce new land uses into the area or otherwise result in additional types or amounts of impacts. Therefore, because O&M activities associated with flood risk reduction components of the proposed project would be similar to existing conditions, would be **less than significant**.

Restoration Sites 13, 14, and 16

Construction

Special-Status Wildlife

Construction of ecosystem restoration at Sites 13, 14, and 16 would have similar impacts as construction of the flood risk reduction components described above for each species. **Table 3.6-9** identifies the estimated impacts on riparian communities and aquatic resources, including wetlands, due to construction activities at Sites 13, 14, and 16. In addition, one elderberry shrub was found on ecosystem restoration Site 13. It is avoided by the proposed project because it is several hundred feet outside the grading limits, however, elderberry shrubs grow quickly, and new ones could establish prior to construction. Therefore, impacts to special-status wildlife species associated with construction of ecosystem restoration at Sites 13, 14, and 16 would be **significant**.

Special-Status Plants

Botanical surveys were not conducted at Sites 13, 14, and 16. The aquatic edges of waterbodies, margins of emergent wetland, and forested wetland provide potential habitat for special-status plant species. If special-status plants were present, construction of the ecosystem restoration sites could remove them resulting in a **significant** impact.

TABLE 3.6-9
SUMMARY OF POTENTIAL IMPACTS ON BIOLOGICAL COMMUNITIES AT RESTORATION SITES 13, 14, AND 16

Impact Type (Acres)	Site 13	Site 14	Site 16	Total (Acres)
Ruderal	5.47	1.71	9.91	**17.08**

Agricultural	241.47	40.84	--	**282.31**
Riparian Forest	0.32	1.95	5.59	**7.86**
Forested Wetland	1.25	--	0.78	**2.03**
Riverine	--	0.41	0.40	**0.82**

Operations and Maintenance

O&M activities at Sites 13, 14, and 16 would consist of inspections, weed abatement, removal of encroachments and high-hazard vegetation to ensure levee integrity, replacement and re-working of displaced or launched revetment following large flood events, and adequate levee access along the levee toe road. These activities would be less disruptive to habitat than current ongoing agricultural activities that occur on most of the acreage of the sites and would result in the establishment of additional riparian communities and aquatic resources, including wetlands, that provide habitat. Current ongoing agricultural activities include annual plowing and crop production, including the maintenance of farm roads and irrigation water delivery infrastructure, which results in no habitat in the farmed area. Therefore, because O&M activities associated with Sites 13, 14, and 16 would be less disruptive compared to current agricultural activities, this impact would be **less than significant**.

Other Multi-Benefit Components

Special-Status Wildlife

The proposed project also includes implementation of other multi-benefit components including additional ecosystem restoration sites, and recreation features along the levee system. Construction of these other multi-benefit components would have similar short-term impacts as construction of the flood risk reduction components described above for each species, such as noise, vibration, dust, and potential for impacts from construction equipment. However, the multi-benefit components would be designed to avoid impacts on high-quality habitat, including avoiding elderberry shrubs, established native trees, and wetlands. Additionally, the restoration portion of the proposed project would remove invasive species and return converted agricultural and developed land back into high-quality habitat by planting native habitats. The restored land would offset the loss of habitat by providing habitat and connectivity within and adjacent to the proposed project corridor. However, construction-related disturbance could adversely affect special-status wildlife for the same reasons as described above for the flood risk reduction components. Further, O&M requirements are not yet known, but could include similar activities to the construction phase and may occur in areas not subject to these types of disturbance currently, which could result in substantial special-status species effects. Thus, construction and operation of the other multi-benefit components could result in a **significant** impact on special-status wildlife species.

Special-Status Plants

Areas proposed for restoration have not been surveyed. Based on location and examining aerial photos wetlands and waterbodies within and adjacent to the ecosystem restoration sites could support the special-status plants listed in Table 3.6-4, but it is not known if special-status plant species are present in the restoration areas. As described in Chapter 2, *Project Description*, subsection 2.4.2, *Multi-Benefit Components*, high-value trees or habitat would be avoided and minimized, and restoration activities would create additional natural habitat and enhance existing habitat. However, if special-status plant species are present and the population would be eliminated or its likelihood of persisting would be greatly

reduced by directly removing the plant or altering the habitat, special-status plants would substantially be affected by multi-benefit component activities. This would be a **significant** impact.

Mitigation Measures

Mitigation Measure 3.6-1a (FRR/RS/MB):

Before SJAFCA initiates any work in the proposed project area, including grading, a qualified biologist would conduct mandatory contractor/worker awareness training for all construction (FRR/RS/MB) and operations (MB) personnel. It would be provided to brief them on the need to avoid effects on sensitive biological resources (e.g., riparian habitat, special-status species, wetlands and other sensitive biological communities) and the penalties for not complying with permit requirements. The biologist would inform all construction personnel about the life history of special-status species, including but not limited to VELB, Swainson's hawk, riparian brush rabbit, northwestern pond turtle, burrowing owl, MBTA species, bats, and special-status plants with potential for occurrence on the site, the importance of maintaining habitat and the terms and any applicable regulatory permit conditions.

The training would also cover the restrictions and guidelines that must be followed by all personnel to reduce or avoid effects on sensitive biological communities and special-status species during project construction. The crew leader would be responsible for ensuring that crew members adhere to the guidelines and restrictions. Educational training would be conducted for new personnel as they are brought on the job. General restrictions and guidelines for vegetation and wildlife that must be followed by personnel include the life history and status and of special-status species and their habitat, how to identify these species and their habitats (e.g., nesting, roosting and foraging habitat, elderberry shrubs, and riparian habitat), what to do if these species are encountered during proposed project construction activities and explain the state and federal laws pertaining to them and the possible penalties for non-compliance.

Mitigation Measure 3.6-1b (FRR/MB):

SJAFCA shall implement the following measures to avoid and minimize effects on Crotch's bumble bee for construction (FRR/MB) and O&M (MB) activities as long as Crotch's bumble bee is considered a CESA candidate species or is listed under CESA:

a. **Pre-Activity Nest Survey**. If ground-disturbing activities will occur during the nesting season (February 1 through October 31) in an area with burrows, a pre-activity nest survey shall be conducted within 30 days of initiation of activities to evaluate whether an active nest is present within work areas. Bee identification shall be documented using photos of bees taken from multiple angles. Only approved biologists are allowed to handle, capture, or net bees if needed for identification, as described in the California Department of Fish and Wildlife's 2023 Survey Considerations for California Endangered Species Act Candidate Bumble Bee Species, or most recent version.

b. **Nest Avoidance**. If an active Crotch's bumble bee nest is detected within a work area, an avoidance buffer of 100 feet (30.5 meters) shall be established. The buffer may be reduced if determined by a qualified biologist that, based on bee behavior, a reduced buffer will not affect nesting individuals. Ground-disturbing activities shall avoid active nests during the Crotch's bumble bee nesting period (February 1 through October 31), to the maximum extent feasible, or until the nest is determined to no longer be active by a qualified biologist.

c. **Consultation.** If impacts cannot be feasibly avoided and construction could result in potential direct or indirect impacts to Crotch's bumble bee and/or occupied habitats, SJAFCA shall

consult with CDFW to ensure compliance with the California Endangered Species Act, which may include obtaining a "take" permit (e.g., CESA Section 2081 Incidental take Permit from CDFW).

Mitigation Measure 3.6-1c (FRR/RS/MB):

During construction (FRR/RS/MB) and operational (MB) activities SJAFCA shall implement the measures included in the *Framework for Assessing Impacts to the Valley Elderberry Longhorn Beetle* (USFWS 2017; see Appendix E to the Draft EIR) to reduce effects on valley elderberry longhorn beetle. The framework includes avoidance and minimization measures for shrubs that would not be transplanted within 50 meters of the proposed project, methodologies for transplanting of shrubs, and methodologies for compensatory mitigation guidance for removed habitat.

Mitigation Measure 3.6-1d (FRR/RS/MB):

SJAFCA shall implement the following measures to reduce effects on nesting Swainson's hawks during construction (FRR/RS/MB) and O&M (MB) activities.

a. **Breeding Season Survey.** If work occurs during the Swainson's hawk breeding season, SJAFCA would conduct a breeding season survey for nesting birds that would be conducted for all trees and shrubs that would be removed or disturbed that are located within 0.5 mile of construction activities, including grading. Swainson's hawk surveys would be completed during at least two of the following survey periods: January 1 to March 20; March 20 to April 5; April 5 to April 20; and June 10 to July 30, with no fewer than three surveys completed in at least two survey periods and with at least one of these surveys conducted no more than 48 hours from the initiation the proposed project activities to confirm the absence of nesting. If the biologist determines that the area surveyed does not contain any active nests, construction activities, including removal or pruning of trees and shrubs, could commence without any further mitigation.

b. **Active Nest Buffer.** If active nests are found a buffer of 0.25 mile shall be established until the nest is no longer active. A qualified biologist may propose a smaller distance from the nest subject to SJAFCA approval, in coordination with CDFW. The purpose of the buffer shall be to avoid any take of nesting birds until the nest is no longer active (i.e. the young have fledged or the nest otherwise becomes inactive). The extent of an alternative buffer will depend on the level of noise or construction disturbance compared to ambient noise or other disturbance, line of sight, barriers, or development between the nest and the activities, and other site-specific circumstances. A qualified biologist shall be present on-site daily during construction activities within 0.25 mile of an active nest to ensure the buffer distance is adequate and the birds are not showing any signs of stress. If signs of stress that could cause nest abandonment are noted (such as defensive flights at intruders, getting up from a brooding position, or flying off the nest), construction activities shall cease until they can be resumed without signs of stress.

Mitigation Measure 3.6-1e (FRR/RS/MB):

SJAFCA shall implement the following for construction (FRR/RS/MB) and O&M (MB) activities to reduce effects on riparian brush rabbit per USFWS guidance (USFWS 2019):

a. **Pre-construction Surveys.** Prior to the initiation of any ground-disturbing construction activities, an approved biologist shall conduct a reconnaissance-level survey to determine if any riparian brush rabbits occur within the proposed work areas. If any riparian brush rabbits

are observed within the construction areas, construction shall only be allowed to commence when the observed riparian brush rabbit has exited the work area and at the discretion of the qualified biologist.

b. **Silt Fencing.** Prior to initiation of any ground-disturbing construction activities, silt fencing shall be installed at the top of the waterside of the levee to prevent encroachment of construction personnel and equipment as well as minimize the potential for sedimentation to avoided riparian habitat and Oxbow Preserve.

c. **Exclusion Fencing.** The boundary of the proposed project footprint shall be delineated with exclusionary fencing (silt fence with bottom buried) to prevent riparian brush rabbits from entering the site during construction. Only tightly woven netting or similar material shall be used for erosion control materials, such as coir rolls and geo-textiles, within or adjacent to suitable habitat of sensitive species. No plastic monofilament matting shall be used.

Mitigation Measure 3.6-1f (FRR/RS/MB):

SJAFCA shall implement the following measures to avoid and minimize effects on northwestern pond turtle for construction (FRR/RS/MB) and O&M (MB) activities:

a. A qualified biologist shall conduct a pre-construction survey within 7 days before the start of project activities. If no northwestern pond turtles are observed, SJAFCA shall document that information for the file, and no additional measures would be required, except as described below for dewatering activities.

b. Should any northwestern pond turtles be detected on land during the pre-construction survey, the qualified biologist shall identify the location using GPS coordinates. With prior CDFW approval, a qualified biologist may relocate any northwestern pond turtles found on land or in aquatic habitat within the construction footprint to suitable aquatic habitat at least 200 feet away from the construction footprint.

c. If northwestern pond turtles are observed on land within the construction footprint during project activities, work shall be stopped within approximately 200 feet of the turtle, and a qualified biologist shall be notified immediately. If possible, the turtle will be allowed to leave on its own and the qualified biologist will remain in the area until the biologist deems his or her presence no longer necessary to ensure that the turtle is not harmed. Alternatively, with prior CDFW approval, the qualified biologist may capture and relocate the turtle unharmed to suitable habitat at least 200 feet outside the construction footprint. If a northwestern pond turtle nest is unintentionally uncovered during project activities, work shall be stopped within 200 feet of the nest and SJAFCA shall contact CDFW to determine the appropriate next steps.

Mitigation Measure 3.6-1g (FRR/RS/MB):

SJAFCA shall implement the following measures to avoid and minimize effects on burrowing owl for construction (FRR/RS/MB) and O&M (MB) activities:

a. Prior to initiation of any excavation activities at borrow sites, SJAFCA shall conduct a pre-construction survey for burrowing owls in accordance with CDFW guidelines described in the Staff Report on Burrowing Owl Mitigation. If no burrowing owls are located during these surveys, then effects to burrowing owls would be less than significant and no mitigation would be required.

b. If burrowing owls are located on or immediately adjacent to the site, then coordination would occur to determine the proper measures that would need to be implemented to ensure that burrowing owls are not impacted by the proposed project. Potential mitigation measures that could be implemented include:

    i. A qualified biologist shall conduct appropriate surveys at and around material source sites, to determine the presence/absence of burrowing owls. At least one survey shall be conducted no more than 1 week prior to the onset of any construction activity.

    ii. A 250-foot buffer, within which no new activity would be permissible, shall be maintained between the proposed project activities and nesting burrowing owls. This protected area shall remain in effect until August 31 or at the discretion of a qualified biologist, until the young owls are foraging independently.

    iii. No burrowing owls shall be evicted from burrows during the nesting season (February 1 through August 31). Eviction outside the nesting season could be permitted pending evaluation of eviction plans and receipt of formal written approval from CDFW authorizing the eviction.

Mitigation Measure 3.6-1h (FRR/RS/MB):

SJAFCA shall implement the following measures to avoid and minimize effects on breeding and migratory birds for construction (FRR/RS/MB) and O&M (MB) activities:

a. **Clearing and Grubbing.** Tree and shrub removal and work in other areas scheduled for vegetation clearing, grading, or other construction or O&M activities shall not be conducted during the nesting season (generally February 15 through September 30, depending on the species and environmental conditions for any given year), when feasible.

b. **Pre-construction Surveys.** Conduct surveys to locate any nest sites within proposed construction and O&M areas in the spring. Surveys shall be conducted by a qualified biologist using approved methods. If nests or young of these species are not located, construction may proceed. If nests or young are located, nest buffer requirements shall be implemented as described below.

c. **Active Nest Buffer.** If nesting birds have been identified within or adjacent to the construction footprint, avoidance buffers shall be established of 500 feet for white-tailed kite, northern harrier, and loggerhead shrike; 300 feet for common raptors; 200 feet for heron or egret rookeries, and 100 feet for common passerines. Reduced buffers may be implemented if recommended by the monitoring biologist. Buffers 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. No construction activities shall occur within the buffer zone, which would be maintained until the young have fledged (as determined by a qualified biologist).

Mitigation Measure 3.6-1i (FRR/RS/MB):

In advance of tree and structure removal, a pre-construction survey for bats shall be conducted by a qualified biologist to characterize potential bat habitat and identify active roost sites within the proposed project area. Should potential roosting habitat or active bat roosts be found in trees and/or structures to be removed, the following measures shall be implemented:

a. Removal of trees and structures shall occur when bats are active, approximately between the periods of March 1 to April 15 and August 15 to October 15, and outside of bat maternity

roosting season (approximately April 15 – August 31) and outside of months of winter torpor (approximately October 15 – February 28), to the extent feasible.

b. If removal of trees and structures during the periods when bats are active is not feasible and active bat roosts being used for maternity or hibernation purposes are found on or in the immediate vicinity of the proposed project area where tree and structure removal is planned, a no-disturbance buffer of 100 feet shall be established around these roost sites until they are determined to be no longer active by the qualified biologist.

c. The qualified biologist shall be present during tree and structure removal if active bat roosts, which are not being used for maternity or hibernation purposes, are present. Trees and structures with active roosts shall be removed only when no rain is occurring or is forecast to occur for three days and when daytime temperatures are at least 50°F.

d. Removal of trees with active or potentially active roost sites shall follow a two-step removal process:

    i. On the first day of tree removal and under supervision of the qualified biologist, branches and limbs not containing cavities or fissures in which bats could roost, shall be cut only using chainsaws.

    ii. On the following day and under the supervision of the qualified biologist, the remainder of the tree may be removed, either using chainsaws or other equipment (e.g., excavator or backhoe).

e. Removal of structures containing or suspected to contain active bat roosts, which are not being used for maternity or hibernation purposes, shall be dismantled under the supervision of the qualified biologist in the evening and after bats have emerged from the roost to forage. Structures shall be partially dismantled to significantly change the roost conditions, causing bats to abandon and not return to the roost. If deemed necessary by a qualified biologist, bat exclusion devises may be installed to prevent the re-entry of bats to a roost.

Mitigation Measure 3.6-1j (RS/MB):

SJAFCA shall implement the following measures to avoid and minimize effects on special-status plants during restoration activities:

a. **Pre-construction Surveys.** Qualified botanists shall survey the proposed project area to document the presence of special-status plants before project implementation and would conduct a floristic survey that follows the CDFW botanical survey guidelines (CDFW 2018). All plant species observed would be identified to the level necessary to determine whether they qualify as special-status plants or are plant species with unusual or significant range extensions. The guidelines also require that field surveys be conducted when special-status plants that could occur in the area are evident and identifiable, generally during the reported blooming period. To account for different special-status plant identification periods, one or more series of field surveys may be required in spring and summer. If any special-status plants are identified during the surveys, the botanist would photograph and map locations of the plants, document the location and extent of the special-status plant population on a CNDDB Survey Form and submit the completed Survey Form to the CNDDB. The amount of compensatory mitigation required would be based on the results of these surveys.

b. **Avoidance.** If one or more special-status plants is identified in the proposed project area during pre-construction surveys, SJAFCA shall redesign or modify the proposed project components to avoid indirect or direct effects on special-status plants wherever feasible.

If special-status plants cannot be avoided by redesigning project components, implementation of mitigation would avoid significant effects on special-status plants.

c. **Preservation.** If complete avoidance of special-status plants is not feasible, the effects of the proposed project on special-status plants would be compensated through off-site preservation at a one-to-one ratio or as negotiated with the resource agencies. Suitable habitat for affected special-status plant species would be purchased in a conservation area or established onsite and preserved and managed in perpetuity. Detailed information would be provided to the agencies on the location and quality of the preservation area, the feasibility of protecting and managing the area in perpetuity and the responsible parties. Other pertinent information also would be provided, to be determined through future coordination with the resource agencies.

Mitigation Measure (FRR/RS/MB): Implement Mitigation Measure 3.6-2 (see Impact 3.6-2).

Significance After Mitigation: Implementation of Mitigation Measures 3.6-1 and 3.6-2 would reduce impacts to special-status wildlife and plant species to a **less-than-significant level**, as described below.

Flood Risk Reduction Components

Impacts would be reduced through implementation of Mitigation Measure 3.6-1a, which includes worker awareness training and avoidance actions specific to the species and sensitive habitat likely to occur in the proposed project area. Impacts on Crotch's bumble bee would be reduced with implementation of Mitigation Measure 3.6-1b which would include avoidance of active nests, or if avoidance is not possible consulting with CDFW to ensure compliance with the California Endangered Species Act, which may include obtaining a "take" permit. Impacts on VELB would be reduced with implementation of Mitigation Measure 3.6-1c, which would include avoidance and minimization measures, methodologies for transplanting shrubs, and methodologies for compensatory mitigation. The impact on Swainson's hawk would be reduced with implementation of Mitigation Measure 3.6-1d, which includes pre-construction surveys, and creation of buffers around active nests. Impacts on riparian brush rabbit would be reduced with implementation of Mitigation Measure 3.6-1e, which includes pre-construction surveys, and installation of silt and exclusion fencing. Impacts on northwestern pond turtle would be reduced by implementation of Mitigation Measure 3.6-1f, which includes pre-construction surveys, and relocation requirements. Impacts on burrowing owl would be reduced by implementation of Mitigation Measure 3.6-1g, which includes pre-construction surveys, buffers around active nests, and reporting requirements. Impacts on other breeding and migratory birds would be reduced by implementation of Mitigation Measure 3.6-1h, which includes avoidance of work during the breeding period, pre-construction surveys, and active nest buffers. Impacts on special-status bats would be reduced by implementation of Mitigation Measure 3.6-1i, which includes avoidance of the bat maternity roosting season, buffer areas, and actions that must be employed during tree and structure removal. Finally, implementation of Mitigation Measures 3.6-1j, 3.6-1k, and 3.6-2 would reduce impacts on special-status plants through pre-construction surveys, avoidance, and preservation actions and ensure that riparian habitat is retained, protected, and if necessary, replaced with compensatory habitat. Collectively, these mitigation measures would result in the avoidance and minimization of substantial effects on special-status wildlife species during construction activities.

Restoration Sites 13, 14, and 16

As described above, implementation of Mitigation Measures 3.6-1a through 3.6-1j would reduce impacts on special-status wildlife species. Implementation of Mitigation Measure 3.6-1j would reduce impacts on special-status plants through pre-construction surveys, avoidance, and preservation actions and Mitigation Measures 3.6-1k and 3.6-2 would ensure that riparian habitat is retained, protected, and if necessary, replaced with compensatory habitat. Collectively, these mitigation measures would result in the avoidance and minimization of substantial effects on special-status plant and wildlife species during construction activities.

Other Multi-Benefit Components

The proposed project is intended to improve ecological conditions for species within the proposed project area in a manner that would restore native natural communities and have beneficial long-term impacts on special-status species that utilize the restored habitat type. As described above, implementation of Mitigation Measures 3.6-1a through 3.6-1j would reduce impacts on special-status wildlife species. Implementation of Mitigation Measure 3.6-1j would reduce impacts on special-status plant species through pre-construction surveys, avoidance, and preservation actions and Mitigation Measures 3.6-1k and 3.6-2 would ensure that riparian habitat is retained, protected, and if necessary, replaced with compensatory habitat. Collectively, these mitigation measures would result in the avoidance and minimization of substantial effects on special-status plant and wildlife species during construction activities.

Impact 3.6-2: Implementation of the proposed project could result in adverse effects to riparian habitat or other sensitive natural communities identified in local or regional plans, policies, regulations, or by CDFW or USFWS.

Biological communities are assemblages of plant species that are defined by species composition and relative abundance. Special-status biological communities, also referred to as sensitive natural communities, include waters, wetlands, riparian communities, and any natural community ranked S1, S2, or S3 by CDFW (CDFW 2025b). A delineation of waters and wetlands to USACE accuracy standards has not been completed for the proposed project; however, a habitat survey was conducted that included aquatic resources, and six sensitive natural communities were identified on-site and are likely to qualify as both waters of the United States and state. These include the San Joaquin River, French Camp Slough, Weatherbee Lake, riparian forest, forested wetland, and emergent wetlands. Although irrigation ditches are generally not considered a sensitive natural community, they may qualify as waters of the United States or state, thereby qualifying as a sensitive natural community. See Appendix C to this Draft EIR for additional information. Thus, they are included in the discussion below. Impact 3.6-3 further discusses impacts specific to wetlands.

Flood Risk Reduction Components

Construction

As discussed in Chapter 2, *Project Description*, subsection 2.5.1, *Site Preparation and Mobilization*, riparian vegetation, which is a sensitive natural community, may be trimmed and removed as part of site preparation for the proposed project. Additionally, design for the proposed project shows portions of the seepage berm construction and the dryland levee construction overlapping several irrigation ditches that may also qualify as wetlands and therefore as a sensitive natural community. However, the exact details, including precise locations, of any such construction activities have yet to be determined.

As further discussed in Chapter 2, generally, trees on the waterside slopes that are not dead and/or downed would be avoided and not impacted by rock slope protection efforts. However, construction activities would require the trimming or removal of approximately two acres of riparian forest (Table 3.6-8, "Non-VELB Riparian Impacts"). The impact of the potential loss of riparian habitat as a sensitive natural community would be significant.

The proposed project area contains irrigation ditches large enough that they appear to be permanent (see Appendix C to this Draft EIR) and may qualify as waters of the United States or state, in which case they would be considered a sensitive natural community. Proposed construction activities would result in removal of approximately one acre of irrigation ditches, if all irrigation ditches that fall within the proposed construction footprint are removed (Table 3.6-8, "Wetlands and Other Waters Impacts"). The impact of the loss of irrigation ditches as a sensitive natural community and other waters would be potentially **significant**.

Operations and Maintenance

Regular O&M activities would consist of removal of encroachments and high-hazard vegetation to ensure levee integrity, replacement and re-working of displaced or launched revetment following large flood events, and adequate levee access along the levee toe road, which could also require removal of riparian habitat. These O&M activities are all conducted under existing conditions and would not require work within sensitive natural communities more than is currently required. Thus, the disruptions to sensitive natural communities would remain similar. Furthermore, O&M activities would not introduce new land uses into the area or otherwise result in additional types or amounts of impacts. Therefore, the proposed activities would not increase the size of O&M impacts relative to existing conditions and would not create additional types of impacts. The proposed project O&M activities would be **less than significant**.

Restoration Sites 13, 14, and 16

Construction

Construction at the ecosystem restoration sites would ultimately result in more of each sensitive natural community than is currently present. There would be a temporary loss of sensitive natural community acreage during construction (see Table 3.6-9). The sensitive natural communities would not be entirely removed from the local area. The design retains much more of the sensitive natural communities in the local area than is temporarily impacted. The temporary loss of sensitive natural community acreage would be a potentially **significant** impact.

Operations and Maintenance

O&M activities at Sites 13, 14, and 16 would be directed toward their purpose as sensitive natural communities indefinitely and would only occur for 3 years while the ecosystem restoration sites are established. The proposed project O&M activities would be **less than significant**.

Other Multi-Benefit Components

Restoration of prior converted riparian habitat to improve ecological conditions for species within the proposed ecosystem restoration sites in a manner that would restore native natural communities would have beneficial long-term impacts on the habitat and special-status species that utilize the restored habitat type. The ecosystem restoration sites would be cleared and grubbed to remove existing unwanted

vegetation, and avoidance and minimization measures would be conducted to avoid and preserve designated high-value trees or habitat such as mature live oaks, elderberries, cottonwoods, willows, and wetland areas. Impacts on sensitive natural communities including riparian habitat and irrigation ditches (if they qualify) could occur, during construction from soil disturbance, dust, and grubbing activities, but are likely to be temporary and would result in beneficial effect for both sensitive habitats and special-status species by increasing the overall habitat value and having a net gain of sensitive natural communities. Although direct effects are not anticipated, impacts may occur to sensitive natural communities during construction when connecting existing habitats to newly constructed habitats but would result in an overall net gain in habitat. Therefore, impacts would be **less than significant**.

Mitigation Measures

Mitigation Measure (FRR): Implement Mitigation Measure 3.6-1a.

Mitigation Measure 3.6-2 (FRR/RS):

SJAFCA shall conduct an aquatic resources delineation to identify potential wetlands and other waters that fall under state and federal jurisdiction within proposed project areas.

During construction and O&M activities, design and or refinement of proposed project activities would be implemented to reduce impacts on sensitive habitat to the extent practicable. Refinements implemented to reduce the loss of riparian and wetland/waters habitat would include reducing the impact footprint, constructing on the landside of the levee to avoid impacts to riparian and wetland/waters habitat, and constructing within the existing disturbed areas of the existing levee. Where practicable, trees on the waterside slopes that are not dead and/or downed would be avoided and not impacted by rock slope protection efforts.

Temporary and permanent impacts to riparian habitat and wetland/waters, that cannot be mitigated through avoidance, minimization, or remediation shall be mitigated to ensure no net loss through compensation, by restoring riparian and wetlands/waters habitat at one of the proposed ecosystem restoration sites or an approved offsite location, mitigation bank, or in-lieu fee program. Riparian and wetlands/waters habitat will not be restored where it would be removed by future maintenance activities. A revegetation plan would be prepared by a qualified biologist or landscape architect and reviewed by the appropriate agencies. The revegetation plan would specify the use of beneficial native plants appropriate for each area that provide a diverse variety of grasses and forbs that support native wildlife species.

Significance After Mitigation: Implementing Mitigation Measures 3.6-1a and 3.6-2 would ensure that avoidance of sensitive habitat areas, pre-construction delineations, worker awareness training, and compensatory mitigation would occur. Implementation of these measures would reduce the extent of these impacts to a **less-than-significant level**.

Impact 3.6-3: Implementation of the proposed project could result in adverse effects to state or federally protected wetlands (including but not limited to marsh, vernal pool, and coastal) through direct removal, filling, hydrological interruption, or other means.

Flood Risk Reduction Components

Construction

A formal delineation of waters of the United States and state has not been conducted. However, based on habitat surveys conducted for the proposed project, there are wetlands within the proposed project area

that would likely qualify as jurisdictional under the CWA, Porter-Cologne Act, or under Section 1600 of the California Fish and Game Code.

As discussed in Chapter 2, *Project Description*, subsection 2.5.1, *Site Preparation and Mobilization*, there would be no clearing or grubbing activities occurring below the ordinary high-water mark, which is where the majority of the potential wetlands and waters occur. Therefore, impacts would be limited to wetlands that occur outside of the OHWM such as the irrigation canals, discussed under Impact 3.6.2, which may be jurisdictional. As discussed in Chapter 2, subsection 2.4.1, *Flood Risk Reduction Components*, the proposed project would widen levees, construct seepage berms and extend the dryland levee, which based on the current 30 percent project design would overlap several irrigation ditches that may qualify as jurisdictional wetlands. However, the exact details, including precise locations, of any such construction activities have yet to be determined.

Regular O&M activities would consist of removal of encroachments and high-hazard vegetation to ensure levee integrity, replacement and re-working of displaced or launched revetment following large flood events, and adequate levee access along the levee toe road which could also impact wetlands.

If wetlands are determined to be jurisdictional under state or federal regulations and the proposed project footprint would alter, realign, fill, or hydrological interrupt those features as part of construction there would be potential for significant impacts. Therefore, this impact would be **significant**.

Operations and Maintenance

Regular O&M activities described above are all conducted under existing conditions and would not require work within wetlands more than is currently required. Thus, the disruptions to wetlands would remain similar. Furthermore, O&M activities would not introduce new land uses into the area or otherwise result in additional types or amounts of impacts. Therefore, the proposed activities would not increase the size of O&M impacts relative to existing conditions and would not create additional types of impacts. The proposed project O&M activities would be **less than significant**.

Restoration Sites 13, 14, and 16

Construction

Construction of ecosystem restoration at Sites 13, 14, and 16 would result in work in aquatic resources (below the OHWM of waters of the United States) and possibly also in wetlands. Restoration at the sites would ultimately result in more acreage of aquatic resources that is currently present. However, there could be a temporary adverse effect to aquatic resources during construction, which would be a **significant** impact.

Operations and Maintenance

O&M activities at ecosystem restoration at Sites 13, 14, and 16 would be directed toward their purpose as restoring aquatic resources and would only occur for 3 years while the ecosystem restoration sites are established. The proposed project O&M activities would be **less than significant**.

Other Multi-Benefit Components

A formal delineation of waters of the United States and state has not been conducted for areas proposed for restorations. However, wetlands could occur within the proposed project area that would qualify as

jurisdictional under the CWA, Porter-Cologne Act, or under Section 1600 of the California Fish and Game Code. Ecosystem restoration sites would be cleared and grubbed to remove existing unwanted vegetation, and avoidance and minimization measures would be conducted to avoid and preserve designated wetland areas. Temporary impacts may result during removal of invasive species, breaching of existing levees, regrading of floodplain, or other beneficial improvements. However, the impact of the multi-benefit components on aquatic features protected under state or federal protections would be minimal and would result in an overall net gain of wetlands making this impact **less than significant**.

Mitigation Measures

Mitigation Measure (FRR/RS): Implement Mitigation Measures 3.6-1a and 3.6-2.

Significance After Mitigation: Implementation of Mitigation Measures 3.6-1a and 3.6-2 would ensure that avoidance of sensitive habitat areas, pre-construction delineations, worker awareness training, and compensatory mitigation would occur. Implementation of these measures would reduce the extent of these impacts to a **less-than-significant level**.

Impact 3.6-4: Implementation of the proposed project could interfere with the movement of a native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors or impede the use of native wildlife nursery site.

Flood Risk Reduction Components

Construction

Construction activities could result in temporary modification or permanent loss of riparian habitat used by special-status species, which could affect movement of wildlife. Contiguous riparian and riverine habitats provide suitable cover, prey resources, and water to support local movement and migration of fish and wildlife. Because riparian corridors and rivers often serve as the main routes for movement and migration of numerous wildlife species, the loss, fragmentation, or alteration of riparian habitats could limit access to habitats for breeding, rearing, foraging, and other needs.

The proposed project, based on the 30 percent designs, would result in removal of approximately 2 acres of riparian habitat out of the approximately 70 acres in the flood risk reduction portion of the proposed project area. The majority of the vegetation to be removed occurs on the levee at the existing edge of the habitat. As discussed in Chapter 2, *Project Description*, subsection 2.5.1, *Site Preparation and Mobilization*, on the waterside riparian trees would be preserved when feasible and no clearing or grubbing would occur below the OHWM, which would maintain a corridor for birds year-round and a corridor for ground dwelling wildlife when water levels are below the OHWM. In areas where patches of vegetation need to be completely removed for placement of rock slope protection the continuity of existing vegetation would be reduced creating a break in the vegetation. Thus, there is potential for temporary loss of cover for wildlife migration for species that use ground cover such as the riparian brush rabbit and northwestern pond turtle when water levels are above the OHWM and in areas where vegetation would be completely removed down to the OHWM for rock placement.

Grading and other ground-disturbing activities could also temporarily disrupt the movement of small mammals, reptiles, and amphibians. Although these species would likely need to move to and through adjacent unaffected aquatic or upland habitat away from active construction activities, the effect of the proposed project on access of these species to their habitat would be temporary and these species would

be expected to return to areas affected by construction once such work is completed and vegetation has regrown. Additionally, there would be similar areas of riparian and grassland habitat in reaches along San Joaquin River unaffected by the proposed project that could be utilized by these species. Equipment and personnel movement and vegetation removal during construction could interfere with the movement of other terrestrial wildlife species such as small mammals or birds; however, these activities would not result in substantial effects on the movement of these species because they are mobile and can move away from construction activities to unaffected areas.

Although trees greater than 2 inches would be maintained where feasible and vegetation below the OHWM would not be removed as described in Chapter 2, *Project Description*, subsection 2.5.1, *Site Preparation and Mobilization*, removing small stretches of riparian undergrowth would temporarily disrupt movement and cause temporary fragmentation until such time that the revegetated areas regrow. Although the magnitude of adverse effects that would result on wildlife movement varies both by species and by specific activity, considering the relative rarity of riparian and riverine habitats regionally in the San Joaquin Valley, their close association with the proposed project area, and their importance to many species of wildlife that depend on riparian undergrowth and riverine habitats for dispersal, movement, and breeding as described above, interference with these movement corridors and nursery sites through any amount of habitat modification or loss would be a **significant** impact.

Operations and Maintenance

Regular O&M activities described above are all conducted under existing conditions and would not require additional clearing or grubbing that could potentially impact migration corridors more than what is currently required. Thus, the disruptions to migration corridors would remain similar. Furthermore, O&M activities would not introduce new land uses into the area or otherwise result in additional types or amounts of impacts. Therefore, the proposed activities would not increase the size of O&M impacts relative to existing conditions and would not create additional types of impacts. The proposed project O&M activities would be **less than significant**.

Restoration Sites 13, 14, and 16

Construction

Construction activities at the ecosystem restoration sites would have similar temporary impacts on wildlife movement as the flood risk reduction components, although the restoration work would ultimately result in more wildlife habitat. The temporary interference with wildlife movement would be a **significant** impact.

Operations and Maintenance

O&M activities at ecosystem restoration at Sites 13, 14, and 16 would be directed toward their purpose as restoring wildlife habitat and would only occur for 3 years while the ecosystem restoration sites are established. The proposed project O&M activities would be **less than significant**.

Other Multi-benefit Components

Restoring riparian habitat on agricultural and developed land would create better continuity along migration corridors and potential nesting and nursery grounds for terrestrial wildlife species that utilize the San Joaquin River system. There would be short-term effects to birds and other wildlife in areas

adjacent to the construction footprint due to increased noise, vibration and dust and removal of invasive vegetation. However, overall impacts would be less than significant.

Construction of the recreational components would occur within previously disturbed areas such as agricultural and developed lands. Indirect effects could occur during construction, but no direct effects are anticipated to migration corridors. Impacts would be **less than significant**.

Mitigation Measures

Mitigation Measure (FRR/RS): Implement Mitigation Measures 3.6-1a through 3.6-1h and 3.6-2.

Significance After Mitigation: Implementation of Mitigation Measures 3.6-1a through 3.6-1h and 3.6-2 would ensure that avoidance of sensitive habitat areas, pre-construction delineations, worker awareness training, and compensatory mitigation would occur. Implementation of these measures would reduce the extent of these impacts to a **less-than-significant level**.

Impact 3.6-5: Implementation of the proposed project could conflict with local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance.

All Project Components

As previously discussed, construction and O&M activities for the flood risk reduction, ecosystem restoration at Sites 13, 14, and 16, and other multi-benefit components of the proposed project have the potential to remove trees and high-hazard vegetation (which may include trees). This activity could remove trees that are regulated by local ordinances for trees. The following local ordinances regulate trees for their respective portions of the proposed project:

- City of Stockton: Stockton Municipal Code Section 16.130 regulates the removal of "heritage trees." Heritage trees are defined as "*any Quercus lobata (commonly known as "Valley Oak"), Quercus agrifolia (Coast Live Oak), and Quercus wislizenii (Interior Live Oak) tree which is located on public or private property within the limits of the City, and which has a trunk diameter of 16 inches or more, measured at 24 inches above actual grade*" (Section 16.240). Removal of heritage trees requires a permit from the City and replacement on a three-for-one basis.
- San Joaquin County: County Municipal Code Title 9-1505 requires an approved Improvement Plan application for removal of "native oak trees" and "Heritage oak trees" on projects requiring discretionary approval. A native oak tree is defined as "a valley oak (*Quercus lobata*) or an interior live oak (*Quercus wislizenii*), California live oak (*Quercus agrifolia*), or blue oak (*Quercus douglasii*) tree." A heritage oak tree is defined as "A native oak tree that has a single trunk diameter of 32 inches or greater measured at four and one-half feet above the average ground elevation of the tree" (Title 9-900.020). Title 9-1505.8 exempts removals required for the repair and maintenance of flood control facilities. Otherwise the code requires replacement of native oaks at 3:1 and heritage oaks at 5:1.
- City of Lathrop: Lathrop Municipal Code only covers trees that are in the right-of-way of public streets (Section 12.16). No such trees would be removed by the proposed project.
- City of Manteca: Lathrop Municipal Code only covers trees that are in the right-of-way of public streets (Section 12.08). No such trees would be removed by the proposed project.

The proposed project could remove oaks that are regulated by the City of Stockton and San Joaquin County. However, oak removal in San Joaquin County may not be regulated for two reasons. First, the

proposed project may not require discretionary approval, and so San Joaquin County Municipal Code Title 9-1505 may not apply. Second, tree removal that is required for flood control facilities, and other public facilities in general, is exempted.

Proposed project activities could also be in conflict with the San Joaquin County General Plan. The plan includes multiple goals and objectives for the protection of biological resources including Goal NCR-2 "to preserve and protect wildlife habitat areas for the maintenance and enhancement of biological diversity and ecological integrity"; NRC 2-1 to protect significant biological and ecological resources; NCR-2-4, which requires new development in vicinity of significant oak groves to be designed and sited to maximize the long-term preservation of the trees and the integrity of their natural setting; and NCR-2-5, which states that development is not to be allowed that results in a net loss of riparian or wetland habitat.

The proposed project may remove oaks regulated by the City of Stockon municipal code. The proposed project may also include loss of riparian vegetation along the levee which would be in conflict with certain goals and objectives in the San Joaquin County General Plan. The impact would be **significant**.

Mitigation Measures

Mitigation Measure (FRR/RS/MB): Implement Mitigation Measures 3.6-1a and 3.6-2.

Mitigation Measure 3.6-5 (FRR/RS/MB):

In the City of Stockton, SJAFCA shall submit an application for a heritage tree removal permit for any oaks that will be removed that meet Stockton Municipal Code size requirements. SJAFCA shall replace heritage trees removed per the requirements of the municipal code on a 3:1 basis with each replacement tree being of at least 15-gallon container size. SJAFCA shall comply with any other applicable local code regarding tree removal.

Significance After Mitigation: Implementation of Mitigation Measures 3-6.1a, 3.6-2, and 3.6-5, including preserving existing habitat, revegetating disturbed areas with native vegetation, and replacing heritage oaks removed on a 3:1 basis would reduce the extent of these impacts to a **less-than-significant level**.

Impact 3.6-6: Implementation of the proposed project could conflict with the provisions of an adopted habitat conservation plan, natural community conservation plan, or other approved local, regional, or state habitat conservation plan.

All Project Components

The proposed project area is covered by San Joaquin County Multi-Species Conservation and Open Space Plan approved in 2000. This plan covers an expansive list of species and habitats of interest at federal, state, and local levels. The San Joaquin County Multi-Species Conservation and Open Space Plan specifically covers levee maintenance efforts undertaken by SJAFCA. The proposed project would not conflict with any of the objectives outlined in the San Joaquin County Multi-Species Conservation and Open Space Plan. Given the implementation of the mitigation measures listed above are consistent with or more protective than the measure incorporated into the San Joaquin County Multi-Species Conservation and Open Space Plan for biological resources, there would be no conflict between the proposed project and the San Joaquin County Multi-Species Conservation and Open Space Plan. The potential impacts for the proposed project on an adopted conservation plan would be **less than significant**.

Mitigation Measures (FRR/RS/MB): None required.

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3.7 Cultural Resources

3.7.1 Introduction

This section examines the potential impacts of the proposed project on cultural resources. Tribal cultural resources are discussed separately in Section 3.18, *Tribal Cultural Resources*. For the purposes of this analysis, the term "cultural resource" is defined as follows:

> *Native American, and non-Native American historic-era, sites, structures, districts, and landscapes, or other evidence associated with human activity considered important to a culture, a subculture, or a community for scientific, traditional, religious, or other reason. These resources include the following types of CEQA-defined resources: historical resources, archaeological resources, and human remains.*

This section relies on the information and findings presented in *Mossdale Tract Area Urban Flood Risk Reduction Project, San Joaquin County, California: Archaeological and Architectural Resources Inventory Report*. That report (Appendix F [*Confidential*] to this Draft EIR) details the results of the cultural resources study, which examined the environmental, ethnographic, and historic background of the proposed project area, emphasizing aspects of human occupation.

Comments addressing cultural resources were received in response to the NOP. The California State Lands Commission (CSLC) requested that the EIR evaluate potential impacts to submerged cultural resources in the proposed project area and suggested that the CSLC be contacted regarding shipwrecks data. The CSLC also stated that any submerged cultural resources in state waters for more than 50 years should be considered significant and is under title to the CSLC and requested that a mitigation measure detailing an unanticipated discovery protocol for submerged cultural resources and language requiring CSLC of final disposition of any submerged cultural resources identified on state lands. The California Native American Heritage Commission (NAHC) provided details on some cultural resource regulations pertaining to the proposed project and requested that the NAHC be contacted for a Sacred Lands File (SLF) search and list of California Native American Tribes for the proposed project area. See Appendix A to this Draft for NOP comment letters.

3.7.2 Key Terms

This section includes the key terms defined below.

- **Architectural Resource.** This resource type includes historic-era buildings, structures (e.g., bridges, canals, roads, utility lines, railroads), objects (e.g., monuments, boundary markers), and districts. Residences, cabins, barns, lighthouses, military-related features, industrial buildings, and bridges are some examples of architectural resources. If a resource is considered a ruin (e.g., building lacking structural elements, structure lacking a historic configuration), it is classified as an archaeological resource.
- **Archaeological Resource.** This resource type consists of pre-contact and historic-era Native American archaeological resources, as well as non–Native American archaeological resources from the historic era:

- *Native American archaeological resources* consist of village sites, temporary camps, lithic scatters, roasting pits/hearths, milling features, petroglyphs, rock features, and burials. Associated artifacts include obsidian and chert flaked-stone tools (e.g., projectile points, knives, scrapers) or toolmaking debris; culturally darkened soil (midden) containing heat-affected rocks, artifacts, or shellfish remains; and stone milling equipment (e.g., mortars, pestles, handstones, or milling slabs).
- *Non–Native American historic-era archaeological resources* consist of townsites, homesteads, agricultural or ranching features, mining-related features, refuse concentrations, and features or artifacts associated with early military and industrial land uses. Associated artifacts include stone, concrete, or adobe footings and walls; artifact-filled wells or privies; and deposits of metal, glass, and/or ceramic refuse.

3.7.3 Environmental Setting

Environmental Context

The proposed project area is within the northern portion of the San Joaquin Valley within California's Great Valley Geomorphic Province, with the San Joaquin River as the dominant drainage of the proposed project area and vicinity. The Great Valley, also called the Central Valley, is a nearly flat alluvial plain that lies between the Sierra Nevada on the east and the Coast Ranges on the west. Its south end is defined by the Tehachapi Mountains north of Los Angeles, and the Klamath Mountains to the north. The Central Valley has an average width of about 50 miles and is about 400 miles long overall. The proposed project area and vicinity are somewhat rural in character and its natural environment has been heavily influenced by agricultural development, road construction (to the south), water control and conveyance systems (levees) and recent housing development.

The surficial geology of the proposed project area consists of Quaternary alluvium (stream channel and basin deposits). Mapped soils unit in virtually the entire proposed project area consist of silty clay loams (Egbert, Merritt), silt loams (Valdez), and fine sandy loams (Columbia, Grangeville, Veritas), in addition to smaller areas of the proposed project area with clay loams (Dello, Guard, Scribner), and loamy coarse sand (Tinnin). All of these soils are very deep and formed in alluvium (most from granitic rocks), and most are of Latest Holocene (2000 to 150 BP) age, with Historical-to-Modern (150 BP to present) age soils also represented. Historic-era and modern engineering and agricultural use of the landscape, notably through the construction of the levees and roads, and crop farming, have disturbed the majority of the proposed project area.

Cultural Context

Pre-contact Period

Categorizing the pre-contact period into cultural stages allows researchers to describe a broad range of archaeological resources with similar cultural patterns and components during a given timeframe, thereby creating a regional chronology. Rosenthal et al. (2007) provide a framework for the interpretation of the Central Valley pre-contact archaeological record and have divided human history in the region into three basic periods: *Paleo-Indian* (13550–10550 years before present [BP]), *Archaic* (10550–900 BP), and *Emergent* (900–300 BP). The Archaic period is subdivided into three sub-periods: *Lower Archaic* (10550–7550 BP), *Middle Archaic* (7550–2550 BP), and Upper Archaic (2550–900 BP) (Rosenthal et al. 2007). Economic patterns, stylistic aspects, and regional phases further subdivide cultural patterns into shorter phases. This scheme uses economic and technological types, socio-politics, trade networks,

population density, and variations of artifact types to differentiate between cultural periods. The following summary of the region's prehistory is derived principally from Rosenthal et al. (2007), Moratto (1984 [2004]), and Fredrickson (1992).

Paleo-Indian Period (13550–10550 BP)

Humans first entered the Central Valley sometime prior to 13,000 years ago. At that time Pleistocene glaciers had receded to the mountain crests leaving conifer forests on the mid- and upper elevations of the Sierra Nevada and a nearly contiguous confer forest on the Coast Ranges. The Central Valley was covered with extensive grasslands and riparian forests. The Delta system had not yet developed. The Central Valley was home to a diverse community of large mammals, which soon became extinct. People were likely focused on large game hunting, although evidence remains scant, as does understanding of lifeways during this period.

Lower Archaic Period (10550–7550 BP)

The Paleo-Indian Period was followed by the Lower Archaic Period (10550–7550 BP). During this period, the ancient lakes, which had been the subsistence base during the Paleo-Indian Period, began to dry up as a result of climate change. This led to the rapid expanse of oak woodland and grassland prairies across the Central Valley. After 10550 BP, a significant period of soil deposition ensued in the Valley, capping older Pleistocene formation. This was followed around 7000 BP by a second period of substantial soil deposition in the Valley.

It was during this period that the first evidence of milling stone technology appeared, indicating an increased reliance on processing plants for food. This period is often termed the "Milling Stone Horizon" in southern California. The appearance of milling technology may also indicate less emphasis on hunting as individuals became more familiar with the local plant resources. Milling stones include handstones and milling slabs and are frequently associated with a diverse tool assemblage including cobble-based pounding, chopping, and scraping tools. Milling tools were used for processing seeds and nuts. The Lower Archaic also saw the development of well-made bifaces used for projectile points and cutting tools, commonly formed from meta-volcanic greenstone and volcanic basalts. Most artifacts during this period were manufactured of local materials and trade was limited. The primary social unit remained the extended family.

Middle Archaic Period (7550–2550 BP)

After about 7550 BP, California was marked by a change in climate with warmer and drier conditions. Oak woodland expanded upslope in the Coast Ranges and conifer forest moved into the alpine zone in the Sierra Nevada. Rising sea levels led to the formation of the Delta and associated marshlands. An initial period of upland erosion and lowland deposition was followed by a long period of stabilization of landforms. Scant evidence of human occupation from this period has been found in the Sacramento Valley or the adjacent Coast Ranges. Most evidence comes from the Sierra Foothills in Calaveras and Tuolumne counties.

Upper Archaic Period (2550–900 BP)

Evidence for Upper Archaic human occupation in the Central Valley is much more extensive than for earlier periods. The development of the Holocene landscape buried older deposits, resulting in the identification of more sites from the Upper Archaic than from older periods of development. Alluvial deposition was partially interrupted by two consecutive droughts known as the Medieval Climatic anomaly.

Two fundamental adaptations developed side-by-side during the Upper Archaic period, evidenced by a diversification in settlements patterns. Populations in the Valley tended towards large, high-density, permanent settlements. These villages were used as hubs from which the populace roamed to collect resources, utilizing a wide range of technologies. The populations in the foothills and mountains lived in less dense settlements, moving with the seasons to maximize resource returns. Tools tended to be expedient and multipurpose for use in a wide variety of activities. Village sites show extended occupation as evidenced by well-developed midden, frequently containing hundreds of burials, storage pits, structural remains, hearths, ash dumps, and extensive floral and faunal remains.

Emergent Period (900–300 BP)

A major shift in material culture occurred around 900 BP, marking the beginning of the Emergent Period. Particularly notable was the introduction of the bow and arrow. The adoption of the bow occurred at slightly different times in various parts of the Sacramento Valley, but by 750 BP it was in use in the region. The bow was accompanied by the Stockton Serrated point, an invention seemingly developed by people in the area, distinctive from point types used in other parts of the state. Another key element of material culture from this period include big-head effigy ornaments thought to be associated with the Kuksu religious movement. In areas where stone was scarce, baked clay balls are found, presumably for cooking in baskets. Other diagnostic items from this period are bone tubes, stone pipes, and ear spools. Along rivers, villages are frequently associated with fish weirs, with fishing taking on an increasing level of importance in the diet of the local populace.

Ethnographic Setting

Section 3.18.2 provides the ethnographic setting, including a summary of the Northern Valley Yokuts Native American Tribe.

Historic Setting

The earliest European presence in California came with the Spanish discovery and exploration of the California coast in the mid-16th century. European expansion began when Spain began establishing a string of Franciscan missions throughout the region to Christianize the native population of California and to gain political and social control of the area. Alongside the missions came a network of military establishments or *presidios* and civilian settlements or *pueblos*. Exploration of the California hinterland focused predominantly on identifying rancho sites to support the mission network as well as the recapture of runaway Natives (Gudde 1998; Hoover et al. 2002).

Although the original Spanish plan for the mission system included secularization, the process did not begin until Mexican independence from Spain in the 19th century. The Mexican government began secularization in mid-1834, with mission lands granted to high-ranking Mexican Californian soldiers, politicians, and socialites. Most ranchos were intensively involved in the hide-and-tallow trade, supporting huge herds of cattle on their vast landholdings. Beginning in the 1830s, Americans began to migrate to California. Many Americans became Mexican citizens, married into prominent *Californio* families, and were granted lands from the governor (Gudde 1998; Hoover et al. 2002). The proposed project area was part of the Pescadero land grant. In November 1843, Mexican Governor Micheltorena granted land to Valentin Higuera and Rafael Feliz, which became known as Pescadero, with 34,446 acres, located west of the San Joaquin River, bordering San Joaquin County (Beck and Haase 1988; Brotherton 1982).

The discovery of gold in California in 1848 instigated one of the largest migrations in history. Thousands came by land and sea in search of their fortunes. Most came to dig for the gold, but many came with the foresight that miners needed supplies. Mining camps and towns were established almost immediately throughout the California's gold-bearing regions, which are generally located along the western foothills of the Sierra Nevada and along the Klamath and Trinity River basins. The influx also brought an extreme diversity of cultures and nationalities. Almost immediately after the discovery of gold, investors began talking about the construction of a transcontinental railroad that would connect eastern goods, money, and services to the new western enterprises (Gudde 1998; Hoover et al. 2002).

Prior to 1850, much of California's low lying Central Valley was naturally subject to regular flooding over large areas making much of that land unusable for most agricultural purposes. The Swamp and Overflow Land Act of 1850 dramatically changed the natural landscape of the Delta by transferring title to swamplands from federal to state ownership. The act authorized the survey and settlement of swamp lands with the caveat that the land would be reclaimed for agriculture. In 1861 California established the Board of Swamp Land Commissioners to create swampland Reclamation Districts (RD) and to realign flood control works. The Board constructed levees for the Sacramento and San Joaquin River basins, among other projects, but generally met with little success. Once a district was organized, they would cut off the natural bypasses and sloughs causing flooding in other places because the water no longer had a natural means of diversion (Gudde 1998; Hoover et al. 2002).

The 20th century also ushered in improved transportation to the region. Changes included the construction of bridges and roadways on the tops of levees, and gasoline-powered (rather than steam) riverboats that plied the waterways. Prior to transportation improvements, roadways were virtually non-existent, with most local travel being accomplished by schooners or barges. Independent operators from Stockton and Sacramento operated most of these smaller workboats. These railroads not only connected the area to populated centers such as Sacramento and San Francisco but also encouraged the movement of agricultural products from the area to outlying markets (Gudde 1998; Hoover et al. 2002). Since at least the late 19th century a levee has been present along the right bank of the San Joaquin River, at the current location of RD 17 West Levee (recorded as architectural resource P-39-005086), in the proposed project area. The RD 17 West Levee has been routinely maintained throughout the 20th and 21st centuries and has recently been significantly modified.

Existing Cultural Environment

California Historical Resources Information System Records Search

In February 2022, on behalf of the SJAFCA, Environmental Science Associates (ESA) requested a cultural resources records search for the proposed project area from staff at the Central California Information Center (CCIC), California State University, Stanislaus. The study area for the records search was the proposed project area with a 0.25-mile buffer. The CCIC maintains the official California Historical Resources Information System Records (CHRIS) records of previous cultural resources studies and recorded cultural resources for the proposed project area and vicinity. With modifications to the proposed project, ESA requested several records search updates from the CCIC in 2022 for the proposed project area.

Field Survey

In 2022, ESA archaeologists and Northern Valley Yokuts Tribe (NVYT) representatives conducted an intensive pedestrian surface survey of accessible portions of the proposed project area at that time where

the proposed flood risk reduction components would be located. During the course of the pedestrian survey, the entire extant levee portion of the proposed project area, along the San Joaquin River, was covered, except for the privately owned areas adjacent to the existing levee. Proposed Staging Areas 2, 3, 5, 8, and 12 were also covered during the pedestrian survey. In 2023 and 2024, as rights of entry became available, ESA completed additional intensive pedestrian surveys that included portions of the proposed dryland levee extension and ecosystem restoration Sites 13, 14, and 16.

Shipwrecks Databases

The CSLC maintains the Shipwrecks Database, which currently identifies approximately 1,550 recorded shipwrecks in California. In November 2022, ESA corresponded with the CSLC requesting a records search of the CSLC's Shipwrecks Database for the proposed project area. The CSLC indicated that one potential shipwreck, the Stockton City #2, is on file in the Shipwrecks Database for the vicinity of the proposed project area. The Stockton City #2 is a 134-ton gas screw vessel constructed in 1916 that wrecked in the San Joaquin River, in the vicinity of the proposed project area, in 1925. The CSLC also noted that not all shipwrecks are listed in the Shipwrecks Database and that listed locations may be inaccurate; previously unidentified vessels or parts of vessels may exist.

ESA reviewed the online interactive database of shipwrecks derived from historic nautical charts maintained by the National Oceanic and Atmospheric Administration (NOAA), as well as the NOAA Historical Shoreline Surveys Google Earth layer, which provides access to nautical charts from the U.S. Coast Survey (USCS) (later the U.S. Coast and Geodetic Survey [USCGS]), for evidence of historic-era shipwrecks in the proposed project area. Neither the NOAA database nor any USCS/USCGS nautical charts depict any potential historic-era shipwrecks in the vicinity of the proposed project area, including any indications of Stockton City #2, referenced by the CSLC in their Shipwrecks Database.

Native American Correspondence

Section 3.18, *Tribal Cultural Resources*, provides a summary of Native American correspondence completed for the proposed project.

Summary of Existing Cultural Environment

Flood Risk Reduction Components

Through archival research, CHRIS records searches, and pedestrian survey, 17 previously recorded cultural resources have been recorded in the proposed project area where proposed flood risk reduction components would be located. Four of these are mapped horizontally within the proposed project area but are above the extent of any proposed project activities and not in areas where the proposed project could have impacts on cultural resources (e.g., areas where ground-disturbing activities would occur). Of the 13 previously recorded cultural resources mapped in the proposed project area where proposed flood risk reduction components would be located and in areas where the proposed project could have impacts on cultural resources, four resources (P-39-000006, -004602, -005086, -005248) were observed in the proposed project area during the pedestrian survey. No evidence of seven resources (P-39-000011, -000225, -004344, -004346, -004547, -004548, -004603) was observed in the proposed project area during the pedestrian survey. The mapped locations of two resources (P-39-000012, -000014/000141) were not covered by the pedestrian survey.

As a result, this study identified the following six cultural resources as either within or potentially within the proposed project area where proposed flood risk reduction components would be located: P-39-000006, -000012, -000014/000141, -004602, -005086, and -005248. Resource P-39-000006 does not appear to have been previously evaluated for California Register-eligibility. Resource P-39-000014/000141 was previously recommended California Register-eligible. The remaining five resources were previously recommended not eligible for the California Register. The cultural resources identified as present or potentially present are detailed below and summarized in **Table 3.7-1**.

TABLE 3.7-1
CULTURAL RESOURCES PRESENT OR POTENTIALLY PRESENT IN THE PROPOSED PROJECT AREA WHERE PROPOSED FLOOD RISK REDUCTION COMPONENTS WOULD BE LOCATED

Primary (P-39-)	Trinomial (CA-SJO)	Name/Description	Location	Previous CR-Eligibility
000002; 000548	250H; [none]	Architectural: Southern Pacific Railroad/Union Pacific Railroad; Union Pacific Railroad Bridge	Within horizontal extent of levee but above any proposed project components	L
000006	254	Archaeological site: pre-contact shell fragments	Staging Area	UE
000011	[none]	Archaeological isolate: pre-contact biface fragment	Along levee	RNE
000012	[none]	Archaeological isolate: pre-contact flake tool	Staging Area	RNE
000014; 000141	19/H; 3	Archaeological site: pre-contact village with two mounds, midden, human remains, flaked-stone artifacts, ground-stone artifacts, dietary faunal remains; historic residence	Staging Area	RE
000225	89	Archaeological site: pre-contact village with mound, midden, human remains, flaked-stone artifacts, ground-stone artifacts, dietary faunal remains	Along levee	UE
004344	[none]	Archaeological isolate: historic-era pump remnants	Along levee	RNE
004346	[none]	Archaeological isolate: historic-era glass bottle fragment	Along levee	RNE
004357	[none]	Architectural: Bridge 29C-127 (San Joaquin River Mossdale)	Within horizontal extent of levee but above any proposed project components	RNE
004510	[none]	Architectural: Bridge 29-0016F (W120-S5 Connector OH)	Within horizontal extent of levee but above any proposed project components	RE
004547	304H	Architectural: Ranch complex	Along levee	RNE
004548	305H	Architectural and archaeological: Ranch complex	Along levee	RNE
004602	[none]	Architectural: Ranch complex	Along levee	RNE
004603	313H	Archaeological site: historic-era refuse scatter	Along levee	RNE
005086	[none]	Architectural: RD 17 West Levee	Along levee	RNE
005248	[none]	Architectural: PG&E Utility Transmission Tower	Along levee	RNE
005337	[none]	Architectural: Tesla-Salado-Manteca 115kV Electric Transmission Line	Within horizontal extent of dryland levee extension but above any proposed project components	UE

NOTES: CR = California Register; L = Listed; PG&E = Pacific Gas & Electric Company; RE = Recommended Eligible; RNE = Recommended Not Eligible; UE = Unevaluated

P-39-000006

This pre-contact archaeological site was first recorded in 1993 (Wohlgemuth et al. 1993a) as a small scatter of freshwater shell in a staging area. Wohlgemuth and Mears (1994) state that the shell recorded as P-39-000006 may be of modern or even non-cultural origin. During ESA's pedestrian survey for the proposed project, shell was observed on the ground surface at the site's mapped location, and the previous descriptions of the site appeared to be accurate. Because no archaeological subsurface survey has been conducted at the mapped location of P-39-000006, it is unclear whether or not it has a subsurface component and what, other than the shell (of unknown age and origin) previously recorded and observed at the site during pedestrian survey for the proposed project, may be present at the site. Given the lack of the subsurface survey, this analysis treats P-39-000006 as potentially California Register-eligible under Criterion 4.

P-39-000012

This pre-contact archaeological isolate was first recorded in 1993 (Wohlgemuth et al. 1993b) as a small green chert flake tool in a staging area. The pedestrian survey conducted for the proposed project did not cover the mapped location of P-39-000012 due to access limitations. However, two previous studies (Wohlgemuth and Mears 1994; Jensen 2004) have recommended P-39-000012 not eligible for the California Register, and this analysis supports this recommendation. Therefore, this analysis concludes that P-39-000012 is not eligible for the California Register.

P-39-000014/000141

This pre-contact archaeological site was first recorded in 1956 (Bennyhoff 1956) and has been updated multiple times since its original identification (Wohlgemuth et al. 1993c; Tinsley 2006; Cook 2019). The resource as currently on file at CCIC consists of previous recordations of P-39-000014, -000141, and -004235, and is an indigenous archaeological site with historic-era archaeological deposits and a former house located in a staging area. The indigenous portion of the site represents a village occupation with a subsurface component, dated to approximately 1500 to 150 BP, with two mounds, midden soil, human burials with funerary items (shell beads), flaked-stone artifacts, ground-stone artifacts, and dietary faunal remains. Historic-era archaeological material documented at the site consists of miscellaneous refuse, while the architectural component of the site is a no-longer-extant early 20th-century house. The site has been heavily impacted by historic-era and modern road construction, in addition to other miscellaneous agricultural and settlement activities. The pedestrian survey conducted for the proposed project did not cover the mapped location of P-39-000014/-000141 due to access limitations. The site has been previously determined National Register-eligible under Criterion D (Tanksley 2003, 2005). This analysis supports this recommendation and also recommends the site California Register-eligible. Therefore, this analysis concludes that P-39-000014/-000141 is California Register-eligible.

P-39-004602

This historic-era architectural resource was first recorded in 2006 (Tom Origer & Associates 2006) in the Staging Area 7 and levee portions of the proposed project area. The resource was described as an early 20th century ranch complex with a house, two barns, and several outbuildings. During ESA's pedestrian survey for the proposed project, the site was observed in the proposed project area and the previous descriptions of the site appeared to be accurate. A previous cultural resources study (Shephard 2011) recommended P-39-004602 not eligible for the California Register, and this analysis supports this recommendation. Therefore, this analysis concludes that P-39-004602 is not eligible for the California Register.

P-39-005086

This historic-era architectural resource, first recorded in 2008 (Ludwig 2008) and updated in 2012 (Arrington 2012), is mapped along the levee portion of the proposed project area and consists of the RD 17 West Levee. A levee has been at the location since the mid-19th century, though it has been continually modified, repaired, and upgraded since that time. During ESA's pedestrian survey for the proposed project, the resource was observed in the proposed project area and the previous descriptions of the site appeared to be accurate. A previous cultural resources study (Shephard 2011) recommended P-39-005086 not eligible for the California Register, and this analysis supports this recommendation. Therefore, this analysis concludes that P-39-005086 is not eligible for the California Register.

P-39-005248

This historic-era architectural resource, first recorded in 2015 (Crawford 2015), is mapped along the levee portion of the proposed project area and consists of a pair of Pacific Gas & Electric Company electrical transmission towers. Crawford (2015) recommended P-39-005248 not eligible for the California Register, and this analysis supports this recommendation. Therefore, this analysis concludes that P-39-005248 is not eligible for the California Register.

Ecosystem Restoration Sites 13, 14, and 16

Through archival research, CHRIS records searches, and pedestrian survey, no previously recorded cultural resources have been identified in ecosystem restoration Sites 13, 14, and 16. One historic-era pump structure was identified during the surface survey in ecosystem restoration Site 16. This structure does not retain integrity and is recommended not eligible for listing in the National Register or California Register. As such, this analysis concludes that there are no known historical resources within ecosystem restoration Sites 13, 14, and 16.

Other Multi-Benefit Components

Through archival research, CHRIS records searches, and pedestrian survey, one previously recorded cultural resources have been recorded in the proposed project area where proposed multi-benefit components would be located. These resources are architectural resources and consist of levees. That resource P-39-005086 has been previously recommended not eligible for the California Register and is described below.

P-39-005086

This historic-era architectural resource, first recorded in 2008 (Ludwig 2008) and updated in 2012 (Arrington 2012), is mapped along the levee portion of the multi-benefit components portion of the proposed project area and consists of the RD 17 West Levee. A levee has been at the location since the mid-19th century, though it has been continually modified, repaired, and upgraded since that time. During ESA's pedestrian survey for the proposed project, the resource was observed in the proposed project area and the previous descriptions of the site appeared to be accurate. A previous cultural resources study (Shephard 2011) recommended P-39-005086 not eligible for the California Register, and this analysis supports this recommendation. Therefore, this analysis concludes that P-39-005086 is not eligible for the California Register.

3.7.4 Regulatory Setting

The following laws and regulations apply to the resources covered in this chapter.

Federal

National Historic Preservation Act and National Register of Historic Places

Historic properties are considered through compliance with the National Historic Preservation Act (NHPA), as amended (United States Code [USC] Title 54, Section 307103 [54 USC 307103]) and its implementing regulations (54 USC 307103; Code of Federal Regulations [CFR] Title 36, Section 800, 36 CFR 60, and 36 CFR 63). The NHPA establishes the federal government's policy on historic preservation and the programs, including the National Register of Historic Places (National Register), through which that policy is implemented. Under the NHPA, historic properties include "any prehistoric or historic district, site, building, structure, or object included in, or eligible for inclusion in, the [National Register]" (54 USC 300308).

When a project implemented under the Order requires a federal permit, compliance with Section 106 of the NHPA (Section 106) is also required. Under Section 106, generally, it is the responsibility of the lead federal agency—in this case, USACE—to consider the effects of a proposed undertaking on historic properties. The federal agency must consult with the State Historic Preservation Officer, federally recognized Indian Tribes, and other interested parties before granting a permit, funding, or other authorization. The agency must also afford the Advisory Council on Historic Preservation and the State Historic Preservation Officer a reasonable opportunity to comment on any undertaking that would adversely affect a property eligible for listing in the National Register. Section 101(d)(6)(A) of the NHPA allows properties of traditional religious and cultural importance to an Indian Tribe or a Native Hawaiian organization to be determined eligible for inclusion in the National Register.

Under the NHPA, a find is significant if it meets the National Register listing criteria (36 CFR 60.4), as stated below:

> *The quality of significance in American history, architecture, archaeology, engineering, and culture is present in districts, sites, buildings, structures, and objects that possess integrity of location, design, setting, materials, workmanship, feeling, and association and:*
>
> *a) That are associated with events that have made a significant contribution to the broad patterns of our history, or*
>
> *b) That are associated with the lives of persons significant in our past, or*
>
> *c) That embody the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction, or*
>
> *d) That have yielded, or may be likely to yield, information important in prehistory or history.*

In addition to meeting one of the above criteria, a resource must retain integrity to be considered a historic property. Integrity is measured by the degree to which the resource retains its historical attributes and conveys its historical character, the degree to which the original fabric has been retained, and the reversibility of changes to the resources.

Certain types of resources are usually excluded from consideration for listing in the National Register but can be considered if they meet special requirements in addition to meeting one or more of the National Register listing criteria. The following seven criteria considerations deal with resources usually excluded from listing in the National Register:

- Religious resources.
- Moved resources.
- Birthplaces and graves.
- Cemeteries.
- Reconstructed resources.
- Commemorative resources.
- Resources that have achieved significance within the past 50 years.

State

California Environmental Quality Act

CEQA (codified at California Public Resources Code [PRC] Section 21000 *et seq*.) is the principal statute governing environmental review of projects occurring in California. CEQA requires lead agencies to determine whether a proposed project would have a significant effect on the environment, including a significant effect on historical resources or unique archaeological resources. Under CEQA (PRC Section 21084.1), a project that may cause a substantial adverse change in the significance of a historical resource or unique archaeological resource is a project that may have a significant effect on the environment.

The California Office of Historic Preservation, an office of the California Department of Parks and Recreation, oversees adherence to CEQA regulations and maintains the California Historical Resource Inventory. Typically, a resource must be more than 50 years old to be considered as a potential historical resource. The California Office of Historic Preservation advises recording any resource 45 years or older, because there is commonly a 5-year lag between identification of a resource and the date that planning decisions are made.

Historical Resources

CEQA Guidelines (codified at California Code of Regulations [CCR] Section 15000 et seq.) recognize that a *historical resource* includes the following:

- A resource in the California Register;
- A resource included in a local register of historical resources, as defined in PRC Section 5020.1(k) or identified as significant in a historical resource survey meeting the requirements of PRC Section 5024.1(g); and

- Any object, building, structure, site, area, place, record, or manuscript that a lead agency determines to be historically significant or significant in the architectural, engineering, scientific, economic, agricultural, educational, social, political, military, or cultural annals of California by the lead agency, provided the lead agency's determination is supported by substantial evidence in light of the whole record.

If a lead agency determines that an archaeological site is a historical resource, the provisions of PRC Section 21084.1 and CCR Section 15064.5 apply. If an archaeological site does not meet the criteria for a historical resource contained in the *CEQA Guidelines*, then the site may be treated in accordance with the provisions of PRC Section 21083, pertaining to unique archaeological resources.

Unique Archaeological Resources

As defined in PRC Section 21083.2, a *unique archaeological resource* is 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 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
- Is directly associated with a scientifically recognized important prehistoric or historic event or person.

CEQA Guidelines note that if an archaeological resource is not a unique archaeological resource, historical resource, or tribal cultural resource, the effects of the project on those cultural resources shall not be considered a significant effect on the environment (CCR Section 15064.5[c][4]).

California Register of Historical Resources

The California Register is "an authoritative listing and guide to be used by state and local agencies, private groups, and citizens in identifying the existing historical resources of the state and to indicate which resources deserve to be protected, to the extent prudent and feasible, from substantial adverse change" (PRC Section 5024.1[a]). The criteria for eligibility for the California Register are based upon the criteria for listing In the National Register of Historic Places (National Register) (PRC Section 5024.1[b]). Certain resources are determined by the statute to be automatically included in the California Register, including California properties formally determined eligible for, or listed in, the National Register.

To be eligible for the California Register, a cultural resource must be significant at the local, state, and/or federal level under one or more of the following four criteria:

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.

A resource eligible for the California Register must be of sufficient age and retain enough of its historic character or appearance (integrity) to convey the reason for its significance. Additionally, the California Register consists of resources that are listed automatically and those that must be nominated through an application and public hearing process. The California Register automatically includes the following:

- California properties listed in the National Register (and those formally determined eligible for the National Register);
- California Registered Historical Landmarks from No. 770 onward; and
- Those California Points of Historical Interest that have been evaluated by the California Office of Historic Preservation and have been recommended to the State Historical Resources Commission for inclusion in the California Register.

Other resources that may be nominated to the California Register include:

- Historical resources with a significance rating of Category 3 through 5 (those properties identified as eligible for listing in the National Register, the California Register, and/or a local jurisdiction register);
- Individual historic resources;
- Historic resources contributing to historic districts;
- Historic resources designated or listed as local landmarks, or designated under any local ordinance, such as a historic preservation overlay zone; and
- Tribal cultural resources.

California Public Resources Code Section 5097

PRC Section 5097.99, as amended, states that no person shall obtain or possess any Native American artifacts or human remains that are taken from a Native American grave or cairn. Any person who knowingly or willfully obtains or possesses any Native American artifacts or human remains is guilty of a felony, which is punishable by imprisonment. Any person who removes, without authority of law, any such items with an intent to sell or dissect or with malice or wantonness is also guilty of a felony, which is punishable by imprisonment. PRC Section 5097.5 specifies that any unauthorized removal of paleontological remains is a misdemeanor.

California Native American Historic Resource Protection Act

The California Native American Historic Resource Protection Act of 2002 imposes civil penalties, including imprisonment and fines up to $50,000 per violation, for persons who unlawfully and maliciously excavate upon, remove, destroy, injure, or deface a Native American historic, cultural, or sacred site that is listed or may be listed in the California Register.

California Health and Safety Code Section 7050.5

Section 7050.5 of the California Health and Safety Code (HSC) protects human remains by prohibiting the disinterring, disturbing, or removing of human remains from any location other than a dedicated cemetery. PRC Section 5097.98 (and reiterated in CCR Section 15064.59[e]) also identifies steps to follow in the event of the accidental discovery or recognition of any human remains in any location other than a dedicated cemetery.

Delta Reform Act of 2009 and Delta Plan

The mission of the Delta Stewardship Council is to promote the coequal goals of water supply reliability and ecosystem restoration in a manner that protects and enhances the unique values of the Delta as an evolving place (California Water Code Section 85054). The 2009 Delta Reform Act states that the coequal goals are to be achieved in a manner that protects and enhances the unique cultural, recreational, natural resource, and agricultural values of the Delta as an evolving place. The Delta Stewardship Council has a legally enforceable management framework for the Delta and Suisun Marsh called the Delta Plan, which applies best available science to further the coequal goals.

The Delta Stewardship Council was granted specific regulatory and appellate authority by the California Legislature under the 2009 Delta Reform Act over certain actions that take place in the Delta or Suisun Marsh, in whole or in part. The Delta Stewardship Council exercises that authority by developing and implementing the Delta Plan and its accompanying regulations.

According to the Delta Reform Act, state or local agencies approving, funding, or carrying out projects, plans, or programs, upon determining that their project is a "permitted action" subject to regulations of the Delta Plan, must certify the consistency of the project with the Delta Plan policies (California Water Code Section 85225).

Shipwrecks and Submerged Cultural Resources

The title to all abandoned shipwrecks and other (submerged) cultural resources on or in the tide and submerged lands of California is vested in the state and under the jurisdiction of the CSLC (California PRC Section 6313[a]). Also, according to PRC Section 6313(c), any submerged cultural resource remaining in state waters for more than 50 years is presumed to be archaeologically or historically significant.

California Natural Resources Agency Tribal Consultation Policy

On November 20, 2012, the California Natural Resources Agency adopted its *Final Tribal Consultation Policy* to ensure effective government-to-government consultation between the agency, its departments, and Tribes in accordance with California Executive Order B-10-11. The policy's goal is to "engage in the timely and active process of respectfully seeking, discussing, and considering the views of Tribes, Tribal communities and Tribal Consortia in an effort to resolve concerns of as many parties as possible". The policy outlines its implementation procedures for outreach, establishing Tribal Liaisons and associated committees, and staff training.

Local

The proposed project area includes lands in San Joaquin County and the cities of Stockton, Lathrop and Manteca. Each of these jurisdictions have general plans with goals and policies that address cultural resources (see **Table 3.7-2**). Applicable general plan goals and policies are summarized below along with relevant local regulations.

TABLE 3.7-2
APPLICABLE GENERAL PLAN GOALS AND POLICIES – CULTURAL RESOURCES

General Plan	Goals and Policies
San Joaquin County	Natural and Cultural Resources Element, Goal NCR-6, Policies NCR-6.1 through NCR-6.9
City of Stockton	Land Use Element, Goal LU, Policies LU-3.1 and LU-5.2
City of Lathrop	Recreation and Resources Element, Goal RR-3, Policies RR 3.1 through 3.4
City of Manteca	Recreation and Resources Element, Goals RC-11 and RC-12, Policies RC-P-37 and RC-P-38
SOURCES: City of Lathrop 2022; City of Manteca 2024; City of Stockton 2018; San Joaquin County 2016	

San Joaquin County

San Joaquin County General Plan

The San Joaquin County General Plan contains goals and policies associated with the protection of cultural resources that are relevant to the proposed project including but not limited to policies addressing that no significant architectural, historical, archaeological, or cultural resources are knowingly destroyed through county action, and a requirement for the preparation of an archaeological report by a qualified cultural resource specialist prior to the issuance of any discretionary permit or approval in areas determined to contain significant historic or prehistoric archaeological artifacts that could be disturbed by proposed project construction.

City of Stockton

Envision Stockton 2040 General Plan

The City of Stockton General Plan contains goals and policies associated with the protection of cultural resources that are relevant to the proposed project including but not limited to policies addressing that new development should be compatible with cultural and historic resources and protection of cultural/ historic resources from encroachment or destruction by incompatible development.

City of Lathrop

City of Lathrop General Plan

The City of Lathrop General Plan contains goals and policies associated with the protection of cultural resources that are relevant to the proposed project including but not limited to policies addressing protection of areas containing significant historic, archaeological and paleontological resources, as defined by the PRC.

City of Manteca

City of Manteca General Plan 2023

The City of Manteca General Plan contains goals and policies associated with the protection of cultural resources that are relevant to the proposed project including but not limited to policies addressing conducting a site evaluation and mitigation of adverse impacts to archaeological sites.

3.7.5 Impacts and Mitigation Measures

Methods of Analysis

Historical Resources

Impacts on historical resources are assessed by identifying any activities that would affect them, such as new construction, demolition, or substantial alteration. Individual properties and districts identified as historical resources under CEQA include those that are significant because of their association with important events, people, or architectural styles or master architects, or for their informational value (California Register Criteria 1, 2, 3, and 4) and that retain sufficient historic integrity to convey their significance. Criterion 4 is typically applied to the evaluation of archaeological resources and not to architectural resources. Historical resources may include architectural resources and archaeological resources.

Once a resource has been identified as significant, it must be determined whether the impacts of the project would "cause a substantial adverse change in the significance" of the resource (CCR Section 15064.5[b]). A "substantial adverse change in the significance" of a historical resource means "physical demolition, destruction, relocation, or alteration of the resource or its immediate surroundings such that the significance of [the] historical resource would be materially impaired" (CCR Section 15064.5[b][1]). A historical resource is materially impaired through the demolition or alteration of the resource's physical characteristics that convey its historical significance and that justify its inclusion in (or eligibility for inclusion in) the California Register or a qualified local register (CCR Section 15064.5[b][2]). Therefore, material impairment of historical resources constitutes a significant impact.

Archaeological Resources

The significance of most pre-contact and historic-era archaeological sites is typically assessed relative to California Register Criterion 4. This criterion stresses the importance of the information potential contained within an archaeological site, rather than the significance of the site as a surviving example of a type or its association with an important person or event. Archaeological resources may qualify as historical resources under the definition provided in CCR Section 15064.5(a). Alternatively, they may be assessed under CEQA as unique archaeological resources. "Unique archaeological resources" are defined as archaeological artifacts, objects, or sites that contain information needed to answer important scientific research questions (PRC Section 21083.2).

A substantial adverse change in the significance of an archaeological resource is assessed similarly to such changes to other historical resources; that is, a "substantial adverse change in significance" means "physical demolition, destruction, relocation, or alteration of the resource or its immediate surroundings such that the significance of [the] historical resource would be materially impaired" (CCR Section 15064.5[b][1]). As stated previously, a historical resource is materially impaired when a project demolishes or materially alters the resource's physical characteristics that convey its historical significance and that justify its inclusion (or eligibility for inclusion) in the California Register or a qualified local register (CCR Section 15064.5[b][2]). Therefore, material impairment of archaeological resources that are considered historical resources or unique archaeological resources would be a significant impact.

Human Remains

Human remains, including those buried outside of formal cemeteries, are protected under several state laws, including PRC Section 5097.98 and HSC Section 7050.5. For the purposes of this analysis, intentional disturbance, mutilation, or removal of interred human remains without following the notification and consultation procedures outlined in PRC Section 5097.89 and HSC Section 7050.5 would be a significant impact.

Thresholds of Significance

In accordance with Appendix G of the CEQA Guidelines, an impact is considered significant if the proposed project would:

- Cause a substantial adverse change in the significance of a historical resource pursuant to CEQA Guidelines Section 15064.5.
- Cause a substantial adverse change in the significance of an archaeological resource pursuant to CEQA Guidelines Section 15064.5.
- Disturb any human remains, including those interred outside of formal cemeteries.

The following analysis describes archaeological resources, both as historical resources according to CEQA Guidelines Section 15064.5, and as unique archaeological resources as defined in PRC Section 21083.2(g).

Impacts and Mitigation Measures

Table 3.7-3 summarizes the impact conclusions presented in this section.

TABLE 3.7-3
SUMMARY OF IMPACT CONCLUSIONS – CULTURAL RESOURCES

Impact Statement	Flood Risk Reduction Components	Ecosystem Restoration Sites 13, 14, and 16	Other Multi-Benefit Components
3.7-1: Implementation of the proposed project could cause a substantial adverse change in the significance of a historical resource pursuant to CEQA Guidelines Section 15064.5.	SU	NI	SU
3.7-2: Implementation of the proposed project could cause a substantial adverse change in the significance of an archaeological resource pursuant to CEQA Guidelines Section 15064.5.	SU	LSM	SU
3.7-3: Implementation of the proposed project could disturb human remains, including those interred outside of dedicated cemeteries.	LSM	LSM	LSM

NOTES: LSM = Less than Significant with Mitigation; NI = No Impact; SU = Significant and Unavoidable

Impact 3.7-1: Implementation of the proposed project could cause a substantial adverse change in the significance of a historical resource pursuant to CEQA Guidelines Section 15064.5.

The following discussion focuses on architectural resources. Archaeological resources, including archaeological resources that are potentially historical resources according to CEQA Guidelines Section 15064.5, are addressed under Impact 3.7-2.

Flood Risk Reduction Components

The proposed flood risk reduction components include raising the height of levees along portions of the existing levee alignment, construction of a dryland levee extension and drained seepage berm, placement of riprap rock slope protection, and various staging areas. Each of these components are described in detail in Chapter 2, *Project Description*, and are presented on Figure 2-2. Construction of the proposed flood risk reduction components of the proposed project would involve ground disturbance, vibration, and modification of architectural resources (e.g., levees, water conveyance features). Construction of the flood risk reduction components of the proposed project also has the potential to introduce new visual elements or modify existing visual elements (e.g., levee shape modifications). However, the exact details, including precise locations, of any such construction activities have yet to be determined. Therefore, it is not known whether implementing the proposed project would affect any historical resources. Construction of new infrastructure or modifications to existing infrastructure (e.g., levees, water conveyance features) could result in significant impacts on historical resources in several ways:

- Construction could introduce new elements to a historic setting associated with historical resources or could physically alter historical resources.
- Ground-disturbing construction activities could alter existing landscapes.
- Vibration generated during construction work could physically damage or alter nearby architectural resources that have the potential to qualify as historical resources.

Based on the results of the background research, pedestrian survey, and evaluation provided above, there are three known architectural resources in the proposed project area where proposed flood risk reduction components would be located (P-39-004602, -005086, -005248). All of these have been recommended not eligible for listing in the California Register. Therefore, there are no known historical resources, pursuant to CEQA Guidelines Section 15064.5, in the proposed project area where proposed flood risk reduction components would be located.

However, portions of the proposed project area are privately owned and access was not provided at the time of the survey; these areas consist of the privately owned areas adjacent to the existing levee, portions of the dryland levee, and Staging Areas 1, 4, 6, 7, 9, 10, and 11. As mentioned above, construction activities and O&M for the proposed flood risk reduction components of the proposed project would involve activities that have the potential to affect historical resources, such as ground disturbance, vibration, and modification of architectural resources. While all areas where non-staging activities are located were evaluated in the pedestrian survey for the current analysis, many of the staging areas were not. Because the privately owned areas adjacent to the existing levee and Staging Areas 1, 4, 6, 7, 9, 10, and 11 were not covered by the pedestrian survey for the proposed project, there is the potential that as-yet unidentified architectural resources may be present in these areas. If any architectural resources were present in these areas and found to qualify as historical resources, pursuant to CEQA Guidelines Section 15064.5, any impacts on these resources would be **significant**.

Restoration Sites 13, 14, and 16

Proposed ecosystem restoration at Sites 13, 14, and 16 would include excavated floodplains, floodplain side channels, brush mat, habitat wood structures, willow baffles, and upland brush piles. Construction of ecosystem restoration features at Sites 13, 14, and 16 would involve ground disturbance and vibration. Construction activities also have the potential to introduce new visual elements or modify existing visual

elements. However, there are no architectural resources in ecosystem restoration Sites 13, 14, and 16 that qualify as historical resources for the purposes of CEQA. Therefore, there would be **no impact** on historical resources.

Other Multi-benefit Components

The proposed project also includes implementation of other multi-benefit components including additional ecosystem restoration sites, and recreation features along the levee system. These proposed multi-benefit components are described in Chapter 2, *Project Description*, and are presented on Figure 2-3. Construction activities would involve ground disturbance (from grading, grubbing, planting), vibration, and modification of architectural resources (e.g., levees). Construction of the multi-benefit components of the proposed project also has the potential to introduce new visual elements or modify existing visual elements (e.g., levee shape modifications, general landscape modifications). However, the exact details, including precise locations, of any such construction activities have yet to be determined. Therefore, it is not known whether implementing the proposed project would affect any historical resources. Construction of new infrastructure or modifications to existing infrastructure (e.g., levees) could result in significant impacts on historical resources in several ways:

- Construction could introduce new elements to a historic setting associated with historical resources or could physically alter historical resources.
- Ground-disturbing construction activities could alter existing landscapes.
- Vibration generated during construction work could physically damage or alter nearby architectural resources that have the potential to qualify as historical resources.

Based on the results of the background research and evaluation provided above, there are two known architectural resources in the proposed project area where proposed multi-benefit components would be located: P-39-005084, and -005086. One of these resources (P-39-005086) has been evaluated as not eligible for the California Register, while P-39-005084 has not been evaluated for California Register-eligibility and, therefore, is potentially an historical resource, pursuant to CEQA Guidelines Section 15064.5.

However, portions of the proposed project area were not included in the pedestrian survey for the current analysis. As mentioned above, construction and O&M could involve activities that have the potential to affect historical resources, such as ground disturbance, vibration, and modification of architectural resources. However, the exact details, including precise locations, of any such activities have yet to be determined. Therefore, it is not known whether implementing the multi-benefit components of the proposed project would affect any architectural resources. If any architectural resources were present in these areas and found to qualify as historical resources, pursuant to CEQA Guidelines Section 15064.5, any impacts on these resources from implementation of the multi-benefit components of the proposed project could be **significant**.

Mitigation Measures

Mitigation Measure 3.7-1 (FRR/MB):

Before implementation of the proposed project, SJAFCA shall, in consultation with a qualified archaeologist and architectural historian, defined as those meeting the U.S. Secretary of the Interior's Professional Qualifications Standards for Archeology and Architectural History, and

California Native American Tribes culturally and geographically affiliated with the proposed project area, develop and implement a Cultural Resources Management Plan (CRMP) for the proposed project. The CRMP shall be submitted to the CHRIS upon SJAFCA approval, and shall require the following:

- A cultural resources survey and associated documentation for those portions of the proposed project area not covered by the pedestrian survey conducted to date.
- An evaluation of any cultural resources identified in the proposed project area during the supplemental survey for California Register-eligibility (i.e., as qualifying as historical resources, as defined in CEQA Guidelines Section 15064.5) as well as whether they qualify as archaeological resources, pursuant to CEQA Guidelines Section 15064.5. Such evaluation may require archaeological testing (excavation), potentially including laboratory analysis, consultation with relevant California Native American Tribes (for indigenous resources), or archival research. The evaluation should also include any cultural resources previously recorded in the proposed project area that have not been previously evaluated for California Register-eligibility (e.g., P-39-005084).
- An assessment of potential proposed project impacts on any cultural resources identified in the proposed project area that qualify as historical resources (per CEQA Guidelines Section 15064.5) and/or archaeological resources (per CEQA Guidelines Section 15064.5). This shall include an analysis of whether the proposed project's potential impacts would materially alter a resource's physical characteristics that convey its historical significance and that justify its inclusion (or eligibility for inclusion) in the California Register or a qualified local register.
- A technical report documenting the cultural resources survey, evaluations of California Register-eligibility, and assessment of potential proposed project impacts on cultural resources meeting U.S. Secretary of the Interior's Standards for cultural resources technical reporting. This report shall be submitted to the CHRIS upon SJAFCA approval.

The CRMP shall also include and require implementation of the following:

- Methods and procedures associated with protective measures to avoid impacts on archaeological resources P-39-000006 and P-39-000014/000141 during proposed project construction required under Mitigation Measure 3.7-2(b).
- Methods and procedures associated with the cultural resources awareness and sensitivity training required under Mitigation Measure 3.7-2(c).
- The protocol for the protocol of monitoring and reporting of unanticipated discoveries shall follow the methods and procedures described in the Archaeological and Tribal Monitoring Plan portion of the CRMP required in Mitigation Measures 3.7-2(d), Mitigation Measure 3.7-2(e) and 3.7-2(f).

Significance After Mitigation: Mitigation Measure 3.7-1 would be implemented to reduce the impacts of the proposed project on historical resources, pursuant to CEQA Guidelines Section 15064.5 through development and implementation of a CRMP, which would require an inventory and significance evaluation for potential historical resources in the proposed project area and subsequent development and implementation of measures to avoid or reduce impacts on historical resources in the proposed project area.

Because portions of the proposed project area that include both flood risk reduction and multi-benefit components have not been surveyed due to lack of access, and because the design, footprint and exact location of proposed multi-benefit components are not known, it is not

possible at this time to conclude that Mitigation Measure 3.7-1, or equally effective mitigation measures, would reduce significant impacts to a less-than-significant level in all cases. Therefore, this impact would remain **significant and unavoidable** for both the flood risk reduction and multi-benefit components of the proposed project.

Impact 3.7-2: Implementation of the proposed project could cause a substantial adverse change in the significance of an archaeological resource pursuant to CEQA Guidelines Section 15064.5.

Flood Risk Reduction Components

The proposed flood risk reduction components include raising the height of levees along portions of the existing levee alignment, construction of a dryland levee extension and drained seepage berm, placement of riprap rock slope protection, and various staging areas. Construction of the proposed flood risk reduction components of the proposed project would involve ground disturbance (e.g., excavation, grading, grubbing, staging). However, the exact details, including precise locations, of any such construction activities have yet to be determined. Therefore, it is not known whether implementing the proposed flood risk reduction components of the proposed project would affect any archaeological resources. Construction of new infrastructure or modifications to existing infrastructure (e.g., levees, water conveyance features) for the proposed flood risk reduction components of the proposed project could partially or completely destroy archaeological resources, resulting in a significant impact.

Based on the results of the background research, pedestrian survey, consultation with California Native American Tribes, and evaluation provided above, there are three known archaeological resources (P-39-000006, -000012, -000014/000141), all indigenous, in the proposed project area where proposed flood risk reduction components would be located. One of these is an archaeological isolate (P-39-000012) and is recommended not eligible for the California Register. The other two (P-39-000006, -000014/000141) are being treated as California Register-eligible for the proposed project; therefore, they are considered archaeological resources, pursuant to CEQA Guidelines Section 15064.5. The only activity proposed at P-39-000006 and P-39-000014/000141 is staging. However, staging activities would include activities such as heavy equipment tracking on sediment, minor haul route creation, and deposition and moving of materials and other equipment. These activities could result in ground disturbance and any ground disturbance at P-39-000006 or P-39-000014/000141 could result in a potentially significant impact on the resources.

Much of the proposed project area where proposed flood risk reduction components would be located is privately owned and access was not provided at the time of the survey conducted for the current analysis. These areas consist of the privately owned areas adjacent to the existing levee and Staging Areas 1, 4, 6, 7, 9, 10, and 11. As stated above, construction activities and O&M would involve ground-disturbing activities (excavation, grading, grubbing, staging) that have the potential to affect archaeological resources. While all areas where non-staging activities are located were covered in the pedestrian survey for the current analysis, many of the staging areas were not. Background research only identified two archaeological resources (P-39-000006, -000014/000141), pursuant to CEQA Guidelines Section 15064.5, in proposed staging areas; however, because the privately owned areas adjacent to the existing levee and Staging Areas 1, 4, 6, 7, 9, 10, and 11 were not covered by the pedestrian survey for the proposed project, there is the potential that as-yet unidentified archaeological resources may be present in these areas. If any archaeological resources were present in these areas and found to qualify as

archaeological resources, pursuant to CEQA Guidelines Section 15064.5, any impacts on these resources could be **significant**.

Restoration Sites 13, 14, and 16

Proposed ecosystem restoration at Sites 13, 14, and 16 would include excavated floodplains, floodplain side channels, brush mat, habitat wood structures, willow baffles, and upland brush piles. Construction of ecosystem restoration features at Sites 13, 14, and 16 would involve ground disturbance (e.g., excavation, grading, grubbing, planting, staging). Based on the results of the background research, pedestrian survey, consultation with California Native American Tribes, and evaluations provided above, there are no known archaeological resources in Sites 13, 14, and 16.

Despite the negative survey results and relatively low potential to impact archaeological resources, the potential does exist for cultural materials to be uncovered during construction of the proposed project. Impacts on previously undiscovered archaeological resources that are CEQA-defined historical resources or unique archaeological resources during proposed project construction could be **significant**.

Other Multi-benefit Components

The proposed project also includes implementation of other multi-benefit components including additional ecosystem restoration sites, and recreation features along the levee system. Construction activities would involve ground disturbance (e.g., excavation, grading, grubbing, planting, staging). However, the exact details, including precise locations, of any such construction activities have yet to be determined. Therefore, it is not known whether implementing the proposed multi-benefit components of the proposed project would affect any archaeological resources. Construction of new infrastructure or modifications to existing infrastructure (e.g., levees, water conveyance features) for the proposed multi-benefit components of the proposed project could partially or completely destroy archaeological resources, resulting in a significant impact.

Based on the results of the background research, pedestrian survey, consultation with California Native American Tribes, and evaluations provided above, there are no known archaeological resources in the proposed project area where proposed multi-benefit components would be located. However, some of the proposed project area was not included in the pedestrian survey for the current analysis. As stated above, construction and O&M activities could involve ground disturbance (e.g., excavation, grading, grubbing, planting), which could partially or completely destroy archaeological resources, resulting in a significant impact. However, the exact details, including precise locations, of any such activities have yet to be determined. Therefore, it is not known whether implementing the proposed multi-benefit components would affect any archaeological resources. If any archaeological resources were present where ground-disturbing activities would occur, and such resources were found to qualify as archaeological resources, pursuant to CEQA Guidelines Section 15064.5, any impacts on these resources from implementation of the multi-benefit components of the proposed project could be **significant**.

Mitigation Measures

Mitigation Measure 3.7-2(a) (FRR/RS/MB): Implement Mitigation Measure 3.7-1.

Mitigation Measure 3.7-2 (b) (FRR):

Prior to construction activities, a membrane shall be placed over the recorded site boundaries of P-39-000006 and -39-000014/000141 with a 50-foot buffer. A thin (3 to 6-inch-thick) layer of imported gravel and/or sediment shall then be placed over the membrane to cover the entire site boundary and buffer. The sediment and membrane shall be maintained throughout proposed project construction to ensure that the resource boundaries are not impacted by the proposed project. At the conclusion of proposed project construction, the imported gravel and/or sediment and membrane shall be carefully removed to avoid disturbance to the original ground surface at the resources' boundaries. The placement, maintenance, and removal of the membrane and imported gravel and/or sediment shall be subject to the cultural resources monitoring required under Mitigation Measure 3.7-2(d).

Mitigation Measure 3.7-2(c) (FRR/RS/MB):

Before implementation of the proposed project, SJAFCA shall, in consultation with a qualified archaeologist, defined as those meeting the U.S. Secretary of the Interior's Professional Qualifications Standards for Archeology, and California Native American Tribes culturally and geographically affiliated with the proposed project area, develop a Cultural Resources Awareness and Sensitivity Training Program for all construction and field workers involved in proposed project ground-disturbing activities. The program shall include a presentation that covers, at a minimum, the types of cultural resources common to the area, regulatory protections for cultural resources, and the protocol for unanticipated discovery of archaeological resources, submerged cultural resources, and human remains required under Mitigation Measures 3.7-2(e) to 3.7-2(f). Personnel working in areas of proposed project ground-disturbing activities shall receive the training prior to working in these areas. Written materials associated with the program shall be provided to proposed project personnel as appropriate. Documentation of the training attendance shall be maintained by SJAFCA.

Mitigation Measure 3.7-2(d) (FRR/RS/MB):

An archaeologist meeting, or supervised by an archaeologist meeting, the Secretary of the Interior's Professional Qualifications Standards for Archeology, in addition a representative from a California Native American Tribe culturally and geographically affiliated with the proposed project area, shall be invited to conduct construction monitoring for all proposed project ground-disturbing construction activities in culturally designated areas. The conduct and work of any Tribal Monitor shall be consistent with the NAHC *Guidelines for Native American Monitors/ Consultants* (NAHC 2005). The methods and procedures for the monitoring shall follow those presented in the Archaeological and Tribal Monitoring Plan portion of the CRMP, including unanticipated discovery and reporting protocol. Monitoring may be concluded upon mutual agreement between SJAFCA, the archaeologist, and the California Native American Tribe.

Mitigation Measure 3.7-2(e) (FRR/RS/MB):

If archaeological resources are encountered during proposed project construction, all construction activities within 100 feet shall halt, and a qualified archaeologist, defined as an archaeologist meeting the Secretary of the Interior's Professional Qualifications Standards for Archeology, shall inspect the find within 24 hours of discovery and notify SJAFCA of their initial assessment. Indigenous archaeological materials might include: obsidian and chert flaked-stone tools (e.g., projectile points, knives, scrapers) or toolmaking debris; culturally darkened soil (midden) containing heat-affected rocks, artifacts, or shellfish remains; stone milling equipment (e.g., mortars, pestles, handstones); and battered stone tools, such as hammerstones and pitted

stones. Historic-era materials might include: building or structure footings and walls; and deposits of metal, glass, and/or ceramic refuse.

If SJAFCA, based on recommendations from the qualified archaeologist and California Native American Tribes that are traditionally and culturally affiliated with proposed project area (if the resource is indigenous), determines that the resource may qualify as a historical resource or unique archaeological resource (pursuant to CEQA Guidelines Section 15064.5), or a tribal cultural resource (as defined in PRC 21074), the resource shall be avoided, if feasible. Consistent with CEQA Guidelines Section 15126.4(b)(3), this may be accomplished through: planning construction to avoid the resource; incorporating the resource within open space; capping and covering the resource; or deeding the site into a permanent conservation easement. If avoidance of the resource is not feasible, SJAFCA shall continue to consult with California Native American Tribes that are traditionally and culturally affiliated with the proposed project area (if the resource is indigenous) and other appropriate interested parties to determine treatment measures to avoid, minimize, or mitigate any potential impacts to the resource pursuant to PRC Section 21083.2 and CEQA Guidelines Section 15126.4. This shall include documentation of the resource and may include data recovery (according to PRC Section 21083.2), if deemed appropriate, or other actions such as treating the resource with culturally appropriate dignity and protecting the cultural character and integrity of the resource (according to PRC Section 21084.3). Any technical report developed to document the implementation mitigation shall be submitted to the CHRIS upon SJAFCA approval, unless the document contains information that California Native American Tribes involved in the development of the mitigation deem should not be filed with the CHRIS, in which case, the report shall be submitted to the NAHC.

Mitigation Measure 3.7-2(f) (FRR/RS/MB):

If a shipwreck, and associated artifacts, or other cultural resource on or in the tide and submerged lands of California is encountered during proposed project construction or operation, Mitigation Measure 3.7-2(e) shall be implemented, in addition to the following measures:

- SJAFCA shall initiate consultation with CSLC staff within two business days of the discovery.
- Per PRC Section 6313(c), any submerged cultural resource remaining in state waters for more than 50 years shall be presumed to be archaeologically or historically significant.
- If the find is a maritime archaeological resource, the qualified archaeologist assessing the find shall have expertise in maritime archaeology.
- SJAFCA shall consult with the CSLC regarding assessment of the find and development of any treatment measures to minimize or mitigate potential impacts on the resource, pursuant to PRC Section 21083.2 and CEQA Guidelines Section 15126.4. Treatment measures would typically consist of (but would not necessarily be limited to) sample excavation, artifact collection, site documentation, and historical research, with the aim to target the recovery of important scientific data contained in the portion(s) of the significant resource to be affected by the proposed project. SJAFCA shall prepare a treatment plan to document the treatment measures and their implementation methods. The treatment plan shall include provisions for analysis of data in a regional context, reporting of results within a timely manner, curation of artifacts and data at an approved facility, and dissemination of reports to local and state repositories, libraries, and interested professionals. Any treatment measures implemented shall be documented in a professional-level technical report (e.g., archaeological testing results report, archaeological data recovery report, ethnographic report) authored by a qualified archaeologist, to be filed with the CHRIS. Proposed project construction work at the

location of the find may commence upon completion of the approved treatment and authorization by SJAFCA. Work may proceed in other parts of the proposed project area while the mitigation is being carried out.

- SJAFCA shall submit to the CSLC any report prepared for the resource as part of the assessment of the find and implementation of treatment measures to minimize or mitigate potential impacts.

Significance After Mitigation: Implementation of Mitigation Measures 3.7-2(a) through 3.7-2(f) would be implemented to reduce the impacts of the proposed project on archaeological resources, pursuant to CEQA Guidelines Section 15064.5 through development and implementation of a CRMP, which would require an inventory and significance evaluation for potential archaeological resources in the proposed project area and subsequent development and implementation of measures to avoid or reduce impacts on archaeological resources in the proposed project area, in addition to protective measures for P-39-000006 and -000014/000141 during construction, development and implementation of a cultural resources awareness program, construction monitoring, and implementation of unanticipated discovery protocol for archaeological resources. These measures would reduce any potential impacts on archaeological resources resulting from the proposed project. However, because portions of the proposed project area that include both flood risk reduction and multi-benefit components have not been surveyed due to lack of access, and because the design, footprint and exact location of proposed multi-benefit components are not known, it is not possible at this time to conclude that Mitigation Measures 3.7-2 to 3.7-7, or equally effective mitigation measures, would reduce significant impacts to a less-than-significant level in all cases. Therefore, this impact would remain **significant and unavoidable** for both the flood risk reduction and multi-benefit components of the proposed project. There are no documented archaeological resources in Sites 13, 14, and 16. Implementation of Mitigation Measures 3.7-2(c)-(f) would reduce the impact at these locations to a **less-than-significant level**.

Impact 3.7-3: Implementation of the proposed project could disturb human remains, including those interred outside of dedicated cemeteries.

Flood Risk Reduction Components

The proposed flood risk reduction components include raising the height of levees along portions of the existing levee alignment, construction of a dryland levee extension and drained seepage berm, placement of riprap rock slope protection, and various staging areas. Construction of the proposed flood risk reduction components of the proposed project would involve ground disturbance (e.g., excavation, grading, grubbing, staging), which could result in significant impacts on human remains through physical damage or destruction. However, the exact details, including precise locations, of any such construction activities have yet to be determined. Therefore, it is not known whether implementing the proposed flood risk reduction components of the proposed project would impact any human remains.

No human remains have been identified in the flood risk reduction components portion of the proposed project area through archival research or Native American consultation or correspondence, including with the NAHC. The land use designations for the flood risk reduction components portion of the proposed project area do not include cemetery uses. Though indigenous human remains were previously identified at archaeological site P-39-000014/000141, whose boundary includes the flood risk reduction components proposed project area, the human remains were identified outside of the proposed project area and in a buried context. Proposed project activities within the P-39-000014/000141 site boundary are limited to construction staging activities (Staging Area 9), where minimal ground disturbance would

occur. Therefore, the flood risk reduction components portion of the proposed project is not anticipated to disturb any human remains. However, since the flood risk reduction components portion of the proposed project could involve ground-disturbing activities, it is possible that such actions could unearth, expose, or disturb previously unknown human remains. In the event that human remains are discovered during proposed project construction activities, impacts on the human remains resulting from the proposed project would be **significant** if those remains are disturbed or damaged.

Ecosystem Restoration Sites 13, 14, and 16

Proposed ecosystem restoration at Sites 13, 14, and 16 would include excavated floodplains, floodplain side channels, brush mat, habitat wood structures, willow baffles, and upland brush piles. Construction of ecosystem restoration features at Sites 13, 14, and 16 would involve ground disturbance (e.g., excavation, grading, grubbing, planting, staging). Based on the results of the background research, pedestrian survey, consultation with California Native American Tribes, and evaluations provided above, there are no known human remains in Sites 13, 14, and 16.

Despite the negative survey results and relatively low potential to impact archaeological resources with human remains, the potential exists for human remains to be uncovered during construction of the proposed project. Impacts on previously undiscovered human remains during proposed project construction could be **significant**.

Other Multi-benefit Components

The proposed project also includes implementation of other multi-benefit components including additional ecosystem restoration sites, and recreation features along the levee system. Construction activities would involve ground disturbance (e.g., excavation, grading, grubbing, planting), which could result in significant impacts on human remains through physical damage or destruction. However, the exact details, including precise locations, of any such construction activities have yet to be determined. Therefore, it is not known whether implementing the proposed multi-benefit reduction components of the proposed project would impact any human remains.

No human remains have been identified in the proposed multi-benefit reduction components of the proposed project through archival research or Native American consultation or correspondence, including with the NAHC. The land use designations for the proposed multi-benefit reduction components of the proposed project do not include cemetery uses. Therefore, the proposed multi-benefit reduction components of the proposed project is not anticipated to disturb any human remains. However, since the proposed multi-benefit reduction components of the proposed project could involve ground-disturbing activities, it is possible that such actions could unearth, expose, or disturb previously unknown human remains. In the event that human remains are discovered during proposed project construction activities, impacts on the human remains resulting from the proposed project would be **significant** if those remains are disturbed or damaged.

Mitigation Measures

Mitigation Measure 3.7-3(a) (FRR/MB): Implement Mitigation Measures 3.7-2(b) through 3.7-2(d)

Mitigation Measure 3.7-3(b) (FRR/RS/MB):

In the event of discovery of any human remains during proposed project-related construction activities, such activities within 100 feet of the find shall cease until the San Joaquin County Coroner has been contacted to determine that no investigation of the cause of death is required. If the Coroner determines that the remains are not modern and are Native American in origin, the NAHC shall be contacted within 24 hours of the Coroner's determination. The NAHC shall then identify the person or persons it believes to be the most likely descendant (MLD) from the deceased Native American; the MLD shall then make recommendations to SJAFCA for the appropriate means of treating the human remains and any grave goods. Per PRC Section 5097.98, SJAFCA shall ensure that the immediate vicinity of the location of the human remains is not damaged or disturbed by further development activity until SJAFCA has discussed and conferred with the MLD regarding their recommendations, if applicable, taking into account the possibility of multiple human remains. Any technical report developed to document the implementation mitigation shall be submitted to the CHRIS and NAHC upon SJAFCA approval, unless the document contains information that California Native American Tribes involved in the development of the mitigation deem should not be filed with the CHRIS, in which case, the report shall be submitted only to the NAHC.

Significance After Mitigation: Implementation of Mitigation Measures 3.7-3(a) and 3.7-3(b) would reduce any potentially significant impacts on human remains from the proposed project to a **less-than-significant level** through development and implementation of a CRMP, which would require an inventory and significance evaluation for potential archaeological resources in the proposed project area and subsequent development and implementation of measures to avoid or reduce impacts on archaeological resources in the proposed project area, in addition to protective measures for P-39-000006 and -000014/000141 during construction, development and implementation of a cultural resources awareness program, construction monitoring, and implementation of unanticipated discovery protocol for archaeological resources and human remains.

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3.8 Energy

3.8.1 Introduction

This section describes the impact of the proposed project on energy resources both in the region and throughout the state.

Existing federal, state, and local plans and policies relevant to energy that are applicable to the proposed project implementation are presented. Background information on California's energy profile (i.e., mix of energy resources and consumption characteristics) and the energy production and transmission profile of Pacific Gas & Electric Company (PG&E), the regional provider of electricity to the proposed project area is also provided. This regulatory setting identifies regulatory and policy frameworks that govern the production and consumption of energy resources and aim to increase energy efficiency while reducing reliance on fossil fuels. Lastly, the impact analysis examines the energy usage characteristics of the proposed project to determine whether it could result in any energy-related environmental impacts during its construction or operational activities.

No comments specifically addressing energy were received in response to the NOP. See Appendix A to this Draft EIR for NOP comment letters.

3.8.2 Environmental Setting

Electricity

California

The generating capacity of a unit of electricity is expressed in megawatts (MW). Generation is typically measured in megawatt-hours (MWh), kilowatt-hours (kWh), or gigawatt-hours (GWh). In 2023, California generated a total of 281,140 GWh of electricity, a decrease of 2.1 percent (6,080 GWh) from 2022. Renewable and non–greenhouse gas (GHG) emitting electricity generation resources—nuclear and large hydroelectric—accounted for 58 percent of total electricity generation in California, compared to 54 percent in 2022. Net imports of electricity to California accounted for 65,518 GWh in 2023, a decrease of 22 percent (83,962 GWh) from 2022 (CEC 2024a).

Regional

PG&E provides electricity to approximately 16 million people throughout its 70,000-square-mile service area in Northern and Central California, which extends from Eureka in the north to Bakersfield in the south, and from the Pacific Ocean in the west to the Sierra Nevada in the east (PG&E 2024a). PG&E produces and purchases energy from a mix of conventional and renewable generating sources. The electricity it provides is generated by a diverse mix of sources, including renewable, hydroelectric, and nuclear. The 2023 electric power mix for PG&E-owned generation and power purchases included 32.8 percent renewable power, 53.4 percent nuclear power, and 13.8 percent large hydroelectric power (PG&E 2024b). **Table 3.8-1** provides a detailed view of PG&E's power mix compared to the overall statewide power mix.

TABLE 3.8-1
ELECTRIC POWER MIX DELIVERED TO RETAIL CUSTOMERS IN 2023

Energy Resource	2023 PG&E Base Plan	2023 Statewide Power Mix (for comparison)[a]
Eligible Renewable	32.8%	36.9%
Biomass and Bio-waste	3.4%	2.1%
Geothermal	0.3%	4.8%
Small Hydroelectric	2.5%	1.8%
Solar	20.2%	17.0%
Wind	6.3%	11.2%
Coal	0.0%	1.8%
Large Hydroelectric	13.8%	11.7%
Natural Gas	0.0%	36.6%
Nuclear	53.4%	9.3%
Other	0.0%	0.1%
Unspecified Sources of Power[b]	0.0%	3.7%
Total	**100%**	**100%**

NOTES: PG&E = Pacific Gas and Electric Company

a. Percentages are estimated annually by the California Energy Commission based on the electricity sold to California consumers during the previous year. The eligible renewable percentage above does not reflect Renewables Portfolio Standard compliance, which is determined using a different methodology.
b. *Unspecified sources of power* means electricity from transactions that are not traceable to specific generation sources.

SOURCE: PG&E 2024b

Natural Gas

Natural gas is a combustible mixture of simple hydrocarbon compounds (primarily methane) that is used as a fuel source. Natural gas consumed in California is obtained from naturally occurring gas deposits, which are drilled or fracked, processed, odorized, and delivered through high-pressure transmission pipelines. As indicated previously, natural gas provides almost half of California's total electricity requirements and is measured in terms of both cubic feet and Btu.

PG&E provides natural gas transportation services to "core" customers and to "non-core" customers (industrial, large commercial, and natural gas–fired electric generation facilities) that are connected to its gas system in its service territory. Core customers can purchase natural gas procurement service (natural gas supply) from either PG&E or non-utility third-party gas procurement service providers (referred to as *core transport agents*). When core customers purchase gas supply from a core transport agent, PG&E still provides gas delivery, metering, and billing services to those customers. When PG&E provides both transportation and procurement services, PG&E refers to the combined service as "bundled" natural gas service.

PG&E does not provide procurement service to non-core customers, who must purchase their gas supplies from third-party suppliers. PG&E offers backbone gas transmission, gas delivery (local transmission and

distribution), and gas storage services as separate and distinct services to its non-core customers. Access to PG&E's backbone gas transmission system is available for all natural gas marketers and shippers, as well as non-core customers. PG&E also delivers gas to off-system customers (i.e., outside of PG&E's service territory) and to third-party natural gas storage customers.

Transportation Fuels

California

California uses a higher volume of gasoline than any other transportation fuel, by far, and nearly all gasoline used in California is obtained through the retail market. In 2024, approximately 13.4 billion gallons of gasoline were sold in California's retail market (CDTFA 2025a). Diesel fuel is the second most used transportation fuel by volume in California. In 2024, 2.9 billion gallons of diesel were sold in California (CDTFA 2025b). According to the U.S. Department of Energy's Energy Information Administration (U.S. EIA), many semi-trucks, delivery vehicles, buses, trains, ships, boats and barges, and farm, construction, and military vehicles and equipment have diesel engines (U.S. EIA 2023).

Local

Regular unleaded gasoline is used primarily to fuel passenger cars and small trucks. Diesel fuel is used primarily in large trucks and construction equipment. Both fuels are used widely within San Joaquin County, which includes the cities of Stockton, Lathrop, and Manteca. In 2023, estimated sales of gasoline in San Joaquin County totaled 323 million (CEC 2024b). That same year estimated diesel sales in San Joaquin County 144 million gallons (CEC 2024b).

3.8.3 Regulatory Setting

Federal

Energy Policy Act of 2005

The Energy Policy Act of 2005 includes provisions for 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. The Renewable Fuel Standard program was created under the Energy Policy Act of 2005 and established the first renewable fuel volume mandate in the United States (U.S. EPA 2024a).

Energy Independence and Security Act of 2007

The Energy Independence and Security Act of 2007 was enacted to facilitate the increased use of renewable energy and increased energy efficiency. To promote an increase in the supply of alternative fuel sources, the Energy Independence and Security Act set mandatory Renewable Fuel Standards that required fuel producers to use at least 36 billion gallons of biofuel in 2022 (U.S. EPA 2024b). The law also established miles per gallon (mpg) targets for cars and light trucks and directed the National Highway Traffic Safety Administration (NHTSA) to establish a fuel economy program for medium- and heavy-duty trucks and create a separate fuel economy standard for trucks (U.S. EPA 2024b).

Energy Act of 2020

The Energy Act of 2020 prioritizes research, development, and demonstration across a broad spectrum of energy technologies within the U.S. Department of Energy: solar and wind power, energy storage, grid modernization, energy efficiency, nuclear power, carbon capture utilization and storage, and more. The Energy Act of 2020 provides a focus on the technologies that will be critical to reducing GHG emissions in the power sector, industry, and buildings and to addressing climate change (U.S. EPA 2024c).

U.S. Department of Transportation, U.S. Department of Energy, and U.S. Environmental Protection Agency

On the federal level, the U.S. Department of Transportation (U.S. DOT), U.S. Department of Energy, and U.S. Environmental Protection Agency (U.S. EPA) have substantial influence over energy policies related to the consumption of transportation fuels. Generally, federal agencies influence transportation energy consumption by establishing and enforcing fuel economy standards for automobiles and light trucks, and by funding energy-related research and development and transportation infrastructure projects.

Established by Congress in 1975, the Corporate Average Fuel Economy (CAFE) Standards (Code of Federal Regulations Title 49, Parts 531 and 533) help to reduce energy consumption by increasing the required fuel economy for cars and light trucks. NHTSA and EPA jointly administer the CAFE standards. Congress has specified that CAFE standards must be set at the "maximum feasible level," with consideration given for four factors:

- Technological feasibility.
- Economic practicality.
- Effect of other standards on fuel economy.
- The need for the nation to conserve energy.

Most recent updates to the CAFÉ standards were proposed on July 28, 2023, for model year 2027–2032 passenger cars and light trucks and new fuel efficiency standards for model year 2030–2035 heavy-duty pickup trucks and vans. The proposed rule would require an industry fleet-wide average of approximately 58 mpg for passenger cars and light trucks in model year 2032, by increasing fuel economy by 2 percent year over year for passenger cars and 4 percent year over year for light trucks (NHTSA 2025). For heavy-duty pickup trucks and vans, the proposed rule would increase fuel efficiency by 10 percent year over year (NHTSA 2025).

On June 7, 2024, U.S. DOT finalized and updated the CAFE standards for model years 2027–2031. In this final rule, fuel economy will increase 2 percent per year for model year 2027–2031 passenger cars and 2 percent per year for model year 2029–2031 light trucks. These increases will bring the average fuel economy of light-duty vehicles up to approximately 50.4 mpg by model year 2031. Fuel efficiency of heavy-duty pickup trucks and vans will increase 10 percent per year for model years 2030–2032 and 8 percent per year for model years 2033–2035 (U.S. DOT 2024).

State

California has implemented several policies, rules, and regulations to improve vehicle efficiency, increase the development and use of alternative fuels, reduce air pollutants and GHGs from the transportation

sector, and reduce vehicle miles traveled. Additionally, California is transitioning to zero-carbon, renewable sources of power while requiring the rapid electrification of large segments of the economy.

Renewables Portfolio Standard

The State of California has adopted regulations to increase the proportion of electricity generated by renewable resources. California's Renewables Portfolio Standard (RPS) program was established in 2002 by Senate Bill (SB) 1078 with the initial requirement that 20 percent of electricity retail sales must be served by renewable resources by 2017. The RPS goal has since increased several times. In 2018, SB 100 increased California's RPS once more, requiring retail sellers and local publicly owned utilities to procure eligible renewable electricity for 44 percent of retail sales by the end of 2024, 52 percent by the end of 2027, and 60 percent by the end of 2030. It also requires CARB to plan for 100 percent eligible renewable energy resources and zero-carbon resources by the end of 2045. In the latest update to RPS, SB 1020, signed on September 16, 2022, revised SB 100 to require that renewable energy resources and zero-carbon resources supply 90 percent of all retail sales of electricity to end-use customers by December 31, 2035; 95 percent of all retail sales to end users by December 31, 2040; 100 percent of electricity procured to serve all state agencies by December 31, 2035; and 100 percent of all retail sales to end users by December 31, 2045.

State of California Energy Action Plan

The California Energy Commission (CEC) and the California Public Utilities Commission (CPUC) approved the first State of California Energy Action Plan in 2003. The plan established shared goals and specific actions to ensure that adequate, reliable, and reasonably priced electrical power and natural gas supplies are provided. It also identified policies, strategies, and actions that are cost-effective and environmentally sound for California's consumers and taxpayers.

In 2005, the CEC and CPUC adopted a second Energy Action Plan to reflect various policy changes and actions from the prior 2 years. At the beginning of 2008, the agencies determined that it would not be necessary or productive to prepare a new energy action plan. This determination was based in part on a finding that the state's energy policies have been significantly influenced by the passage of Assembly Bill (AB) 32, the California Global Warming Solutions Act of 2006 (discussed below). Rather than produce a new energy action plan, the CEC and CPUC prepared an update that examines the state's ongoing actions in the context of global climate change.

California Global Warming Solutions Act of 2006

In 2006, Governor Arnold Schwarzenegger signed AB 32, the California Global Warming Solutions Act of 2006 (California Health and Safety Code, Division 25.5), which focused on reducing GHG emissions in California to 1990 levels by 2020. Under Health and Safety Code, Division 25.5, CARB has the primary responsibility for reducing GHG emissions in California; however, AB 32 also tasked the CEC and CPUC with providing information, analysis, and recommendations to CARB regarding strategies to reduce GHG emissions in the energy sector.

In 2016, Governor Edmund G. Brown Jr. signed Senate Bill (SB) 32 and its companion bill, AB 197. SB 32 and AB 197 amended Health and Safety Code, Division 25.5 and established a new climate pollution reduction target of 40 percent below 1990 levels by 2030, with provisions to ensure that the benefits of state climate policies reach disadvantaged communities.

California Integrated Energy Policy

In 2002, the Legislature passed SB 1389, which required the CEC to develop an integrated energy plan every 2 years for electricity, natural gas, and transportation fuels, for the California Energy Policy Report. The plan calls for the state to assist in the transformation of the transportation system to improve air quality, reduce congestion, and increase the efficient use of fuel supplies with the least environmental and energy costs. To further this policy, the plan identifies a number of strategies, including assistance to public agencies and fleet operators in implementing incentive programs for zero-emission vehicles and their infrastructure needs, and encouragement of urban designs that reduce vehicle miles traveled and accommodate pedestrian and bicycle access.

The CEC has adopted the 2024 Integrated Energy Policy Report Update, which assesses major energy trends and issues facing the state's electricity, natural gas, and transportation fuel sectors and provides policy recommendations to conserve resources, protect the environment, ensure reliable, secure, and diverse energy supplies, enhance the state's economy, and protect public health and safety. The 2024 Integrated Energy Policy Report Update covers a broad range of topics, including energy efficiency, building energy efficiency standards, achieving 100 percent clean electricity by 2045, and the California Energy Demand Forecast (CEC 2024c).

Airborne Toxic Control Measure to Limit Diesel-Fueled Commercial Motor Vehicle Idling

In 2004, CARB adopted the Airborne Toxic Control Measure to Limit Diesel-Fueled Commercial Motor Vehicle Idling to reduce public exposure to emissions of diesel particulate matter (Title 13, Section 2485 of the California Code of Regulations [13 CCR Section 2485]). The measure applies to diesel-fueled commercial vehicles with gross vehicle weight ratings greater than 10,000 pounds that are licensed to operate on highways, regardless of where they are registered. This measure prohibits diesel-fueled commercial vehicles from idling for more than five minutes at any given location (CARB 2025a). The primary goal of this regulation is to reduce public health impacts from diesel emissions, but compliance with the measure also results in energy savings in the form of reduced fuel consumption from unnecessary idling.

Truck and Bus Regulation

In addition to limiting exhaust from idling trucks, in 2008 CARB approved the Truck and Bus Regulation to reduce emissions of oxides of nitrogen and particulate matter from existing diesel vehicles operating in California (13 CCR Section 2025). The phased regulation aims to reduce emissions by requiring the installation of diesel soot filters and encouraging the retirement, replacement, or retrofitting of older engines with newer emission-controlled models. This regulation will be implemented in phases, with full implementation by 2023.

In-Use Off-Road Diesel-Fueled Fleets Regulation

Because off-road vehicles used in construction and related industries can last 30 years or longer, most of those that are in service today are part of an older fleet that do not have emission controls. In 2007, CARB approved the In-Use Off-Road Diesel-Fueled Fleets Regulation (Off-Road Regulation) to reduce emissions from existing (in-use) off-road diesel vehicles used in construction and other industries (CARB 2025b).[1]

[1] Since its approval in 2007, the Off-Road Regulation has been amended twice in 2009, once in 2010, and most recently on October 1, 2023 (CARB 2025b).

The Off-Road Regulation specifies that off-road vehicles 25 horsepower and up may not idle for longer than 5 minutes. It also identifies target emission rates for off-road vehicles, which decline over time to accelerate the rate of turnover to newer, cleaner engines. The primary goal of the In-Use Off-Road Diesel-Fueled Fleets Regulation is to reduce public health impacts from diesel emissions, but compliance also saves energy by reducing fuel consumption for unnecessary idling and by promoting the use of more fuel-efficient engines.

The October 2023 amendments (Amendments) to the Off-Road Regulation were based on the importance of achieving further oxides of nitrogen (NO_x) emissions reductions from the off-road sector, as influenced by CARB's robust on-road regulatory and incentive policies, as well as achieving reductions for diesel particulate matter at a statewide level to reduce the health risk throughout California, especially in communities that experience disproportionate burdens from exposure to toxic air contaminants (CARB 2023). Elements of the Amendments include but are not limited to: (1) phase out of the older and highest-emitting off-road engines from operation in California; and (2) restrictions on the addition of vehicles with Tier 3 and Tier 4 Interim engines, in favor of Tier 4 Final or zero-emission technology (CARB 2023).

CARB Advanced Clean Trucks Program

On June 25, 2020, CARB adopted the Advanced Clean Trucks rule, which requires truck manufacturers to transition from diesel vehicles to electric zero-emission vehicles beginning in 2024, with the goal of reaching 100 percent zero-emission vehicles by 2045. The goal of the legislation is to help California meet its climate targets of a 40 percent reduction in GHG emissions and 50 percent reduction in petroleum use by 2030, and an 80 percent reduction in GHG emissions by 2050.

Truck manufacturers will be required to sell zero-emission vehicles as an increasing percentage of their annual sales from 2024 through 2035. Companies with large distribution fleets (50 or more trucks) will be required to report information about their existing fleet operations in an effort to identify future strategies for increasing zero-emission fleets statewide (CARB 2021).

Zero-emission vehicles are two to five times more energy efficient than diesel vehicles. The Advanced Clean Trucks rule will reduce GHG emissions with the co-benefit of reducing dependence on petroleum fuels.

CARB Advanced Clean Fleets

In April 2023, CARB adopted the Advanced Clean Fleets regulation, which is part of CARB's broader strategy to accelerate the transition to zero-emission medium- and heavy-duty vehicles. It complements the Advanced Clean Trucks regulation, focusing on reducing emissions and promoting the adoption of zero-emission vehicles (ZEVs). The Advanced Clean Fleets regulation covers various fleet types, including drayage operations, government-owned fleets, and high-priority fleets, mandating ZEV adoption in phases. High-priority fleets are entities that own, operate, or direct the operation of at least one vehicle in California, and that either have $50 million or more in gross annual revenue, or own, operate, or direct the operation of 50 or more vehicles. Federal agencies that own, operate, or direct the operation of at least one vehicle in California are also subject to this regulation.

Key provisions include manufacturer sales mandates, requirements that drayage fleets transition to ZEVs, and specific ZEV targets for high-priority and government fleets. The regulation is expected to significantly reduce emissions, benefit public health, and contribute to achieving climate goals.

To support the transition, CARB provides incentives, grants, and funding programs, with an emphasis on equity for disproportionately affected communities. These programs aim to reduce the financial burden on fleet owners, promote early adoption, and expand charging and hydrogen fueling infrastructure. CARB estimates that both regulations will result in a substantial increase in ZEVs on California roads, contributing to reductions of emissions and improvements to public health. The regulation reflects California's commitment to achieving a fully zero-emissions fleet by 2045, with specific targets for various vehicle categories (CARB 2024).

In January 2025, CARB withdrew its federal waiver and authorization to add the Advanced Clean Fleets regulation to its emissions control program. As a result, CARB is not enforcing parts of the Advanced Clean Fleets regulation that depends on federal approval. However, not all components of the regulation require federal approval; the provisions applying to state and local governments fleets remain in effect (CARB 2025c).

Local

The proposed project area includes lands in San Joaquin County and the cities of Stockton, Lathrop, and Manteca. Each of these jurisdictions have general plans with goals and policies that address energy conservation (see **Table 3.8-2**). Applicable general plan goals and policies are summarized below along with relevant local regulations.

TABLE 3.8-2
APPLICABLE GENERAL PLAN GOALS AND POLICIES – ENERGY

General Plan	Goals and Policies
San Joaquin County	Natural and Cultural Resources Element, Goal NCR-5
City of Stockton	Land Use Goal LU-5, Policy LU-5.4, Action LU-5.4B
City of Lathrop	No applicable goals or policies
City of Manteca	Resource Conservation Element, Goal RC-5, Policy RC-5.1

SOURCES: City of Lathrop 2022; City of Manteca 2024; City of Stockton 2018; San Joaquin County 2016

San Joaquin County

San Joaquin County General Plan

The San Joaquin County General Plan includes Goal NCR-5 and policies that address and promote the improvement to energy conservation in the county. However, there are no goals and policies directly related to energy conservation in a restoration context, as the Plan primarily address energy conservation in residential uses. Other General Plan policies that address land use and transportation and circulation may indirectly improve energy conservation.

City of Stockton

Envision Stockton 2040 General Plan

The City of Stockton General Plan includes limited goals and policies that address policy and goals related to energy conservation and energy impacts. Other General Plan policies that address land use and protection, and energy demand may indirectly improve energy conservation.

City of Lathrop

City of Lathrop General Plan

The City of Lathrop General Plan includes goals and policies that address energy conservation outreach and expansion of renewable energy resources. There are no goal and policies directly related to energy conservation in a restoration context; the Plan primarily address energy conservation in residential uses.

City of Manteca

City of Manteca General Plan

The City of Manteca General Plan includes goals and policies that promote energy conservation in new developments for energy efficiency. The Plan addresses many policies for better standards in energy uses.

3.8.4 Impacts and Mitigation Measures

Methods of Analysis

This analysis considers CEQA Guidelines Appendix G thresholds, as described in this section, in determining whether the proposed project would result in the inefficient, wasteful, or unnecessary use of energy. The evaluation involved reviewing regulations and determining their application to the proposed project. As discussed previously, there are several federal, state, and local plans and policies that are intended to increase energy conservation and the use of renewable energy. Consistence of the proposed project with these regulations would also ensure that the proposed project would not result in the inefficient, wasteful, or unnecessary use of energy.

Flood Risk Reduction Components and Restoration Sites 13, 14, and 16

The quantification of construction-related energy use presented in this section is based on the GHG emissions estimates presented in Section 3.10, *Greenhouse Gas Emissions*. Energy use during the proposed project construction and operation is also assessed for consistency with state and local policies adopted to conserve and reduce energy consumption.

Construction

The proposed flood risk reduction components and ecosystem restoration at Sites 13, 14, and 16's construction activities would consume energy primarily in the form of transportation fuels (e.g., diesel and gasoline) used by haul trucks, heavy-duty equipment, and worker vehicles traveling to and from construction areas. Electricity consumed by any electric-powered equipment would be minimal relative to the amount of diesel and gasoline consumed. Natural gas is generally not used during construction.

Construction activities and associated energy use could vary substantially from day to day, depending on the phase and type of construction activity and the number of workers and vendors traveling to the

construction areas. The assumptions used for this analysis regarding the construction schedule, and regarding the types, number, and level of usage of construction equipment and vehicles for each activity, are consistent with the assumptions used for the air quality and GHG emissions analyses. This section provides the best possible estimates of energy consumption for informational purposes; overall, however, the analysis applies a qualitative assessment relative to the two Appendix G CEQA checklist criteria.

Diesel fuel consumption by on-site construction equipment has been estimated based on the GHG emissions estimates for off-road equipment from CalEEMod (version 2022.1.1), in combination with The Climate Registry default factors for calculating CO_2 emissions from diesel fuel. All off-road construction equipment is assumed to be diesel-fueled (The Climate Registry 2023).

With regard to on-road construction vehicles, this analysis assumes that light-duty automobiles and trucks used by commuting workers would be fueled by gasoline and that on-road construction vehicles (e.g., vendor and haul trucks for demolition debris, soil, and other material hauling) would use diesel fuel. The analysis further assumes that no electric on-road vehicles would be used during construction. The fuel quantities required by on-road vehicles during construction have been calculated based on the GHG emissions associated with commuting workers and vendor and haul trips. Such GHG emissions were estimated using CalEEMod defaults for estimated trip counts and trip lengths and The Climate Registry default factors for calculating CO_2 emissions from gasoline and diesel fuels (The Climate Registry 2023).

Operation and Maintenance

O&M impacts are qualitatively evaluated for the proposed project.

Other Multi-Benefit Components

The proposed project also includes implementation of other multi-benefit components including additional ecosystem restoration sites, and recreation features along the levee system. Because the locations and designs of the ecosystem restoration sites and recreational features are still under development, energy impacts of these proposed project components have been conducted qualitatively at a programmatic level.

Thresholds of Significance

In accordance with Appendix G of the CEQA Guidelines, an impact is considered significant if the proposed project would:

- Result in potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources, during project construction or operation.
- Conflict with or obstruct a state or local plan for renewable energy or energy efficiency.

Impacts and Mitigation Measures

Table 3.8-3 summarizes the impact conclusions presented in this section.

TABLE 3.8-3
SUMMARY OF IMPACT CONCLUSIONS – ENERGY

Impact Statement	Flood Risk Reduction Components	Restoration Sites 13, 14, and 16	Other Multi-Benefit Components
3.8-1: Implementation of the proposed project could result in wasteful, inefficient, or unnecessary consumption of energy resources during construction or operation or conflict with or obstruct a state or local plan for renewable energy or energy efficiency	LS	LS	LS

NOTE: LS = Less than Significant

Impact 3.8-1: Implementation of the proposed project could result in wasteful, inefficient, or unnecessary consumption of energy resources during construction or operation or conflict with or obstruct a state or local plan for renewable energy or energy efficiency.

Flood Risk Reduction Components

Energy would be consumed to power construction equipment and vehicles transporting workers, materials, and equipment to and from the construction sites. Energy use would vary throughout the construction period based on the activities being performed and would cease upon completion of construction.

Heavy-duty equipment used for construction of the flood risk reduction components of the proposed project would rely on diesel fuel, as would vendor trucks delivering materials to the individual construction sites and haul trucks exporting demolition materials or other materials off-site. Travel by construction workers to and from each construction site would be in light-duty vehicles, which are primarily gasoline-powered.

Table 3.8-4 identifies the anticipated energy usage during the construction phase of the proposed flood risk reduction components. As detailed in Table 3.8-4, construction-related off-road equipment and on-road vehicles would consume approximately 2,012,348 gallons of diesel and on-road vehicles would consume approximately 26,104 gallons of gasoline, over the 5-year construction period. This amounts to an average annual usage of approximately 402,470 gallons of diesel fuel per year and 5,221 gallons of gasoline fuel per year over the 5 years of construction. There are two construction schedule scenarios proposed: one with a 3-year timeframe and one with a 5-year timeframe. The 5-year construction schedule was used in this analysis as it is a more reasonable project timeline and accounts for resource availability, seasonality of construction to account for flood season, and the need for certain proposed project components.

Although construction energy use is presented as an annual average, some construction years would be more or less energy-intensive depending on the phasing of activities. The proposed flood risk reduction component's estimated annual average diesel and gasoline use are equivalent to approximately 0.28 percent of the diesel and a very small fraction (less than 0.002 percent) of the gasoline sold in San Joaquin County annually in 2023 (CEC 2024b). The use of diesel, gasoline, and other alternative fuels for construction activities would be temporary and would constitute a small fraction of the regional usage.

TABLE 3.8-4
CONSTRUCTION ENERGY USE FOR THE PROPOSED FLOOD RISK REDUCTION COMPONENTS

Energy Type	Unit of Measure	Total Energy Use	2026	2027	2028	2029	2030
Diesel							
Off-Road Construction Equipment	gallons/year	685,901	177,826	154,946	154,188	82,138	116,803
On-Road Vehicles	gallons/year	1,326,447	285,202	475,698	344,825	120,625	100,097
Total Diesel Use	gallons/year	2,012,348	463,028	630,644	499,013	202,763	216,900
Annual Average Diesel Use[a]	**gallons/year**	**402,470**					
Gasoline							
On-Road Vehicles	gallons/year	26,104	5,846	5,496	6,357	4,256	4,149
Total Gasoline Use	gallons/year	26,104	5,846	5,496	6,357	4,256	4,149
Annual Average Diesel Use[a]	**gallons/year**	**5,221**					

NOTE:
a. Annual average has been estimated by dividing the total energy use by the expected 5 years of construction duration.
SOURCE: Data compiled by Environmental Science Associates in 2025 based on information contained in Appendix B to this Draft EIR.

During construction of the proposed flood risk reduction components, construction activities would comply with state and local requirements designed to minimize idling and associated emissions, which also minimizes fuel use. Construction equipment used would be subject to Mitigation Measure 3.4-1, requiring the use of electric engines when available, and the use of Tier 4 Final engines when electrification is not possible. CARB's In-Use Off-Road Diesel-Fueled Fleets regulation would also apply to certain off-road diesel engines or equipment greater than 25 hp. The regulation (1) imposes limits on idling, requires a written idling policy, and requires a disclosure when selling vehicles; (2) requires all vehicles to be reported to CARB (using the Diesel Off-Road Online Reporting System) and labeled; (3) restricts the adding of older vehicles into fleets starting on January 1, 2014; (4) requires fleets to reduce their emissions by retiring, replacing, or repowering older engines or installing Verified Diesel Emission Control Strategies (i.e., exhaust retrofits); (5) requires the phase out of the oldest and dirtiest engines starting on January 1, 2024; (6) requires the procurement and use of renewable diesel (R99 or R100) starting January 1, 2024, with limited exceptions; and (7) requires contracting entities to obtain valid Certificates of Reported Compliance for all listed contractors and subcontractors for contract work where vehicles subject to the Off-Road Regulation will operate (CARB 2025b).

Construction activities would use fuel-efficient equipment and on-road vehicles consistent with federal and state regulations, such as the fuel efficiency regulations in CARB's Pavley Phase II standards for light-duty vehicles like worker commute and vendor vehicles; the anti-idling regulation (13 CCR Section 2485); and fuel requirements for stationary equipment (concerning the Airborne Toxic Control Measures; 17 CCR Section 93115). In accordance with 13 CCR Sections 2485 and 2449, idling by commercial vehicles heavier than 10,000 pounds and off-road equipment greater than 25 hp would be limited to a maximum of five minutes. The intent of these regulations is to reduce construction emissions; however, compliance with the anti-idling and emissions reduction regulations would also result in fuel savings from the more efficient use of equipment.

Construction activities under the flood risk reduction components of the proposed project would not be unusual compared to overall regional and local demands for energy resources, and they would not require equipment that would be less energy efficient than at comparable construction sites in the region or state.

Regular O&M activities would consist of inspections, weed abatement, removal of encroachments and high-hazard vegetation to ensure levee integrity, replacement and re-working of displaced or launched revetment following large flood events, and adequate levee access along the levee toe road. These activities would occur periodically similar to existing O&M activities. The proposed project would not change the number of vehicle trips generated or the types and activity levels of off-road equipment used for O&M activities. Therefore, operational energy use would be similar to existing conditions.

Overall, fuel use during construction and O&M activities associated with the flood risk reduction components of the proposed project would not be considered inefficient, wasteful, or unnecessary consumption of energy, nor would any sources or activities conflict with or obstruct a state or local plan for renewable energy or energy efficiency. Therefore, this impact would be **less than significant**.

Restoration Sites 13, 14, and 16

Energy would be consumed to power construction equipment and vehicles transporting workers, materials, and equipment to and from the construction sites. Energy use would vary throughout the construction period based on the activities being performed and would cease upon completion of construction.

Heavy-duty equipment used for construction of ecosystem restoration at Sites 13, 14, and 16 would rely on diesel fuel, as would vendor trucks delivering materials to the individual construction sites and haul trucks exporting demolition materials or other materials off-site. Travel by construction workers to and from each construction site would be in light-duty vehicles, which are primarily gasoline-powered.

Table 3.8-5 identifies the anticipated energy usage during the construction phase of ecosystem restoration at Sites 13, 14, and 16. As detailed in Table 3.8-5, construction-related off-road equipment and on-road vehicles would consume approximately 214,135 gallons of diesel and on-road vehicles would consume approximately 6,310 gallons of gasoline over the 1-year construction period.

TABLE 3.8-5
CONSTRUCTION ENERGY USE FOR THE PROPOSED RESTORATION SITES 13, 14, AND 16

Energy Type	2026 Energy Use (gallons per year)
Diesel	
Off-Road Construction Equipment	239,964
On-Road Vehicles	59,826
Total Diesel Use	**299,789**
Gasoline	
On-Road Vehicles	8,834
Total Gasoline Use	**8,834**

SOURCE: Data compiled by Environmental Science Associates in 2025 based on information contained in Appendix B to this Draft EIR.

The proposed ecosystem restoration at Sites 13, 14, and 16's estimated diesel and gasoline use is equivalent to approximately 0.2 percent of the diesel and a very small fraction (less than 0.003 percent) of the gasoline sold in San Joaquin County annually in 2023 (CEC 2024b). The use of diesel, gasoline, and other alternative fuels for construction activities would be temporary and would constitute a small fraction of the regional usage.

As noted in the flood risk reduction components discussion above, construction activities for ecosystem restoration Sites 13, 14, and 16 would also be conducted in compliance with applicable local, state, and federal regulations. Construction activities at ecosystem restoration Sites 13, 14, and 16 would not be unusual compared to overall regional and local demands for energy resources, and they would not require equipment that would be less energy efficient than at comparable construction sites in the region or state.

Upon completion of construction activities for ecosystem restoration at Sites 13, 14, and 16, a planting contractor would install container plants, grasses, and temporary irrigation. The planting contractor would be required to provide maintenance and irrigation over the next 3 years during the plant establishment period. Following the completion of the initial planting, regular O&M activities would be performed throughout the year though some would vary according to weather and season: general clean-up maintenance of the sites would occur throughout the year, clean-up maintenance would generally include picking up trash, vandalism repairs, and the removal of used planting accessories (e.g., bamboo stakes, ties, browse guards). Maintenance activities associated with ecosystem restoration at Sites 13, 14, and 16 are summarized in Table 2-10 Chapter 2, *Project Description*. O&M activities would consist of a maintenance crew vehicle traveling along the levee and small machinery for weed abatement such as mowers and weed whackers/trimmers which would result in minimal energy use. O&M activities would be conducted with equipment meeting industry standards for fuel use and would therefore not be inefficient and wasteful.

Overall, fuel use during construction and O&M activities associated with ecosystem restoration at Sites 13, 14, and 16 would not be considered inefficient, wasteful, or unnecessary consumption of energy, nor would any sources or activities conflict with or obstruct a state or local plan for renewable energy or energy efficiency. Therefore, this impact would be **less than significant**.

Other Multi-benefit Components

The proposed project also includes implementation of other multi-benefit components including additional ecosystem restoration sites, and recreation features along the levee system. These proposed multi-benefit components are described in Chapter 2, *Project Description*, and are presented on Figure 2-3. Table 2-2 lists the type of ecosystem restoration, habitat acreage, and approximate grading volumes for Sites 13, 14, and 16 and for the additional proposed ecosystem restoration sites. Activities would involve selective grading and revegetation to expand habitat areas, construction of setback levees and selective breaching of levees in certain areas. These activities would involve use of earth moving and construction equipment which would use energy, but the intensity of use required is likely to be lower than for the flood risk reduction components. Conceptual restoration plans have been developed for the 10 sites designated as having medium or high potential for restoration. Table 2-2 shows that some of the identified sites would involve significant grading volumes. While some sites are expected to balance cut

and fill, export of graded material from other sites would generate truck trips resulting in diesel fuel use. In addition, energy would be used in the form of gasoline to fuel construction worker trips to the sites. Construction equipment and vehicles would be subject to the same idling regulations discussed under the flood risk reduction components and ecosystem restoration Sites 13, 14, and 16, above to reduce unnecessary energy use. For the same reasons discussed under the flood risk reduction components and ecosystem restoration at Sites 13, 14, and 16's analysis above, energy use associated with the construction activities under multi-benefit components would not be considered inefficient, wasteful, or unnecessary and would not conflict with or obstruct a state or local plan for renewable energy or energy efficiency.

O&M activities would be similar to those discussed under the analysis for the flood risk reduction components and ecosystem restoration at Sites 13, 14, and 16 above; therefore, energy use associated with O&M activities associated with the multi-benefit components would not be considered inefficient, wasteful, or unnecessary and would not conflict with or obstruct a state or local plan for renewable energy or energy efficiency.

Overall, fuel use during construction, O&M activities associated with the multi-benefit components of the proposed project would result in a **less-than-significant impact**.

Mitigation Measures

Mitigation Measures (FRR/RS/MB): None required.

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3.9 Geology, Soils, and Mineral Resources

3.9.1 Introduction

This section includes a description of the existing geological, soil, and mineral characteristics of the proposed project area and vicinity and an analysis of the effects the proposed project could have on geology, soils, and mineral resources in the proposed project vicinity.

No comments specifically addressing geology, soils, and mineral resources were received in response to the NOP. See Appendix A to this Draft for NOP comment letters.

3.9.2 Environmental Setting

Regional Geology

The sedimentary deposits of the Central Valley were derived from the Coast Ranges to the west and the Sierra Nevada to the east. Granitic and metamorphic rocks outcrop along the eastern and southeastern flanks of the Central Valley; sedimentary rocks outcrop along most of the western, southwestern, southern, and southeastern flanks of the Central Valley; and volcanic rocks outcrop along the northeastern flanks of the Central Valley. The geomorphic setting includes dissected uplands, alluvial plains and fans, river flood plains and channels, and lake bottoms. (City of Stockton 2018).

Geology and Soils

San Joaquin County extends across the width of the Great Valley, which has been filled with sediments that attain thicknesses exceeding 30,000 feet in depth in some areas. The Great Valley is generally characterized as an asymmetrical trough with shallow dipping sequences of deposits to the east and steeply dipping deposits to the west. The alluvium deposits located east of the San Joaquin River originate from eroded silica-based volcanic and granitic materials from the Sierra Nevada. Deposits west of the San Joaquin River are composed of a higher percentage of shale/clay and quartzite marine deposits, which originate from the Coast Ranges. Alluvial deposits comprise a majority of the surface deposits within the county, but there are also lacustrine and marsh (otherwise known as intertidal) deposits present. Lacustrine deposits are typically composed of fine-grained materials such as clays and silts interbedded with sands and conglomerates that formed during a time when lakes and marshes existed within the Central Valley. Marsh deposits are found within the low-lying areas of the Delta region.

Topography

The topography of the county ranges from approximately 25 feet below mean sea level (msl) in some locations of the Delta to 3,626 feet above msl at Mt. Boardman within the Diablo Range, which is part of the Coast Ranges. Oxidation of peat and the resulting subsidence has lowered some Delta islands up to 25 feet below msl and more than 30 feet below the water-way elevation. The county's topography is generally flat at the valley floor. In the east, the Sierra Nevada foothills form gently rolling hills with gradual elevation changes. The maximum elevation attained in the eastern foothills is 497 feet above msl at Bunker Hill. In the west, the valley transitions rapidly in the Diablo Range of the Coastal Ranges. Terrain within the Diablo Range is characterized by steep grades and large elevation changes from river valleys to surrounding peaks.

Local Geology

Geologic formations within the Central Valley consist of sediment deposited in marine, alluvial, and terrestrial environments. To the east of the San Joaquin River, the geologic formations found within San Joaquin County are composed of the Basement Complex, Ione Formation, Valley Springs Formation, Mehrten Formation, Tulare Formation, and recent alluvium. The basement complex is composed of crystalline igneous and metamorphic rocks which are found beneath the sedimentary units. The Ione Formation is composed of claystones and sandstones with some conglomerates from earlier Delta depositions. The Valley Springs Formation is composed of alluvium derived sandstones, siltstones, and clay stones. The Mehrten Formation is alluvium composed of conglomerates, sandstones, siltstones, and clay stones. The lacustrine Tulare Formation is composed of clay stone and sandstone. Within the Tulare Formation is the Corcoran Clay Member, a prominent densely compacted clay unit that is known to prevent the vertical movement of groundwater. The Corcoran Clay member is found throughout the southern half of San Joaquin County and is well developed to the west of State Route 99. Quaternary river and flood plain deposits, consisting of clays, silt, sands, and gravel overlay the underlying geologic formations as surface soil deposits.

Geology west of the San Joaquin River is composed of sources of deposition related to the sedimentary rocks of marine origin derived from the Coastal Ranges as opposed to the geologic formations found to the east derived from the Sierra Nevada. The eastern Diablo Range of the Coastal Ranges is composed primarily of thick ancient marine and nonmarine deposits known as the Great Valley Sequence which dip down toward the bottom center of the Central Valley beneath the valley alluvial deposits. The Great Valley Sequence overlies the Coast Range Franciscan Assemblage along the valley's western flank which has been highly deformed through tilting, folding, and faulting.

Soils

Different soil types exist within San Joaquin County that are closely associated with alluvial action and deposition. Sand to gravel soils have been deposited along waterways and the ancient course of the San Joaquin River. Areas in between waterways are rich in fine-grained clays and silts with extensive peat deposits present in the Delta. Silt and clay soils are fertile and support agriculture within San Joaquin County for a wide variety of crops. These fertile silts and clays pose some risk to structures, as they can be expansive and cause significant damage. Peat deposits are subject to compaction through extraction of groundwater, oil and gas, loading, or natural causes. Peat compaction can lead to subsidence and significant damage to structures.

The Natural Resources Conservation Service of the U.S. Department of Agriculture has mapped the soils throughout the county as part of its soil survey program. According to the most recent soil survey data, a total of 183 different soil units have been identified within the county (NRCS 2013). While no one unit is prominently found within the area, the Tokay fine sandy loam and the Rindge Muck units are more widely found (at 3.6 and 3.4 percent of the total area) than any of the other units.

Geologic Hazards

Expansive Soils

Expansive soils are characterized by their potential "shrink-swell" behavior. Shrink-swell is the cyclic change in volume (expansion and contraction) that occurs in certain fine-grained clay sediments from the

process of wetting and drying. Clay minerals such as smectite, bentonite, montmorillonite, beidellite, vermiculite and others are known to expand with changes in moisture content. The higher the percentage of expansive minerals present in near-surface soils, the higher the potential for significant expansion. The greatest effects occur when there are significant or repeated moisture content changes. Expansions of 10 percent or more in volume are not uncommon. This change in volume can exert enough force on a building or other structure to cause cracked foundations, floors, and basement walls. Structural damage typically occurs over a long period of time, usually the result of inadequate soil and foundation engineering or the placement of structures directly on expansive soils.

According to the soil survey data for San Joaquin County, close to half of the upper 5 feet of soils throughout the county have a low shrink-swell potential, a lesser portion is considered to have a moderate potential, and about an eighth of the area (primarily in the southwestern end of the county) has been mapped with a high potential (NRCS 2013).

Soil Erosion

Erosion is the wearing away of soil and rock by processes such as mechanical or chemical weathering, mass wasting, and the action of waves, wind, and underground water. Excessive soil erosion can eventually lead to damage of building foundations and roadways. Areas that are susceptible to erosion are often those that become exposed during the construction phase of development when existing cover is removed or earthwork activities disturb sub-grade areas. Typically, the soil erosion potential is reduced once disturbed areas are graded and covered with landscaping, structures, concrete, asphalt, or slope protection materials.

Settlement

Settlement can occur from immediate settlement, consolidation, shrinkage of expansive soil, and liquefaction (discussed below). Immediate settlement occurs when a load from a structure or placement of new fill material is applied, causing distortion in the underlying materials. This settlement occurs quickly and is typically complete after placement of the final load. Consolidation settlement occurs in saturated clay from the volume change caused by squeezing out water from the pore spaces. Consolidation occurs over a period of time and is followed by secondary compression, which is a continued change in void ratio under the continued application of the load. Soils tend to settle at different rates and by varying amounts depending on the load weight or changes in properties over an area, which is referred to as differential settlement.

Subsidence can also occur by hydrocompaction or oxidation of peat. Subsidence can result in reduced storage capacity of groundwater aquifers. Subsidence within the county is usually the result of pumping groundwater or oxidation of peat in the Delta. Subsidence in the Delta results in lower levees and islands with increased flooding risks. Subsidence rates vary across the Delta and no one rate is applicable to the entire Delta. Estimated elevation decreases range from 0 to 5 feet by 2050 and from 0 to over 9 feet by 2100, and from 0 to over 18 feet by 2200 (URS 2007). Subsidence and rise in sea level cause increased hydrostatic pressure on levees and increase the risk of failure. The loss of peat soils, due to compaction and mining, has caused the land surface of many Delta islands to subside (decrease in elevation). This subsidence has resulted in most of the Delta being, on average, 15 feet below sea level, and the most deeply subsided areas as much as 25 feet below sea level.

Landslides and Slope Failures

Slope failures, commonly referred to as landslides, include many phenomena that involve the downslope displacement and movement of material, either triggered by static (i.e., gravity) or dynamic (i.e., earthquake) forces. A slope failure is a mass of rock, soil, and debris displaced downslope by sliding, flowing, or falling. Exposed rock slopes undergo rockfalls, rockslides, or rock avalanches, while soil slopes experience shallow soil slides, rapid debris flows, and deep-seated rotational slides. Landslides may occur on slopes of 15 percent or less; however, the probability is greater on steeper slopes that exhibit old landslide features such as scarps, slanted vegetation, and transverse ridges. Landslide-susceptible areas are characterized by steep slopes and downslope creep of surface materials. Debris flows consist of a loose mass of rocks and other granular material that, if saturated and present on a steep slope, can move downslope. The rate of rock and soil movement can vary from a slow creep over many years to a sudden mass movement. Landslides occur throughout the State of California, but the density of incidents increases in zones of active faulting.

Slope stability can depend on a number of complex variables. The geology, structure, and amount of groundwater affect slope failure potential, as do external processes (i.e., climate, topography, slope geometry, and human activity). The factors that contribute to slope movements include those that decrease the resistance in the slope materials and those that increase the stresses on the slope. Slope failure under static forces occurs when those forces initiating failure overcome the forces resisting slope movement. For example, a soil slope may be considered stable until it becomes saturated with water (e.g., during heavy rains or due to a broken pipe or sewer line). Under saturated conditions, the water pressure in the individual pores within the soil increases, reducing the strength of the soil. Cutting into the slope and removing the lower portion, or slope toe, can reduce or eliminate the slope support, thereby increasing stress on the slope.

Earthquake motions can induce significant horizontal and vertical dynamic stresses in slopes that can trigger failure. Earthquake-induced landslides can occur in areas with steep slopes that are susceptible to strong ground motion during an earthquake.

Steep slopes in the county are relatively limited and are primarily found in the southwestern portion of the county within the Coast Range. In addition, there are minor slopes, in terms of vertical height, that are susceptible to slope instability in various levees located throughout the Delta area. The proposed project area is generally level; therefore, hazards associated with landslides are minimal.

Earthquake Terminology and Concepts

Richter magnitude is a measure of the size of an earthquake as recorded by a seismograph, a standard instrument that records ground shaking at the location of the instrument. The reported Richter magnitude for an earthquake represents the highest amplitude measured by the seismograph at a distance of 100 kilometers from the epicenter. Richter magnitudes vary logarithmically, with each whole number step representing a ten-fold increase in the amplitude of the recorded seismic waves. Earthquake magnitudes are also measured by their Moment Magnitude (Mw), which is related to the physical characteristics of a fault including the rigidity of the rock, the size of fault rupture, and movement or displacement across a fault (CGS 2002). Ground movement during an earthquake can vary depending on the overall magnitude, distance to the fault, focus of earthquake energy, and type of geologic material. The composition of underlying soils, even those relatively distant from faults, can intensify ground shaking. For this reason,

earthquake intensities are also measured in terms of their observed effects at a given locality. The Modified Mercalli (MM) intensity scale (**Table 3.9-1**) is commonly used to measure earthquake damage due to ground shaking. The MM values for intensity range from I (earthquake not felt) to XII (damage nearly total), and intensities ranging from IV to X could cause moderate to significant structural damage.[1] The intensities of an earthquake will vary over the region of a fault and generally decrease with distance from the epicenter of the earthquake.

TABLE 3.9-1
MODIFIED MERCALLI INTENSITY SCALE

Intensity Value	Intensity Description	Average Peak Ground Acceleration[a]
I	Not felt except by a very few persons under especially favorable circumstances.	< 0.0017 *g*
II	Felt only by a few persons at rest, especially on upper floors on buildings. Delicately suspended objects may swing.	0.0017–0.014 *g*
III	Felt noticeably indoors, especially on upper floors of buildings, but many people do not recognize it as an earthquake. Standing motor cars may rock slightly, vibration similar to a passing truck. Duration estimated.	0.001–-0.014 *g*
IV	During the day felt indoors by many, outdoors by few. At night, some awakened. Dishes, windows, doors disturbed; walls make cracking sound. Sensation like heavy truck striking building. Standing motor cars rocked noticeably.	0.014–0.039 *g*
V	Felt by nearly everyone, many awakened. Some dishes and windows broken; a few instances of cracked plaster; unstable objects overturned. Disturbances of trees, poles may be noticed. Pendulum clocks may stop.	0.035–0.092 *g*
VI	Felt by all, many frightened and run outdoors. Some heavy furniture moved; and fallen plaster or damaged chimneys. Damage slight.	0.092–0.18 *g*
VII	Everybody runs outdoors. Damage negligible in buildings of good design and construction; slight to moderate in well-built ordinary structures; considerable in poorly built or badly designed structures; some chimneys broken. Noticed by persons driving motor cars.	0.18–0.34 *g*
VIII	Damage slight in specially designed structures; considerable in ordinary substantial buildings, with partial collapse; great in poorly built structures. Panel walls thrown out of frame structures. Fall of chimneys, factory stacks, columns, monuments, walls. Heavy furniture overturned. Sand and mud ejected in small amounts. Changes in well water. Persons driving motor cars disturbed.	0.34–0.65 *g*
IX	Damage considerable in specially designed structures; well-designed frame structures thrown out of plumb; great in substantial buildings, with partial collapse. Buildings shifted off foundations. Ground cracked conspicuously. Underground pipes broken.	0.65–1.24 *g*
X	Some well-built wooden structures destroyed; most masonry and frame structures destroyed with foundations; ground badly cracked. Rails bent. Landslides considerable from riverbanks and steep slopes. Shifted sand and mud. Water splashed (slopped) over banks.	>1.24 *g*
XI	Few, if any, (masonry) structures remain standing. Bridges destroyed. Broad fissures in ground. Underground pipelines completely out of service. Earth slumps and land slips in soft ground. Rails bent greatly.	>1.24 *g*
XII	Damage total. Practically all works of construction are damaged greatly or destroyed. Waves seen on ground surface. Lines of sight and level are distorted. Objects are thrown upward into the air.	>1.24 *g*

NOTE:
a. Value is expressed as a fraction of the acceleration due to gravity (*g*). Gravity *(g*) is 9.8 meters per second squared. 1.0 *g* of acceleration is a rate of increase in speed equivalent to a car traveling 328 feet from rest in 4.5 seconds.

SOURCES: ABAG 2003; CGS 2002

[1] The damage level represents the estimated overall level of damage that will occur for various MM intensity levels. The damage, however, will not be uniform. Not all buildings perform identically in an earthquake. The age, material, type, method of construction, size, and shape of a building all affect its performance.

Regional Faulting and Seismic Hazards

San Joaquin County is in a region that lies between two areas of seismic activity. The active faults associated with the San Andreas Fault System of the greater San Francisco Bay Area lie west of the county line, with the Marsh Creek-Greenville active fault located immediately west of the southern tip of the county. To the east lies a regional shear zone associated with the Sierra Nevada foothills known as the Foothills Fault System. Other active faults associated with the San Andreas Fault System include the Concord, Calaveras, Hayward, and the San Andreas faults (see **Table 3.9-2**). All of these faults are capable of causing ground shaking that could potentially be felt within the county. The Foothills Fault System consists of a complex collection of fault segments that have not been classified as active. There are no active faults located within San Joaquin County.

TABLE 3.9-2
ACTIVE FAULTS IN THE VICINITY OF SAN JOAQUIN COUNTY

Fault	Distance and Direction from County line	Recovery of Movement[a]	Future Earthquake Probability[b]	Historical Seismicity	Maximum Movement Magnitude Earthquake (Mw)[c]
Marsh Creek-Greenville	~1 mile southwest	Historic	3 %	M 5.6 in 1980	6.9
Calaveras	15 miles southwest	Historic	7 %	M 5.6–M 6.4 in 1861 M 6.2 in 1911 and 1984	6.8
Hayward	18 miles southwest	Historic	31 %	M 6.8 in 1868 Many <M 4.5	7.1
Mt. Diablo Thrust	20 miles west	Historic	3 %	Historic active creep	6.6
Concord-Green Valley	25 miles northeast	Historic	3 %	1955 - active creep	6.2
San Andreas (Peninsula Section)	35 miles southwest	Historic	21 %	M 7.1 in 1989 M 7.8 in 1906 M 7.0 in 1838 Many <M 6	7.9
Foothills Fault System (Sierra Nevada)	~10 miles east	Potentially Active	n/a	n/a	6.5

NOTES: CDMG = California Division of Mines and Geology; CGS = California Geological Survey; USGS = U.S. Geological Survey
a. From CGS (2010), historic refers to the post-colonial era (after 1775), the Holocene is from 11,000 years ago to present.
b. Probability of one or more earthquakes of magnitude 6.7 or greater in the next 30 years from the USGS (2008). The USGS estimates the probability of a "background" earthquake not from one of the seven major faults studied to be 9 percent.
c. The Maximum Moment Magnitude Earthquake is derived from the joint CDMG/USGS Probabilistic Seismic Hazard Assessment for the State of California (Peterson et al. 1996)

SOURCES: Bryant and Hart 2007; CGS 2010; USGS 2008; Peterson et al. 1996.

Seismic hazards are generally classified under two categories: primary seismic hazards (surface fault rupture and ground shaking) and secondary seismic hazards (liquefaction[2] and other types of seismically induced ground failure, along with seismically induced landslides). Periodic earthquakes and any

[2] Liquefaction is the process by which saturated, loose, fine-grained, granular, soil, like sand, behaves like a dense fluid when subjected to prolonged shaking during an earthquake.

associated secondary seismic hazards can be expected to occur to some degree in the proposed project area through the lifetime of the proposed project.

The U.S. Geological Survey (USGS) along with the California Geological Survey and the Southern California Earthquake Center formed the 2007 Working Group on California Earthquake Probabilities, which has evaluated the probability of one or more earthquakes of magnitude 6.7 or higher occurring in the State of California over the next 30 years. The result of the evaluation indicated a 63 percent likelihood that such an earthquake event will occur in the San Francisco Bay Area (USGS 2008).

Ground Shaking

Strong ground shaking from a major earthquake could affect the county during the next 30 years. Earthquakes on the active faults (listed in Table 3.9-2) are expected in the future and could produce a range of ground shaking intensities in the county depending on a variety of parameters. Ground shaking may affect areas hundreds of miles distant from the earthquake's epicenter. The common way to describe ground motion during an earthquake is with the motion parameters of acceleration and velocity in addition to the duration of the shaking. A common measure of ground motion is the peak ground acceleration (PGA). The PGA for a given component of motion is the largest value of horizontal acceleration obtained from a seismograph. PGA is expressed as the percentage of the acceleration due to gravity (*g*), which is approximately 980 centimeters per second squared. In terms of automobile accelerations, one "*g*" of acceleration is a rate of increase in speed equivalent to a car traveling 328 feet from rest in 4.5 seconds. For comparison purposes, the maximum peak acceleration value recorded during the Loma Prieta earthquake was in the vicinity of the epicenter, near Santa Cruz, at 0.64 *g*.

Liquefaction

Liquefaction is a transformation of soil from a solid to a liquefied state during which saturated soil temporarily loses strength resulting from the buildup of excess pore water pressure, especially during earthquake-induced cyclic loading. Soil susceptible to liquefaction includes loose to medium dense sand and gravel, low-plasticity silt, and some low-plasticity clay deposits. Four kinds of ground failure commonly result from liquefaction: lateral spread, flow failure, ground oscillation, and loss of bearing strength. Lateral spreading is the horizontal displacement of surficial blocks of sediments resulting from liquefaction in a subsurface layer that occurs on slopes ranging between 0.3 and 3 percent and commonly displaces the surface by several meters to tens of meters. Flow failures occur on slopes greater than 3 percent and are primarily liquefied soil or blocks of intact material riding on a liquefied subsurface zone. Ground oscillation occurs on gentle slopes when liquefaction occurs at depth, and no lateral displacement takes place. Soil units that are not liquefied may pull apart from each other and oscillate on the liquefied zone. The loss of bearing pressure can occur beneath a structure when the underlying soil loses strength and liquefies. When this occurs, the structure can settle, tip, or even become buoyant and "float" upward. Liquefaction and associated failures could damage foundations, roads, underground cables, and pipelines which could disrupt utility service.

In addition, liquefaction can occur in unconsolidated or artificial fill sediments and other reclaimed areas along the margin of San Francisco Bay. The depth to groundwater influences the potential for liquefaction, in that sediments need to be saturated to have a potential for liquefaction.

The probability of soil liquefaction taking place in the proposed project area is considered to be a low to moderate hazard, due to the distance from active fault zones.

Earthquake-Induced Settlement

Settlement of the ground surface can be accelerated and accentuated by earthquakes. During an earthquake, settlement can occur as a result of the relatively rapid compaction and settling of subsurface materials (particularly loose, uncompacted, and variable sandy sediments above the water table) due to the rearrangement of soil particles during prolonged ground shaking. Settlement can occur both uniformly and differentially (i.e., where adjoining areas settle at different amounts). Areas underlain by artificial fill are generally more susceptible to this type of settlement.

Mineral Resources

Mineral resources within San Joaquin County consist primarily of sand and gravel aggregate, with limited mining of peat, gold, and silver. In the past, placer gold deposits have been found in many San Joaquin County rivers and creeks. These deposits were dredged for gold by independent operators in the years following the 1849 gold rush. Significant gold deposits are believed to be fully extracted, and today gold is found only as a secondary product of sand and gravel processing. The mining extent of silver and silver reserves within the county is unknown. Mining operations existing within the county are related to sand and gravel aggregate operations. Resource recovery sites, or areas where important resource recovery sites could potentially be located, are designated by the California Geological Survey (CGS) as MRZ-2 or MRZ-3, or as being underlain by Quaternary alluvium. In San Joaquin County, large swaths of land underlying Lathrop, Manteca, and Tracy are classified as potential resources. (San Joaquin County 2016)

Aggregate is a mixture of sand, gravel, and crushed stone that is used to give bulk and strength to Portland cement concrete (PCC), asphaltic concrete (AC), plaster, and stucco, and is also used on golf courses (brown sand). These materials are used extensively in road and building construction. Due to the expense of transporting aggregate, locating easily accessible, high-grade aggregate deposits is vital to the continued growth of the county.

Aggregate deposits are typically encountered in channel, floodplain, and alluvial fan deposits. Extraction of aggregate is disruptive to other nearby land uses due to extensive overburden removal and heavy equipment use. Because aggregate mines produce dust, vibration, visual blight, and noise, they generally are located away from areas with sensitive uses (e.g., schools and residential areas).

Mining activities are monitored by the Division of Mine Reclamation and San Joaquin County Public Works Department to ensure compliance with applicable laws, to promote reclamation that is cost-effective and beneficial to end-uses, and to protect public health and safety. As of 2013, the Division of Mine Reclamation identified a total of 41 mining sites within San Joaquin County, with 13 active mines and four newly permitted mines. The remaining mines are either closed or idle. Nearly all of the mines listed are related to the extraction and processing of sand and gravel aggregate and are located near sand and gravel deposits in the southwest and northeast areas of the county. Aggregate deposits are most commonly found in channel, floodplain, and alluvial fan deposits. Aggregate is used extensively in road and building construction, and consists of sand, gravel, and crushed stone. Aggregate is a common component in PCC, AC, plaster, and stucco, providing from 80 to 100 percent of the material volume, and may be used on golf courses as brown sand. Aggregate materials are essential for maintaining existing

infrastructure, as well as providing materials for new construction. As a low–unit value, high-bulk weight commodity, it is costly to transport, quickly exceeding its unit value when hauled for long distances, increasing fuel consumption, construction costs, greenhouse gas emissions, and air pollution. For this reason, locally accessible supplies of high-quality aggregate deposits are important to support future growth. In addition, competing land uses can constitute an impediment to finding suitable sites for new mines. For example, permanent open space easements, which often exist in prime aggregate extraction areas, can permanently preclude future extraction of mineral resources.

The CGS conducted a statewide survey of aggregate production in 2006. The survey estimated that in the Corral Hollow Creek production district, near Tracy and Manteca, between 5 and 10 million tons of aggregate are produced each year. Districts near Lathrop and south of Manteca are estimated to generate 0.5 to 2 million tons of aggregate annually. In the northeastern portion of San Joaquin County, the Mokelumne River district is also estimated to produce between 0.5 and 2 million tons of aggregate annually (Mintier Harnish 2009).

Paleontological Resources

Paleontological resources, or fossils, are the evidence of once-living organisms preserved in the rock record. They include both the fossilized remains of ancient plants and animals and the traces thereof (e.g., trackways, imprints, burrows). Fossils greater than 5,000 years old (i.e., older than middle Holocene in age) may be considered potential paleontological resources and are typically preserved in sedimentary rocks. Although they are rare, fossils can also be preserved in volcanic rocks and low-grade metamorphic rocks under certain conditions. Fossils occur in a non-continuous and often unpredictable distribution within some sedimentary units, and the potential for fossils to occur within sedimentary units depends on several factors.

The Society of Vertebrate Paleontology (SVP) has established standard guidelines that outline professional protocols and practices for conducting paleontological resource assessments and surveys; monitoring and mitigation; data and fossil recovery; sampling procedures; and specimen preparation, identification, analysis, and curation (SVP 2010). Most practicing professional vertebrate paleontologists adhere closely to the SVP's assessment, mitigation, and monitoring requirements as provided in its standard guidelines.

Paleontological sensitivity is defined as the potential for a geologic formation to produce scientifically significant fossils. This is determined by rock type, past history of the geologic unit in producing significant fossils, and fossil localities recorded from that unit. Paleontological sensitivity is derived from the known fossil data collected from the entire geologic unit, not just from a specific survey. In its Standard Procedures for the Assessment and Mitigation of Adverse Impacts to Non-renewable Paleontologic Resources, the SVP (2010:1–2) defines four categories of paleontological sensitivity (potential) for rock units: high, low, undetermined, and no potential:

- **High Potential.** Rock units from which vertebrate or significant invertebrate, plant, or trace fossils have been recovered are considered to have a high potential for containing additional significant paleontological resources. Rock units classified as having high potential for producing paleontological resources include, but are not limited to, sedimentary formations and some volcaniclastic formations (e.g., ashes or tephras), and some low-grade metamorphic rocks that contain significant paleontological resources anywhere within their geographical extent, and sedimentary rock

units temporally or lithologically suitable for the preservation of fossils (e.g., middle Holocene and older, fine-grained fluvial sandstones, argillaceous and carbonate-rich paleosols, cross-bedded point bar sandstones, fine-grained marine sandstones).

- **Low Potential.** Reports in the paleontological literature or field surveys by a qualified professional paleontologist may allow determination that some rock units have low potential for yielding significant fossils. Such rock units will be poorly represented by fossil specimens in institutional collections or based on general scientific consensus only preserve fossils in rare circumstances and the presence of fossils is the exception, not the rule (e.g., basalt flows or recent colluvium). Rock units with low potential typically will not require impact mitigation measures to protect fossils.
- **Undetermined Potential.** Rock units for which little information is available concerning their paleontological content, geologic age, and depositional environment are considered to have undetermined potential. Further study is necessary to determine whether these rock units have high or low potential to contain significant paleontological resources. A field survey by a qualified professional paleontologist to specifically determine the paleontological resource potential of these rock units is required before a paleontological resource impact mitigation program can be developed. In cases where no subsurface data are available, paleontological potential can sometimes be determined by strategically located excavations into subsurface stratigraphy.
- **No Potential.** Some rock units have no potential to contain significant paleontological resources—for instance, high-grade metamorphic rocks (such as gneisses and schists) and plutonic igneous rocks (such as granites and diorites). Rock units with no potential require neither protection nor impact mitigation measures relative to paleontological resources.

For geologic units with high potential, full-time monitoring is generally recommended during any project-related ground disturbance. For geologic units with low potential, protection or salvage efforts will not generally be required. For geologic units with undetermined potential, field surveys by a qualified vertebrate paleontologist should be conducted to specifically determine the paleontological potential of the rock units present within the study area.

As indicated by geologic mapping, the surficial geology in the majority of the proposed project area is underlain by Holocene flood plain deposits (CGS 2023). In addition, ecosystem restoration Site 13 is underlain by Late Pleistocene alluvium deposits from the Modesto Formation, Holocene to Late Pleistocene dune sand deposits, and Holocene basin deposits.

The Modesto Formation dates to the Late Pleistocene (approximately 125,000–9,000 years before present). The Modesto Formation has been studied in the San Joaquin Valley, where it has been interpreted as river terrace deposits consisting of arkosic gravel, sand, and silt. Based on a search of the University of California Museum of Paleontology (UCMP) fossil locality online database and available scientific literature, the Modesto Formation is known to contain significant paleontological resources. Further, Pleistocene-age deposits are generally considered to have a high potential to contain significant paleontological resources, given the abundance of previous fossil discoveries throughout California. The Holocene-age alluvial deposits are too young to have preserved significant fossils; however, the deeper, older layers of these deposits date to the Late Pleistocene age and do have the potential to contain significant paleontological resources.

The available records from the UCMP fossil locality online database indicates that there have been vertebrate fossil discoveries within the Modesto Formation in San Joaquin County and in neighboring counties (UCMP 2025). The UCMP database lists a few location names, but the exact locations are not provided because they are considered confidential. The locations of some of these discoveries can be inferred by locality name listed in the UCMP database and are near the proposed project area. Three vertebrate fossil localities were discovered during construction for the South Stockton Six-Lane Project, which occurred approximately 6 miles east of the proposed project area. Two vertebrate fossil localities were discovered near Mormon Slough, approximately 3 miles northeast of the proposed project area. Additionally, two vertebrate fossil localities were discovered in the Holocene-age sediments near CCRC Farms, approximately 13 miles west of the proposed project area. There are no records in the online database that suggest the presence of fossil localities within the proposed project area (UCMP 2025).

Although there is no indication of previous fossil discoveries within the proposed project area, given the presence of the Modesto Formation deposits and other previous finds in the area, the deposits underlying the proposed project area are considered to have a high potential to contain significant vertebrate fossils.

3.9.3 Regulatory Setting

The following laws, statutes, regulations, codes, and policies would apply to the proposed project and are defined as standard conditions for the proposed project.

Federal

Earthquake Hazards Reduction Act

The Earthquake Hazards Reduction Act was enacted in 1997 to "reduce the risks to life and property from future earthquakes in the United States through the establishment and maintenance of an effective earthquake hazards and reduction program." To accomplish this, the Act established the National Earthquake Hazards Reduction Program (NEHRP). This program was significantly amended in November 1990, and refined the description of agency responsibilities, program goals, and objectives.

NEHRP's mission includes improved understanding, characterization, and prediction of hazards and vulnerabilities; improvement of building codes and land use practices; risk reduction through post-earthquake investigations and education; development and improvement of design and construction techniques; improvement of mitigation capacity; and accelerated application of research results. The NEHRP designates the Federal Emergency Management Agency as the lead agency of the program and assigns it several planning, coordinating, and reporting responsibilities. Programs under NEHRP help inform and guide planning and building code requirements such as emergency evacuation responsibilities and seismic code standards such as those to which the proposed project would be required to adhere.

State

Alquist-Priolo Earthquake Fault Zoning Act

The Alquist-Priolo Earthquake Fault Zoning Act was passed in 1972 to protect structures for human occupancy from the hazard of surface faulting. In accordance with the Alquist-Priolo Earthquake Fault Zoning Act, the State Geologist has established regulatory zones—called earthquake fault zones—around the surface traces of active faults and has published maps showing these zones. However, the Alquist-

Priolo Earthquake Fault Zoning Act would not apply to the proposed project because the proposed project area is not within an Alquist-Priolo Earthquake Fault Zone.

Seismic Hazards Mapping Act

The Seismic Hazards Mapping Act was passed in 1990 following the Loma Prieta earthquake to reduce threats to public health and safety and to minimize property damage caused by earthquakes. This Act requires the State Geologist to delineate various seismic hazard zones, and cities, counties, and other local permitting agencies to regulate certain development projects within these zones (CGS 2008). The CGS is in the process of producing official maps based on USGS topographic quadrangles. To date, the CGS has not prepared delineations for the USGS quadrangles in which proposed project elements are proposed, and the sites are not within a designated seismic hazard zone. Therefore, the proposed project is not subject to the Seismic Hazards Mapping Act.

California Building Code

The California Building Code (CBC) has been codified in the California Code of Regulations as Title 24, Part 2. Title 24 is administered by the California Building Standards Commission, which, by law, is responsible for coordinating all building standards. Under state law, all building standards must be centralized in Title 24 or they are not enforceable. The purpose of the CBC is to establish minimum standards to safeguard the public health, safety, and general welfare through structural strength, means of egress facilities, and general stability by regulating and controlling the design, construction, quality of materials, use and occupancy, location, and maintenance of all building and structures within its jurisdiction. The 2022 CBC contains California amendments based on the American Society of Civil Engineers (ASCE) Minimum Design Standard ASCE/SEI 7-16, Minimum Design Loads for Buildings and Other Structures, provides requirements for general structural design and includes means for determining earthquake loads3 as well as other loads (such as wind loads) for inclusion into building codes. Seismic design provisions of the building code generally prescribe minimum lateral forces applied statically to the structure, combined with the gravity forces of the dead and live loads of the structure, which the structure then must be designed to withstand. The prescribed lateral forces are generally smaller than the actual peak forces that would be associated with a major earthquake. Consequently, structures should be able to (1) resist minor earthquakes without damage; (2) resist moderate earthquakes without structural damage but with some nonstructural damage; and (3) resist major earthquakes without collapse, but with some structural as well as nonstructural damage. Conformance to the current building code recommendations does not constitute any kind of guarantee that significant structural damage would not occur in the event of a maximum magnitude earthquake; however, it is reasonable to expect that a structure designed in accordance with the seismic requirements of the CBC should not collapse in a major earthquake.

National Pollutant Discharge Elimination System Construction General Permit

Construction associated with the proposed project would disturb more than 1 acre of land surface affecting the quality of stormwater discharges into waters of the United States. The proposed project would therefore be subject to the National Pollutant Discharge Elimination System *(NPDES) General Permit for Stormwater Discharges Associated with Construction and Land Disturbance Activities* (Order WQ 2022-0057-DWQ, NPDES No. CAS000002), also referred to as the Construction General Permit.

[3] A load is the overall force to which a structure is subjected in supporting a weight or mass, or in resisting externally applied forces. Excess load or overloading may cause structural failure.

The Construction General Permit regulates discharges of pollutants in stormwater associated with construction activity to waters of the United States from construction sites that disturb 1 acre or more of land surface, or that are part of a common plan of development or sale that disturbs more than 1 acre of land surface. The Construction General Permit requires the development and implementation of a storm water pollution prevention plan (SWPPP) that includes specific construction best management practices (BMPs) designed to prevent sediment and pollutants from contacting stormwater from moving off-site into receiving waters. The BMPs fall into several categories—erosion control, sediment control, waste management, and good housekeeping—and are intended to protect surface water quality by preventing the off-site migration of eroded soil and construction-related pollutants from the construction area. Refer to Section 3.12, *Hydrology and Water Quality,* for a detailed description of NPDES permits.

Assembly Bill 1200

Assembly Bill (AB) 1200 required the DWR to report to the Legislature and Governor on the potential impacts of Delta levee failures from seismic and other sources. AB 1200 also required that options to reduce the risk and options to restore the Delta estuary and the ecosystem that it supports be addressed. The resultant Delta Risk Management Strategy (DRMS) produced a report based on the requirements of AB 1200 that was submitted to the legislature in January 2008. The Phase 1 report provides information on the risk to levee stability from various hazards including subsidence, earthquakes, floods, and climate change (DWR 2009). Knowledge gained from the Phase 1 Risk Analysis Report was used in the June 2011 Phase 2 report to develop improvement strategies that would increase the reliability of the Delta levees that present the highest risks. The objectives of the DRMS Phase 2 report were to evaluate the risks and consequences to the state and the Delta associated with the failure of Delta levees considering their exposure to all hazards (seismic, flood, subsidence, seepage, sea level rise) under present and foreseeable future conditions.

Senate Bill 27

Senate Bill (SB) 27 makes several findings and declarations regarding the value of the Delta and the environmental risks to the Delta's many uses in light of the changing climatic, hydrologic, environmental, seismic, and land use conditions. It evaluates options for an improved conveyance system within the Delta and plans to implement a program for sustainable management of the Delta. Key features include investing in essential emergency preparedness, funding projects that will aid sustainability, identifying critical levees that must be strengthened to protect the uses of the Delta, and commencing restoration projects to improve habitat conditions.

Surface Mining and Reclamation Act of 1975

The Surface Mining and Reclamation Act (California Public Resources Code, Sections 2710–2796) provides a comprehensive surface mining and reclamation policy with the regulation of surface mining operations to assure that adverse environmental impacts are minimized and mined lands are reclaimed to a usable condition. The Surface Mining and Reclamation Act mandated the initiation by the State Geologist of mineral land classification (MRZs) in order to help identify and protect mineral resources in areas within the state subject to urban expansion or other irreversible land uses which would preclude mineral extraction.

Paleontological Resources–Regulations – California Public Resources Code

Paleontological resources are the fossilized remains of organisms from prehistoric environments found in geologic strata. They range from mammoth and dinosaur bones to impressions of ancient animals and plants, trace remains, and microfossils. California Public Resources Code Section 5097.5 stipulates that the unauthorized removal or destruction of a vertebrate paleontological site on public lands is a misdemeanor.

Local

The proposed project area includes lands in San Joaquin County and the cities of Stockton, Lathrop, and Manteca. Each of these jurisdictions have general plans with goals and policies that address the potential hazards caused by seismic activity and preservation of mineral and paleontological resources. (see **Table 3.9-3**). Applicable general plan goals and policies are summarized below along with relevant local regulations.

TABLE 3.9-3
APPLICABLE GENERAL PLAN GOALS AND POLICIES – GEOLOGY, SOILS, AND MINERAL RESOURCES

General Plan	Goals and Policies
San Joaquin County	Public Health and Safety Element, Policies PHS-2.15, PHS-2.17, PHS-3.1, PHS-3.5, PHS-3.6, PHS-3.7, PHS-3.8, and NCR-4.1
City of Stockton	Safety Element, Policies SAF-2.4, SAF-2.4D, LU-5.2D, and LU-5.2G
City of Lathrop	Geology and Soils Goals and Policies, PS-1.2, PS-1.3, PS-1.4, PS-1.6, PS-1.8, RR-3, RR-3.1, and RR-5.2
City of Manteca	Safety Element, Geologic and Seismic Hazards Section, S-2.2, S-2.3, S-2.4, S-2.6, S-2.7, and RC-9

SOURCES: City of Lathrop 2022; City of Manteca 2024; City of Stockton 2018; San Joaquin County 2016

San Joaquin County

San Joaquin County General Plan

The Public Health and Safety Element of the San Joaquin County 2035 General Plan include goals and policies related to seismic hazards, soils, and mineral resources that are relevant to the proposed project. Relevant goals and policies address the risk to human safety and property from seismic and geologic hazards; state and federal requirements to improve and maintain flood control facilities to withstand seismic and geologic impacts; proposed structures, utilities, or public facilities within county-recognized areas of near-surface subsidence or liquefaction be located and constructed in a manner that minimizes or eliminates potential damage; promote regional and local efforts to reduce subsidence in the Delta; encourage the planting of vegetation to decrease loss of soil by erosion; support soil conservation and restoration efforts of the U. S. Soil Conservation Service and the Resource Conservation Districts.

City of Stockton

Envision Stockton 2040 General Plan

The Safety chapter of the Envision Stockton 2040 General Plan includes goals, policies, and supporting actions related to seismic and geologic hazards that are relevant to the proposed project. Relevant goals,

policies, and supporting actions address to reduce the potential harm from earthquakes and geologic hazards; and to continue implementing CBC seismic safety standards for construction of new buildings.

City of Lathrop

City of Lathrop General Plan

The City of Lathrop General Plan includes goals and policies that address potential impacts caused by seismic events. The General Plan policies and actions address state seismic design standards and guidelines and all relevant building codes to reduce the risk of damage associated with seismic activity; require special site-specific studies for development projects and city improvement projects to determine the nature and extent of possible liquefaction, landslides, and geologic hazards, and to identify engineering and development siting measures to permit development to occur; require professional inspection of foundation, excavation, earthwork, and other geotechnical aspects of site development during constructions on those sites specified in geotechnical studies as being prone to seismic or geologic hazard; require all structures located within areas containing expansive soils to be designed and engineered to comply with Title 24 of the California Code of Regulations; and ensure that all public facilities are structurally sound and able to withstand seismic shaking and the effects of seismically induced ground failure, consistent with the CBC and other applicable standards.

City of Manteca

City of Manteca General Plan

The City of Manteca General Plan includes goals, policies, and implementation measures designed to protect and enhance the public health and safety of Manteca residents, property, and environment. Relevant goals and policies addressing seismic and geologic hazards include to regulate development in areas of seismic and geologic hazards to reduce risks to life and property associated with earthquakes, liquefaction, erosion, and expansive soils; new development will be required to mitigate the potential impacts of geologic and seismic hazards, including uncompacted fill, liquefaction, and subsidence, through the development review process; require professional inspection of foundation, excavation, earthwork, and other geotechnical aspects of site development during construction on those sites specified in geotechnical studies as being prone to moderate or greater levels of seismic or geologic hazard; and ensure that all public facilities are structurally sound and able to withstand seismic shaking and the effects of seismically induced ground failure, consistent with the CBC and other applicable standards.

3.9.4 Impacts and Mitigation Measures

Methods of Analysis

The impact analysis identifies specific impacts of the change caused by subdividing and construction of existing large industrial lots at the site of the proposed project and the effects on existing geologic, soil, and seismic conditions that could result through implementation of the proposed project. The analysis of proposed project impacts is based on the significance criteria listed below.

Thresholds of Significance

In accordance with Appendix G of the CEQA Guidelines, an impact is considered significant if the proposed project would:

- Expose people or structures to potential substantial adverse effects, including risk of loss, injury or death involving:
  - 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;
  - Strong seismic ground shaking;
  - Seismic-related ground failure, including liquefaction; and/or
  - Landslides or levee failures.
- Result in substantial soil erosion or the loss of topsoil.
- 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.
- Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code creating substantial risks to life or property.
- 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.
- Result in the loss of availability of a known mineral resource that would be a value to the region and the residents of the state.
- Result in the loss of availability of a locally important mineral resource recovery site delineated on a local general plan, specific plan, or other land use plan.
- Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature.

Impacts Not Further Evaluated

Risk of loss, injury, or death involving fault rupture.

The proposed project would not directly or indirectly cause or expose people or structures to injury, death, or damage from fault rupture because none of the components intersect any active faults, as determined by CGS mapping performed in accordance with the Alquist-Priolo Earthquake Fault Zoning Act. Therefore, this significance criterion is not applicable to the proposed project and is not discussed further.

Have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems

Implementation of the proposed project would not include the use of septic tanks or alternative wastewater disposal systems, and therefore, would have no impact on the support capacity of affected soils. For these reasons, this criterion is not applicable to the proposed project.

Impacts and Mitigation Measures

Table 3.9-4 summarizes the impact conclusions presented in this section.

TABLE 3.9-4
SUMMARY OF IMPACT CONCLUSIONS – GEOLOGY, SOILS, AND MINERAL RESOURCES

Impact Statement	Flood Risk Reduction Components	Restoration Sites 13, 14, and 16	Other Multi-Benefit Components
3.9-1: Implementation of the proposed project could expose people or structures to potential substantial adverse effects involving strong seismic ground shaking; seismic-related ground failure, including liquefaction; and landslides.	LS	LS	LS
3.9-2: Implementation of the proposed project could result in substantial soil erosion or the loss of topsoil.	LS	LS	LS
3.9-3: The proposed project could be located on a geologic unit or soil that is unstable as a result of the proposed project, potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction or collapse, or be located on expansive or corrosive soils that could result in structural damage.	LS	LS	LS
3.9-4: Implementation of the proposed project could result in the loss of availability of a known mineral resource or recovery site that would be of value to the region and the residents of the state.	LS	LS	LS
3.9-5: Implementation of the proposed project could directly or indirectly destroy a unique paleontological resource or site or unique geologic feature.	LSM	LSM	LSM

NOTES: LS = Less than Significant; LSM = Less than Significant with Mitigation

Impact 3.9-1: Implementation of the proposed project could expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving strong seismic ground shaking; seismic-related ground failure, including liquefaction; and landslides.

Flood Risk Reduction Components

The proposed flood risk reduction components include raising the height of levees along portions of the existing levee alignment, construction of a dryland levee extension and drained seepage berm, placement of riprap rock slope protection, and various staging areas. O&M activities would consist of inspections, weed abatement, removal of encroachments and high-hazard vegetation to ensure levee integrity, replacement and re-working of displaced or launched revetment following large flood events, and adequate levee access along the levee toe road. O&M inspections would consist of a patrol vehicle traveling along the levee and small machinery for weed abatement such as mowers and weed whackers/ trimmers.

The proposed project area is at relatively low risk of fault-related surface disturbance, including ground shaking. However, there could be a risk of failure if one should occur which could expose people or structures to flooding in the event one of the proposed flood risk reduction components fails during a seismic event. However, proposed rehabilitation and improvement of existing levees would be designed to comply with regulatory standards of USACE and CVFPB, the latest industry standards and building code requirements for seismic design. The design and construction of the cut-off walls, floodwalls and/or levees would meet or exceed applicable design standards for static and dynamic stability, seismic ground shaking, liquefaction, subsidence, and seepage, minimizing the potential for significant damage.

In addition, the proposed flood risk reduction components would implement standard grading and soil engineering practices to ensure that foundations are adequately supported and do not settle or otherwise fail. This includes excavating the existing soils and replacing it with compacted engineered fill. Therefore, with compliance with the mandatory regulatory requirements this impact would be **less than significant**.

Restoration Sites 13, 14, and 16 and Other Multi-benefit Components

Proposed ecosystem restoration features at Sites 13, 14, and 16 would include excavated floodplains, floodplain side channels, brush mat, habitat wood structures, willow baffles, and upland brush piles. The proposed project also includes implementation of other multi-benefit components including additional ecosystem restoration sites, and recreation features along the levee system. Construction of proposed ecosystem restoration and recreation features would include site preparation, development of proposed project components, and hauling of materials. Regular O&M would include inspections, weed abatement, vegetation management, and levee access for flood-fighting purposes.

These activities are not anticipated to exacerbate the exposure of people or structures to substantial adverse effects related to seismic hazards. The proposed project area is considered to be at relatively low risk of fault-related surface disturbance, including ground shaking. Additionally, compliance with applicable mandatory regulatory requirements would further reduce the potential for impacts related to seismic shaking and seismically induced ground failure. Therefore, this impact would be **less than significant**.

Mitigation Measures

Mitigation Measures (FRR/RS/MB): None required.

Impact 3.9-2: Implementation of the proposed project could result in substantial soil erosion or the loss of topsoil.

All Project Components

Construction of proposed project components would involve site preparation, grading, backfilling, compaction, and other earthmoving activities that could result in increased rates and amounts of erosion and or the loss of topsoil. Because the overall footprint of construction activities would exceed 1 acre, construction of the proposed project components would be required to comply with the *NPDES General Permit for Discharges of Storm Water Runoff Associated with Construction and Land Disturbance Activities* (Order WQ 2022-0057-DWQ, NPDES No. CAS000002), or Construction General Permit. These statutes were developed to ensure that erosion is controlled on construction sites. The Construction General Permit requires preparation and implementation of a SWPPP, which includes application of BMPs required for all projects. Additional measures may also be required, as determined necessary by the QSD, to control stormwater run-on/runoff and sediment. These measures would include steps to reduce temporary increases in erosion during construction activities. As a result, this impact would be **less than significant**.

Mitigation Measures

Mitigation Measures (FRR/RS/MB): None required.

Impact 3.9-3: The proposed project could be located on a geologic unit or soil that is unstable, or that could become unstable as a result of the proposed project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction or collapse, or be located on expansive or corrosive soils that could result in structural damage.

All Project Components

As described under Impact 3.9-1, flood risk reduction components would be constructed to meet current engineering specifications that meet seismic safety levels for this region. In addition, the ecosystem restoration sites and multi-benefit components would comply with existing regulations and policies that address seismic-related safety issues (i.e., San Joaquin County General Plan Policies PHS-2.15 Seismic Impacts to Flood Control Facilities, and PHS-3.1 Consider Geologic Hazards for New Development) and required adherence to requirements of the CBC and city design standards. The proposed project area is generally flat, which greatly minimizes the potential for landslides to occur. The potential for liquefaction throughout the proposed project area could vary and would depend on site-specific data including depth to groundwater and composition of underlying materials. Other factors such as topography and density of subsurface materials would also heavily influence any potential for lateral spreading or earthquake-induced settlement. Soils on in the proposed project area and the depth to the groundwater provide little potential for liquefaction ground failures such as lateral spreading, subsidence, or ground collapse to occur. Therefore, this impact would be **less than significant**.

Mitigation Measures

Mitigation Measures (FRR/RS/MB): None required.

Impact 3.9-4: Implementation of the proposed project could result in the loss of availability of a known mineral resource or recovery site that would be of value to the region and the residents of the state.

All Project Components

The principal mineral resources in San Joaquin County are deposits of sand and gravel aggregate, and many companies are currently mining and processing these deposits as regulated by the state and County. Portions of the proposed project area overlay the MRZ-2 zone as defined by the San Joaquin County General Plan (San Joaquin County 2016). None of the existing sand and gravel mining or processing operations are located at proposed project component sites. While the specific locations of the other multi-benefit components are not known, the implementation of ecosystem restoration sites would not prohibit the future utilization of existing mineral resources as they would still be accessible because there would be no constructed facilities. Proposed recreation components would be constructed primarily on top of levees and within existing right of ways and would not be expected to prohibit access to any underlying mineral resources. Therefore, proposed project would not reduce or eliminate availability of mineral resources. Therefore, the potential loss of locally or regionally significant mineral resources would be **less than significant**.

Mitigation Measures

Mitigation Measures (FRR/RS/MB): None required.

Impact 3.7-5: Implementation of the proposed project could directly or indirectly destroy a unique paleontological resource or site or unique geologic feature.

All Project Components

Geologic mapping indicates that the surficial deposits underlaying the fix-in-place levee improvements, Sites 14 and 16, and the other multi-benefit components consist primarily of Holocene-age flood plain deposits. These deposits are generally considered to have low potential to contain significant paleontological resources; however, the deeper, older layers of these deposits date to the Late Pleistocene age and may have the potential to contain significant paleontological resources. However, the fix-in-place levee improvements and associated multi-benefit components would be located in previously disturbed areas that were excavated for development of the existing levee, and much of the excavation for development of the ecosystem restoration sites would be too shallow to reach the older Late Pleistocene deposits. Therefore, there would be low potential to encounter paleontological resources during construction of these components.

Portions of the proposed project area (i.e., the dryland levee extension and Site 13) are underlain by alluvium deposits from the Modesto Formation. Because of past fossil discoveries in San Joaquin County (and throughout California) within the Modesto Formation, these deposits are considered to have a high potential to contain significant paleontological resources. Therefore, excavation activities associated with construction of proposed project components could result in exposure of buried paleontological resources and this impact would be **significant**.

Mitigation Measures

Mitigation Measure 3.9-1a (FRR/RS/MB):

Prior to the start of any ground-disturbing activities, a Qualified Paleontologist shall conduct pre-construction worker paleontological resources sensitivity training. The training shall include information on what types of paleontological resources could be encountered during excavations, what to do in case an unanticipated discovery is made by a worker, and laws protecting paleontological resources. All construction personnel shall be informed of the possibility of encountering fossils and instructed to immediately inform the construction foreperson or supervisor if any bones or other potential fossils are unexpectedly unearthed in an area where a paleontological monitor is not present.

Mitigation Measure 3.9-1b (FRR/RS/MB):

If a paleontological resource is discovered during construction, a Qualified Paleontologist or paleontological monitor shall be contacted and empowered to temporarily divert or redirect grading and excavation activities in the area of the exposed resource to facilitate evaluation of the discovery. An appropriate buffer area shall be established by the Qualified Paleontologist around the find where construction activities shall not be allowed to continue. Work shall be allowed to continue outside of the buffer area. All significant fossils shall be collected by the paleontological monitor and/or the Qualified Paleontologist. Collected fossils shall be prepared to the point of identification and catalogued before they are submitted to their final repository. Any fossils collected shall be curated at a public, non-profit institution with a research interest in the materials, such as the University of California Museum of Paleontology at Berkeley, if such an institution agrees to accept the fossils. If no institution accepts fossil collection, they shall be donated to a local school in the area for educational purposes. Accompanying notes, maps, photographs, and a technical report shall also be filed at the repository and/or school.

Mitigation Measure 3.9-1c (FRR/RS/MB):

A Qualified Paleontologist shall select paleontological monitors meeting the Society for Vertebrate Paleontology standards (SVP 2010) who shall be present during all excavations in the Modesto Formation or in areas with high potential to encounter paleontological resources (e.g., excavation depths over five feet in previously undisturbed deposits). Depending on the conditions encountered, full-time monitoring can be reduced to part-time inspections or ceased entirely if determined adequate by the Qualified Paleontologist. The Qualified Paleontologist may spot check the excavation on an intermittent basis and recommend whether the depth of required monitoring should be revised based on his/her observations. Monitoring activities shall be documented in a Paleontological Resources Monitoring Report to be prepared by the Qualified Paleontologist at the completion of construction.

Significance After Mitigation: Implementing Mitigation Measures 3.9-1a through 3.9-1c would reduce impacts to paleontological resources through requiring pre-construction training and monitoring in areas of high paleontological sensitivity and during construction activities that require excavation of depths greater than five feet. As a result, this impact would be **less than significant**.

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3.10 Greenhouse Gas Emissions

3.10.1 Introduction

This section discusses the federal, state, and local regulations and policies pertaining to climate goals and greenhouse gas (GHG) emissions and includes an analysis of the potential short and long-term impacts of the proposed project related to GHGs.

Comments addressing GHGs were received in response to the NOP. Comments requested that the EIR included a GHG analysis that is consistent with AB 32: identify the thresholds of significance for GHG, calculate project-level emissions, and determine the impact significance of those emissions. See Appendix A in this Draft EIR for NOP comment letters.

Air emissions are addressed in Section 3.4, *Air Quality* and energy use is addressed in Section 3.8, *Energy*.

3.10.2 Environmental Setting

Climate Science

"Global warming" and "climate change" are common terms used to describe the increase in the average temperature of the earth's near-surface air and oceans since the mid-20th century. Natural processes and human actions have been identified as affecting the climate. The Intergovernmental Panel on Climate Change (IPCC) has concluded that variations in natural phenomena such as solar radiation and volcanoes produced most of the warming from pre-industrial times to 1950 and had a small cooling effect afterward.

However, increasing GHG concentrations in the atmosphere resulting from human activity since the 19th century, such as fossil fuel combustion, deforestation, and other activities, are believed to be a major factor in climate change. GHGs in the atmosphere naturally trap heat by impeding the exit of solar radiation that has hit the earth and is reflected back into space—a phenomenon referred to as the "greenhouse effect." Some GHGs occur naturally and are necessary for keeping the Earth's surface habitable. However, increases in the concentrations of these gases in the atmosphere during the last 100 years have trapped solar radiation and decreased the amount that is reflected into space, intensifying the natural greenhouse effect, and resulting in the increase of global average temperature.

CO_2, methane, nitrous oxide, hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride are the principal GHGs. When concentrations of these gases exceed historical concentrations in the atmosphere, the greenhouse effect is intensified. CO_2, methane, and nitrous oxide occur naturally and are also generated through human activity. Emissions of CO_2 are largely byproducts of fossil fuel combustion, whereas methane results from off-gassing, natural gas leaks from pipelines and industrial processes, and incomplete combustion associated with agricultural practices, landfills, energy providers, and other industrial facilities. Nitrous oxide emissions are also largely attributable to agricultural practices and soil management. CO_2 sinks include vegetation and the ocean, which absorb CO_2 through sequestration and dissolution, and are two of the largest reservoirs of CO_2 sequestration. Other human-generated GHGs include fluorinated gases such as hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride, which have much higher heat-absorption potential than CO_2 and are byproducts of certain industrial processes.

CO_2 is the reference gas for climate change, as it is the GHG emitted in the highest volume. The effect that each of the GHGs have on global warming is the product of the mass of their emissions and their global warming potential (GWP). GWP indicates how much a gas is predicted to contribute to global warming relative to how much warming would be predicted to be caused by the same mass of CO_2. For example, methane and nitrous oxide are substantially more potent GHGs than CO_2, with GWPs of 25 and 298 times that of CO_2 respectively, which has a GWP of 1 (CARB 2025a).

In emissions inventories, GHG emissions are typically reported as metric tons of CO_2 equivalent ($MTCO_2e$). CO_2e is calculated as the product of the mass emitted of a given GHG and its specific GWP. While methane and nitrous oxide have much higher GWPs than CO_2, CO_2 is emitted in higher quantities and it accounts for the majority of GHG emissions in CO_2e, both from commercial developments and human activity in general.

Carbon Dioxide

CO_2 is a naturally occurring gas that enters the atmosphere through natural as well as anthropogenic (human) sources. Key anthropogenic sources include the burning of fossil fuels (e.g., oil, natural gas, and coal), solid waste, trees, wood products, and other biomass, as well as industrially relevant chemical reactions such as those associated with manufacturing cement. CO_2 is removed from the atmosphere when it is absorbed by plants as part of the biological carbon cycle.

Methane

Methane (CH_4) is the main component of natural gas used and is formed naturally from decay of organic matter. Natural sources of CH_4 include wetlands, permafrost, oceans, and wildfires. Anthropogenic sources include fossil fuel production, biomass burning, animal husbandry (fermentation during manure management), and landfills.

Nitrous Oxide

Nitrous oxide (N_2O) is a colorless gas produced by microbial processes in soil and water, including those reactions that occur in nitrogen-rich fertilizers. In addition to agricultural sources, some industrial processes (i.e., nylon production, nitric acid production) also emit N_2O. During combustion, NO_X emissions composed of NO_2 and nitrogen oxide (NO) are produced, which are not the same as N_2O. Very small quantities of N_2O may be formed during fuel combustion by reaction of nitrogen and oxygen.

Effects of Global Climate Change

The scientific community's understanding of the fundamental processes responsible for global climate change has improved over the past decade, and its predictive capabilities are advancing. However, uncertainties remain in scientific predictions of, for example, local effects of climate change; the occurrence, frequency, and magnitude of extreme-weather events; effects of aerosols; changes in clouds; shifts in the intensity and distribution of precipitation; and changes in oceanic circulation.

Because of the complexity involved and the inability to adequately model Earth's climate system in a sufficient resolution, the uncertainty surrounding climate change is dynamic and ever-changing with research. Nonetheless, the Intergovernmental Panel on Climate Change's Sixth Assessment Report states that the dominant cause of the warming observed since the mid-20th century is extremely likely to have

been the anthropogenic increase in GHG concentrations mainly from the transportation and industrial sectors (IPCC 2022). The national academies of science from 80 countries have issued statements endorsing the consensus position that humans are the dominant cause of global warming that has occurred since the mid-20th century (Cook et al. 2016).

The *Fourth California Climate Change Assessment*, published in 2018, found that global climate change has had the following potential impacts on California: loss of snowpack; sea level rise; more extreme heat days per year; more high-ozone days; more extreme forest fires; more severe droughts punctuated by extreme-precipitation events; increased erosion of California's coastlines and seawater intrusion into the Sacramento–San Joaquin Delta and associated levee systems; and increased pest infestation (OPR 2018a; CEC and CNRA 2018). The report's findings are consistent with climate change studies published by the California Natural Resources Agency (CNRA) since 2009, starting with the *California Climate Adaptation Strategy* (CNRA 2009), published as a response to Governor's Executive Order S-13-2008. In 2014, the CNRA rebranded the first update of the 2009 adaptation strategy as the *Safeguarding California Plan* (CNRA 2014). The 2018 update to *Safeguarding California Plan* identifies hundreds of ongoing actions and next steps state agencies are taking to safeguard Californians from climate impacts within a framework of 81 policy principles and recommendations (CNRA 2018). The 2022 Implementation Report for California's 2021 Climate Adaptation Strategy, released in 2022, outlines the state's progress in strengthening resilience across several critical areas, such as natural systems, water resources, coastal protection, public health, and community engagement. It emphasizes efforts to integrate climate adaptation into decision-making and highlights ongoing initiatives, while also outlining future steps to accelerate progress, including enhancing funding for local projects, strengthening cross-agency collaboration, and addressing emerging climate risks (CCSA 2022).

Temperature Increase

The primary effect of the addition of GHGs to the atmosphere has been a rise in the average global temperature. The impact of human activities on global temperature is readily apparent in the observational record. The contiguous U.S. has observed an average annual temperature of 54.4 degrees Fahrenheit (°F), which is 2.4°F above average (NOAA 2024). Of the 10 warmest years in the contiguous U.S., nine have occurred since 1998, with 2012 and 2016 being the two warmest years on record (U.S. EPA 2024a). According to the Cal-Adapt website, San Joaquin County could experience an increase in annual average maximum temperature of approximately 4.9°F to 8.1°F by 2070–2099, compared to the baseline period of 1961–1990 (Cal-Adapt 2025).

With climate change, extreme heat conditions and heat waves are predicted to impact larger areas, last longer, and have higher temperatures. Heat waves, defined as three or more days with temperatures above 90°F, are projected to occur more frequently by the end of the century. Extreme heat days and heat waves can negatively impact human health. Heat-related illnesses include a spectrum of illnesses ranging from heat cramps to severe heat exhaustion and life-threatening heat stroke (Red Cross Red Climate Crescent Center [RCCC] 2019).

Wildfires

The hotter and dryer conditions expected with climate change will make forests more susceptible to extreme wildfires. The Fourth Assessment found that if GHG emissions continue to rise, the frequency of extreme wildfires burning over approximately 25,000 acres would increase by nearly 50 percent, and the

average area burned statewide each year would increase by 77 percent, by the year 2100. In the areas that have the highest fire risk, wildfire insurance is estimated to see costs rise by 18 percent by 2055 and the fraction of property insured would decrease (Westerling 2018).

Air Quality

Higher temperatures, conducive to air pollution formation, could worsen air quality in California and make it more difficult for the state to achieve air quality standards. Climate change may increase the concentration of ground-level ozone, which can cause breathing problems, aggravate lung diseases such as asthma, emphysema, chronic bronchitis, and cause chronic obstructive pulmonary disease, but the magnitude of the effect, and therefore, its indirect effects, are uncertain. Emissions from wildfires can lead to excessive levels of particulate matter, ozone, and volatile organic compounds (NOAA 2022). Additionally, severe heat accompanied by drier conditions and poor air quality could increase the number of heat-related deaths, illnesses, and asthma attacks throughout the state (RCCC 2019).

Precipitation and Water Supply

There is a high degree of uncertainty with respect to the overall impact of global climate change on future water supplies in California. Studies indicate considerable variability in predicting precise impacts of climate change on California's hydrology and water resources. Increasing uncertainty in the timing and intensity of precipitation will challenge the operational flexibility of California's water management systems. Warmer and wetter winters would increase the amount of runoff available for groundwater recharge; however, this additional runoff would occur at a time when some basins are either being recharged at their maximum capacity or are already full. Conversely, reductions in spring runoff and higher evapotranspiration because of higher temperatures could reduce the amount of water available for recharge (CNRA 2018).

Hydrology and Sea Level Rise

Climate change has the potential to affect the amount of snowfall, rainfall, and snowpack; the intensity and frequency of storms; flood hydrographs (flash floods, rain or snow events, coincidental high-tide and high-runoff events); sea level rise and coastal flooding; coastal erosion; and the potential for saltwater intrusion. Sea level rise can be a product of global warming that occurs through two main processes: expansion of seawater as the oceans warm and the melting of ice over land. A rise in sea levels could cause coastal flooding and erosion and could jeopardize California's water supply.

Sea level has risen 8–9 inches since 1880. In 2023, global sea level set a new record high of 3.99 inches above 1993 levels. The rate of sea level rise is accelerating; it has more than doubled, from 0.06 inch (1.4 millimeters) per year throughout most of the 20th century to 0.14 inch (3.6 millimeters) per year from 2006 to 2015. In many locations along the U.S. coastline, high-tide flooding is now 300 percent to more than 900 percent more frequent than it was 50 years ago. Sea level could rise as much as 2 feet above 2000 levels by 2100 (NOAA 2023). Rising seas could affect transportation infrastructure, utilities, and regional industries.

Agriculture

California has a massive agricultural industry that represents over 13 percent of total U.S. agricultural revenue (California Department of Food and Agriculture [CDFA] 2020). Higher CO_2 levels can stimulate

plant production and increase plant water-use efficiency. However, a changing climate presents significant risks to agriculture due to changes in maximum and minimum temperatures, reduction of winter chill hours, extreme heat leading to additional costs for livestock cooling and losses in production, and declines in water quality, groundwater security, soil health, and pollinator species, and increased pest pressures (CNRA 2018).

Ecosystems and Wildlife

Increases in global temperatures and the potential resulting changes in weather patterns could have ecological effects on a global and local scale. Increased concentrations of GHGs are likely to accelerate the rate of climate change. As stated in the *Safeguarding California Plan*, "species and ecosystems in California are valued both for their intrinsic worth and for the services they provide to society. Air purification, water filtration, flood attenuation, food provision, recreational opportunities such as fishing, hunting, wildlife viewing, and more are all services provided by ecosystems. These services can only be maintained if ecosystems are healthy and robust and continue to function properly under the impacts of climate change. A recent study examined the vulnerability of all vegetation communities statewide in California and found that 16 of 29 were highly or nearly highly vulnerable to climate change, including Western North American freshwater marsh, Rocky Mountain subalpine and high montane conifer forest, North American Pacific coastal salt marsh, and more." Soil moisture is likely to decline in many regions, and intense rainstorms are likely to become more frequent. With climate change, ecosystems and wildlife will be challenged by the spread of invasive species, barriers to species migration or movement in response to changing climatic conditions, direct impacts to species health, and mismatches in timing between seasonal life-cycle events such as species migration and food availability (CNRA 2018).

GHG Emissions Inventories

U.S. GHG Emissions

Based on data compiled by the U.S. EPA, in 2022, the United States emitted about 6,343 million $MTCO_2e$ of GHGs, 75 percent of which came from fossil fuel combustion for electricity, heat, and transportation. Of the nation's major sectors, transportation accounts for the highest volume of GHG emissions (approximately 28 percent), followed by electricity (25 percent), industry (23 percent), commercial and residential (13 percent), and agriculture (11 percent). Total U.S. GHG emissions decreased by 3 percent between 1990 and 2022, reaching a peak in 2007 before generally decreasing (U.S. EPA 2024b).

State of California GHG Emissions

The California Air Resources Board (CARB) compiles GHG inventories for the state. Based on the GHG inventory data from 2022 (the latest year for which data are available from CARB), emissions from GHG-emitting activities statewide were 371.1 million $MTCO_2e$. From 2000 to 2022, the carbon intensity of California's economy decreased by 54.8 percent while the gross domestic product increased by 77.5 percent (CARB 2024a). The decline in total emissions is likely attributable in part to the post–COVID-19 pandemic, most notably from reduced vehicle activity (reductions in travel by heavy- and light-duty vehicles).

Of California's major sectors, transportation accounts for the highest volume of GHG emissions (approximately 39 percent), followed by the industrial sector (23 percent), electricity (16 percent), residential and commercial (14 percent), and agriculture (8 percent) (CARB 2024a).

3.10.3 Regulatory Setting

Federal

The U.S. Supreme Court held that the U.S. EPA must consider regulation of motor vehicle GHG emissions. In *Massachusetts v. Environmental Protection Agency* et al., 12 states and cities, including California, together with several environmental organizations sued to require the U.S. EPA to regulate GHGs as pollutants under the CAA (127 S. Ct. 1438 [2007]). The Supreme Court ruled that GHGs fit within the CAA's definition of a pollutant and the U.S. EPA had the authority to regulate GHGs.

On December 7, 2009, the U.S. EPA Administrator signed two distinct findings regarding GHGs under Section 202(a) of the CAA:

- **Endangerment Finding:** The current and projected concentrations of the six key 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 combined emissions of these GHGs from new motor vehicles and new motor vehicle engines contribute to the GHG pollution that threatens public health and welfare.

These findings did not, by themselves, impose any requirements on industry or other entities. However, these actions were a prerequisite for implementing GHG emissions standards for vehicles.

State

A variety of statewide rules and regulations mandate quantification and, if emissions exceed established thresholds, the reduction of GHGs. CEQA requires lead agencies to evaluate project-related GHG emissions and the potential for projects to contribute to climate change and to provide appropriate mitigation in cases where the lead agency determines that a project would result in a significant addition of GHGs to the atmosphere.

Executive Order S-3-05

In June 2006, Governor Arnold Schwarzenegger signed Executive Order S-3-05, which established the following statewide emission reduction targets through the year 2050:

- 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 executive order does not contain any requirements that directly pertain to the proposed project; however, future actions taken by the State of California to implement these goals may affect the proposed project, depending on the specific implementation measures that are developed.

Assembly Bill 32 and the Climate Change Scoping Plan

Assembly Bill (AB) 32, the California Global Warming Solutions Act of 2006, required the CARB to establish a statewide GHG emissions cap for 2020 based on 1990 emissions levels. AB 32 required CARB to adopt regulations that identify and require selected sectors or categories of emitters of GHGs to report and verify their statewide GHG emissions; CARB is authorized to enforce compliance with the program. Under AB 32, CARB was also required to adopt a statewide GHG emissions limit equivalent to the statewide GHG emissions levels in 1990, which had to be achieved by 2020. CARB established this limit in December 2007 at 427 million $MTCO_2e$ (CARB 2008).

In December 2008, CARB approved the Climate Change Scoping Plan, also known as the AB 32 Scoping Plan, which outlined the State of California's strategy to achieve the 2020 GHG emissions limit by reducing 174 million $MTCO_2e$ (about 191 million tons) of emissions across various sectors. The plan proposed to reduce GHG emissions, improve the environment, reduce dependence on oil, diversify energy sources, save energy, create new jobs, and enhance public health. The Scoping Plan was to be updated every 5 years to evaluate the mix of AB 32 policies and remain on track to achieve reduction goals. It included 39 recommended measures. CARB released updates to the Scoping Plan in 2014, 2017, and 2022.

California Renewable Energy Programs

In 2002, California established its initial Renewables Portfolio Standard (RPS), with the goal of increasing the percentage of renewable energy in the state's electricity mix to 20 percent by 2017. The RPS goal has since increased several times. In 2018, SB 100 increased California's RPS once more, requiring retail sellers and local publicly owned utilities to procure eligible renewable electricity for 44 percent of retail sales by the end of 2024, 52 percent by the end of 2027, and 60 percent by the end of 2030. It also requires CARB to plan for 100 percent eligible renewable energy resources and zero-carbon resources by the end of 2045. In the latest update to RPS, SB 1020, signed on September 16, 2022, revised SB 100 to require that renewable energy resources and zero-carbon resources supply 90 percent of all retail sales of electricity to end-use customers by December 31, 2035; 95 percent of all retail sales to end users by December 31, 2040; 100 percent of electricity procured to serve all state agencies by December 31, 2035; and 100 percent of all retail sales to end users by December 31, 2045.

Senate Bill 97

In 2007, the California Legislature passed SB 97, which required amendment of the CEQA Guidelines to incorporate analysis and mitigation of GHG emissions from projects subject to CEQA. The amendments took effect March 18, 2010. The amendments added Section 15064.4 to the CEQA Guidelines, specifically addressing the potential significance of GHG emissions. Section 15064.4 calls for a "good faith effort" to "describe, calculate or estimate" GHG emissions and indicates that the analysis of the significance of any GHG impacts should include consideration of the extent to which projects would:

- Increase or reduce GHG emissions;
- Exceed a locally applicable threshold of significance; or
- Comply with "regulations or requirements adopted to implement a statewide, regional, or local plan for the reduction or mitigation of greenhouse gas emissions."

The CEQA Guidelines also state that a project may be found to have a less-than-significant impact related to GHG emissions if it complies with an adopted plan that includes specific measures to sufficiently reduce GHG emissions (Title 14, Section 15064[h][3] of the California Code of Regulations). Importantly, however, the CEQA Guidelines do not require or recommend a specific analytical methodology or provide quantitative criteria for determining the significance of GHG emissions.

Executive Order B-30-15 and SB 32

In April 2015, Governor Edmund G. Brown Jr. issued an executive order to establish a California GHG reduction target of 40 percent below 1990 levels by 2030. Reaching this emission reduction target will make it possible for California to reach its ultimate goal of reducing emissions 80 percent under 1990 levels by 2050, as identified in Executive Order S-3-05. Executive Order B-30-15 also specifically addresses the need for climate adaptation and directs state government to take the following steps (Office of the Governor 2015):

- Incorporate climate change impacts into the state's 5-Year Infrastructure Plan.
- Update the *Safeguarding California Plan*, the state climate adaptation strategy, to identify how climate change will affect California infrastructure and industry and what actions the state can take to reduce the risks posed by climate change.
- Factor climate change into state agencies' planning and investment decisions.
- Implement measures under existing agency and departmental authority to reduce GHG emissions.

Executive Order B-30-15 required CARB to update the AB 32 Climate Change Scoping Plan to incorporate the 2030 target. On September 8, 2016, Governor Brown signed SB 32, which codified the 2030 reduction target (i.e., 40 percent below 1990 levels) called for in Executive Order B-30-15. CARB approved the 2017 Scoping Plan Update in December 2017. The 2017 Scoping Plan Update proposes a framework of action for reducing GHG emissions by 40 percent by 2030 relative to 1990 levels (CARB 2017).

Assembly Bill 1279 (California Climate Crisis Act)

Signed into law in September 2022, AB 1279 requires the state to achieve two objectives by 2045 or sooner: (1) net zero GHG emissions and (2) a reduction in statewide anthropogenic GHG emissions of 85 percent below 1990 levels. AB 1279 requires CARB to ensure that the 2022 *Scoping Plan for Achieving Carbon Neutrality* (2022 Scoping Plan), described further below, identifies and recommends measures to achieve carbon neutrality, and to identify and implement policies and strategies for CO_2 removal and carbon capture, utilization, and storage technologies.

2022 Scoping Plan for Achieving Carbon Neutrality

The 2022 Scoping Plan, adopted by CARB in December 2022, expands on prior scoping plans and responds to AB 1279 by outlining a technologically feasible, cost-effective, and equity-focused path to achieve the state's climate target of reducing anthropogenic emissions to 85 percent below 1990 levels and achieving carbon neutrality by 2045 or earlier (CARB 2022). Implementation of the plan will achieve significant reductions in fossil fuel combustion through the deployment of clean technologies and fuels, further reductions in short-lived climate pollutants, support for sustainable development, increased action

on natural and working lands to reduce emissions and sequester carbon, and the capture and storage of carbon.

The 2022 Scoping Plan identifies an action applicable to the construction equipment sector that requires that 25 percent of construction energy demand be electrified by 2030 and 75 percent by 2045 (CARB 2022).

CARB Advanced Clean Trucks Program

On June 25, 2020, CARB adopted the Advanced Clean Trucks rule, which requires truck manufacturers to transition from diesel vehicles to electric zero-emission vehicles beginning in 2024, with the goal of reaching 100 percent zero-emission vehicles by 2045. The goal of the legislation is to help California meet its climate targets of a 40 percent reduction in GHG emissions and 50 percent reduction in petroleum use by 2030, and an 80 percent reduction in GHG emissions by 2050.

Truck manufacturers will be required to sell zero-emission vehicles as an increasing percentage of their annual sales from 2024 through 2035. Companies with large distribution fleets (50 or more trucks) will be required to report information about their existing fleet operations in an effort to identify future strategies for increasing zero-emission fleets statewide (CARB 2021).

Zero-emission vehicles are two to five times more energy efficient than diesel vehicles. The Advanced Clean Trucks rule will reduce GHG emissions with the co-benefit of reducing dependence on petroleum fuels.

CARB Advanced Clean Fleets

In April 2023, CARB adopted the Advanced Clean Fleets regulation, which is part of CARB's broader strategy to accelerate the transition to zero-emission medium- and heavy-duty vehicles. It complements the Advanced Clean Trucks regulation, focusing on reducing emissions and promoting the adoption of zero-emission vehicles (ZEVs). The Advanced Clean Fleets regulation covers various fleet types, including drayage operations, government-owned fleets, and high-priority fleets, mandating ZEV adoption in phases. High-priority fleets are entities that own, operate, or direct the operation of at least one vehicle in California, and that either have $50 million or more in gross annual revenue, or own, operate, or direct the operation of 50 or more vehicles. Federal agencies that own, operate, or direct the operation of at least one vehicle in California are also subject to this regulation.

Key provisions include manufacturer sales mandates, requirements that drayage fleets transition to ZEVs, and specific ZEV targets for high-priority and government fleets. The regulation is expected to significantly reduce emissions, benefit public health, and contribute to achieving climate goals.

To support the transition, CARB provides incentives, grants, and funding programs, with an emphasis on equity for disproportionately affected communities. These programs aim to reduce the financial burden on fleet owners, promote early adoption, and expand charging and hydrogen fueling infrastructure. CARB estimates that both regulations will result in a substantial increase in ZEVs on California roads, contributing to reductions of emissions and improvements to public health. The regulation reflects California's commitment to achieving a fully zero-emissions fleet by 2045, with specific targets for various vehicle categories (CARB 2024b).

In January 2025, CARB withdrew its federal waiver and authorization to add advanced clean fleets to its emissions control program. As a result, CARB is not enforcing parts of the ACF regulation that depends on federal approval. However, not all components of the regulation require federal approval; the provisions applying to state and local governments fleets remain in effect (CARB 2025b).

Local

The proposed project area includes lands in San Joaquin County and the cities of Stockton, Lathrop and Manteca. Each of these jurisdictions have general plans with goals and policies that address GHG emissions (see **Table 3.10-1**). Applicable general plan goals and policies are summarized below along with relevant local regulations.

TABLE 3.10-1
APPLICABLE GENERAL PLAN GOALS AND POLICIES – GREENHOUSE GAS EMISSIONS

General Plan	Goals and Policies
San Joaquin County	Public Health and Safety Element, Policy PHS-6.2
City of Stockton	Transportation Element, Policy TR-3.2
City of Lathrop	Public Safety Element, Policy PS-6.9
City of Manteca	Air Quality Element, Policy AQ-P-12

SOURCES: City of Lathrop 2022; City of Manteca 2024; City of Stockton 2018; San Joaquin County 2016

San Joaquin County

San Joaquin County General Plan

The San Joaquin County General Plan includes goals and policies that address climate change and GHG emissions and takes steps to address the issues of climate change by reducing GHG emissions, improving energy efficiency, reducing waste, and managing water use.

San Joaquin Valley Air Pollution Control District

The proposed project area is located within the San Joaquin Valley Air Basin, which is managed by the San Joaquin Valley Air Pollution Control District (SJVAPCD). In August 2008, SJVAPCD's Governing Board adopted the Climate Change Action Plan (CCAP) (SJVAPCD 2009). Based on that plan, SJVAPCD created guidance to evaluate GHG significance. The guidance covers projects that include Best Performance Standards (BPS), which are more typical of residential or commercial-type projects (SJVAPCD 2009).

CEQA reviews for projects implementing BPS would not require quantification of project-specific GHG emissions. Consistent with the CEQA Guidelines, such projects would be determined to have less-than-significant individual and cumulative impacts for GHG emissions. For CEQA reviews of projects not implementing BPS, SJVAPCD recommends quantifying project-specific GHG emissions and demonstrating that project-specific GHG emissions would be reduced or mitigated by at least 29 percent, compared to Business-as-Usual (BAU), including GHG emission reductions achieved since the 2002–2004 baseline period. Projects that would achieve at least a 29 percent GHG emissions reduction compared to BAU are considered consistent with the AB 32 emissions reduction goal for 2020. However,

as the state has now adjusted the GHG emission reduction goal for year 2030 through implementation of SB 32, this comparison is no longer relevant in the post-2020 environment. Therefore, projects complying with an approved GHG emission reduction plan or GHG mitigation program, which avoids or substantially reduces GHG emissions within the geographic area in which the project is located would be determined to have a less-than-significant individual and cumulative impact for GHG emissions (SJVAPCD 2015).

City of Stockton

Envision Stockton 2040 General Plan

The City of Stockton General Plan includes goals and policies that address climate change and aim to reduce GHG emissions through resiliency planning practices, mitigation, and adaptability.

City of Stockton Climate Action Plan

The City of Stockton adopted a Climate Action Plan (CAP) in August 2014 that outlines a framework to feasibly reduce community GHG emissions in a manner that is supportive of AB 32 while accommodating growth envisioned under the City of Stockton's 2035 General Plan. The CAP also continues existing practice of requiring new development to reduce emissions by 29 percent compared to BAU conditions, which is consistent with the recommendations of SJVAPCD. The City of Stockton's CAP includes measures that increase the use of electric powered construction equipment to help reduce direct emissions from fuel combustion and reducing idling time for off-road construction equipment to meet the CARB idling regulations for on-road trucks. These measures would help reduce the amount of GHG emissions associated with the construction both the flood risk reduction and multi-benefit components (City of Stockton 2014).

City of Lathrop

City of Lathrop General Plan

The City of Lathrop General Plan includes goals and policies that address GHG emissions and climate change impacts and promote land use development strategies to reduce GHG emissions and reduce climate change impacts.

City of Manteca

City of Manteca General Plan

The City of Manteca General Plan includes goals and policies that address climate change and aim to achieve and maintain national, state, and local air quality standards.

City of Manteca Climate Action Plan

The City of Manteca has prepared a CAP as its primary strategy for ensuring that the buildout of the General Plan 2023 supports the goals of AB 32, which California to reduce statewide GHG emissions to 1990 levels by the year 2020. The City of Manteca's CAP is designed to reduce community-related and city operations related GHG emissions to a degree that would not hinder or delay implementation of AB 32. The CAP also includes strategies to reduce emissions in a way that will achieve emissions targets set in the 2008 Climate Change Scoping Plan adopted by CARB.

3.10.4 Impacts and Mitigation Measures

Methods of Analysis

GHG emissions and global climate change represent cumulative impacts from human activities and development projects locally, regionally, statewide, nationally, and worldwide. GHG emissions from all of these sources cumulatively contribute to the significant adverse environmental impacts of global climate change. No single project could generate enough GHG emissions to noticeably change the global average temperature; instead, the combination of GHG emissions from past, present, and future projects around the world have contributed and will continue to contribute to global climate change and its associated environmental impacts. There are currently no established thresholds for assessing whether the GHG emissions of a project would be considered a cumulatively considerable contribution to global climate change; however, all reasonable efforts should be made to minimize a project's contribution to global climate change. In addition, while GHG impacts are recognized exclusively as cumulative impacts (CAPCOA 208), GHG emissions impacts must also be evaluated on a project-level under CEQA.

GHG emissions and global climate change represent cumulative impacts from human activities and development projects locally, regionally, statewide, nationally, and worldwide. GHG emissions from all these sources cumulatively contribute to the significant adverse environmental impacts of global climate change. No single project could generate enough GHG emissions to noticeably change the global average temperature; instead, the combination of GHG emissions from past, present, and future projects around the world has contributed and will continue to contribute to global climate change and its associated environmental impacts.

No thresholds have been established for assessing whether the GHG emissions of a project would be considered a cumulatively considerable contribution to global climate change; however, all reasonable efforts should be made to minimize a project's contribution to global climate change.

Flood Risk Reduction Components and Restoration Sites 13, 14, and 16

GHG Emissions

Construction activities associated with the proposed flood risk reduction components and ecosystem restoration at Sites 13, 14, and 16 would generate GHG emissions from the use of haul trucks, heavy-duty equipment, and worker vehicles traveling to and from construction areas.

GHG emissions from construction activities would come from the combustion of fuel (e.g., gasoline and diesel) in construction equipment and vehicles and were estimated using the California Emissions Estimator Model (CalEEMod) (version 2022.1.1) with the same assumptions as discussed in Section 3.4, *Air Quality.* Construction would take place over 5 years from 2026 to 2030, with breaks in activity due to the flooding season in proposed project areas. As there will be minimal activity over the operational lifetime of the proposed project, GHG emission resulting from operations have not been quantified.

Consistency with Plans, Policies and Regulations

The analysis evaluates consistency with CEQA Guidelines Section 15064.4(b)(2) by considering whether the proposed project would conflict with plan, policies and regulations adopted at the state, regional and local levels, adopted for the purpose of reducing GHG emissions, including but not limited to, local CAPs

and the 2022 Scoping Plan for Carbon Neutrality. San Joaquin County, City of Manteca, and City of Stockton all have their own CAPs. Consistency with each CAP was evaluated for construction impacts of the proposed project.

Other Multi-Benefit Components

The proposed project also includes implementation of other multi-benefit components including additional ecosystem restoration sites, and recreation features along the levee system. Construction activities associated with these components would also generate GHG emissions primarily from combustion of fuel in construction equipment and vehicles used to transport workers, equipment and materials to the construction areas. However, because the locations and designs of the ecosystem restoration sites and recreational features are still under development, and detailed schedule and construction equipment information is not known at this time, emissions associated with these components have not been quantified. GHG impacts of these proposed project components with respect to both Appendix G criteria are evaluated qualitatively at a programmatic level.

Thresholds of Significance

In accordance with Appendix G of the CEQA Guidelines, an impact is considered significant if the proposed project would:

- Generate GHG emissions, either directly or indirectly, that may have a significant cumulative effect on the environment.
- Conflict with an applicable plan, policy, or regulation of an agency adopted for the purpose of reducing the emissions of GHGs.

The CEQA Guidelines do not prescribe specific methods for performing an assessment, do not establish specific thresholds of significance, and do not mandate specific mitigation measures. Rather, the CEQA Guidelines emphasize the lead agency's discretion to determine the appropriate methods and thresholds of significance consistent with various factors prescribed by CEQA Guideline 15064.4. The Governor's Office of Planning and Research's Technical Advisory, titled *Discussion Draft CEQA and Climate Change Advisory* (OPR 2018b), states that:

> *[N]either the CEQA statute nor the CEQA Guidelines prescribe thresholds of significance or particular methodologies for perming an impact analysis. This is left to lead agency judgment and discretion, based upon factual data and guidance from regulatory agencies and other sources where available and applicable. Even in the absence of clearly defined thresholds for GHG emissions, such emissions must be disclosed and mitigated to the extent feasible whenever the lead agency determines that the project contributes to a significant, cumulative climate change impact.*

Furthermore, the advisory document indicates that "in the absence of regulatory standards for GHG emissions or other scientific data to clearly define what constitutes a 'significant impact,' individual lead agencies may undertake a project-by-project analysis, consistent with available guidance and current CEQA practice." Section 15064.7(c) of the CEQA Guidelines specifies that "when adopting thresholds of significance, a lead agency may consider thresholds of significance previously adopted or recommended by other public agencies, or recommended by experts, provided the decision of the lead agency to adopt such thresholds is supported by substantial evidence".

SJVAPCD does not have a recommended quantitative significance threshold for the analysis of the impact of a project's GHG emissions on the environment. Based on guidance from 2009 in the SJVAPCD's *Final Staff Report Addressing Greenhouse Gas Emissions Impacts under the California Environmental Quality Act* (SJVAPCD 2009), projects may evaluate GHG significance based on:

- Using any combination of SJVAPCD approved GHG Emission Reduction Measures to meet BPS identified by the District;
- Complying with an approved GHG plan or mitigation program adopted by the public agency with jurisdiction over the affected resources and have a certified Final CEQA document; or
- Reducing GHG emissions by at least 29 percent consistent with GHG emission reduction targets established in CARB's AB 32 Scoping Plan.

The BPS approach is targeted primarily towards projects that include stationary sources or land use development projects and not infrastructure development projects such as the proposed project. In addition, the BPS identified by the SJVAPCD primarily address operational sources of GHG emissions and not emissions from construction activities. The 29 percent reduction is calculated based on achieving AB 32 targets by 2020 which is now out of date. There is no guidance from the SJVAPCD to evaluate impacts addressing the State current SB 32 targets for 2030 and AB 1279 targets for 2045. Therefore, to evaluate GHG emissions impacts of the proposed project, this analysis relies on compliance with an approved GHG reduction plan or mitigation program including the climate action plans adopted by the cities of Stockton, Lathrop and Manteca as well as the CARB 2022 Scoping Plan for Achieving Carbon Neutrality which addresses statewide GHG targets established under SB 32 and AB 1279. Compliance with these plans would avoid or substantially reduce GHG emissions of the proposed project. This evaluation is considered in a cumulative context because the analysis of GHG emissions is only relevant in a cumulative context.

Impacts and Mitigation Measures

Table 3.10-2 summarizes the impact conclusions presented in this section.

TABLE 3.10-2
SUMMARY OF IMPACT CONCLUSIONS – GREENHOUSE GAS EMISSIONS

Impact Statement	Flood Risk Reduction Components	Restoration Sites 13, 14, and 16	Other Multi-Benefit Components
3.10-1: Implementation of the proposed project could generate greenhouse gas emissions that could have a significant impact on the environment.	LS	LS	LS
3.10-2: Implementation of the proposed project could conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases.	LS	LS	LS

NOTE: LS = Less than Significant

Impact 3.10-1: Implementation of the proposed project could generate greenhouse gas emissions that could have a significant impact on the environment.

Flood Risk Reduction Components and Restoration Sites 13, 14, and 16

Construction

The construction emissions below have been provided for informational purposes and are not used in the evaluation of significance of impacts as SJVAPCD does not provide mass emissions thresholds for assessment of GHG impacts. GHG emissions from the construction of the proposed flood risk reduction components and ecosystem restoration at Sites 13, 14, and 16 would be generated primarily from the heavy-duty equipment, such as the scrapers and graders used in proposed construction activities such as: clearing, grubbing, and demolition, levee fill, site restoration, and seepage berm activity. Emissions generated would vary throughout the construction period by type and intensity of construction activities performed and would cease upon the completion of construction. There are two construction schedule scenarios proposed for the flood risk reduction components: one with a 3-year timeframe and one with a 5-year timeframe. The flood risk reduction components' emissions were based on the 5-year timeframe, as it is a more reasonable project timeline and accounts for resource availability, seasonality of construction to account for flood season, and the need for certain proposed project components. The construction duration for the ecosystem restoration at Sites 13, 14, and 16 would occur within 1 year. **Table 3.10-3** summarizes GHG emissions generated from construction activities from proposed flood risk reduction components and ecosystem restoration at Sites 13, 14, and 16. Based on the modeling of construction equipment and truck activities, the estimated GHG emissions from construction activities would be approximately 24,622 MT CO_2e over the entire 5-year construction period.

TABLE 3.10-3
CONSTRUCTION GREENHOUSE GAS EMISSIONS

Construction Year	GHG Emissions (MT CO_2e/year)
2026[b]	8,104
2027	6,726
2028	5,330
2029	2,156
2030	2,306
Total[a]	**24,622**

NOTES: MT CO_2e = metric tons of carbon dioxide equivalent; GHG = greenhouse gas; MT = metric tons; NA = Not applicable

a. Sum of emissions during the different construction years may not add up to the total due to rounding.
b. 2026 includes GHG emissions from flood risk reduction components and Sites 13, 14, and 16.

SOURCE: Data compiled by Environmental Science Associates in 2025 based on information contained in Appendix B to this Draft EIR.

Because SJVAPCD does not provide significance thresholds for construction-related GHG emissions, this analysis evaluates the proposed project's construction emissions qualitatively in relation to the statewide GHG reduction goals. GHG emissions from off-road construction equipment represent a very small

portion of overall statewide emissions (0.6 percent), and CARB has identified only limited strategies to control emissions from such equipment. In other words, the state can achieve its 2030 target with very limited emissions reductions in the construction sector.

Additionally, to achieve the statewide GHG targets pursuant to SB 32 and the CARB 2022 Scoping Plan for Achieving Carbon Neutrality, efforts to reduce GHG emissions must focus on operational sources, such as building energy use and vehicle travel. This is based on CARB's holistic approach which looks at all emissions sources in California and focuses on reducing the largest emissions sources that the state can influence and control. The 2022 Scoping Plan therefore calls for substantial reduction in emissions from certain sources such as vehicular emissions and building energy use, which provide significant opportunities for reduction through vehicle miles traveled (VMT) reduction, transportation electrification, and building decarbonization. The 2022 Scoping Plan includes only one control measure that addresses emissions from the construction sector, which requires that 25 percent of the construction energy demand be electrified by 2030 and 75 percent by 2045. These requirements are imposed by CARB on equipment manufacturers, not on individual projects, and therefore are not applicable to the proposed project. Therefore, construction emissions generated by the proposed project would not result in a significant impact on the environment and would not conflict with the state's GHG reduction goals. For these reasons, construction GHG emissions from the proposed flood risk reduction components and ecosystem restoration at Sites 13, 14, and 16 are not considered cumulatively considerable, and the impact would be **less than significant.**

Operations and Maintenance

Regular O&M activities for proposed flood risk reduction components would consist of inspections, weed abatement, removal of encroachments and high-hazard vegetation to ensure levee integrity, replacement and re-working of displaced or launched revetment following large flood events, and adequate levee access along the levee toe road. The levee maintenance roads would be used, as they are currently used, to access the length of the levee during these activities and during high-flow events for flood-fighting purposes. O&M activities would not require heavier or noisier equipment than under current conditions. O&M inspections would consist of a patrol vehicle traveling along the levee and small machinery for weed abatement such as mowers and weed whackers/trimmers. These activities would only occur periodically, as under existing conditions. O&M activities would not introduce new land uses into the area. As these activities would occur as under existing conditions, these vehicle trips would result in a negligible increase in GHG emissions.

Once construction activities for ecosystem restoration at Sites 13, 14, and 16 is complete, a planting contractor would install container plants, grasses, and temporary irrigation. The planting contractor would be required to provide maintenance and irrigation over the next 3 years during the plant establishment period. Following the completion of the initial planting, regular O&M activities would be performed throughout the year though some would vary according to weather and season: general clean-up maintenance of the sites would occur throughout the year, clean-up maintenance would generally include picking up trash, vandalism repairs, and the removal of used planting accessories (e.g., bamboo stakes, ties, browse guards). Maintenance activities associated with Sites 13, 14, and 16 are summarized in Table 2-10 of the Project Description. O&M would consist of a maintenance crew vehicle traveling along the levee and small machinery for weed abatement such as mowers and weed whackers/trimmers. These activities would only be required on an intermittent basis and would result in minor increases in motor

vehicle trips. As a practical matter, these vehicle trips would result in a negligible increase in GHG emissions.

Therefore, for these reasons above, the proposed project's operational-related GHG emissions are not considered cumulatively considerable, and the impact would be **less than significant.**

Other Multi-benefit Components

Construction

The proposed project also includes implementation of other multi-benefit components including additional ecosystem restoration sites, and recreation features along the levee system which would not require unusual or excessive construction. Therefore, construction activities and equipment generating emissions would be similar to those used for the flood control components and ecosystem restoration at Sites 13, 14, and 16 of the proposed project. While there would be some degree of additional truck trips generated by construction activities of restoration and recreational project, where feasible, cut material would be reused on-site to create higher elevation upland areas and wildlife habitat. For sites where it is not feasible to balance cut and fill or where excess cut material may be beneficially reused off-site, excess fill would be removed using haul trucks with end-dump trailers or similar equipment and would be minimal compared to flood risk reduction components. In general, the level of construction activity associated with the multi-benefit components would be at most the same if not less than the flood control components and ecosystem restoration at Sites 13, 14, and 16, thereby potentially generating a similar level of GHG emissions. Therefore, GHG emissions associated with the multi-benefit components are not considered cumulatively considerable, and the impact would be **less than significant.**

Operations and Maintenance

While conservation management actions could require O&M activities to inspect project features and/or evaluate program effectiveness, these activities would only be required on an intermittent basis and would result in a minor increase in motor vehicle trips. Therefore, O&M vehicle trips would result in a negligible increase in GHG emissions and would have a **less-than-significant impact**.

Mitigation Measures

Although impacts associated with construction GHG emissions would be less than significant and no mitigation is required, implementation of Mitigation Measure 3.4-1, which is intended to reduce NOx emissions, would contribute to a reduction of construction GHG emissions.

> **Mitigation Measure (FRR/RS/MB):** Implement Mitigation Measure 3.4-1.
>
> **Significance after Mitigation:** Implementation of Mitigation Measure 3.4-1 would reduce greenhouse gas emissions of the proposed project because it includes requirements of electric engines for commercially available equipment, Tier 4 Final off-road engines, and alternative fuel use.

Impact 3.10-2: Implementation of the proposed project could conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases.

All Project Components

Construction

The applicable plans adopted for the purpose of reducing GHG emissions is CARB's 2022 Scoping Plan for Achieving Carbon Neutrality and local CAPs. The 2022 Scoping Plan identifies a construction equipment sector action for the Scoping Plan Scenario that commits to electrification of 25 percent of energy demand by 2030, and 75 percent by 2045. Although the proposed project's is anticipated to occur into 2030, these targets are not regulatory requirements imposed directly on individual projects. Instead, they are dependent on vehicle and equipment manufacturers to develop and supply ZEVs. Any electrical power required during construction will be supplied from PG&E, which is required to comply with SB 100 and the RPS. SB 100 requires that the proportion of electricity from renewable sources be 60 percent by 2030 and 100 percent renewable power by 2045.

The City of Manteca CAP, City of Stockton CAP, and San Joaquin Valley CAP all include measures and policies that are aimed to reach the AB 32 targets and goals. There are no reduction measures in the Manteca CAP and San Joaquin Valley CAP that address construction-related GHG emissions, and therefore the proposed project would be consistent with these CAPs. The City of Stockton CAP includes measures to increase the use of electric powered construction equipment to help reduce direct emissions from fuel combustion and reduce idling time for off-road construction equipment to meet the CARB idling regulations for on-road trucks to reduce GHG emissions during construction. Because the proposed project would comply with these measures and therefore is consistent with the CAP.

The proposed project would be consistent with all applicable plans, policies, and regulations adopted for the purpose of reducing GHG emissions and would therefore have a **less-than-significant-impact.**

Operations and Maintenance

While conservation management actions could require O&M activities to inspect project features and/or evaluate program effectiveness, these activities would only be required on an intermittent basis and would result in a minor increase in motor vehicle trips. Therefore, the negligible GHG emissions generated by O&M vehicle trips would not conflict with any applicable plans, policies, and regulations adopted for the purpose of reducing GHG emissions and would result in a **less-than-significant impact**.

Mitigation Measures

Mitigation Measures (FRR/RS/MB): None required.

3.11 Hazards and Hazardous Materials

3.11.1 Introduction

This section addresses the hazardous materials and public safety issues related to the proposed project area and surrounding area. Issues addressed here include hazardous materials, hazardous waste, and wildland fire hazards. Applicable policies and hazardous materials regulations are discussed. The impact analysis presents the standards used to evaluate hazards and hazardous materials impacts and addresses potential effects of the proposed project from hazards and hazardous materials. See Section 3.20, *Wildfire*, for further discussion of wildfire risks associated with proposed project implementation. See Section 3.12, *Hydrology and Water Quality*, for further discussion of potential water quality effects associated with the proposed project.

No comments specifically addressing hazards and hazardous materials were received in response to the NOP. See Appendix A to this Draft EIR for NOP comment letters.

3.11.2 Environmental Setting

Definition of Hazardous Materials and Hazardous Wastes

A material may be considered hazardous if it appears on a list of hazardous materials prepared by a federal, state, or local agency, or if it has characteristics defined as hazardous by such an agency. Factors that influence the health effects of exposure to hazardous materials include the dose to which the person is exposed, the frequency of exposure, the exposure pathway, and individual susceptibility.

The CCR defines a hazardous material as a substance that, because of physical or chemical properties, quantity, concentration, or other characteristics, may either: (1) cause an increase in mortality or an increase in serious, irreversible, or incapacitating, illness; or (2) pose a substantial present or potential hazard to human health or environment when improperly treated, stored, transported or disposed of, or otherwise managed (CCR, Title 22, Division 4.5, Chapter 10, Article 2, Section 66260.10).

Hazardous wastes are defined in a similar manner. Hazardous wastes are hazardous materials that no longer have practical use, such as substances that have been discarded, discharged, spilled, contaminated, or are being stored prior to proper disposal. Hazardous materials and hazardous wastes are classified according to four properties: toxicity, ignitability, corrosivity, and reactivity (CCR, Title 22, Chapter 11, Article 3), which are defined in the CCR, Title 22, Sections 66261.20–66261.24.

Hazardous Materials Sites

A database search of hazardous materials sites located in or within approximately 0.25 mile of the proposed project area was performed using the California Department of Toxic Substances Control's (DTSC) database, Envirostor. The database shows the locations of "open" cases, which are sites that are undergoing or still require further action, and "closed" cases, which indicates site closure has been completed. Based on the results of the database search, there are currently no open active sites within 0.25 mile of the proposed project area (DTSC 2025).

Airports

The Stockton Metropolitan Airport is located 3 miles southeast of downtown Stockton in San Joaquin County. This is the only airport within the vicinity of the proposed project area. The Stockton Metropolitan Airport is approximately 3.25 miles east of the nearest proposed flood risk reduction project component, a proposed seepage berm.

Hazards and Hazardous Materials Sensitive Receptors – Schools and Day Care Centers

There are two schools located within 0.25 mile of proposed project components. The closest school is Lathrop High School, located at 647 Spartan Way, Lathrop which is approximately 0.15 mile east of a proposed staging area. George Y. Komure Elementary School, located at 2121 Henry Long Blvd, Stockton is approximately 0.17 mile to the east of the proposed cutoff wall.

There are four daycare centers within 0.25 mile of proposed project components. The Baby University Family Childcare is located at 5066 Pier Drive, Stockton and approximately 0.24 mile to the east of a proposed cutoff wall. The Burks Building Blocks Childcare agency is located at 5016 Pier Drive, Stockton, also approximately 0.24 mile to the east of the proposed cutoff wall. The Kids Come First Daycare Center is located at 835 Dos Reis Road, Lathrop, in proximity to the Dos Reis Road staging area and is within 0.25 mile of the proposed De Lima Road staging area and a proposed restoration site adjacent to Dos Reis Regional Park.

Wildfire

The California Department of Forestry and Fire Protection (CAL FIRE) is responsible for managing and protecting California's natural resources and has been charged with the identification of Fire Hazard Severity Zones (FHSZ). These zones include FHSZ in State Responsibility Areas and all Very High FHSZs within Local Responsibility Areas. Factors that account for wildfire behavior include several variables, primarily climate, weather, vegetation, topography, and human influences, which intermix to produce local and regional fire regimes that affect how, when, and where fires burn. FHSZs are categorized as Moderate, High, and Very High. The proposed project area and surrounding land is designated "Other Unzoned" for fire hazard severity by CAL FIRE and is located over 10 miles from the nearest high fire hazard severity zone.

3.11.3 Regulatory Setting

Federal

Federal regulatory agencies include the U.S. Environmental Protection Agency (U.S. EPA), the Occupational Safety and Health Administration (OSHA), the Department of Transportation (DOT), and the National Institute of Health. The following represent federal laws and guidelines governing hazardous substances that could be applicable to the proposed project.

- Pollution Prevention Act (Title 42, Section 13101 et seq. of the United States Code [42 USC 13101 et seq.]/ Title 40 of the Code of Federal Regulations [40 CFR])
- Clean Water Act (33 USC 1251 et seq./40 CFR)

- Clean Air Act (42 USC 7401 et seq./40 CFR)
- Occupational Safety and Health Act (SFHA; 29 USC 651 et seq./29 CFR)
- Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA; 7 USC 136 et seq./40 CFR)
- Safe Drinking Water Act (42 USC 300f et seq./40 CFR)
- Toxic Substances Control Act (15 USC 2601 et seq./40 CFR)

At the federal level, the principal agency regulating the generation, transport and disposal of hazardous substances is the U.S. EPA, under the authority of the Resource Conservation and Recovery Act (RCRA). The RCRA established a federal hazardous substance "cradle-to-grave" regulatory program that is administered by the U.S. EPA. Under the RCRA, the U.S. EPA regulates the generation, transportation, treatment, storage, and disposal of hazardous substances. The RCRA was amended in 1984 by the Hazardous and Solid Waste Act (HSWA), which affirmed and extended the "cradle-to-grave" system of regulating hazardous substances. The HSWA specifically prohibits the use of certain techniques for the disposal of some hazardous substances. Under the RCRA, individual states may implement their own hazardous substance management programs as long as they are consistent with, and at least as strict as, the RCRA. The U.S. EPA must approve state programs intended to implement the RCRA requirements.

FIFRA provides for federal regulation of pesticide distribution, sale, and use ("pesticides" includes any herbicide, insecticide, rodenticide, algaecide, fungicide, or any combination of substances intended to prevent, destroy, or repel any pest). All pesticides distributed or sold in the United States must be registered (licensed) by the U.S. EPA. Before U.S. EPA may register a pesticide under FIFRA, the applicant must show, among other things, that using the pesticide according to specifications "will not generally cause unreasonable adverse effects on the environment." FIFRA defines the term "unreasonable adverse effects on the environment" to mean: "(1) any unreasonable risk to man or the environment, taking into account the economic, social, and environmental costs and benefits of the use of any pesticide, or (2) a human dietary risk from residues that result from a use of a pesticide in or on any food inconsistent with the standard under Section 408 of the Federal Food, Drug, and Cosmetic Act." Training is required for workers in pesticide-treated areas and certification and training for applicators of restricted use pesticides.

Hazardous Substances Worker Safety Requirements

OSHA is the agency responsible for ensuring worker safety. OSHA sets federal standards for implementation of training in the workplace, exposure limits, and safety procedures in the handling of hazardous substances (as well as other hazards). OSHA also establishes criteria by which each state can implement its own health and safety program.

Hazardous Materials Transportation

The DOT regulates the interstate transport of hazardous materials and wastes through implementation of the Hazardous Materials Transportation Act. This act specifies driver-training requirements, load labeling procedures, and container design and safety specifications. Transporters of hazardous wastes must also meet the requirements of additional statutes such as the RCRA.

State

The California Environmental Protection Agency (CalEPA) and the California Governor's Office of Emergency Services (Cal OES) establish rules governing the use of hazardous substances. The State Water Resources Control Board's (State Water Board) primary responsibility is to protect water quality and supply.

CalEPA was created in 1991 to better coordinate state environmental programs, reduce administrative duplication, and address the greatest environmental and health risks. CalEPA unifies the state's environmental authority under a single accountable, Cabinet-level agency. The Secretary for Environmental Protection oversees the following agencies: Air Resources Board, Integrated Waste Management Board, California Department of Pesticide Regulation, State Water Board, DTSC, and Office of Environmental Health Hazard Assessment.

Applicable state laws include the following:

- Porter Cologne Water Quality Control Act (California Water Code Section 13000–14076/23 CCR).
- California Accidental Release Prevention Law (California Health and Safety Code Section 25531 et seq./19 CCR).
- California Occupational Safety and Health Act (California Labor Code Section 6300–6718/8 CCR).
- Hazardous Materials Handling and Emergency Response "Waters Bill" (California Health and Safety Code Section 25500 et seq./19 CCR).
- Hazardous Waste Control Law (California Health and Safety Code Section 25100 et seq./22 CCR).
- California Air Quality Laws (California Health and Safety Code Section 39000 et seq./17 CCR).
- Pesticide Contamination Prevention Act (California Food and Agriculture Code Section 13141 et seq./3 CCR).

Within CalEPA, the DTSC has primary regulatory responsibility, with delegation of enforcement to local jurisdictions that enter into agreements with the state agency, for the generation, transport and disposal of hazardous substances under the authority of the Hazardous Waste Control Law (HWCL). Regulations implementing the HWCL list 791 hazardous chemicals and 20 or 30 more common substances that may be hazardous; establish criteria for identifying, packaging and labeling hazardous substances; prescribe management of hazardous substances; establish permit requirements for hazardous substances treatment, storage, disposal and transportation; and identify hazardous substances that cannot be deposited in landfills.

Under both the federal RCRA and the HWCL, the generator of a hazardous substance must complete a manifest that accompanies the waste from the point of generation to the ultimate treatment, storage or disposal location. The manifest describes the waste, its intended destination, and other regulatory information about the waste. Copies must be filed with the DTSC. Generators must also match copies of waste manifests with receipts from the treatment, storage or disposal facility to which it sends waste.

Section 3 of the California Code of Regulations addresses the use of pesticides and pest control operations ("pesticides" includes any herbicide, insecticide, rodenticide, algaecide, fungicide, or any combination of substances intended to prevent, destroy, or repel any pest). These regulations provide pesticide

registration and licensing procedures, lists of restricted materials, work and worker safety requirements, and environmental protections for groundwater, surface water, air, and aquatic environments. SJAFCA and its contractors will be required to comply with the California Department of Pesticide Regulations.

Emergency Response to Hazardous Materials Incidents

California has developed an Emergency Response Plan to coordinate emergency services provided by federal, state, and local government and private agencies. Response to significant hazardous materials incidents is one part of this plan. The plan is administered by Cal OES, which coordinates the responses of other agencies including the CalEPA, the California Highway Patrol, CDFW, the Regional Water Quality Control Board (Regional Water Board), local environmental health departments, and local fire departments.

Local

San Joaquin County Public Health Services, Environmental Health Department

The Unified Hazardous Waste and Hazardous Management Regulatory Program (SB 1082, 1993) is a state and local effort to consolidate, coordinate, and make consistent existing programs regulating hazardous waste and hazardous materials management. CalEPA adopted implementing regulations for the Unified Program (CCR, Title 27, Division 1, Subdivision 4, Chapter 1) in January 1996. The Unified Program is implemented at the local level by a Certified Unified Program Agency.

San Joaquin County Office of Emergency Services

The San Joaquin County OES is responsible for effective planning for emergencies including those related to hazardous material incidents. The County OES coordinates planning, response to emergencies, improves procedures for incident notification and provides training and equipment to safety personnel (City of Stockton 1990). The California Health and Safety Code Section 25500 requires the County OES to: (1) prepare an inventory and information system for the storage and location of hazardous materials in the county; (2) oversee the preparation and collection of plans for those businesses that use hazardous substances; (3) prepare area response plans that would incorporate inventory data, training for emergency responses and evacuation plans; and (4) present an inspection plan and data management plan for approval to the state.

San Joaquin County Plans and Policies

San Joaquin County prepared a Hazardous Waste Management Plan (HWMP) in November 1988. The HWMP is intended to serve as the primary planning document for hazardous waste management in the county. The HWMP analyzes the hazardous waste situation within the county and makes recommendations. The recommendations within the HWMP encourage a variety of administrative programs to monitor and encourage hazardous waste reduction and to educate and inform hazardous waste generators and the public concerning hazardous waste problems. The HWMP also recommends that any Use Permit for a hazardous waste generator requires the generator to implement a waste reduction program.

The proposed project area includes lands in San Joaquin County and the cities of Stockton, Lathrop, and Manteca. Each of these jurisdictions have general plans with goals and policies that address hazards and

hazardous materials (see **Table 3.11-1**). Applicable general plan goals and policies are summarized below along with relevant local regulations.

TABLE 3.11-1
APPLICABLE GENERAL PLAN GOALS AND POLICIES – HAZARDS AND HAZARDOUS MATERIALS

General Plan	Goals and Policies
San Joaquin County	Public Health and Safety Element, Goal PHS-7, Policies PHS-7.1, PHS-7.2, PHS-7.3, PHS-7.5, PHS-7.8, and PHS-7.11
City of Stockton	Safety Element, Hazard Protection Section, Goal SAF-2, Policies SAF-2.1B, SAF-2.2A, SAF-2.9, SAF-2.9A, and SAF-2.9B
City of Lathrop	Public Safety Element, Goal PS-4, Policies PS-4.1 to PS-4.6
City of Manteca	Safety Element, Goal S-4, S-4.1 to S-4.4

SOURCES: City of Lathrop 2022; City of Manteca 2024; City of Stockton 2018; San Joaquin County 2016

San Joaquin County

San Joaquin County General Plan

The San Joaquin County General Plan includes goals and policies that address hazardous materials and wastes, as well as the location, storage, transportation, and safety of these materials. San Joaquin County requires the use, storage, and disposal of hazardous materials and wastes to comply with local, state, and federal safety standards and to maintain and implement the County HWMP.

City of Stockton

Envision Stockton 2040 General Plan

The City of Stockton General Plan includes goals and policies that address the risk of potential accidents and spills of hazardous materials in the city. Hazardous materials regulated by state and federal laws along as commonly used materials used in homes must be controlled. City of Stockton policies are implemented to minimize the risk to city residents and property associated with the transport, distribution, use, and storage of hazardous materials. The transportation of hazardous materials will be restricted within the city to routes that have been designated for such transport.

City of Lathrop

City of Lathrop General Plan

The City of Lathrop General Plan includes goals and policies that address public safety relating to Hazardous Waste and Materials. The Public Safety Element is designed to protect the community from any potential contamination from hazardous waste or materials. Producers and users of hazardous materials will be encouraged to reduce the amount of hazardous materials produced and used.

City of Manteca

City of Manteca General Plan

The City of Manteca General Plan includes goals and policies that address the health, safety, natural resources, and property through regulation of use, storage, transport, and disposal of hazardous materials.

Policies regulate the production, use, storage, transport, and disposal of hazardous materials to protect the health and safety of Manteca residents.

3.11.4 Impacts and Mitigation Measures

Methods of Analysis

Thresholds of Significance

In accordance with Appendix G of the CEQA Guidelines, an impact is considered significant if the proposed project would:

- Create a significant hazard to the public or the environment through the routine transport, use, or disposal or through 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 one-quarter 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 Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment.
- For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project result in a safety hazard or excessive noise for people residing or working in the project area
- Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan.
- Expose people or structures, either directly or indirectly, to a significant risk of loss, injury or death involving wildland fires.

Impacts Not Further Evaluated

Be located on previously unknown hazardous material sites or sites on the list compiled by Government Code Section 65962.5 and, as a result, would create a significant hazard to the public or environment.

As discussed in Section 3.11.2, *Environmental Setting*, there are no known active hazardous materials sites within 0.25 mile of the proposed project area and none of the proposed project components would be located on or directly adjacent to a site that is listed as a hazardous material site pursuant to Government Code Section 65962.5. Therefore, implementation of the proposed project would not create a significant hazard to the public or environment due to being located on a designated hazardous materials site and no impact would occur.

Be located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport.

The proposed project components are not located within 2 miles of a public airport or public use airport and, as such, is not included in an airport land use compatibility plan. The closest airport to the proposed

project area is the Stockton Metropolitan Airport located over 4 miles from the proposed project area. Furthermore, proposed project components are not tall enough to create a hazard and are consistent with existing flood reduction features in the proposed project area. Therefore, construction and O&M of the proposed project would not result in a safety hazard for people residing or working in the project area and no impact would occur.

Impacts and Mitigation Measures

Table 3.11-2 summarizes the impact conclusions presented in this section.

TABLE 3.11-2
SUMMARY OF IMPACT CONCLUSIONS – HAZARDS AND HAZARDOUS MATERIALS

Impact Statement	Flood Risk Reduction Components	Restoration Sites 13, 14, and 16	Other Multi-Benefit Components
3.11-1: Implementation of the proposed project could involve the routine transport, use, or disposal of hazardous materials and may result in reasonably foreseeable upset and accident conditions.	LS	LS	LS
3.11-2: Implementation of the proposed project could involve the storage or use of hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school.	LS	LS	LS
3.11-3: Implementation of the proposed project could interfere with an adopted existing emergency response plan or evacuation plan.	LSM	LSM	LSM
3.11-4: Implementation of proposed project could expose people or structures, either directly or indirectly, to significant loss, injury, or death due to wildland fires.	LS	LS	LS

NOTES: LS = Less than Significant; LSM = Less than Significant with Mitigation

Impact 3.11-1: Implementation of the proposed project could involve the routine transport, use, or disposal of hazardous material and may result in reasonably foreseeable upset and accident conditions.

Flood Risk Reduction Components

Implementation of proposed flood risk reduction components include raising the height of levees along portions of the existing levee alignment, construction of a dryland levee extension and drained seepage berm, and placement of riprap rock slope protection, and various staging areas. Site preparation would require the removal of existing features to facilitate the proposed levee improvements, including structures, fencings, utility poles, asphalt pavement, woody vegetation, and other minor appurtenances. More extensive demolition would be required at the Mossdale Crossing County Park and removal of approximately 17 modular homes and appurtenances at the Oakwood Lake Mobile Estates. Portions of public paved roads would be demolished where the existing dryland levee and proposed dryland levee extension cross Woodward Avenue, Airport Way, Oleander Avenue, Fig Road, and Union Road. As described in Chapter 2, *Project Description*, any hazardous materials encountered during site preparation would be removed according to hazardous materials regulations and hauled to the nearest landfill licensed for identified hazardous materials.

Construction of the proposed flood risk reduction components could involve the use of small amounts of routinely used hazardous materials including but not limited to petroleum products (i.e., oil, gasoline, and diesel fuels), automotive fluids (i.e., antifreeze and hydraulic fluids), and other chemicals (i.e., adhesives, solvents, and other chemicals). Incorrect storage, handling, transporting, or disposing of hazardous materials could result in an inadvertent release that could pose a potential health risk to construction workers and to the public. However, the storage, handling, transport, and disposal of all hazardous materials would be required to comply with all applicable federal, state, and local laws and regulations that pertain to the avoidance and, if necessary, mitigation of the accidental release of hazardous materials. This includes CCR Title 8, Section 5194, which requires a hazards communication program identifying hazardous materials on-site and reducing the potential for a spill, and CFR Title 29, Section 1910.120, which includes requirements for emergency response to releases or substantial threats of releases of hazardous substances. Construction contractors would be required to prepare and implement a Hazardous Materials Business Plan (HMBP) to manage any hazardous materials used. Further, all spent hazardous materials would be disposed of in accordance with DTSC and County regulations.

Similar to existing conditions, regular O&M activities would consist of inspections, weed abatement, removal of encroachments and high-hazard vegetation to ensure levee integrity, replacement and re-working of displaced or launched revetment following large flood events, and adequate levee access along the levee toe road. There would be no new storage or removal of hazardous waste.

Because the amounts of hazardous materials anticipated to be used would be small and all hazardous materials would be stored, handled, transported, and disposed of in compliance with the applicable laws and regulations, this impact would be **less than significant**.

Restoration Sites 13, 14, and 16 and Other Multi-benefit Components

Proposed ecosystem restoration features at Sites 13, 14, and 16 would include excavated floodplains, floodplain side channels, brush mat, habitat wood structures, willow baffles, and upland brush piles. The proposed project also includes implementation of other multi-benefit components including additional ecosystem restoration sites, and recreation features along the levee system. These proposed multi-benefit components are described in Chapter 2, *Project Description*, and are presented on Figure 2-3. Table 2-2 in Chapter 2, *Project Description* lists the type of ecosystem restoration, habitat acreage, and approximate grading volumes for Sites 13, 14, and 16 and for the additional proposed ecosystem restoration sites. Proposed recreational features include the development of recreational paths along the top of levee and landside toe within the San Joaquin River corridor. Construction activities could require the use of small amounts of routinely used hazardous materials including petroleum products, automotive fluids, and others. Incorrect storage, handling, transporting, or disposing of hazardous materials could result in an inadvertent release that could pose a potential health risk to construction workers and to the public. However, the storage, handling, transport, and disposal of hazardous materials would be required to comply with all applicable federal, state, and local laws and regulations that pertain to avoiding and, if necessary, mitigating the accidental release of hazardous materials. Construction contractors would be required to prepare and implement an HMBP to manage any hazardous materials used. Further, all spent hazardous materials would be disposed of in accordance with DTSC and County regulations.

As described in Chapter 2, *Project Description*, following completion of construction activities for the ecosystem restoration features planting, irrigation and monitoring would occur over the following 3 years

during the plant establishment period. This would include focused application of herbicides to control invasive plants. Maintenance activities for the ecosystem restoration features would be performed throughout the year though some would vary according to weather and season. Over time maintenance frequency and intensity would be expected to decrease as the sites become more self-sustaining with removal of irrigation would occur and less frequent activities to control invasive plants. Similar to current conditions, O&M activities would consist of inspections, weed abatement, removal of encroachments and high-hazard vegetation to ensure levee integrity, replacement and re-working of displaced or launched revetment. The use of pesticides, and worker and environmental safety, are specifically regulated at the federal level (FIFRA) and state level (DPR and 3 CCR Food and Agriculture, Division 6. Pesticides and Pest Control Operations). No other hazardous materials would be stored or used on the site and thus there would be no potential for an accidental release of hazardous materials.

Because the amounts of hazardous materials anticipated to be used would be small and all hazardous materials would be stored, handled, transported, and disposed of in compliance with the applicable laws and regulations, this impact would be **less than significant**.

Mitigation Measures

Mitigation Measures (FRR/RS/MB): None required.

Impact 3.11-2: Implementation of the proposed project could involve the storage or use of hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school.

Flood Risk Reduction Components

Several existing schools and daycare centers are located within 0.25 mile of the location of proposed flood risk reduction components.

As described in Impact 3.11-1, site construction activities could involve the use of small amounts of routinely used hazardous materials that if incorrectly stored, handled, transported, or disposed of could be inadvertently released posing a potential health risk. Site preparation and construction activities would be required to comply with all applicable federal, state, and local laws and regulations that pertain to the avoidance and, if necessary, mitigation of the accidental release of hazardous materials.

Because the amounts of hazardous materials anticipated to be used would be small and all hazardous materials would be handled, stored, transported, and disposed of in compliance with the applicable regulations, impacts associated with hazardous materials emissions within 0.25 mile of a school would be **less than significant**.

Restoration Sites 13, 14, and 16 and Other Multi-benefit Components

As described in Impact 3.11-1, construction activities for the proposed ecosystem restoration features at Sites 13, 14, and 16 and at the additional ecosystem restoration sites, and implementation of proposed recreation features would use limited quantities of hazardous materials such as gasoline and diesel fuel. Following completion of construction activities for the ecosystem restoration features planting, irrigation and monitoring would occur over the following 3 years during the plant establishment period. This would include focused application of herbicides to control invasive plants. Over time maintenance frequency and intensity would be expected to decrease as the sites become more self-sustaining with removal of

irrigation would occur and less frequent activities to control invasive plants. As also discussed in Impact 3.11-1 similar to current conditions, O&M activities would consist of inspections, weed abatement, removal of encroachments and high-hazard vegetation to ensure levee integrity, replacement and re-working of displaced or launched revetment. The use of pesticides, and worker and environmental safety, are specifically regulated at the federal level (FIFRA) and state level (DPR and 3 CCR Food and Agriculture, Division 6. Pesticides and Pest Control Operations). No other hazardous materials would be stored or used on the site and thus there would be low potential for the emission of hazardous materials within 0.25 mile of a school.

Because the amounts of hazardous materials anticipated to be used would be small and all hazardous materials would be handled, stored, transported, and disposed of in compliance with the applicable regulations, impacts associated with hazardous materials emissions within 0.25 mile of a school would be **less than significant**.

Mitigation Measures

Mitigation Measures (FRR/RS/MB): None required.

Impact 3.11-3: Implementation of the proposed project could interfere with an existing emergency response plan or evacuation plan.

All Project Components

Proposed flood risk reduction components include raising the height of levees along portions of the existing levee alignment, construction of a dryland levee extension and drained seepage berm, and placement of riprap rock slope protection, and various staging areas. As described under Impact 3.17-1, temporary construction traffic would include a substantial number of haul trips, which could temporarily degrade conditions for multimodal travel near the construction sites. In addition, improvements for the existing dryland levee and construction of the dryland levee extension would require the temporary closure of public roads where they intersect the alignment, including Woodward Avenue, Airport Way, Oleander Avenue, Fig Road, and Union Road.

Proposed ecosystem restoration features at Sites 13, 14, and 16 would include excavated floodplains, floodplain side channels, brush mat, habitat wood structures, willow baffles, and upland brush piles. The proposed project also includes implementation of other multi-benefit components including additional ecosystem restoration sites, and recreation features along the levee system. These proposed multi-benefit components are described in Chapter 2, *Project Description*, and are presented on Figure 2-3. Proposed recreational features include the development of recreational paths along the top of levee and landside toe within the San Joaquin River corridor. Increases in traffic volumes on local roadways providing access to the proposed project area could cause intermittent and temporary slowdowns in traffic flow during construction. Traffic would return to baseline conditions following construction. O&M activities would result in a minor increase in motor vehicle trips which would not be substantial enough to result in congestion that could interfere with emergency access or emergency evacuation plans.

However, as described above, construction of proposed project components would result in a substantial number of haul trips that could temporarily degrade conditions for multimodal travel near construction sites. In addition, construction of the dryland levee extension would require temporary closure of public

roads where they intersect the alignment. As described in Chapter 2, *Project Description*, neighborhoods along haul routes would be notified of haul routes, ingress and egress points, staging areas, detours, lane closures (if any), and closed recreational areas (including bike paths) approximately one week prior to commencement of construction activities. Signage would be installed at all ingress and egress locations to alert the public of construction activities and potential restrictions on access during construction activities. Nevertheless, construction activities could result in temporary interference with implementation of emergency access and/or emergency evacuation plan due to substantial haul trips to and from construction sites and the temporary closure of intersections for construction of the dryland levee. Therefore, this impact is considered **significant**.

Mitigation Measures

Mitigation Measure (FRR/RS/MB): Implement Mitigation Measure 3.17-1.

Significance After Mitigation: Mitigation Measure 3.17-1 requires the preparation and implementation of a construction traffic management plan, such that implementation of the proposed project components would not interfere with emergency response efforts. Implementing this mitigation measure would reduce the potentially significant impact related to interference with implementation of emergency access and/or emergency evaluation plans to a **less-than-significant level**.

Impact 3.11-4 Implementation of the proposed project could expose people or structures, either directly or indirectly, to significant loss, injury, or death due to wildland fires.

Flood Risk Reduction Components

The proposed project area is surrounded by agricultural land, with some industrial and residential uses. There are no designated forestry lands within or adjacent to the proposed project area. The proposed project is not located within a heavily wooded area nor is it surrounded by wildlands or forests. The proposed project area and surrounding land is designated “Other Unzoned” for fire hazard severity by CAL FIRE and is located over 10 miles from the nearest high fire hazard severity zone. During construction, fire risk would increase due to the presence of fuels and construction equipment within the proposed flood risk reduction components. Site preparation would begin with trimming and/or removal of vegetation and demolition of structures, hardscape, and surface features where construction access and activities would occur. This would eliminate dry vegetation that could serve as a fuel source during a wildfire and convert it into newly planted native species that will be maintained and pose less severe risks during a fire. Therefore, any increase in risk would be minimal and temporary and this impact would be **less than significant**.

Restoration Sites 13, 14, and 16 and Other Multi-benefit Components

Proposed ecosystem restoration features at Sites 13, 14, and 16 would include excavated floodplains, floodplain side channels, brush mat, habitat wood structures, willow baffles, and upland brush piles. The proposed project also includes implementation of other multi-benefit components including additional ecosystem restoration sites, and recreation features along the levee system. As mentioned above, the proposed project area and surrounding land is designated “Other Unzoned” for fire hazard severity by CAL FIRE and is located over 10 miles from the nearest high fire hazard severity zone. During construction, fire risk would increase due to the presence of fuels and construction equipment within the proposed project. Site preparation would begin with trimming and/or removal of vegetation and

demolition of structures, hardscape, and surface features where construction access and activities would occur. This would eliminate dry vegetation that could serve as a fuel source during a wildfire and convert it into newly planted native species that would be maintained and poses less severe risks during a fire. Following completion of construction activities for the ecosystem restoration features planting, irrigation and monitoring would occur over the following 3 years during the plant establishment period. Therefore, any increase in risk would be minimal and temporary and this impact would be **less than significant**.

Mitigation Measures

Mitigation Measures (FRR/RS/MB): None required.

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3.12 Hydrology and Water Quality

3.12.1 Introduction

This section addresses the potential impact of implementation of the proposed project on hydrology and water quality. The hydrology and water quality impact analysis was developed based on review of information provided in published documents and databases (e.g., water quality control plans, groundwater sustainability plans), as well as a project-specific hydraulic impact analysis provided in Appendix G to this Draft EIR.

Comments addressing hydrology and water quality were received in response to the NOP. Comments requested consideration of impacts to existing drainage facilities and compliance with regulations and permits related to the protection of surface and groundwater. Concerns were also expressed around the potential for the proposed project to exacerbate flooding south of the proposed dry land levee. See Appendix A to this Draft EIR for NOP comment letters.

3.12.2 Environmental Setting

The following sections describe the existing conditions in and around the proposed project area, including climate, surface water hydrology, groundwater hydrology, surface water and groundwater quality, and local drainage and flooding.

Climate

The proposed project is located in the northern portion of San Joaquin Valley. The region is characterized by a Mediterranean climate with long hot dry summers and cool rainy winters that include dense tule fog (San Joaquin County 2014). Average annual rainfall is 18 inches per year, with the mean annual precipitation as measured in the City of Stockton is 14.00 inches (WRCC 2025). The temperature ranges from average daily maximums of 88.4 degrees Fahrenheit (°F) to average daily minimums of 56.9°F in June and from average daily maximums of 53.4°F to average daily minimums of 37.7°F in January (San Joaquin County 2016). To the west the Coast Ranges provide a buffer from the Pacific Ocean, moderating the influence of the marine environment. Winds in the San Joaquin Valley most frequently blow from the northwest, especially in the summer, and the region's topographic features restrict air movement and channel the air mass towards the southeastern end of the valley (City of Manteca 2022).

Hydrology

Surface Water

Figure 3.12-1 illustrates surface water hydrology in the vicinity of the proposed project area. The proposed project area is located in the Sacramento-San Joaquin Delta (Delta) along the lower portion of the San Joaquin River. Other relevant water bodies (from upstream to downstream) include Paradise Cut, Old River, and French Camp Slough. Each of these water bodies is discussed in more detail below.

Sacramento-San Joaquin Delta

The proposed project area includes the southern portion of the Delta waterways. The Delta is a 700-mile network of sloughs and waterways surrounding more than 60 leveed tracts and islands (Water Education Foundation 2025). The Delta is formed by the Sacramento River flowing south to meet the north-flowing

San Joaquin River just south of Sacramento, where the rivers mix with smaller tributaries and tidal flows. The Delta has a large area of prime farmland and serves as the hub of California's freshwater-delivery system that moves water from the wet north to the dry southern part of the state (USGS 2018).

Water movement in the Delta responds to four primary forcing mechanisms: (1) freshwater inflows draining to the ocean; (2) Delta exports and diversions; (3) operation of water control facilities such as dams, export pumps and flow barriers; and (4) the regular tidal movement of seawater into and out of the Delta. In addition, winds and salinity behavior within the Delta can generate secondary currents, which, although low velocity, can be of considerable significance with respect to transporting contaminants and mixing different sources of water. Changes in flow patterns within the Delta, whether caused by export pumping, winds, atmospheric pressure, flow barriers, tidal variations, inflows, or local diversions, can influence water quality at drinking water intakes (CALFED Bay-Delta Program 2005).

San Joaquin River

The San Joaquin River Basin covers approximately 15,880 square mile basin and includes the entire area drained by the San Joaquin River. It includes all watersheds tributary to the San Joaquin River and the Delta south of the Sacramento River and south of the American River watershed (Regional Water Board 2019). The San Joaquin River originates in the Sierra Nevada Mountains and enters the San Joaquin Valley at Friant Dam, flowing northward and draining the portion of the Central Valley south of the Delta and north of the Tulare Lake Basin, serving as the drainage channel for the entire basin and discharging into the Delta. The San Joaquin River watershed includes a substantial high-elevation zone above 6,000 feet, where precipitation falls as snow during winter months. Accumulated snow typically melts in late spring, producing high streamflow runoff. Warmer winter storms may result in rain-on-snow events, producing wintertime floods. The San Joaquin River is tidally influenced throughout much of the proposed project area (State Water Board 2023). The Stanislaus River is one of three principal tributaries to the San Joaquin River, draining 1100 square miles on the western slope of the Sierra Nevada, with 40 percent of its basin above the snowline (USACE 1999). The Stanislaus River is a contributing source of floodwater to the proposed project area.

Paradise Cut

Paradise Cut is a historic distributary slough of the San Joaquin River that serves as a natural bypass for high-water flows and protects the urbanized areas of Lathrop and Stockton from flooding. At the head of the cut a rock weir allows San Joaquin flows to enter the cut when the river is flowing at about 17,000 cubic feet per second (South Delta Water Agency 2025). The ongoing Paradise Cut Expansion Project is part of the Central Valley Flood Protection Plan (CVFPP) and seeks to further decrease peak flows during potential flood events and improve and enhance habitat.

Old River

Old River is a tidal distributary of the San Joaquin River that flows for approximately 40 miles through the Delta. The river is lined with levees that prevent flooding of the adjacent Delta islands, many of which lie below sea level.

Water Monitoring Station
Legal Delta

Project Components

RD 17 Levee Alignment ROW
Levee Improvements
Waterside Erosion Repairs and Rock Slope Protection Footprint
Haul Routes
Staging Areas (SA)
Restoration Sites (Project-level evaluation)
Restoration Sites (Program-level evaluation)

Project Vicinity

Stockton
Lathrop
Manteca
Tracy
Louise Ave
French Camp Slough
San Joaquin River
Middle River
Old River
Paradise Cut
Ssjid Cnl
South Fork Little Johns
North Little Johns
Weber Slough
Duck Crk
Lone Tree Crk
Banta Carbona Lift Cnl
Delta Mendota Cnl
Stanislaus River
Mid Lateral No 3

Stockton
French Camp Slough
San Joaquin River
Weber Slough
Ssjid Cnl
Airport Way
S Harlan Rd
99
SA 2
French Camp Rd
SA 3
Mathews Rd
Howard Rd
SA 4
BDT
S Roberts Rd
Bowman Rd
Manthey Rd
Frewert Rd
Site 2
SA 5
Site 5
de Lima Rd
5
SA 6
Dos Reis Rd
Site 6
S Lathrop Rd
SJD
SA 7
Old River
Golden Valley Pkwy
SJL
River Islands Parkway
OH1
Site 9
Lathrop
Town Centre Dr
River Islands Pkwy
SA 9
Queirolo Rd
SA 10
Howland Rd
Stewart Rd
MSD
SA 11
SA 14
Site 14
Site 16
SA 15
SA 16
SA 13
Site 17
Site 13
McKinley Ave
Yosemite Ave
Manteca
120
Airport Way
Peach Ave
Union Rd
Tinnin Rd

N
0
0.75
Miles

Path: U:\GIS\GIS\Projects\19xxxx\D20190130 1 02_SJAFCA_Mossdale_UFRR\03 MXDs Projects\CEQA\CEQA_v2.aprx Fig3 12-1 Surface Water R... EPimentel 11/20/2025

SOURCE: MAXAR, 2024; CPAD, 2025; KSN, 2025; PBI, 2025; ESA, 2025

SJAFCA Mossdale Tract Urban Flood Risk Reduction Project

Figure 3.12-1
Surface Water Resources

ESA

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French Camp Slough

French Camp Slough is an approximately 7-mile waterway in an agricultural watershed in San Joaquin County, formed by the confluence of two tributaries, Littlejohns Creek and Lone Tree Creek. It connects with the San Joaquin River approximately 0.7 mile south of CA-4 and is downstream of proposed flood risk reduction project components, in the northern portion of the proposed project area.

Groundwater

The San Joaquin River Hydrologic region contains 11 distinct groundwater subbasins. As depicted in **Figure 3.12-2**, the proposed project area falls within the Tracy Subbasin (DWR Basin Number 5-022.15; DWR 2006a) and the Eastern San Joaquin Subbasin (DWR Basin Number 5-022.01; DWR 2006b). Both subbasins are part of the larger San Joaquin Valley Groundwater Basin. The following subsections describe the Tracy and Eastern San Joaquin subbasins in more detail. Refer to the next section (*Water Quality*) for a description of groundwater quality.

Tracy Subbasin

The Tracy Subbasin boundaries follow the Old River on the northwest, the Coastal Range on the southwest and south, and the San Joaquin River on the east (DWR 2006a). The southeast boundary of the subbasin, along the San Joaquin-Stanislaus county line, follows irregular water district boundaries. The subbasin is almost entirely with San Joaquin County but includes a small triangular portion of Alameda County. About one-half of the subbasin is a mix of Delta islands (mostly agriculture) and waterways while the other half is comprised of urban and agricultural communities (Non-Delta areas) (GEI Consultants 2021).

Surface water is available to most areas of the basin and is supplemented with groundwater. Groundwater levels within the subbasin have been relatively stable and recover after periods of pumping with only a few areas indicating declining groundwater levels. About 2,400 wells (about 1,950 domestic and 450 agricultural, industrial and municipal wells) are present in the subbasin and provide about 12,000 acre-feet annually for drinking water and irrigation, but this only constitutes about 3 percent of the total water supplies for the subbasin. The remaining 97 percent of water used is surface water (GEI Consultants 2021).

The Tracy Subbasin has two principal aquifers (Upper and Lower) which are separated by a low-permeability clay (the Corcoran Clay) that extends beyond the subbasin into the San Joaquin Valley. The depth of the Corcoran Clay varies through the subbasin but generally is about 200 feet below ground surface (bgs). The extent of the Corcoran Clay is not fully defined in the subbasin. The Upper aquifer provides water to domestic wells, groundwater-dependent ecosystems and public and small community water systems. The Upper aquifer receives recharge from precipitation, deep percolation of applied water for agriculture and rivers. The Upper aquifer also discharges groundwater to the rivers. The Lower aquifer is used by public water systems and agriculture. The aquifer is recharged from other subbasins south of the subbasin. The Corcoran Clay is absent near the foothills where precipitation can also recharge the aquifers. Because the Corcoran Clay may be absent beneath the Delta islands and possible in the western portions of the subbasin, groundwater from the Upper aquifer may also recharge the Lower aquifer (GEI Consultants 2021).

The depth to groundwater in the Upper aquifer varies from a few feet bgs in the Delta islands and near the rivers to as much as 80 feet bgs near the foothills. The depth to groundwater in the Lower aquifer is deeper, ranging from 20 feet bgs to as much as 270 feet bgs near the foothills. Groundwater levels in the Lower aquifer are above the Corcoran Clay; therefore, the potential for subsidence is low. Groundwater levels in most of the Tracy Subbasin are stable or rising, however, there are five wells based on long-term records (1998-2020), two in the southern portion of the Non-Delta Management area and three in the western portion of the Non-Delta Management area where groundwater levels are declining (GEI Consultants 2021).

Groundwater Management

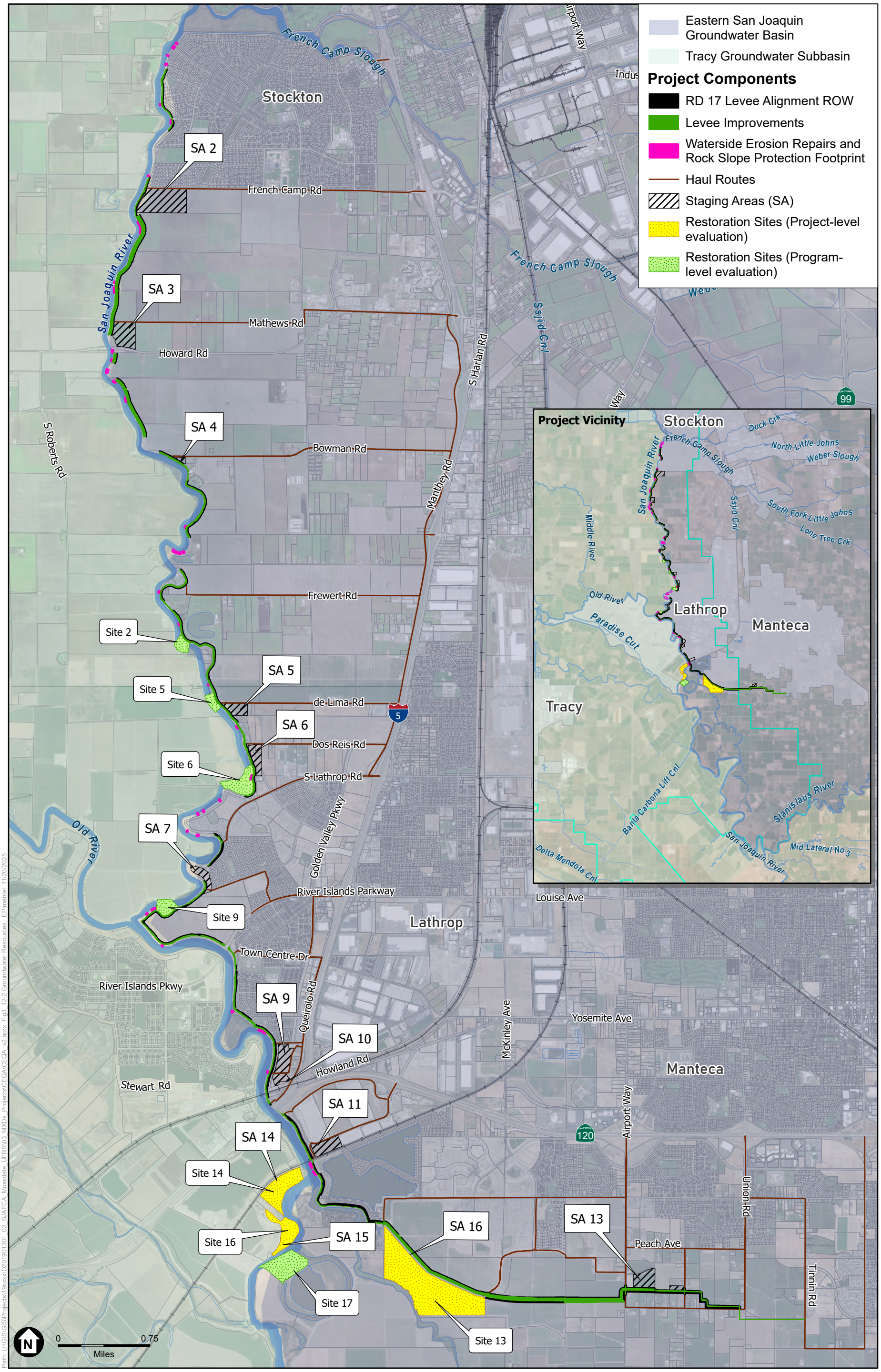
The Tracy Subbasin was designated by DWR as a "medium priority" subbasin and is therefore required to comply with the Sustainable Groundwater Management Act (SGMA, discussed in more detail in subsection 3.12.3, *Regulatory Setting*). Adjacent subbasins (e.g., the Eastern San Joaquin Basin) were designated as high priority and critically overdrafted. Six local public agencies (Banta-Carbona Irrigation District, Byron-Bethany Irrigation District, City of Lathrop, City of Tracy, San Joaquin County, and the Stewart Tract) are designated as Groundwater Sustainability Agencies (GSAs) responsible for sustainably managing groundwater in the Tracy Subbasin. The Tracy Subbasin Groundwater Sustainability Plan (GSP) was released November 1, 2021 (GEI Consultants 2021).

The Delta Management area will not require active groundwater management by the GSAs to maintain sustainability while the Non-Delta Management area may require active management to be sustainable. Water budgets for just the Non-Delta Management area shows the historic water budget to be in slight surplus but the projected water budget with climate change shows a slight deficient. The deficit, about 800 acre-feet per year (AFY), is occurring in the Upper aquifer, while the Lower aquifer is showing a slight surplus of about 100 AFY (GEI Consultants 2021).

The sustainability goal for the Non-Delta Management portions of the Tracy Subbasin is: To provide reliable and sustainable groundwater resources for existing and future needs of all beneficial users in the Tracy Subbasin that does not degrade or decrease over time and will continue to be sustained through continued local adaptive management of the resources. Significant and undesirable results (locally defined), minimum thresholds, and measurable objectives were developed for five of the six sustainability indicators: chronic lowering of groundwater levels, reduction of storage, land subsidence, degradation of water quality, and surface water depletion. Seawater intrusion has not occurred in the past and is unlikely to occur in the future and therefore sustainability criteria were not established for this sustainability indicator (GEI Consultants 2021).

Eastern San Joaquin Subbasin

The Eastern San Joaquin Subbasin includes lands south of Dry Creek between the San Joaquin River on the west and the crystalline basement rock of the Sierra Nevada foothills on the east (DWR 2006b). The Eastern San Joaquin Subbasin boundary to the south stretches along the San Joaquin County line and continues along the Stanislaus River into Calaveras County to the east. Ground surface elevations vary extensively across the Eastern San Joaquin Subbasin, from almost 1,000 feet above mean sea level in the upload areas in the east to around sea level in the flat lying valley floor to the west. Three major westerly flowing tributaries to the San Joaquin River within or adjacent to the Eastern San Joaquin Subbasin are the Stanislaus River (Subbasin south boundary), the Mokelumne River (north portion of Subbasin), and



SOURCE: MAXAR, 2024; CPAD, 2025; KSN, 2025; PBI, 2025; ESA, 2025

SJAFCA Mossdale Tract Urban Flood Risk Reduction Project

Figure 3.12-2
Groundwater Resources

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the Calaveras River (central portion of Subbasin). Land use patterns in the Eastern San Joaquin Subbasin are dominated by agricultural uses, including nut and fruit trees, vineyards, row crops, grazing and forage. Both agricultural and urban land use rely on a combination of surface water and groundwater, with some agricultural lands using recycled or reusing water (ESJGA 2024).

The Eastern San Joaquin Subbasin has one principal aquifer that provides water for domestic, irrigation, and municipal water supply and is composed of three water production zones: the shallow zone that consists of alluvial sands and gravels of the Modesto, Riverbank, and Upper Turlock Lake Formations; the intermediate zone that consists of the Lower Turlock lake and Laguna Formations; and the deep zone that consists of the consolidated sands and gravels of the Mehrten Formation (ESJGA 2024).

Groundwater recharge and discharge are driven by both natural and anthropogenic (human-influenced) factors. Recharge in the shallow zones occurs through soil and applied water infiltration, infiltration and percolation of surface water bodies and via groundwater flow from upgradient areas and potentially from flow between subbasins from the north, south, and west. Groundwater discharge primarily occurs through groundwater production wells, as well as to rivers and streams where groundwater elevations are higher than river stages. Other sources of groundwater discharge are evapotranspiration from riparian areas, phreatophyte woodlands, and other groundwater-dependent ecosystem communities (ESJGA 2024).

Interconnected surface waters are surface water features that are hydraulically connected by a saturated zone to the groundwater system. In these systems, the water table and surface water features intersect at the same elevations and locations. Interconnected surface waters may be either gaining or losing, wherein the surface water feature itself is either gaining water from the aquifer system or losing water to the aquifer system. The San Joaquin River is interconnected with the subbasin greater than 75 percent of the time (ESJGA 2024). Disconnected streams will always be losing streams, but interconnected streams may be either losing or gaining, depending on the surface water and groundwater conditions. As mentioned, groundwater discharge from the aquifer is primarily through groundwater pumping, however, groundwater also discharges to streams where groundwater elevations are higher than the streambed elevations. The proposed project area has a mix of mostly gaining streams where groundwater discharges to the San Joaquin River more than 75 percent of time, mostly losing streams where the San Joaquin River loses water to the groundwater system (ESJGA 2024).

Groundwater levels in some portions of the Eastern San Joaquin Subbasin have been declining for many years, while groundwater levels in other areas of the Eastern San Joaquin Subbasin have remained stable or increased in recent years. The change in groundwater levels varies across the Eastern San Joaquin Subbasin, with the greatest declines occurring in the central portion. The western and southern portions have experienced less change in groundwater levels, in part due to the minimal groundwater pumping in the Delta area to the west and the import of surface water for agricultural and urban uses. In the most recent years, groundwater levels show a general trend of increasing as a result of two significantly wet water years following two critically dry water years (ESJGA 2024).

While the total volume of groundwater in storage in the Eastern San Joaquin Subbasin has declined over time, groundwater storage reduction has not historically been an area of concern, as there are large volumes of fresh water stored in the aquifer. The total fresh groundwater in storage was estimated at over 50 million-acre-feet (MAF) in 2015. The amount of groundwater in storage has decreased by

approximately 0.01 percent per year (or -0.34 MAF per year) between 1995 and 2023. As such, it is highly unlikely the Eastern San Joaquin Subbasin will experience conditions under which the volume of stored groundwater poses a concern, although the depth to access that groundwater does pose a concern. Despite long-term declining groundwater levels, land subsidence has not historically been an area of concern in the Eastern San Joaquin Subbasin, and there are no records of land subsidence caused by groundwater pumping in the subbasin (ESJGA 2024).

Historically, the two aspects of greatest focus for groundwater management in the Eastern San Joaquin Subbasin have been groundwater elevation and, in some areas of the subbasin, groundwater quality. The western and southern portions of the subbasin, underlying the proposed project area, have experienced less change in groundwater levels, in part due to the minimal groundwater pumping in the Delta area to the west. The import of surface water for agricultural and urban uses and groundwater storage reduction has not historically been an area of concern in the subbasin, as there are large volumes of fresh water stored in the aquifer (ESJGA 2024). However, the total volume of groundwater in storage in the Eastern San Joaquin Subbasin has declined over time, and the groundwater basin is now considered critically overdrafted (DWR 2021).

Groundwater Management

The Eastern San Joaquin Groundwater Subbasin was identified by DWR as critically overdrafted. The Eastern San Joaquin Groundwater Authority (ESJGA) was formed in 2017 in response to SGMA (discussed in more detail in subsection 3.12.3, *Regulatory Setting*) and prepared a GSP. The Eastern San Joaquin GSP was originally developed in 2020 to meet SGMA regulatory requirements and then revised in 2022 and 2024 to address comments from DWR (ESJGA 2024).

The sustainability goal description for the Eastern San Joaquin Subbasin is "to maintain an economically-viable groundwater resource for the beneficial use of the people of the Eastern San Joaquin Subbasin by operating the subbasin within its sustainable yield or by modification of existing management to address future conditions. This goal will be achieved through the implementation of a mix of supply and demand type projects consistent with the GSP implementation plan." Sustainability indicators refer to any of the effects caused by groundwater conditions occurring throughout the subbasin that, when significant and unreasonable, cause undesirable results. Representative monitoring networks exist for these indicators to monitor conditions across the Eastern San Joaquin Subbasin and to detect trends toward undesirable results (ESJGA 2024).

The sustainability indicators identified by DWR that are applicable to the subbasin[1] are the following: chronic lowering of groundwater levels indicating a significant and unreasonable depletion of supply if continued over the planning and implementation horizon; significant and unreasonable reduction of groundwater storage; significant and unreasonable degraded water quality; significant and unreasonable land subsidence that substantially interferes with surface land uses; and depletions of interconnected surface water that have significant and unreasonable adverse impacts on beneficial uses of the surface

[1] Seawater intrusion is not considered an applicable sustainability indicator for the Eastern San Joaquin Subbasin as the adjoining Sacramento-San Joaquin River Delta (Delta) is managed as a freshwater body, there is minimal pumping near the Delta, and there are relatively low chloride concentrations in the Subbasin.

water. Achieving sustainability in the Eastern San Joaquin Subbasin requires implementation of projects and management actions (ESJGA 2024).

Water Quality

Surface Water Quality

Surface water quality in water bodies within and adjacent to the proposed project area are influenced by precipitation, discharge of human-made constituents, and several naturally occurring constituents, such as salinity and nutrients (including organic carbon) that are necessary components of the ecosystem and can vary with natural hydrology and tidal cycles. Human-made constituents of concern, such as pathogens and contaminants, result from point-source and nonpoint-source discharges and legacy contamination. The magnitude of the effect of each factor on water quality can differ for different constituents and for different hydrologic conditions (water year types). Examples of point and nonpoint sources of pollutants to surface waters in the proposed project area and vicinity include:

- *Drainage discharged from inactive and abandoned mines* can contribute metals, such as mercury, cadmium, copper, and zinc.
- *Stormwater runoff* can contribute metals, sediment, pathogens, organic carbon, nutrients, pesticides, dissolved solids (i.e., salts), petroleum products, oil and grease, and other chemical residues.
- *Discharges from wastewater treatment plants* can contribute salts, metals, trace elements, nutrients, pathogens, organic carbon, and pesticides.
- *Agricultural irrigation return flows and nonpoint-source discharges* can contribute salts, organic carbon, methylmercury, nutrients, pesticides, pathogens, and sediment.
- *Direct application of herbicides and insecticides* for aquatic plants and mosquito control can contribute organic chemicals.
- *Water-based recreational activities (e.g., boating)* can contribute hydrocarbon compounds, nutrients, and pathogens.
- *Atmospheric deposition* can contribute metals, pesticides, and synthetic organic chemicals and may lower pH via precipitation.

Delta water quality is highly variable and heavily influenced by inflows from rivers and by seawater intrusion into the western and central portions of the Delta during periods of low outflow. Delta water quality parameters can show considerable geographic and seasonal variation. Generally, Delta water quality is best during the winter and spring months and is poorer through the irrigation season and early fall. Storage and instream flow releases from Central Valley Project (CVP) and State Water Project (SWP) reservoirs (e.g., Folsom, Shasta, Trinity, Oroville) are an important component of Delta water quality management, particularly for salinity control in the late summer and fall when natural runoff and Delta inflow have decreased. Salinity in the Delta is the result of tidal exchange with the San Francisco Bay, variations in freshwater inflow from the San Joaquin and Sacramento Rivers, agricultural and urban exports/diversions, and agricultural return flows. Reduced Delta inflows can increase the amount of seawater intrusion and increase the water quality influence of organic-rich agricultural runoff in Delta channels. Water quality constituents of particular concern in the Delta include salt intrusion, turbidity, temperature, nutrients, and mercury (Regional Water Board 2019; State Water Board 2018). The

concentrations of these materials in the Delta are affected by river inflows, tidal flows, agricultural diversions, drainage flows, wastewater discharges, water exports, cooling water intakes and discharges, and groundwater connectivity.

Water quality in the San Joaquin River is influenced by factors such as rain and snowmelt runoff, reservoir operations, and irrigation return flows in the San Joaquin River Basin. Water quality is also influenced by inputs resulting from land use patterns and management and other seasonal activities in the sources' watersheds. Broadly, these land uses contribute organic materials that play a role with biological and chemical oxygen demand, and they contribute to several of the water quality contaminants known to commonly be found in the Lower San Joaquin River such as herbicides, insecticides, fungicides, nutrients, bacteria, sediment, and metals. Agricultural return flows commonly discharge elevated salt loads into the San Joaquin River.

Beneficial Uses

From a water quality perspective, Delta waterways, including the San Joaquin River and the proposed project area, fall under the jurisdiction of the State Water Board, the Central Valley Regional Water Board, and the San Francisco Bay Regional Water Board (refer to subsection 3.12.3, *Regulatory Setting*, for more details). The relevant water quality control plans include *The Water Quality Control Plan for the California Regional Water Quality Control Board Central Valley Region: the Sacramento River Basin and the San Joaquin River Basin* (Basin Plan) (Regional Water Board 2019) and the *Water Quality Control Plan for the San Francisco Bay/Sacramento–San Joaquin Delta Estuary* (Bay-Delta Basin Plan) (State Water Board 2018). Both basin plans identify beneficial uses of water, adopt water quality objectives to protect the beneficial uses, and develop implementation programs for achieving the objectives. **Table 3.12-1** summarizes the beneficial uses for water bodies in the proposed project area.

Impaired Water Bodies

In accordance with Section 303(d) of the Clean Water Act (CWA), the regional water boards periodically review water quality conditions and determine whether the conditions are impairing beneficial uses of each water body (refer to subsection 3.12.3, *Regulatory Setting*, for more details). Several water bodies in the proposed project area are identified on the most recent Section 303(d) list of impaired water bodies **Table 3.12-2** identifies water bodies in the proposed project area listed under CWA Section 303(d) (State Water Board 2024). The table also provides information about the constituents that contribute to these water bodies' impaired water quality and the total maximum daily loads (TMDLs) that have been or are being developed to protect their beneficial uses.

Water Quality Monitoring

Major monitoring programs in the San Joaquin River include the DWR Municipal Water Quality Investigations Program and the DWR Water Quality Monitoring Program, in compliance with D-1641 (as revised from D-1485). The City of Stockton also monitors ambient water quality to assess potential effects associated with discharges from the Stockton Regional Wastewater Control Facility. Water monitoring stations located along the San Joaquin River collect both streamflow and water quality data. Stations within the proposed project area are depicted on Figure 3.12-1.

TABLE 3.12-1
BENEFICIAL USES OF WATER BODIES IN THE PROPOSED PROJECT AREA AND VICINITY

Designated Beneficial Use	Sacramento–San Joaquin Delta[a]	Lower San Joaquin River
Municipal and Domestic Supply (MUN)	X	X
Agricultural Supply Irrigation (AGR)	X	X
Agricultural Supply Stock Water (AGR)	X	X
Industrial Process Supply (PRO)	X	X
Industrial Service Supply (IND)	X	–
Hydropower Generation (POW)	–	–
Water Contact Recreation (REC-1)	X	–
Water Contact Recreation Canoeing and Rafting (REC-1)	–	–
Non-Contact Water Recreation (REC-2)	X	–
Warm Freshwater Habitat (WARM)	X	X
Cold Freshwater Habitat (COLD)	X	X
Warm Migration of Aquatic Organisms (MIGR-WARM)	X	X
Cold Migration of Aquatic Organisms (MIGR-COLD)	X	X
Warm Spawning, Reproduction, and/or Early Development (SPWN-WARM)	X	X
Cold Spawning, Reproduction, and/or Early Development (SPWN-COLD)	–	X
Wildlife Habitat (WILD)	X	X
Navigation (NAV)	X	--
Rare, Threatened, or Endangered Species (RARE)	X	X
Commercial and Sport Fishing (COMM)	X	X
Estuarine Habitat (EST)	X	–
Freshwater Replenishment (FRSH)	–	–
Groundwater Recharge (GWR)	X	–
Marine Habitat (MAR)	X	–
Shellfish Harvesting (SHELL)	X	–

NOTES: -- = not designated; N/A = not applicable; P = potential beneficial use; X = existing beneficial use.

a. Uses aggregated from the two relevant water quality control plans.

SOURCES: Regional Water Board 2019; State Water Board 2018

TABLE 3.12-2
303(D) LIST OF IMPAIRED WATER BODIES IN THE PROPOSED PROJECT AREA AND VICINITY

Water Body	Pollutant	Pollutant Category	Potential Source	Proposed TMDL Completion Date
San Joaquin River (Stanislaus River to Delta Boundary)	Temperature, water	Other Cause	A Source Unknown	2027
	DDE	Pesticides	A Source Unknown	2027
	DDT	Pesticides	A Source Unknown	2027
	Diuron	Pesticides	A Source Unknown	2027
	Group A Pesticides	Pesticides	A Source Unknown	2011[a]
	Imidacloprid	Pesticides	A Source Unknown	2035
	Toxaphene	Pesticides	A Source Unknown	2019[a]
	Mercury	Metals	A Source Unknown	2012[a]
	Toxicity	Total Toxics	A Source Unknown	2019[a]
San Joaquin River (in Delta Waterways, southern portion	Temperature, water	Other Cause	A Source Unknown	2034
Delta Waterways (southern portion)	DDT	Pesticides	A Source Unknown	2027
	Electrical Conductivity	Salinity/total dissolved solids/chlorides/sulfates	A Source Unknown	2027
	Chlorpyrifos	Pesticides	A Source Unknown	2007[b]
	Diazinon	Pesticides	A Source Unknown	2007[b]
	Mercury	Metals	Agricultural Return Flows; Atmospheric Deposition; Highway/Road/Bridge Runoff; Industrial Point Sources; Municipal Point Sources; Natural Sources; Resource Extraction; Urban Runoff/Storm Sewers	2011[b]
	Group A Pesticides	Pesticides	A Source Unknown	2027
	Invasive Species	Other Cause	A Source Unknown	2019[a]
	Toxicity	Total Toxics	A Source Unknown	2019[a]
French Camp Slough (San Joaquin County; outside Delta Waterways)	Indicator Bacteria	Pathogens	A Source Unknown	2027
	Oxygen, Dissolved	Nutrients	A Source Unknown	2027
	Toxicity	Total Toxics	A Source Unknown	2027
	Chlorpyrifos	Pesticides	Agriculture	2007[a]
	Bifenthrin	Pesticides	A Source Unknown	2035
	Pyrethroids	Pesticides	A Source Unknown	2035

NOTES: Delta = Sacramento–San Joaquin Delta; DDE = Dichlorodiphenyldichloroethylene; DDT = Dichlorodiphenyltrichloroethane

a. Expected TMDL completion date; TMDLs are still pending even if the date has passed.
b. Date TMDL approved by U.S. EPA.

SOURCE: State Water Board 2024

Groundwater Quality

Tracy Subbasin

The concentration and depth of the naturally occurring elements varies widely over the Tracy Subbasin at any given location. All water supplied by public water systems meets drinking water standards either naturally or is treated prior to being provided to the public. Groundwater quality in the subbasin has locally exceeded the maximum contaminant levels (MCLs) for drinking water for specific elements, some exceedances are scattered, and some are clustered. Constituents of concern throughout the basin include salinity, sulfate, arsenic, boron, iron and manganese. In addition to these constituents, localized areas of manmade contamination, including trihalomethanes, volatile organic compounds (solvents), and gasoline are present in the groundwater (GEI Consultants 2021).

Eastern San Joaquin Subbasin

Groundwater quality in the Eastern San Joaquin Subbasin varies by location. Areas along the western margin have historically had higher levels of salinity. Salinity may be naturally occurring or the result of human activity. Sources of salinity in the subbasin include Delta sediments, deep saline groundwater, and irrigation return water. Total dissolved solids (TDS), which is a measure of all inorganic and organic substances present in a liquid in molecular, ionized, or colloidal suspended form, and chloride are commonly used to measure salinity. The Groundwater Ambient Monitoring and Assessment (GAMA) Program includes numerous water quality monitoring sites in the subbasin compiled from different sources. Maximum TDS concentrations across the subbasin have been reported as high as 2,500 milligrams per liter (mg/L) along portions of the Eastern San Joaquin Subbasin's western boundary. Maximum chloride concentrations have been reported at concentrations greater than 2,000 mg/L, with higher concentrations measured in the central and western regions of the subbasin (ESJGA 2024).

For drinking water, California has three secondary maximum contaminant level (SMCL) standards for TDS, all based on aesthetic considerations such as taste and odor, not public health concerns. These are 500 mg/L (recommended limit), 1,000 mg/L (upper limit), and 1,500 mg/L (short-term limit). TDS concentrations decrease significantly to the east, to typically less than 500 mg/L (the recommended limit for aesthetic considerations). The SMCL for chloride is 250 mg/L. Chloride concentrations are typically low across the Eastern San Joaquin Subbasin with the majority of measurements falling within the 0-250 mg/L range. Elevated concentrations of other constituents, such as nitrate, arsenic, and point-source contaminants, are generally localized and not widespread and are generally related to natural sources or land use activities. The GSP establishes ongoing monitoring of salinity (as TDS and chloride) and uses publicly available groundwater quality data to assess groundwater quality relative to arsenic, nitrate, and a number of other common water quality constituents to fill data gaps and identify potential trends of concern (ESJGA 2024).

Flood Management System

The proposed project area is susceptible to flooding as a result of drainage from the contributing surface water bodies. While runoff is highly influenced by reservoir regulation, extreme flood events can still results in expansive flooding in the area. The existing flood management system comprises channel and levee systems on the San Joaquin River, as part of the State Plan Flood Control (SPFC) (DWR 2022a). Specifically, the proposed project area is protected by the RD 17 levee system. The RD 17 levee system, authorized by the Lower San Joaquin River and Tributaries Project in the Flood Control Act of 1944, is

comprised of State-Federal Project levees (also referred to as State Plan of Flood Control, or SPFC levees) along the San Joaquin River and French Camp Slough, which form the west and north borders of RD 17, and a non-Project dryland levee which borders RD 17 on the south. The land generally slopes east to west, and there is no levee along the east side of the RD 17 jurisdiction. Therefore, the interior drainage watershed extends to the east of RD 17 (Peterson Brustad Inc. 2021).

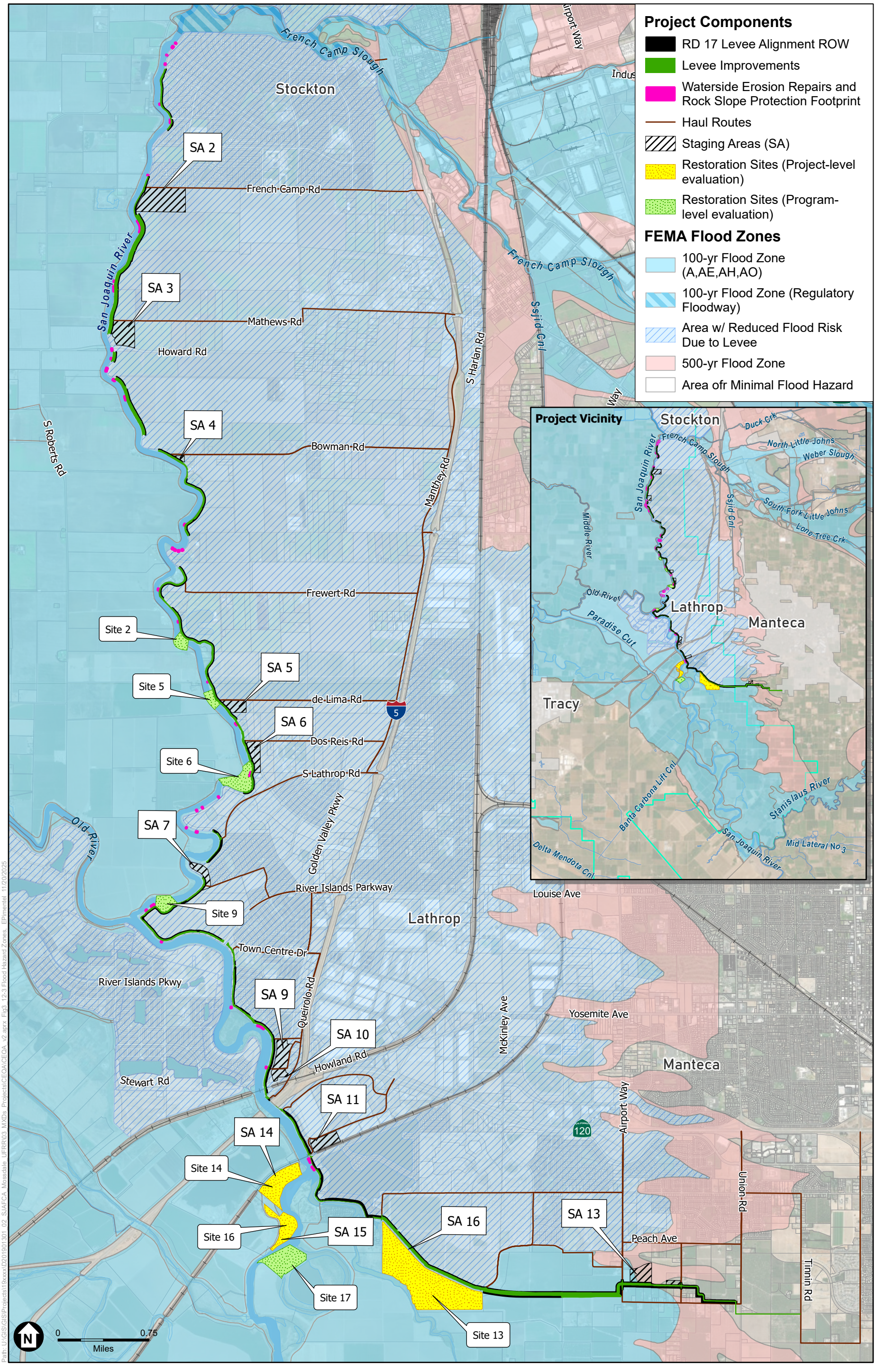
The RD 17 levee system protects approximately 10,698 residential units and 182 nonresidential (commercial/industrial and public) properties with a total floor area of 11,858,000 square feet (ENGEO 2023). Examples of some large commercial facilities within RD 17 include the Del Monte Foods Distribution Center, In and Out Burger Distribution Center, Ghirardelli Chocolate Factory Outlet, and Daimler Chrysler. Main transportation arteries within RD 17 include Interstate 5 (I-5) and State Route 120. Other facilities within RD 17 include San Joaquin General Hospital, San Joaquin County Jail, San Joaquin County Honor Farm, San Joaquin County Juvenile Hall, two high schools, six elementary schools, and 28 other facilities that house and/or provide services to special needs populations. RD 17 contains over 6,345 acres of agricultural lands that produce tomatoes, alfalfa, and corn (among other crops). The potential structural and content value of property damages for a levee breach within the area protected by the RD 17 levee system is estimated to be greater than $900 million (ENGEO 2023).

Under existing conditions, there exists significant risk to public health, safety and property associated with flooding, including an existing resident population of 45,000 people plus 1,700 temporarily housed people in jails and hospitals, 15,450 structures, and 45 critical facilities. The primary flood risk in the proposed project area is from geotechnical failure of the existing levees. Geotechnical failures caused by through-levee seepage or underseepage are typically sudden and unpredictable, and can produce large volume, high velocity flood flows. These failures come during winter and spring with little warning, with minimal time for evacuation and emergency actions. Levee overtopping or flanking is also a risk in the larger flood events (i.e., 100- or 200-year events), especially in the future with climate change (Peterson Brustad Inc. 2021). Overtopping and flanking floods are much more predictable, so evacuation is much more effective for these failure mechanisms.

The levees do not currently meet Urban Levee Design Criteria, the levee and floodwall design criteria developed by DWR for providing the urban level of flood, and therefore do not provide the Urban Level of Protection under existing climate conditions. The Urban Level of Flood Protection Criteria was developed in response to requirements from the Central Valley Flood Protection Act of 2008 and is further discussed in subsection 3.12.3, *Regulatory Setting*. DWR analyses predict that climate change impacts on the San Joaquin River system will be extreme in the next 50 years, which will only further exacerbate existing problems, including degradation of ecosystem habitat (Peterson Brustad Inc. 2021).

Flood Hazard Zones

The Federal Emergency Management Agency (FEMA) Flood Insurance Rate Maps (FIRMs) were reviewed to identify flood hazard zones in the proposed project area. As depicted in **Figure 3.12-3**, the proposed project components are located in areas of reduced flood risk due to levee. Select restoration sites are proposed west of the San Joaquin River and are located in the 100-year flood zone.



SOURCE: MAXAR, 2024; CPAD, 2025; KSN, 2025; PBI, 2025; ESA, 2025

SJAFCA Mossdale Tract Urban Flood Risk Reduction Project

Figure 3.12-3
Flood Hazard Zones in the Proposed Project Area

ESA

Path: U:\GIS\GIS\Projects\19xxxx\ID201901301 02 SJAFCA Mossdale UFRR\03 MXDs Projects\CEQA\CEQA v2 aprx Fig3 12-3 Flood Hazard Zones, EPimentel 11/20/2025

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3.12.3 Regulatory Setting

Federal

Clean Water Act

Regulatory authorities exist on both the state and federal levels for the control of water quality in California. The U.S. EPA is the federal agency responsible for water quality management pursuant to the CWA. The purpose of the CWA is to protect and maintain the quality and integrity of the nation's waters by requiring states to develop and implement state water plans and policies. Several sections of the CWA pertain to regulating impacts on waters of the United States and are described in more detail below.

Section 303: Water Quality Standards and Implementation Plans

The State of California adopts water quality standards to protect beneficial uses of state waters as required by Section 303 of the CWA and the Porter-Cologne Water Quality Control Act of 1969 (Porter-Cologne). Under Section 303(d) of the CWA, states, territories, and authorized tribes are required to develop lists of impaired waters. Impaired waters are waters that do not meet water quality standards, even after point pollution sources have installed control technology necessary to meet the minimum required pollution protection level. The law requires that these jurisdictions establish a priority ranking for listed waters and develop action plans to improve water quality. This process includes development of the TMDL that set discharge limits for nonpoint source pollutants. A TMDL is the amount of loading that the water body can receive for a given constituent and still meet water quality criteria for that constituent. The TMDL must include an allocation of allowable loadings to point and nonpoint sources, with consideration of background loadings and a margin of safety. Generally, National Pollutant Discharge Elimination System (NPDES) permit limitations for listed pollutants must be consistent with the load allocation identified in the TMDL.

Section 401: Water Quality Certification

Section 401 of the CWA requires any applicant pursuing a federal permit to conduct any activity that may result in a discharge of a pollutant into navigable waters, including the crossing of rivers or streams during road, pipeline, or transmission line construction, to obtain a water quality certification (or waiver) from the state in which the discharge originates. CWA Section 401 is administered by U.S. EPA. In California, CWA Section 401 authority is delegated to and administered by the State Water Board and water quality certifications are issued by regional water boards in California. Under Section 401 of the CWA, applicants for a federal license or permit to conduct activities which may result in the discharge of a pollutant into waters of the United States must obtain certification or waiver from the state in which the discharge would originate or, if appropriate, from the interstate water pollution control agency with jurisdiction over affected waters at the point where the discharge would originate. The regional water boards must issue or waive Section 401 water quality certification for a project to be permitted under Section 404. Water quality certification requires the evaluation of water quality considerations associated with dredging or placement of fill materials into waters of the United States and imposes project-specific conditions on development. The certification ensures that the discharge will comply with the applicable effluent limitations and water quality standards.

Section 402: Permits for Discharges to Surface Waters

CWA Section 402 regulates discharges to surface waters through the NPDES program, administered by the U.S. EPA. In California, the State Water Board is authorized by the U.S. EPA to oversee the NPDES

program through the nine regional water quality control boards (see related discussion about the Porter-Cologne Water Quality Control Act below). The NPDES program provides both general permits (those that cover a number of similar or related activities) and individual permits.

Construction Activities

The NPDES General Permit for Storm Water Discharges Associated with Construction and Land Disturbance Activities (General Construction Permit, Order 2009-009-Division of Water Quality) is applicable to all land disturbing construction activities that would affect 1 acre or more. Construction activities subject to the General Construction Permit include clearing, grading, stockpiling, and excavation. The General Construction Permit requires the applicant to file a Notice of Intent (NOI) to discharge stormwater, and to prepare and implement a stormwater pollution prevention plan (SWPPP) that considers the use of post-construction, permanent BMPs to protect water quality throughout the life of a project. The SWPPP is to include a site map and a description of proposed construction activities, a demonstration of compliance with relevant local ordinances and regulations, and an overview of the BMPs to be implemented to prevent soil erosion and discharge of other construction-related pollutants that could contaminate nearby water resources. Permittees are further required to conduct annual monitoring and reporting so that the BMPs can be correctly implemented and effective in controlling the discharge of stormwater-related pollutants. Types of BMPs include source controls, treatment controls, and site planning measures. RD 17 would file an NOI with the Regional Water Board to obtain coverage under the General Construction Permit before any proposed project construction activities could begin.

FEMA National Flood Insurance Program

The U.S. Congress established the National Flood Insurance Program (NFIP) with the passage of the National Flood Insurance Act of 1968. The NFIP, administered by FEMA, is a federal program for property owners in NFIP-participating communities to purchase insurance as a protection against flood losses in exchange for state and community adoption and implementation of land use criteria that reduce future flood damages. Participation in the NFIP is based on an agreement between communities and the federal government. If a community adopts and enforces a FEMA-approved floodplain management ordinance to reduce future flood risk to new construction in regulated floodplains, the federal government will make flood insurance available to individuals within the community as financial protection against flood losses. This insurance is designed to provide a financial alternative and reduce the escalating costs of federal disaster assistance for flood-damaged buildings and their contents.

The Federal Insurance and Mitigation Administration, a part of FEMA, manages the NFIP. In addition to providing flood insurance and reducing flood damages through floodplain management regulations, the NFIP identifies and maps the nation's regulated floodplains. FEMA's FIRMs or Flood Hazard Boundary Maps show flood hazard areas and provide flood zone designations according to varying levels of flood risk for geographic areas within a community. Flood hazard areas that are shown on the Flood Insurance Rate Map are identified as a Special Flood Hazard Area, defined as the area that will be inundated by the flood event having a 1 percent chance of being equaled or exceeded in any given year. The 1 percent annual chance flood also is referred to as the base flood or 100-year flood. Moderate flood hazard areas are the areas between the limits of the base flood and the 0.2 percent annual chance (or 500-year) flood. The areas of minimal flood hazard are the areas outside the Special Flood Hazard Area (SFHA) and higher than the elevation of the 0.2 percent annual chance flood. For FEMA to accredit a levee as providing a 100-year level of flood risk reduction (1 percent annual chance flood, or 0.01 annual

exceedance probability), the levee must be shown to satisfy several criteria, including protection of the embankment against erosion. Specific requirements are contained in Title 44, Section 65.10 of the Code of Federal Regulations (CFR), which is the FEMA 1 percent annual chance or 100-year standard.

Federal Antidegradation Policy

The Federal Antidegradation Policy, established in 1968, is designed to protect existing uses, water quality, and national water resources. The federal policy (40 CFR 131.12) directs states to adopt a statewide policy that includes the following primary provisions:

- Existing instream uses and the water quality necessary to protect those uses shall be maintained and protected.
- Where existing water quality is better than necessary to support fishing and swimming conditions, that quality shall be maintained and protected unless the state finds that allowing lower water quality is necessary for important local economic or social development.
- Where high-quality waters constitute an outstanding national resource, such as waters of national and state parks, wildlife refuges, and waters of exceptional recreational or ecological significance, that water quality shall be maintained and protected.

State

Porter-Cologne Water Quality Control Act

The Porter-Cologne Water Quality Control Act (Porter-Cologne Act) established the State Water Board and divided the state into nine regions, each overseen by a regional water board (see California Water Code Section 13000 et seq.) The nine regional water boards have primary responsibility for the coordination and control of water quality within their respective jurisdictional boundaries. Under the Porter-Cologne Act, "water quality objectives" are limits or levels of water quality constituents or characteristics established for the protection of beneficial uses.

The Porter-Cologne Act requires the regional water boards to establish water quality objectives while acknowledging that water quality may be changed to some degree without unreasonably affecting beneficial uses. Designated beneficial uses, together with the corresponding water quality objectives, and an antidegradation policy also constitute water quality standards under the federal Clean Water Act. The water quality objectives provide requirements for water quality control.

If USACE determines that only non-federal waters are present in a restoration project area, then no federal CWA permit would be required. Regardless of federal jurisdiction, however, the project would require a permit, or "waste discharge requirements," for impacts on any waters of the state. The waste discharge requirements would be issued by the appropriate regional water board or, for statewide or multi-regional projects, by the State Water Board. Under the Porter-Cologne 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 regulations.

A discharger whose project disturbs 1 or more acres of soil or disturbs less than 1 acre but is part of a larger common plan of development that in total disturbs 1 acre or more, must obtain coverage under the General Permit for Storm Water Discharges Associated with Construction Activities, Construction

General Permit Order No. 2009-009-DWQ. Construction activity subject to this permit includes clearing, grading, grubbing, and disturbances to the ground such as stockpiling or excavation; however, it 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 SWPPP.

Water Quality Control Plans

Under the Porter-Cologne Act, waters of the state fall under the jurisdiction of the State Water Board and the nine regional water boards. "Waters of the state" means any surface water or groundwater, including saline waters, within the boundaries of the state (California Water Code Section 13050[e]). The federal government has delegated to the State Water Board and to the regional water boards the authority to implement the requirements of the federal CWA in California, including issuing NPDES permits, under the Porter-Cologne Act. However, the requirements of the Porter-Cologne Act are even broader than those of the CWA. The Porter-Cologne Act requires the regional water boards to prepare and periodically update water quality control plans, also known as "basin plans." Each basin plan establishes water quality objectives sufficient to ensure that the designated beneficial uses of surface water and groundwater are reasonably protected, and actions to control nonpoint and point sources of pollution.

Any person who discharges or proposes to discharge any waste that could affect the quality of the waters of the state must file a "report of waste discharge" with the appropriate regional water board. "Waste" includes any and all waste substances associated with human habitation, of human or animal origin, or from any producing, manufacturing, or processing operation (California Water Code Section 13050[d]). Upon receipt of a report of waste discharge, the regional water board may issue "waste discharge requirements" designed to ensure compliance with applicable water quality objectives and other requirements of the basin plan.

A public review process is conducted every 3 years to identify and prioritize the actions needed to address water quality concerns and maintain the effectiveness of the basin plan. Amendments to basin plans may include site-specific water quality objectives for a single constituent, basin-wide control programs for a suite of potential pollutants, and/or policy recommendations and strategies for addressing emerging contaminants and/or climate change. The following water quality control plans are relevant to the proposed project.

Sacramento and San Joaquin River Basin Water Quality Control Plan

The Water Quality Control Plan for the California Regional Water Quality Control Board Central Valley Region: the Sacramento River Basin and the San Joaquin River Basin (Regional Water Board 2019) covers the entire area included in the Sacramento and San Joaquin River drainage basins, including the Lower San Joaquin River. Water quality objectives have been established by the Central Valley Regional Water Board to protect designated beneficial uses established in the Basin Plan. These protective limits are achieved primarily through the combined, collective issuance of individual water quality permits (and certifications) for significant human-caused sources of pollution. Permits may contain specific numeric limits (i.e., effluent limitations) on pollutant quantities to be discharged or regulate other (e.g., construction) activities to ensure that, collectively and with the benefit of dilution, water quality objectives would be achieved. Surface water bodies in the North Delta are currently listed as impaired in multiple pollutant categories. Section 303(d) of the CWA requires the development of TMDLs for impaired water bodies.

Water Quality Control Plan for the San Francisco Bay/Sacramento–San Joaquin Delta Watershed

The 1995 *Water Quality Control Plan for the San Francisco Bay/Sacramento–San Joaquin Delta* (1995 Bay-Delta Plan) (State Water Board 1995) was developed as a result of the 1994 Bay-Delta Accord, which committed the CVP and SWP to new Delta habitat objectives. One of the main features of the 1995 Bay-Delta Plan was the estuarine habitat objectives (X2) for Suisun Bay and the western Delta. The "X2 standard" refers to the position at which 2 ppt salinity occurs in the Delta estuary and is intended to improve shallow-water fish habitat in the spring of each year (see subsection 3.10.2 for additional information regarding X2). The standard as implemented in the State Water Board's D-1641 water rights decision (State Water Board 2000), which is the implementation plan for the 1995 Bay-Delta Plan, specifies that the location of X2 must remain west of the confluence of the Sacramento and San Joaquin rivers, at Collinsville, measured 81 km upstream of the Golden Gate Bridge, for the months of February–June, and downstream of other specific locations in the Delta on a certain number of days each month from February through June. A positive shift in the X2 location represents a condition of increased saltwater intrusion, representing a poorer condition.

Other elements of the 1995 Bay-Delta Plan included export-to-inflow ratios intended to reduce entrainment of fish at the export pumps, Delta Cross Channel gate closures, minimum Delta outflow requirements, and San Joaquin River salinity and flow standards. The objectives were largely implemented through D-1641 and placed responsibility for attaining these requirements primarily on the U.S. Bureau of Reclamation and DWR. The Bay-Delta Plan and D-1641 include several additional salinity objectives to protect beneficial uses (e.g., municipal and industrial uses, agricultural uses, and fish and wildlife uses) at locations throughout the Delta, such as Rock Slough, the Sacramento River at Emmaton, the San Joaquin River at Jersey Point, and the Sacramento River at Collinsville (State Water Board 2000). D-1641 considered activities from various stakeholders and an array of factors affecting salinity in the South Delta in identifying flow objectives and allocating responsibility for meeting water quality requirements.

California State Antidegradation Policy

In 1968, as required under the Federal Antidegradation Policy, the State Water Board adopted an antidegradation policy aimed at maintaining high-quality waters in California under Resolution No. 68-16. The California Antidegradation Policy applies to high-quality (i.e., tier 2) surface and ground waters only, and states that the disposal of wastes into state waters are to 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. The policy provides as follows:

- Where the existing quality of water is better than required under existing water quality control plans, such quality would be maintained until it has been demonstrated that any change would be consistent with maximum benefit to the people of the state and would not unreasonably affect present and anticipated beneficial uses of such water.
- Any activity which produces waste or increases the volume or concentration of waste and which discharges to existing high-quality waters would be required to meet Waste Discharge Requirements as regulated by the State Water Board, which would ensure (1) pollution or nuisance would not occur and (2) the highest water quality consistent with the maximum benefit to the people of the state would be maintained.

Delta Reform Act of 2009 and Delta Plan

The mission of the Delta Stewardship Council is to promote the coequal goals of water supply reliability and ecosystem restoration in a manner that protects and enhances the unique values of the Delta as an evolving place (California Water Code Section 85054). The 2009 Delta Reform Act states that the coequal goals are to be achieved in a manner that protects and enhances the unique cultural, recreational, natural resource, and agricultural values of the Delta as an evolving place. The Delta Stewardship Council has a legally enforceable management framework for the Delta and Suisun Marsh called the Delta Plan, which applies best available science to further the coequal goals.

The Delta Stewardship Council was granted specific regulatory and appellate authority by the California Legislature under the 2009 Delta Reform Act over certain actions that take place in the Delta or Suisun Marsh, in whole or in part. The Delta Stewardship Council exercises that authority by developing and implementing the Delta Plan and its accompanying regulations.

According to the Delta Reform Act, state or local agencies approving, funding, or carrying out projects, plans, or programs, upon determining that their project is a "permitted action" subject to regulations of the Delta Plan, must certify the consistency of the project with the Delta Plan policies (Water Code Section 85225).

The Delta Reform Act of 2009 and Delta Plan are relevant to the proposed project based on the location of the proposed project (i.e., within the Delta) and because they provide context for the evaluation of potential effects of implementation of the proposed project on water quality.

Central Valley Flood Protection Board

Created in 1911, the Central Valley Flood Protection Board (CVFPB) establishes, maintains, and enforces standards for the construction, maintenance, and operation of the flood control system to protect life, property, and habitat in California's Central Valley. The CVFPB coordinates state entities, local flood risk control agencies and the federal government to minimize damages from floods in California's Central Valley and is the non-federal sponsor for federal flood control projects in the SPFC. The CVFPP is California's strategic blueprint to improve flood risk management in the Central Valley (DWR 2022b). Prepared by DWR in accordance with the Central Valley Flood Protection Act of 2008, the CVFPP is updated by DWR and adopted by the CVFPB every 5 years. The CVFPP guides the state's participation in managing flood risk in areas protected by the SPFC.

Title 23 of the California Code of Regulations and the California Water Code provide guidance to DWR and the CVFPB on enforcement of appropriate standards for flood control projects in the Central Valley. These codes authorize DWR and the CVFPB to enforce standards for erecting, maintaining, and operating levees, channels, and other flood control works within their jurisdictions. The rules state that existing levees may not be excavated or left partially excavated during the flood season, which generally is November 1 through April 15 for the San Joaquin River. CVFPB guidance requires that USACE levee criteria be used.

An encroachment permit from the CVFPB is required for every proposal or plan of work that:

(1) Is located between or in the vicinity of any project levees.

(2) Is located within a CVFPB easement.

(3) Is located within a designated floodway that has been adopted by the CVFPB.

(4) Is located within 30 feet of a non-leveed regulated stream listed in California Code of Regulations Title 23, Division 1, Article 8, Table 8.1.

(5) May have a negative effect on any adopted plan of flood control.

Urban Level of Flood Protection Criteria

Criteria was developed in response to requirements from the Central Valley Flood Protection Act of 2008 enacted by Senate Bill (SB) 5 (2007) to strengthen the link between flood management and land use; specifically, California Government Code Section 65007(n):

> *"Urban level of flood protection" means the level of protection that is necessary to withstand flooding that has a 1-in-200 chance of occurring in any given year using criteria consistent with, or developed by, the Department of Water Resources. "Urban level of flood protection" shall not mean shallow flooding or flooding from local drainage that meets the criteria of the national Federal Emergency Management Agency standard of flood protection.*

SB 5 as amended does not specify any enforcement authority for the urban level of flood protection but instead relies on the due diligence of cities and counties to incorporate flood risk considerations into floodplain management and planning. However, the law tasked DWR with developing Urban Levee Design Criteria (DWR 2012) that cities and counties could use to make findings related to an urban level of flood protection. The law also provides that cities and counties may develop their own criteria as long as it is consistent with the criteria developed by DWR. These criteria are incorporated by reference into the Urban Level of Flood Protection Criteria when levees and floodwalls are used to provide the necessary level of flood protection. See also subsection 3.13-18, *Land Use and Planning* for additional information on how local jurisdictions in the proposed project area have met the requirements of SB 5.

Sustainable Groundwater Management Act

In 2014, the Sustainable Groundwater Management Act (SGMA) was signed by the Governor of the State of California, setting the framework for local agencies to sustainably manage California's groundwater basins. DWR categorizes groundwater basins as high, medium, low, or very low priority by considering eight factors listed in California Water Code Section 10933(b), including the population overlying the basin, the number of public supply wells that draw from the basin, the degree to which persons overlying the basin rely on groundwater as their primary source of water, and documented impacts on the groundwater within the basin. To avoid potential state intervention, SGMA requires groundwater basins/ subbasins designated by DWR as medium or high priority to follow four basic steps: (1) form a GSA by June 30, 2017; (2) develop and adopt a GSP by January 31, 2022; (3) implement the Plan to achieve a sustainability goal and avoid undesirable results within 20 years; and (4) report the implementation activities to the DWR to document whether the sustainability goal and the avoidance of undesirable results is being achieved. SGMA allows a GSA agency with an adopted GSP to, among other things: impose reasonable operating regulations on existing wells to minimize interference; regulate, limit, or suspend groundwater extraction, construction of new wells, enlargement of existing wells, or reactivation of abandoned wells; and establish groundwater extraction allocations.

Regional and Local

The proposed project area includes lands in San Joaquin County and the cities of Stockton, Lathrop and Manteca. Each of these jurisdictions have general plans with goals and policies that address hydrology and water quality (see **Table 3.12-3**). Applicable general plan goals and policies are summarized below along with relevant local regulations.

TABLE 3.12-3
APPLICABLE GENERAL PLAN GOALS AND POLICIES – HYDROLOGY AND WATER QUALITY

General Plan	Goals and Policies
San Joaquin County	Public Health and Safety Element, Goal PHS-2, Policies PHS-2.1, PHS-2.2, PHS-2.4, PHS-2.10, PHS-2.13, PHS-2.14, and PHS-2.17; Natural and Cultural Resources Element, Goal NCR-3, Policies NCR-3.1, NCR-3.2, NCR-3.3, NCR-3.4, NCR-3.8, NCR-3.9, and NCR-3.10; The Delta Element, Goal D-6, Policy D-6.1, Goal D-7, Policy D-7.2
City of Stockton	Safety Element, Goal SAF-2, Policy SAF-2.5
City of Lathrop	Public Safety Element, Goal PS-3, Policies PS-3.1, PS-3.2, PS-3.3, PS-3.4, PS-3.6, PS-3.7, PS-3.8, PS-3.10; Recreation and Resources Element, Goal RR-7, Policies RR-7.5, and RR-7.6, Goal RR-8, Policies RR-8.1, RR-8.2, RR-8.7, and RR-8.8
City of Manteca	Resource Conservation Element, Goal RC-1, Policies RC-1.1, RC-1.6, RC-1.7, and RC-1.8; Goal RC-3, Policy RC-3.1, Goal RC-11, Policies RC-11.2, RC-11.3, RC-11.4, RC-11.6, and RC-11.7; Safety Element, Goal S-3, Policies S-3.5, S-3.6, S-3.8, and S-3.15

SOURCES: City of Lathrop 2022; City of Manteca 2024; City of Stockton 2018; San Joaquin County 2016

San Joaquin County

San Joaquin County General Plan

The San Joaquin County 2035 General Plan (San Joaquin County 2016) include goals and policies related to hydrology and water quality that are relevant to the proposed project. Goals and policies are found in the Public Health and Safety Element and the Natural and Cultural Resources Element. The goals emphasize protection of people and property from flood hazards, and protection of the quality of water for municipal and industrial uses, agriculture, recreation, and fish and wildlife. Other goals aim to protect Delta water supplies for agricultural uses and ecosystems enhancement and improve overall Delta water quality, and maintain Delta levees and infrastructure to provide safety and security to residents, visitors, and agricultural resources.

San Joaquin County Code of Ordinances

Chapter 9-1405M of the San Joaquin County Code of Ordinances describes grading and excavation requirements, including grading adjacent to waterways (9-1405.9M).

City of Stockton

Envision Stockton 2040 General Plan

The City of Stockton General Plan (City of Stockton 2024) includes goals and policies related to hydrology and water quality that are relevant to the proposed project. The goals aim to protect residents and business from natural and human-caused hazards, including flood events.

City of Stockton Code of Ordinances

Chapter 15.48 of the City of Stockton Code of Ordinances describes grading and erosion control ordinances.

City of Lathrop

City of Lathrop General Plan

The City of Lathrop General Plan (City of Lathrop 2022) includes goals and policies related to hydrology and water quality that are relevant to the proposed project. Goals and policies are found in Lathrop's Public Safety Element and Recreation and Resources Element. The goals aim to: protect the community from potential flood hazards to minimize loss of life, injury and property damage, and disruption of vital services; protect the health of the Bay-Delta; and protect the quantity and quality of surface water and groundwater.

City of Lathrop Code of Ordinances

Chapter 15.54 of the City of Lathrop Code of Ordinances describes review and permit requirements of grading activities within RD 2062 (River Islands). Chapter 15.56 of the Code of Ordinances describes floodplain management.

City of Manteca

City of Manteca General Plan

The City of Manteca General Plan Update (City of Manteca 2024) includes goals and policies related to hydrology and water quality that are relevant to the proposed project. Goals and policies are found in Manteca's Resource Conservation Element and Safety Element. The goals aim to conserve and enhance water resources (quantity and quality) in local waterways, wetlands, and aquatic habitat; preserve and maintain Manteca's soils to avoid the pollution of surface waters, decreased air quality, and erosion; protect the health of the Bay-Delta; and protect life and property from flood events.

City of Manteca Code of Ordinances

Chapter 15.40 of the City of Manteca Code of Ordinances describes floodplain management.

3.12.4 Impacts and Mitigation Measures

Methods of Analysis

The analysis considers how construction (short-term, temporary) and operations and maintenance (O&M) (long-term, permanent) activities associated with the flood risk reduction and multi-benefit components would result in changes to existing hydrology and water quality conditions. The impact analysis presented in Impact 3.12-4 considers hydraulic changes associated with the proposed dryland levee extension based on the project-specific hydraulic modeling provided in Appendix G, Mossdale Urban Flood Risk Reduction Project Hydraulic Impact Analysis to this Draft EIR. Appendix G presents details regarding model development, assumptions and scenarios and the results are incorporated in Impact 3.12-4.

The proposed project would be regulated by the laws, regulations, plans, and policies summarized in subsection 3.12.3, *Regulatory Setting*. Therefore, the impact analysis assumes that the proposed project would comply with existing applicable regulatory and permitting requirements (i.e., water quality control

plans, waste discharge requirements, groundwater management, etc.). See Section 3.1, *Approach to the Analysis* for further discussion of the approach to the analysis used for evaluating impacts of the proposed project.

Thresholds of Significance

In accordance with Appendix G of the CEQA Guidelines, an impact is considered significant if the proposed project would:

- Violate any water quality standards or waste discharge requirements or otherwise degrade surface or ground water quality.
- Substantially decrease 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 off-site;
  - 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 flood flows.
- In a 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.

Impacts Not Further Evaluated

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.

The proposed project would not generate runoff that flows into a stormwater drainage system or generate runoff that provides substantial additional sources of polluted runoff. As further discussed under Impact 3.12-1, construction activities associated with the proposed project would comply with NPDES regulations to minimize the potential effects of construction runoff on receiving water bodies. The use of pollutants during construction (e.g., for equipment) would be temporary—up to two construction seasons—and pollutants would be properly stored in and distributed from designated staging areas. The proposed project would therefore not 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. Therefore, no impact would occur and this issue is not further evaluated in the EIR.

Risk release of pollutants due to project inundation in a tsunami or seiche zone.

The proposed project area is located approximately 70 miles east of the Pacific coast and therefore is not located in a region subject to tsunamis. The proposed project area is not in a location that would be typically subject to a seiche or standing wave in an enclosed or partially enclosed water body, such as a lake or reservoir, brought on by changes in atmospheric pressure. The proposed project would therefore not risk release of pollutants due to proposed project inundation in a tsunami or seiche zone. Therefore, no impact would occur and this issue is not further evaluated in the EIR.

Impacts and Mitigation Measures

Table 3.12-4 summarizes the impact conclusions presented in this section.

TABLE 3.12-4
SUMMARY OF IMPACT CONCLUSIONS – HYDROLOGY AND WATER QUALITY

Impact Statement	Flood Risk Reduction Components	Restoration Sites 13, 14, and 16	Other Multi-Benefit Components
3.12-1: Implementation of the proposed project could violate any water quality standards or waste discharge requirements, or otherwise substantially degrade surface or ground water quality.	LSM	LS	LS
3.12-2: Implementation of the proposed project could substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the basin.	LS	LS	LS
3.12-3: Implementation of the proposed project could substantially alter the existing drainage pattern of the site or area, in a manner which would: result in substantial erosion or siltation on- or off-site, or substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site.	LS	LS	LS
3.12-4: Implementation of the proposed project could substantially alter the existing drainage pattern of the site or area in a manner which would impede or redirect flood flows.	LS	LS	LS
3.12-5: Implementation of the proposed project could risk release of pollutants due to project inundation in a flood hazard zone.	LS	LS	LS
3.12-6: Implementation of the proposed project could conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan.	LS	LS	LS

NOTES: LSM = Less than Significant after Mitigation; LS = Less than Significant

Impact 3.12-1: Implementation of the proposed project could violate any water quality standards or waste discharge requirements, or otherwise substantially degrade surface or ground water quality.

Flood Risk Reduction Components

Construction

The proposed flood risk reduction components include raising the height of levees along portions of the existing levee alignment, construction of a dryland levee extension and drained seepage berm, placement

of riprap rock slope protection, and various staging areas. Each of these components are described in detail in Chapter 2, *Project Description*, and are presented on Figure 2-2.

Construction of the proposed flood risk reduction components would begin with trimming and/or removal of vegetation and demolition of structures, hardscape, and surface features where construction access and activities would occur, followed by grubbing to remove stumps, roots balls, and underground infrastructure. The fix-in place level improvements would involve installation of a traditional soil-bentonite slurry cutoff wall of varying depth along portions of the existing levee alignment. No clearing or grubbing is anticipated to occur below the ordinary high-water mark (OHWM). Any hazardous materials removed as part of demolition would be removed according to hazardous materials regulations and hauled to the nearest landfill licensed for identified hazardous materials. All generated material or debris would be hauled off-site and disposed of at a suitable landfill. After these activities, mobilization would include the application of temporary best management practices for the control of off-site stormwater runoff and sedimentation, building temporary access roads and ramps, preparing staging areas, and installing signage for traffic and alternate transportation routes that would be affected by construction activities (e.g., bicycle routes). All work would be conducted according to site-specific construction plans that would identify areas for clearing, grading, and revegetation so that ground disturbance would be minimized.

Following construction, any staging area and construction access ramps (portions outside of the proposed project area) would be restored to original pre-existing contour and condition or as agreed to by the property owner. To avoid erosion, staging areas would be hydro-seeded and layered with wood mulch to prevent encroachment of invasive species. Any roads or other access areas damaged by construction would be repaired and restored to prior conditions. Excavated materials (e.g., levee degrade, aggregate base, structures, asphalt pavement) and soil-related and vegetation grubbing and stripping waste would be hauled off-site (refer to Table 2-6 for the anticipated volume of excavated materials). All trash, excess construction materials, and construction equipment would be removed.

Earth-disturbing construction activities (e.g., clearing, grubbing, excavation, grading, etc.) have the potential to expose and disturb soils, potentially mobilizing and/or delivering eroded soil, sediment and other pollutants to receiving waters. The eroded soils, sediment and other pollutants could also be mobilized and transported off-site by stormwater runoff (nonpoint-source pollution), potentially degrading the water quality of receiving waters. Fuels, lubricants, and other hazardous materials associated with construction equipment could also adversely affect water quality if spilled or stored improperly. No in-water work, including work from a barge, would be conducted. All work would occur on land, above the OHWM. While construction would be temporary, on- or off-site soil erosion and discharges of construction-related hazards could result in impacts to surface and groundwater that could violate water quality standards and/or waste discharge requirements or otherwise substantially degrade surface or ground water quality.

In accordance with NPDES regulations, to minimize the potential effects of construction runoff on receiving water quality, the state requires that any construction activity affecting 1 acre or more obtain coverage under the CGP (Order No. 2022-0057-DWQ, effective September 1, 2023). Because construction of the flood risk reduction components would disturb more than 1 acre, SJAFCA would obtain coverage under the CGP and require contractors to comply with the permit conditions. Compliance

with the CGP would require the development and implementation of a SWPPP. The SWPPP would be prepared by a Qualified SWPPP Developer (QSD) and, along with the required permit registration documents, would be submitted electronically to the State Water Board before implementation. The SWPPP would include standard BMPs required for all projects and any additional measures determined necessary by the QSD to control stormwater run-on/runoff and sediment.

Examples of typical construction BMPs include scheduling or limiting certain activities to dry weather periods, using erosion controls such as hydroseeding or erosion control blankets, installing sediment barriers such as silt fence and fiber rolls, implementing dust control measures, maintaining equipment and vehicles used for construction, storing and handling of chemicals and toxic materials to prevent spills from entering the aquatic environment. These BMPs are designed to avoid or reduce stormwater and water quality effects caused by construction site runoff.

With compliance with existing NPDES regulations (e.g., CGP) and the incorporation of BMPs, construction of the proposed flood risk reduction components would not violate applicable water quality standards or waste discharge requirements or otherwise degrade surface water or groundwater quality. However, construction of the soil-bentonite slurry cutoff walls and use of bentonite materials could result in impacts to groundwater quality that would be **significant**.

Operations and Maintenance

O&M activities would consist of inspections, weed abatement, removal of encroachments and high-hazard vegetation to ensure levee integrity, replacement, and re-working of displaced or launched revetment following large flood events, and adequate levee access along the levee toe road. O&M inspections would consist of a patrol vehicle traveling along the levee and small machinery for weed abatement such as mowers and weed whackers/trimmers. The equipment types and quantities would be similar to those currently used and would not introduce new sources of pollutants. Refer to Impact 3.12-2 for a discussion of potential impacts of long-term operation of the dryland levee extension cut off wall on groundwater quality. Therefore, compared to existing conditions, O&M would not violate applicable water quality standards or waste discharge requirements, or otherwise degrade surface water or groundwater quality. Impacts would be **less than significant.**

Restoration Sites 13, 14, and 16

Construction

Proposed ecosystem restoration features at Sites 13, 14, and 16 would include excavated floodplains, floodplain side channels, brush mat, habitat wood structures, willow baffles, and upland brush piles. Specifically, at Site 13, restoration involves regrading part of the site to expand riparian woodland along Walthall Slough and replanting at the existing grade for Elderberry and Valley Oak/upland habitat. At Sites 14 and 16, restoration involves grading and replanting to create active floodplain and ecotones. Across all three sites, approximately 532,900 cubic yards would be graded (refer to Table 2-2). At Sites 13 and 14, excess cut would be exported. At Site 16, cut and fill would be balanced on-site.

Construction associated with proposed ecosystem restoration features at Sites 13, 14, and 16 would generally involve the same activities as for the flood risk reduction components. Specifically, unwanted vegetation would be cleared and grubbed and mass grading in unvegetated areas would be performed using large construction equipment that could include scrapers, bulldozers, excavators, loaders, rubber

track carriers, and dump trucks. More detailed grading around preserved trees and on side channels would be performed using small excavators, bobcats and other similar sized equipment. Finish grading would be performed using excavators to bring each ecosystem restoration site to the design elevations. Where feasible, cut material would be reused on-site to create higher elevation upland areas and high-flow wildlife habitat, and soil would be compacted to allow for replanting. For sites where it is not feasible to balance cut and fill or where excess cut material may be beneficially reused off-site, excess fill would be removed using haul trucks with end-dump trailers or similar equipment. Excavation of earthen material would occur at varying depths (e.g., 4–6 feet for excavated floodplains and 2.5 feet for floodplain side channels). The top quarter of an inch for the of all sites would be scrapped and material off hauled prior to planting. Scrapings, removed vegetation, and miscellaneous other minor clear and grub materials would not be reused for other proposed project improvements. All other earthen materials from site excavation would be transported to staging area 13 for construction of the dryland levee extension. All work would occur on land, above the OHWM. Restoration activities would occur during the dry season (July 1 to October 31), where there is low flow and no connectivity to the San Joaquin River.

Imported materials used to construct Sites 13, 14, and 16 would include aggregate base fill, large hardwood logs for habitat wood structure, and miscellaneous gravel, plantings and brush for habitat enhancement and erosion protection. Temporary items such as pumps, piping, and sprinklers would be needed during vegetation establishment periods for temporary irrigation. Hazardous materials could also be used for construction equipment including petroleum products, automotive fluids, and other chemicals.

Construction activities have the potential to temporarily impair water quality if disturbed and eroded soil, hazardous materials, or construction-related waste are discharged into receiving waters or onto the ground where they can be carried into receiving waters. Soil and associated contaminants that enter receiving waters can increase turbidity and sedimentation and introduce pollutants. Accidental spills of construction-related substances such as fuels and oils could contaminate both surface and groundwater. While construction would be temporary, on- or off-site soil erosion, siltation, and discharges of construction-related hazards could result in impacts to surface and groundwater that could violate water quality standards and/or waste discharge requirements.

As described above for construction of the flood risk reduction components, SJAFCA would obtain coverage under the CGP and require contractors to comply with the permit conditions. Compliance with the CGP would require the development and implementation of a SWPPP. The SWPPP would be prepared by a QSD and, along with the required permit registration documents, would be submitted electronically to the State Water Board before implementation. The SWPPP would include standard BMPs required for all projects and any additional measures determined necessary by the QSD to control stormwater run-on/runoff and sediment. Given compliance with existing NPDES regulations (e.g., CGP) and the incorporation of BMPs, construction activities associated with ecosystem restoration at Sites 13, 14 and 16 would not violate applicable water quality standards or waste discharge requirements or otherwise degrade surface water or groundwater quality. Therefore, impacts would be **less than significant.**

Operations and Maintenance

Once the construction of ecosystem restoration features at Sites 13, 14, and 16 is complete, a planting contractor would install container plants and grasses and maintain/irrigate over the following 3 years during the plant establishment period. A temporary irrigation system would be installed for the

establishment and maintenance period. Irrigation water would be pumped from the river edge or from a domestic water source and applied by drip or spray. The irrigation system may be partially removed for seasonal high-water flows. Watering, weeding, and mowing would occur throughout the year for up to 3 years (refer to Table 2-10). Maintenance frequency and intensity would decrease as the sites become more self-sustaining. Given the types and anticipated duration of these activities, O&M associated with Sites 13, 14, and 16 would not violate applicable water quality standards or waste discharge requirements or otherwise degrade surface water or groundwater quality compared to existing conditions. Therefore, impacts would be **less than significant.**

Other Multi-benefit Components

Construction

The proposed project also includes implementation of other multi-benefit components including additional ecosystem restoration sites, and recreation features along the levee system. These proposed multi-benefit components are described in Chapter 2, *Project Description*, and are presented on Figure 2-3. Proposed recreational features include the development of recreational paths along the top of levee and landside toe within the San Joaquin River corridor.

Erosion control would be installed using a mixture of biodegradable fabric in high erosion risk areas, with straw wattles and mulch used in areas of lower erosion risk. Recreational features would be developed along the top of the levee and/or landside toe and include trails, shared-use paths, and path access and parking improvements. All work would occur on land, above the OHWM. Restoration activities would occur during the dry season, July 1 to October 31, where there is low flow and no connectivity to the San Joaquin River.

Construction of the proposed other multi-benefit components would include many of the same earth-disturbing activities as for Sites 13, 14, and 16. For example, the proposed ecosystem restoration sites and recreational features would be cleared and grubbed to remove existing unwanted vegetation and graded and excavated to construct side channels and bring the sites to the design elevations. Such activities could result in soil erosion and the migration of soil and sediment in stormwater runoff to receiving waters. Fuels, lubricants, and other hazardous materials associated with construction equipment could adversely affect surface or groundwater if spilled or stored improperly.

Assuming construction of the other multi-benefits would disturb more than 1 acre, coverage under the CGP would be required, including preparation and implementation of a SWPPP and site-specific BMPs. Given compliance with existing NPDES regulations (e.g., CGP) and the incorporation of BMPs, construction associated with the other multi-benefit components would not violate applicable water quality standards or waste discharge requirements or otherwise degrade surface water or groundwater quality. Therefore, impacts would be **less than significant.**

Operations and Maintenance

Once construction is complete, ecosystem restoration sites would require ongoing maintenance following construction including temporary irrigation of new plants, focused application of herbicides to control invasive plants, weeding with hand tools, and erosion control. Over time frequency and intensity of maintenance activities is expected to decrease as the sites become more self-sustaining with removal of irrigation and less frequent activities to control invasive plants. The recreational features would require

maintenance similar to maintenance of the fix-in-place levee improvements, including routine inspections and use of small machinery for weed abatement to keep recreational features clear of vegetation. Given the types and anticipated duration of these activities, O&M of the other multi-benefit components would not be anticipated to violate applicable water quality standards or waste discharge requirements or otherwise degrade surface water or groundwater quality compared to existing conditions. Therefore, impacts would be **less than significant.**

Mitigation Measures

Mitigation Measure 3.12-1 (FRR):

Prior to the start of construction and before activities that involve the use of bentonite materials, the contractor in coordination with SJAFCA shall develop and implement a Bentonite Slurry Spill Contingency Plan (BSSCP), or frac-out plan, to minimize the potential for a frac-out associated with excavation and tunneling activities, provide for timely detection of frac-outs, and ensure a "minimum-effect" response in the event of a frac-out and release of excavation fluid. The BSSCP shall identify sensitive areas such as wetlands and streams, map bore paths to avoid sensitive areas, and evaluate soil and weather conditions that could increase spill risks. The BSSCP shall also describe protocols for continuous visual checks and pressure monitoring systems to identify a loss of circulation. The BSSCP shall describe response actions such as stopping drilling, deploying containment measures like sandbags or silt fences, and recovering slurry using pumps or vacuum trucks to avoid any impacts to sensitive areas if a spill occurs.

Significance After Mitigation: Implementation of Mitigation Measure 3.12-1 (FRR) would reduce potential impacts to groundwater that could result from construction of the soil-bentonite slurry cutoff wall to a **less-than-significant level**.

Impact 3.12-2: Implementation of the proposed project could substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the basin.

Flood Risk Reduction Components

The proposed flood risk reduction components are primarily located east of the San Joaquin River in the Eastern San Joaquin Subbasin, with some components (e.g., staging areas) located in the Tracy Subbasin (refer to Figure 3.12-2).

Construction

The proposed flood risk reduction components include raising the height of levees along portions of the existing levee alignment, construction of a dryland levee extension and drained seepage berm, placement of riprap rock slope protection, and various staging areas. Each of these components are described in detail in Chapter 2, *Project Description*, and are presented on Figure 2-2.

Construction would not involve the use of groundwater or require installation of groundwater wells. Construction of the proposed flood risk reduction components would not require dewatering to remove excess surface or groundwater from excavations or involve new or expand existing impervious area that would interfere with groundwater recharge. Therefore, construction of the proposed flood risk reduction components would not substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that it would impede sustainable groundwater management of the Eastern San Joaquin Subbasin. Impacts would be **less than significant.**

Operations and Maintenance

Once construction is complete and the performance standards have been met, O&M of the flood risk reduction components would involve activities similar to existing conditions. Routine O&M activities would not require groundwater use nor would they alter the existing recharge conditions.

Long-term operation of the flood risk reduction components could alter existing groundwater conditions (i.e., recharge and groundwater levels). For example, fix-in-place levee improvements could alter groundwater recharge compared to existing conditions. As described in subsection 2.4.1, *Flood Risk Reduction Components,* fix-in-place levee improvements would include levee raise, cutoff walls, and seepage berms that would be less pervious. For example, floodwalls used for the levee raise would be cast-in-place cement or steel sheet piles. While these improvements would provide additional flood risk reduction in areas where the levee raise cannot meet the required height for flood protection, they would inhibit overtopping that ultimately infiltrates into the groundwater system.

As another example, slurry cutoff walls[2] would be constructed at the levee centerline to depths that would tie into existing lower permeability soil layers below the permeable material. The dryland levee extension also includes a deep cutoff wall, approximately 17,800 feet in length. Cutoff walls are designed to reduce levee through-seepage and underseepage by providing a barrier of low-permeability material within the higher permeability materials in the levee and levee foundation. The slurry cutoff walls could create barriers to groundwater inflow and outflow potentially affecting groundwater levels. Similarly, seepage berms that address shallow foundation and/or levee embankment through-seepage would alter the permeability and potentially affect groundwater levels.

A regional groundwater analysis was conducted to evaluate potential changes in groundwater elevations on the riverside and landside with and without the dryland levee extension cutoff wall, and assess whether there could be intrusion of brackish water within the subsurface following a high-water event (ENGEO 2023). Results of numerical modeling indicate that under normal operating conditions, the dryland levee extension cutoff wall would result in minor increase (approximately 2 feet) to groundwater levels within the vicinity of the cutoff wall. During a 200-year flood event, groundwater elevations are maintained relatively close to the normal operating conditions on the landward side of the levee with a cutoff wall. Groundwater flow remains directed toward the river with or without the cutoff wall. Additionally, during a flood event, water in the San Joaquin River would consist of surface freshwater runoff from the watersheds upstream and therefore influence from the river during a flood event would not be expected to create brackish conditions in groundwater (ENGEO 2023). These results support that the cutoff walls would not result in depletions of interconnected surface water that have significant and unreasonable adverse impacts on beneficial uses of the surface water or result in significant and unreasonable degraded water quality such that sustainable groundwater management of the Eastern San Joaquin Subbasin is impeded.

Therefore, O&M activities would not result in additional groundwater use that would substantially deplete groundwater resources, nor would these activities result in changes that would substantially interfere with groundwater recharge. Long-term operation of the flood risk reduction components would not substantially affect groundwater resources at the subbasin scale such that sustainable groundwater

[2] A slurry cutoff wall is installed on the river side to a determined depth to cutoff seepage through any deep impervious layers. These are used in areas of soft earth close to open water, or with a high groundwater table.

management of the Tracy and Eastern San Joaquin subbasins would be impeded. Therefore, impacts would be **less than significant.**

Restoration Sites 13, 14, and 16 and Other Multi-benefit Components

Sites 13,14, and 16, and other multi-benefit components are located in both the Tracy and Eastern San Joaquin subbasins (refer to Figure 3.12-2).

Construction

As discussed under Impact 3.12-1, the proposed project involves ecosystem restoration of Sites 13, 14, and 16 and other multi-benefit components (ecosystem restoration at other sites and recreational features along the levee system). Construction associates with these sites and other multi-benefit components would include regrading, revegetation, and other similar actions to restore or enhance natural and recreational values within the proposed project area. Construction would not involve the use of groundwater or require installation of groundwater wells. Construction of the proposed flood risk reduction components would not require dewatering to remove excess surface or groundwater from excavations.

The proposed multi-benefit components would include a combination of gravel levee-top path segments and at-grade paved paths behind levees. The gravel levee-top path segments would allow for groundwater infiltration, and the paved paths would only result in a minimal increase in impervious surfaces. Water would still be able to infiltrate the remaining parts of the proposed project area. Any changes would be localized and would not be expected to substantially affect groundwater resources at the subbasin scale such that sustainable groundwater management of the Eastern San Joaquin Subbasin would be impeded.

Therefore, construction associated with Sites 13, 14, and 16, and the other multi-benefit components would not substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that it would interfere with sustainable groundwater management of the Eastern San Joaquin or Tracy subbasins. Impacts would be **less than significant.**

Operations and Maintenance

Once the construction of Sites 13, 14, and 16 and other multi-benefit components are complete, O&M would involve temporary watering of new plants, weeding, and mowing for up to 3 years before the sites are self-sustaining. An irrigation main line to pump water from the river edge or from a domestic water source would be used for irrigation. Water would be applied by drip or spray irrigation, and the irrigation system may be partially or entirely removed for seasonal high-water flows. Over time, maintenance frequency and intensity would be expected to decrease as the sites become more self-sustaining, irrigation lines would be removed, and less frequent activities to control invasive plants would occur. Should the irrigation water be pumped from an existing well, the increase in groundwater demand during this period would not be anticipated to substantially interfere with groundwater supply at the subbasin scale. Further, any additional groundwater use would need to comply with the applicable GSP (i.e., Eastern San Joaquin Subbasin GSP or Tracy Subbasin GSP) and be approved by the respective GSA.

O&M of Sites 13, 14, and 16 and other multi-benefit components would not result in additional impervious surfaces that would interfere substantially with groundwater recharge. Over the long-term, restoration would improve ecological function and habitat in the flood-system and enhance groundwater

recharge by improving the connectivity between the San Joaquin River and floodplain habitats. Therefore, construction would not substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that it would impede sustainable groundwater management of the basin. Impacts would be **less than significant**.

Mitigation Measures

Mitigation Measure (FRR/RS/MB): None required.

Impact 3.12-3: Implementation of the proposed project could substantially alter the existing drainage pattern of the site or area in a manner which would: result in substantial erosion or siltation on- or off-site, or substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site.

Flood Risk Reduction Components

Construction

The proposed flood risk reduction components include raising the height of levees along portions of the existing levee alignment, construction of a dryland levee extension and drained seepage berm, placement of riprap rock slope protection, and various staging areas. Each of these components are described in detail in Chapter 2, *Project Description*, and are presented on Figure 2-2. As described in Impact 3.12-1, construction of the proposed flood risk reduction components would involve establishing staging areas and temporary access roads and ramps; trimming and/or removal of vegetation; demolition of structures, hardscape, and surface features; clearing and grubbing above the OHWM; and excavation and grading.

Construction activities could expose soils to temporary increased rates of erosion and increase sediment loading to receiving waters. During a rain event, construction activities could temporarily alter the direction, rate, and amount of surface runoff within the proposed project area. During the construction period, surface runoff would continue to be routed within the floodplain or nearby surface water features. Construction-related changes in the existing drainage patterns would be temporary and have relatively localized effects on-site and immediately downstream of the proposed project area. Therefore, the construction activities associated with the proposed flood risk reduction components would not result in substantial on- or off-site erosion and siltation; substantial increases in the rate or amount of surface runoff which would result in on or off-site flooding. Therefore, impacts would be **less than significant.**

Operations and Maintenance

Once construction of the flood risk reduction components is complete and the performance standards have been met, routine O&M would involve activities similar to existing conditions. Regular O&M activities would consist of inspections, weed abatement, removal of encroachments and high-hazard vegetation to ensure levee integrity, replacement and re-working of displaced or launched revetment following large flood events, and adequate levee access along the levee toe road. Compared to existing conditions, these routine activities would not alter the existing drainage pattern in a manner that would result in substantial erosion or siltation on- or off-site, or substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site. Impacts would be **less than significant.**

Restoration of Sites 13, 14, and 16 and Multi-benefit Components

Construction

Proposed ecosystem restoration features at Sites 13, 14, and 16 would include excavated floodplains, floodplain side channels, brush mat, habitat wood structures, willow baffles, and upland brush piles. The proposed project also includes implementation of other multi-benefit components including additional ecosystem restoration sites, and recreation features along the levee system. These proposed multi-benefit components are described in Chapter 2, *Project Description*, and are presented on Figure 2-3. Proposed recreational features include the development of recreational paths along the top of levee and landside toe within the San Joaquin River corridor.

Construction activities associated with Sites 13, 14, and 16, other ecosystem restoration sites, and recreational features along the levee system would involve the same activities as for the flood risk reduction components. Specifically, unwanted vegetation would be cleared and grubbed and mass grading in unvegetated areas would be performed using large construction equipment that could include scrapers, bulldozers, excavators, loaders, rubber track carriers, and dump trucks. More detailed grading around preserved trees and on side channels would be performed using small excavators, bobcats and other similar sized equipment. Finish grading would be performed using excavators to bring each ecosystem restoration site to the design elevations.

Similar construction of the flood risk reduction components, construction activities could expose soils to temporary increased rates of erosion and increase sediment loading to receiving waters. During a rain event, construction activities could temporarily alter the direction, rate, and amount of surface runoff within the proposed project area. During the construction period, surface runoff would continue to be routed within the floodplain or nearby surface water features.

Construction-related changes in the existing drainage patterns would be temporary and have relatively localized effects on-site and immediately downstream of the proposed project area. Compared to existing conditions, the construction-related changes would not result in substantial on- or off-site erosion and siltation, or substantial increases in the rate or amount of surface runoff which would result in on or off-site flooding. Therefore, impacts would be **less than significant.**

Operations and Maintenance

Once construction is complete, the ecosystem restoration Sites 13, 14, and 16 and the other multi-benefit components would require ongoing maintenance. Watering, weeding, and mowing would occur throughout the year for up to 3 years (refer to Table 2-10). Maintenance frequency and intensity would decrease as the sites become more self-sustaining. The recreational features would require maintenance similar to the fix-in-place levee improvements, including routine inspections and use of small machinery for weed abatement to keep recreational features clear of vegetation.

Given the types and anticipated duration of these activities, O&M of the ecosystem restoration sites and other multi-benefit components would not alter the existing drainage patterns in a manner that would result in substantial erosion or siltation on- or off-site, or substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site. Therefore, impacts would be **less than significant**.

Mitigation Measures

Mitigation Measure (FRR/RS/MB): None required.

Impact 3.12-4: Implementation of the proposed project could substantially alter the existing drainage pattern of the site or area in a manner which would impede or redirect flood flows.

Flood Risk Reduction Components

Construction

The proposed flood risk reduction components include raising the height of levees along portions of the existing levee alignment, construction of a dryland levee extension and drained seepage berm, placement of riprap rock slope protection, and various staging areas. Each of these components are described in detail in Chapter 2, *Project Description*, and are presented on Figure 2-2. As described in Impact 3.12-1, construction of the proposed flood risk reduction components would involve establishing staging areas and temporary access roads and ramps; trimming and/or removal of vegetation; demolition of structures, hardscape, and surface features; clearing and grubbing above the OHWM; and excavation and grading.

While construction activities could temporarily change the existing drainage patterns of the proposed project area during a rain event through stockpiling of materials, excavation, and grading, construction would not occur during the flood season. Construction of fix-in-place levee components, except for the dryland levee component, would occur between July 1 and October 31 each year to meet restrictions for construction on federal levees. Construction-related changes in the existing drainage patterns would be temporary and have relatively localized effects on-site and immediately downstream of the proposed project area. Compared to existing conditions, the construction-related changes would not impede or redirect flood flows. Therefore, impacts would be **less than significant.**

Operations and Maintenance

As discussed in Impact 3.12-3, once construction of the flood risk reduction components is complete and the performance standards have been met, routine O&M would involve activities similar to existing conditions. Compared to existing conditions, these routine activities would not alter the existing drainage pattern in a manner that would impede or redirect flood flows.

As described in Chapter 2, *Project Description*, the purpose of the proposed project is to provide increased public safety benefits by rehabilitating and improving flood management infrastructure in the proposed project area. The existing levees surrounding the proposed project area are designed to provide protection against the 100-year flood event under current climate conditions. As described in subsection 3.12.3 under *Urban Level of Flood Protection Criteria*, SB 5 requires a higher standard of protection for levees protecting urban and urbanizing areas within the Central Valley – specifically, protection from a 200-year event. The term “200-year event” describes a flood’s recurrence interval, defined as the average number of years between floods of that magnitude. Recurrence intervals are used to describe the extreme nature of a flood and to compare how common (or uncommon) a flood is and how likely it is to occur in any given year. The 10-year recurrence interval means that a flood of this magnitude has a 1 in 10 chance (or 10 percent) of occurring in any given year. The 200-year recurrence interval means that a flood of this magnitude has a 1 in 200 chance (or 0.5 percent) of occurring in any given year. The magnitude of the flood is location-specific and is calculated by analyzing historical river discharge (flow rate measured in cubic feet per second) data using statistical frequency analysis to determine a flood's recurrence interval

and the probability of occurrence. Higher discharges indicate larger magnitudes. The data are collected at stream-gaging stations and used to establish the severity of floods (USGS 2025).

As described in Chapter 2, *Project Description*, the overall objective of the proposed project is to provide increased public safety benefits by rehabilitating, improving, and constructing flood risk reduction infrastructure to achieve a 200-year urban level of flood protection (ULOP) for the proposed project area. Long-term operation of the flood risk reduction components would redirect flood flows away from people and property in and adjacent to the proposed project area. Within the existing levee rights-of-way and easement, long-term operation of the fix-in-place levee improvements compared to existing conditions would modernize the current flood risk reduction infrastructure to accommodate future performance and climate change resiliency.

The proposed dryland levee extension that is part of the proposed flood risk reduction infrastructure would introduce a new approximately 2.9 mile-long-levee east to Tinnin Road to prevent flood waters from going around the existing dryland levee and flooding the proposed project area during extreme flood events (e.g., a 200-year event). The proposed dryland levee extension would protect the proposed project area from overtopping floodwaters originating from upstream areas on the Lower San Joaquin River and Stanislaus River during high-flow events. The proposed dryland levee extension would include a seepage berm and O&M corridor on both sides of levee (refer to subsection 2.4.1 of Chapter 2, *Project Description*, for additional details), providing 200-year ULOP to the proposed project area. Under existing conditions, a 200-year event inundates the proposed project area. With implementation of the proposed project, the dryland levee extension would redirect flood flows away from people and property in the proposed project area, displacing the water elsewhere in the proposed project area and vicinity. Localized flooding would occur in areas near French Camp and parts of Stockton that already experience flooding under existing conditions. The proposed dryland levee extension would also result in minor increases in flooding of areas west of the San Joquin River and south of the proposed dryland levee that are already prone to flooding during a 200-year event and/or new inundation in areas not previously inundated during a 200-year event. Therefore, long-term operation of the dryland levee extension feature of the flood risk reduction component would alter the existing drainage pattern in a manner that would impede or redirect flood flows.

To evaluate changes in flood flows associated with implementation of the proposed dryland levee compared to existing conditions, a hydraulic analysis (Appendix G to this Draft EIR) was performed using a HEC-RAS model.[3] The without-project conditions modeled represent the Lower San Joaquin System without implementation of the proposed project, with the Mossdale dryland levee represented in its current without-project state. The with-project conditions modeled include the fix-in-place levee improvements and dryland levee extension out to Tinnin Road, as defined by the proposed project. The model hydrology was derived from the 2022 CVFPP, which provides 200-year event flows on the San Joaquin River at Vernalis, CA under existing (2022) conditions. Both the with- and without-project conditions were simulated under existing (2022) hydrology and compared to quantify changes in inundation as measured by flood extent (acreage), flood depth (feet), and water surface elevation (feet). To assess the proposed project's resilience to climate change, the with- and without-project conditions

[3] Developed by USACE, the Hydrologic Engineering Center's River Analysis System (HEC-RAS) simulation software is used in computational fluid dynamics to model the hydraulics of water flow through natural rivers and other channels.

were simulated under additional climate change hydrology scenarios (see Appendix G to this Draft EIR). **Table 3.12-5** summarizes modeled changes in flood extent, flood depth, and water surface elevation under the 200-year event, with and without the proposed project, and the associated interpretation for purposes of this analysis. In summary, comparison of the with- and without-project conditions indicate no change in flooded area under more frequent, lower magnitude events (the 2-year, 5-year, 10-year, 50-year, and 100-year flood events). That is, the proposed project would not cause any new flooding under more frequent, lower magnitude events as the existing levees provide adequate protection for these flood scenarios both with and without the proposed project. Under the less frequent, higher magnitude, 200-year event, the proposed project would redirect flood flows away from approximately 3,650 acres in the proposed project area and back into the San Joaquin River system. This redirection of flow slightly raises in-channel water surface elevations in Old River and the San Joaquin River (0.1 foot and 0.2 foot, respectively). While these increases are relatively small, many levees are already being overtopped under existing, without-project conditions and the surrounding topography is relatively flat, resulting in shallow overland flooding primarily west of the San Joaquin River under the with-project condition, as depicted in **Figure 3.12-4**. Approximately 2,970 acres of previously dry, mostly agricultural land would experience new inundation.

TABLE 3.12-5
MODELED CHANGES WITH AND WITHOUT THE PROPOSED PROJECT UNDER THE 200-YEAR EVENT

Variable	Comparison of With and Without Project	Results Interpretation for CEQA
Flood Extent (acres)	3,650 acres of urban and urbanizing area are removed from the 200-year floodplain while 2,970 acres of previously dry, mostly agricultural land become inundated	Flooding is redirected away from the proposed project area and back into the San Joaquin River system, which results in new inundation.
Flood Depth (feet)	In the newly inundated areas, flood depth is generally less than 3 feet with some areas reaching approximately 6 feet.	The flooding is generally shallow. The deeper flooding occurs in undeveloped areas already subject to ponding under existing conditions (west of the San Joaquin River, between I-5 and the Union Pacific Railroad).
Water Surface Elevation (feet)	The redirection of flood flow slightly raises in-channel water surface elevation in Old River (approximately 0.1 foot) and the San Joaquin River (0.2 foot).	These increases are relatively small, with many levees already overtopping and shallow overland flooding west of the San Joaquin River.

SOURCE: Appendix G to this Draft EIR.

Table 3.12-6 summarizes changes in the total flooded acreage by depth category. While the net effect is a reduction in total inundated area of approximately 680 acres (a change of 3 percent), the proposed project would inundate areas in the floodplain not previously inundated under a 200-year event. As discussed in Appendix G to the Draft EIR, under with-project conditions, flood depths in these newly flooded areas would generally remain shallow (less than 3 feet). In addition, across this existing floodplain under with-project conditions, there would be an increase in areas experiencing shallow flooding (0.1 to 3 feet) and a reduction in areas experiencing moderate (3 to 5 feet) and deep flooding (greater than 5 feet).

TABLE 3.12-6
DEPTH AND TOTAL AREA FLOODED WITH AND WITHOUT THE PROPOSED PROJECT UNDER THE 200-YEAR EVENT

Flooding Type	Flooding Depth (feet)[a]	Without Project (acres)	With Project (acres)	Change (acres)	Percent Change
Shallow	0.1 to 3	7,950	9,510	730	19%
Moderate	3 to 5	2,590	2,180	-410	-16%
Deep	> 5	10,250	8,420	-1,830	-18%
	TOTAL	**20,790**	**20,110**	**-680**	**-3%**

NOTES:

a. The 200-year Urban Levee Design Criteria applies to areas with flood depths greater than 3 feet, which is why 3 feet was considered the threshold for "shallow" flooding. A flood depth of approximately 5 feet or greater is considered "high consequence" for evacuation and response by levee and dam breech emergency action plans and among federal agencies (FEMA and USACE), which is why 5 feet was considered the threshold for "moderate" flooding.

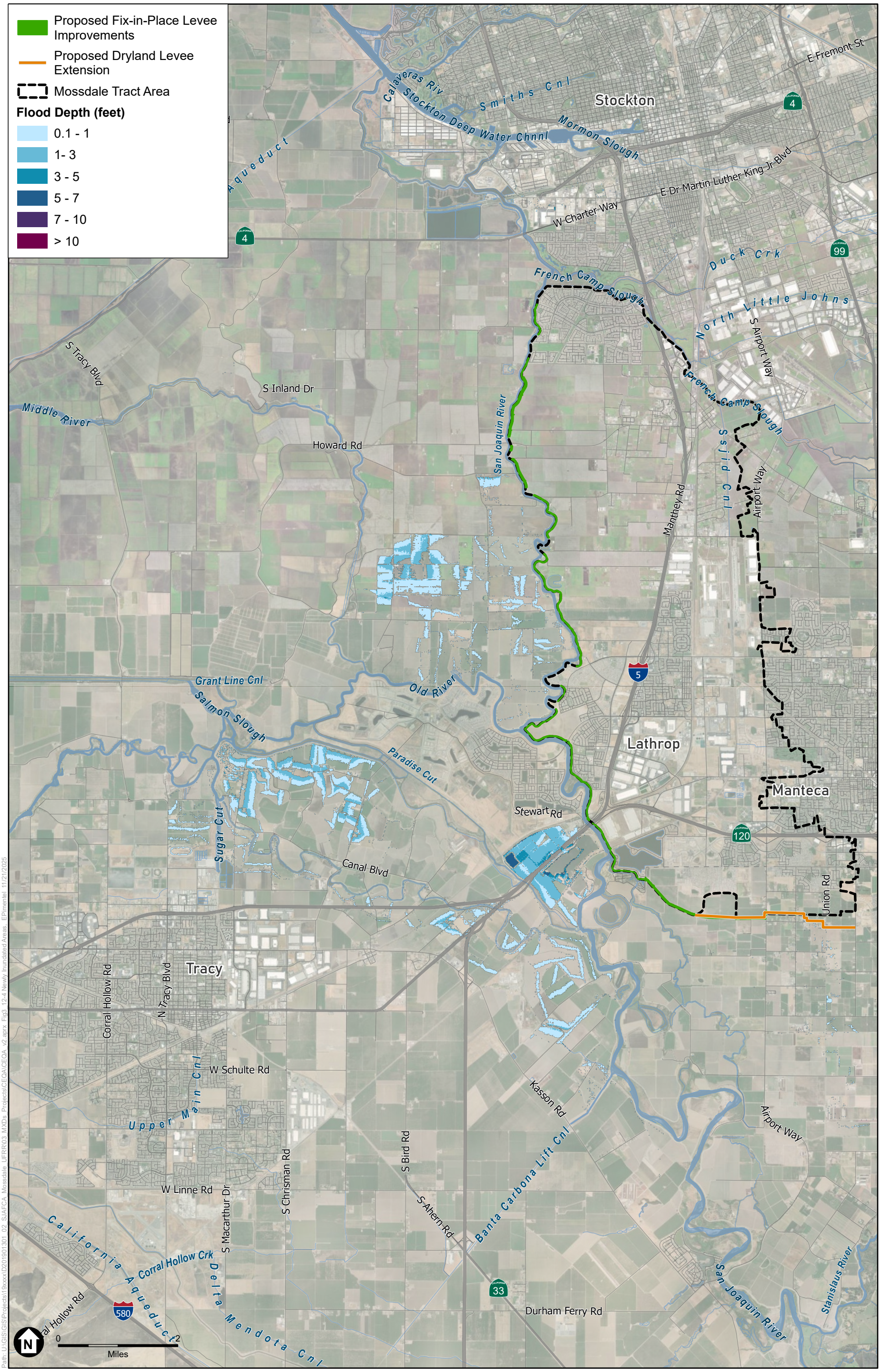
SOURCE: Appendix G to this Draft EIR.

The most notable increase in depth occurs in an existing low-lying pond west of the San Joaquin River, between I-5 and the Union Pacific Railroad, where modeled depths reach approximately 6 feet. However, these locations are undeveloped and already subject to ponding under current conditions.

In addition to the potential increases in depth, the duration of such flooding could also increase. However, while the hydraulic modeling assumes that all floodwaters remain ponded in place, in reality, both infiltration (based on soil type) and evaporation (based on time of year) could shorten the overall duration of shallow flooding impacts in these flat existing agricultural use areas. The predominant soil type in the affected area is Hydrologic Soil Group C, which has an average infiltration rate of 0.1 inch per hour.[4] At this rate, it is estimated that 1 foot of standing water would take about 5 days to infiltrate into the soil. In addition, depending on ambient air temperatures, some reduction in ponded depth would also occur due to evaporation. As a result, even in areas that would experience inundation, the water would be temporarily ponded and would reduce in depth and area over a short period of time.

Therefore, while long-term operation of the proposed project's dryland levee extension would protect the proposed project area (3,650 acres) from flooding under a 200-year event, the levee would redirect flood flows back into the San Joaquin River system, which would result in inundation of areas. However, the affected areas would experience in general 0.1 to 3 feet of inundation. In addition, in areas that would experience inundation, the water would be temporarily ponded and would reduce in depth and area over a short period of time due to infiltration and evaporation (up to 5 days). Furthermore, these areas are currently located in a floodplain mapped by FEMA and while there is change under the 200-year event, no change in flooded area occurs under more frequent, lower magnitude events (2-year, 5-year, 10-year, 50-year, and 100-year flood events). As a result, impacts associated with the dryland levee extension would be **less than significant.** Refer to Section 3.3, *Agriculture Resources*, for a discussion of potential impacts of the proposed project on agricultural resources

4 Based on the USACE's 2025 HEC-RAS 2D User's Manual – Infiltration Methods.



SOURCE: MAXAR, 2024; CPAD, 2025; KSN, 2025; PBI, 2025; ESA, 2025

SJAFCA Mossdale Tract Urban Flood Risk Reduction Project

Figure 3.12-4
Flood Depth of Newly Inundated Areas for the With Project 200-Year 2022 Event

Path: U:\GIS\GIS\Projects\19xxxx\D20190130 1 02 SJAFCA Mossdale UFRR\03 MXDs Projects\CEQA\CEQA v2.aprx Fig3 12-4 Newly Inundated Areas_EPimentel 11/21/2025

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Restoration Sites 13, 14, and 16, and Other Multi-benefit Components

Construction

As discussed in Impact 3.12-3, construction activities associated with Sites 13, 14, and 16, other ecosystem restoration sites and recreational features along the levee system would involve the same activities as for the flood risk reduction components. While construction activities could temporarily change the existing drainage patterns of the proposed project area during a rain event through stockpiling of materials, excavation, and grading, construction would not occur during the flood season. Construction for Sites 13, 14, and 16 would occur during the dry season, from July 1 to October 31, when there is low flow and no connectivity to the San Joaquin River, in order to minimize impacts to special status fish and their habitat. Compared to existing conditions, the construction-related changes would not impede or redirect flood flows. Therefore, impacts would be **less than significant.**

Operations and Maintenance

Once construction is complete, the Sites 13, 14, and 16 and the other multi-benefit components would require ongoing maintenance. Given the types and anticipated duration of these activities, O&M of the ecosystem restoration sites and other multi-benefit components would not alter the existing drainage pattern in a manner that would result in substantial erosion or siltation on- or off-site, or 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 flood flows. Over the long-term, restoration would improve ecological function and habitat in the flood-system, and enhance groundwater recharge by improving the connectivity between the San Joaquin River and floodplain habitats. Therefore, impacts would be **less than significant**.

Mitigation Measures

Mitigation Measure (FRR/RS/MB): None required.

Impact 3.12-5: Implementation of the proposed project could risk release of pollutants due to project inundation in a flood hazard zone.

All Project Components

Construction

As described in Section 2.3, *Project Objectives*, of Chapter 2, *Project Description*, the overall objective of the proposed project is to provide increased public safety benefits by rehabilitating and improving flood risk reduction infrastructure to achieve a 200-year ULOP for the proposed project area. Modernizing the flood risk reduction infrastructure would accommodate future performance and performance and climate change resiliency goals identified in the CVFPP and in SJAFCA's Climate Change Adaptation Policy. Additionally, the proposed project would implement multi-benefit components that would improve ecological function and habitat in the flood-system and contribute additional societal benefits such as recreation.

In order to meet these objectives, construction activities associated with the flood risk reduction; ecosystem restoration Sites 13, 14, and 16; and multi-benefit components would occur adjacent to the San Joaquin River (above the OHWM) in areas within or adjacent to flood hazard zones, as mapped by FEMA

(refer to Figure 3.12-3). The San Joaquin River and portions of the proposed project area to the west are generally located in Zone AE, an area designated as a high-risk flood zone with a 1 percent risk of flooding annually. Portions of the proposed project area, including all staging areas, located east of the San Joaquin River are generally located in Zone X, an area determined to be outside the 500-year flood and protected by levee from the 100-year flood.

As discussed in Impact 3.12-1, construction materials and equipment associated with the proposed project would require routine use of hazardous materials and pollutants (e.g., fuels, oils, antifreeze, coolants, concrete, asphaltic concrete, bentonite slurry, etc.). Staging areas would contain temporary storage for these types of pollutants. As depicted in Figure 3.12-3, the proposed project components, including staging areas, are located in an area with reduced flood risk due to levee. Construction of fix-in-place levee components, except for the dryland levee component, would occur between July 1 and October 31 each year to meet restrictions for construction on federal levees. Construction of ecosystem restoration Sites 13, 14, and 16 would also occur during the dry season, from July 1 to October 31, when there is low flow and no connectivity to the San Joaquin River. Therefore, construction of the proposed project would not be anticipated to be inundated and result in release of pollutants.

As described in Impact 3.12-1, in accordance with NPDES regulations, to minimize the potential effects of construction runoff on receiving water quality, the state requires that any construction activity affecting one acre or more obtain coverage under the CGP. Compliance with the CGP includes identifying required BMPs described in a SWPPP to properly store pollutants to protect from stormwater and inundation from potential flooding. Compliance with existing regulations and the incorporation of BMPs would ensure that pollutants associated with construction equipment and activities are properly managed such that releases are avoided to the extent possible. This impact would be **less than significant.**

Operations and Maintenance

Once construction of the proposed project is complete, O&M activities would generally be similar to existing conditions. Regular O&M would occur in areas with reduced flood risk due to levee and not involve substantial changes to the types or volumes of pollutants used under current maintenance programs. As such, impacts from the release of pollutants due to proposed project inundation from O&M of the proposed project would be **less than significant**.

Mitigation Measures

Mitigation Measure (FRR/RS/MB): None required.

Impact 3.12-6: Implementation of the proposed project could conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan.

All Project Components

Construction

As discussed in Impact 3.12-1, construction associated with the flood risk reduction components, ecosystem restoration Sites 13, 14, and 16, and other multi-benefit components would involve earth-disturbing activities (e.g., clearing, grubbing, excavation, grading, etc.). These activities have the potential to expose and disturb soils, potentially mobilizing and/or delivering eroded soil, sediment and other pollutants to receiving waters. The eroded soils, sediment and other pollutants could also be mobilized

and transported off-site by stormwater runoff (nonpoint-source pollution), potentially degrading the water quality of receiving waters. Fuels, lubricants, and other hazardous materials associated with construction equipment could also adversely affect water quality if spilled or stored improperly. Compliance with NPDES regulations and coverage under the CGP would minimize the potential effects of construction runoff on receiving water quality through development and implementation of a SWPPP to prevent water quality pollutants such as silt, sediment, hazardous materials, and construction-related fluids from entering receiving waters. To mitigate potential impacts associated with construction of the slurry cutoff walls, Mitigation Measure 3.12-1 (FRR) would require SJAFCA or its contractor to develop and implement a BSSCP.

As discussed in Impact 3.12-2, construction associated with the flood risk reduction components, ecosystem restoration Sites 13, 14, and 16, and other multi-benefit components would not require the use of groundwater or interfere substantially with groundwater recharge such that the proposed project would impede sustainable groundwater management of the Tracy or Eastern San Joaquin subbasins. The proposed project would be consistent with the Tracy Subbasin GSP and Eastern San Joaquin Subbasin GSP in terms of protecting groundwater quality as related to protecting beneficial uses and would not result in infiltration of pollutants or result in a violation of a water quality control plan, changes in groundwater level, groundwater recharge, or increased saltwater intrusion.

Therefore, with compliance with NPDES regulations (i.e., CGP) and implementation of Mitigation Measure 3.12-1 (FRR), construction activities associated with the proposed project would not conflict with or obstruct implementation of a water quality control plan (i.e., Sacramento and San Joaquin River Basin Plan and Bay-Delta Plan). Construction activities associated with the proposed project would not conflict with or obstruct implementation of the applicable sustainable groundwater management plan. Therefore, impacts would be **less than significant.**

Operations and Maintenance

As discussed in Impact 3.12-1, once construction is complete for the flood risk reduction components and the performance standards have been met, SJAFCA would be responsible for O&M of the proposed project. Regular O&M would be consistent with existing conditions (e.g., similar activities, access routes, equipment types, and frequency). O&M of ecosystem restoration Sites 13, 14, and 16, and the other multi-benefit components would involve establishment of a temporary irrigation system, and routine watering, weeding and mowing for approximately 3 years. Maintenance frequency and intensity would decrease as the sites become more self-sustaining.

As discussed in Impact 3.12-2, O&M activities associated with the flood risk reduction components would not result in additional groundwater use that would substantially deplete groundwater resources, nor would these activities result in changes that would substantially interfere with groundwater recharge. O&M activities associated with ecosystem restoration Sites 13, 14, and 16, and potentially the other multi-benefit components could require the use of groundwater pumped from a domestic water source for temporary irrigation during the establishment period (up to 3 years). Should the irrigation water be pumped from an existing well, the increase in groundwater demand during this period would not be anticipated to substantially interfere with groundwater supply at the subbasin scale. Further, any additional groundwater use would need to comply with the applicable GSP (i.e., Eastern San Joaquin Subbasin GSP or Tracy Subbasin GSP) and approved by the respective GSA.

Over the long-term, restoration would improve ecological function and habitat in the flood-system and enhance groundwater recharge by improving the connectivity between the San Joaquin River and floodplain habitats. Therefore, O&M of the proposed project would not conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan. Impacts impact would be **less than significant**.

Mitigation Measures

Mitigation Measure (FRR/RS/MB): None required.

3.13 Land Use and Planning

3.13.1 Introduction

This section discusses the existing land use setting within the proposed project area and surrounding areas; identifies applicable federal, state, regional, and local laws, regulations, and policies relevant to land use and planning; and evaluates issues related to land use and planning to determine whether implementation of the proposed project would result in a significant impact due to a conflict with any county and/or city land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect.

The analysis included in this section was developed based on review of the proposed project against the applicable land use plans, policies, and regulations established by San Joaquin County and the cities of Lathrop, Manteca, and Stockton, as well as other applicable regional land use plans. In addition, comments addressing land use and planning were received in response to the NOP. See Appendix A to this Draft EIR for NOP comment letters.

3.13.2 Environmental Setting

The proposed project area includes portions of the cities of Stockton, Lathrop, Manteca, and unincorporated San Joaquin County lands (refer to Figure 2-1 in Chapter 2, *Project Description*). Each of these jurisdictions have land use authority over the parcels within their limits and spheres of influence (SOI), which is described in greater detail below.

Existing Land Uses within the Proposed Project Area

Flood Risk Reduction Components

Figures 3.13-1a through Figure 3.13-1c show the land use designations associated with the surrounding jurisdictions of San Joaquin County and the cities of Stockton, Lathrop, and Manteca in the vicinity of the flood risk reduction components.

Figure 3.13-1a shows the flood risk reduction components in the vicinity of the City of Stockton and San Joaquin County. The surrounding parcels under the land use authority of the City of Stockton are designated as Open Space/Agriculture and Low Density Residential. The surrounding parcels under the land use authority of San Joaquin County are designated as Open Space/Resource Conservation and Agriculture/General. There are three staging areas in this location, the three staging areas in this are under county jurisdiction and have a land use designation of Agriculture/General.

Figure 3.13-1b shows the flood risk reduction components in the vicinity of the City of Lathrop and San Joaquin County. The surrounding parcels under the land use authority of the City of Lathrop are designated as Low and Medium Density Residential, Varied Density Residential – Central Lathrop, Recreational Residential, Neighborhood Park, Public/Quasi Public Facilities, Village Center, and Limited Industrial uses. The surrounding parcels under the land use authority of the county are designated as Open Space/Resource Conservation and Agriculture/General uses. There are eight staging areas in this area, six are within the City of Lathrop and two are within the county. The six staging areas within the City of Lathrop are designated, from north to south, as: (1) Varied Density Residential – Central Lathrop;

(2) Neighborhood Park; (3) Public/Quasi Public; (4) and (5) Medium Density Residential, Freeway Commercial, and Neighborhood Park uses; (6) Limited Industrial use. The two staging areas within San Joquin County are designated as are designated as Agriculture/Urban Reserve.

Figure 3.13-1c shows the flood risk reduction components in the vicinity of the City of Manteca and San Joaquin County. The surrounding parcels under the land use authority of the City of Manteca are designated as Very Low Residential [0.5 to 2 dwelling units per acre (du/ac)], Low Density Residential (2.1 to 8 du/ac), Open Space, Public/Quasi-Public, and Urban Reserve (Park) uses. The surrounding parcels under the land use authority of the county are designated as Open Space/Resource Conservation, Agriculture/Urban Reserve, Agriculture/General, Residential/Low Density, Residential/Medium Density, and Commercial/Recreation. There are two staging areas in the location, one is located within the City of Manteca and one is within San Joaquin County. The staging area within the City of Manteca is designated as Open Space. The staging area within the county is designated as Agriculture/Urban Reserve use.

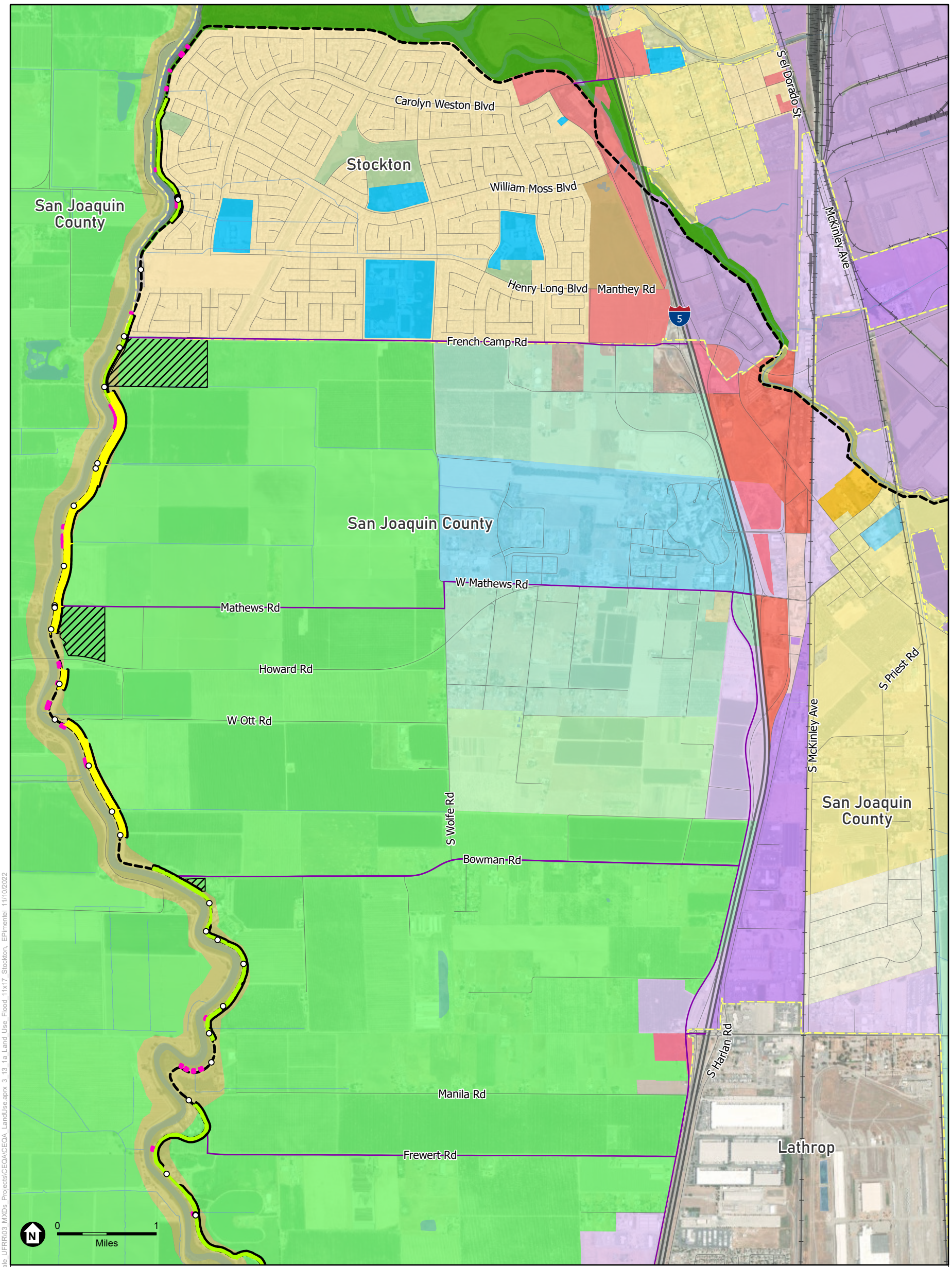
Restoration Sites 13, 14, and 16

Figures 3.13-1d through 3.13-1f show the land use designations associated with the surrounding jurisdictions of San Joaquin County and the cities of Stockton, Lathrop, and Manteca in the vicinity of ecosystem restoration Sites 13, 14, and 16.

Figure 3.13-1d shows the ecosystem restoration features at Sites 13, 14, and 16 in the vicinity of the City of Stockton and San Joaquin County; however, Sites 13, 14, and 16 are not located within the City of Stockton or a portion of the county. The surrounding parcels under the land use authority of the City of Stockton and San Joaquin County are the same designations as surrounding land uses identified in Figure 3.13-1a above.

Figure 3.13-1e shows the ecosystem restoration features at Sites 13, 14, and 16 in the vicinity of the City of Lathrop and San Joaquin County. The surrounding parcels under the land use authority of the City of Lathrop and the county are the same designations as surrounding land uses identified in Figure 3.13-1b above. Sites 13, 14, and 16 are also located in this area; Site 13 is only partially shown and is located in Manteca; therefore, it is discussed below. The land use designation for Sites 14 and 16, which are located in the county, are designated as Agriculture/Urban Reserve and Open Space/Resource Conservation.

Figure 3.13-1f shows the ecosystem restoration features at Sites 13, 14, and 16 in the vicinity of the City of Manteca and San Joaquin County. The surrounding parcels under the land use authority of the City of Lathrop and the county are the same designations as surrounding land uses identified in Figure 3.13-1c above. Site 13 is located in this area; the site is within the City of Manteca and has a land use designation of Open Space.



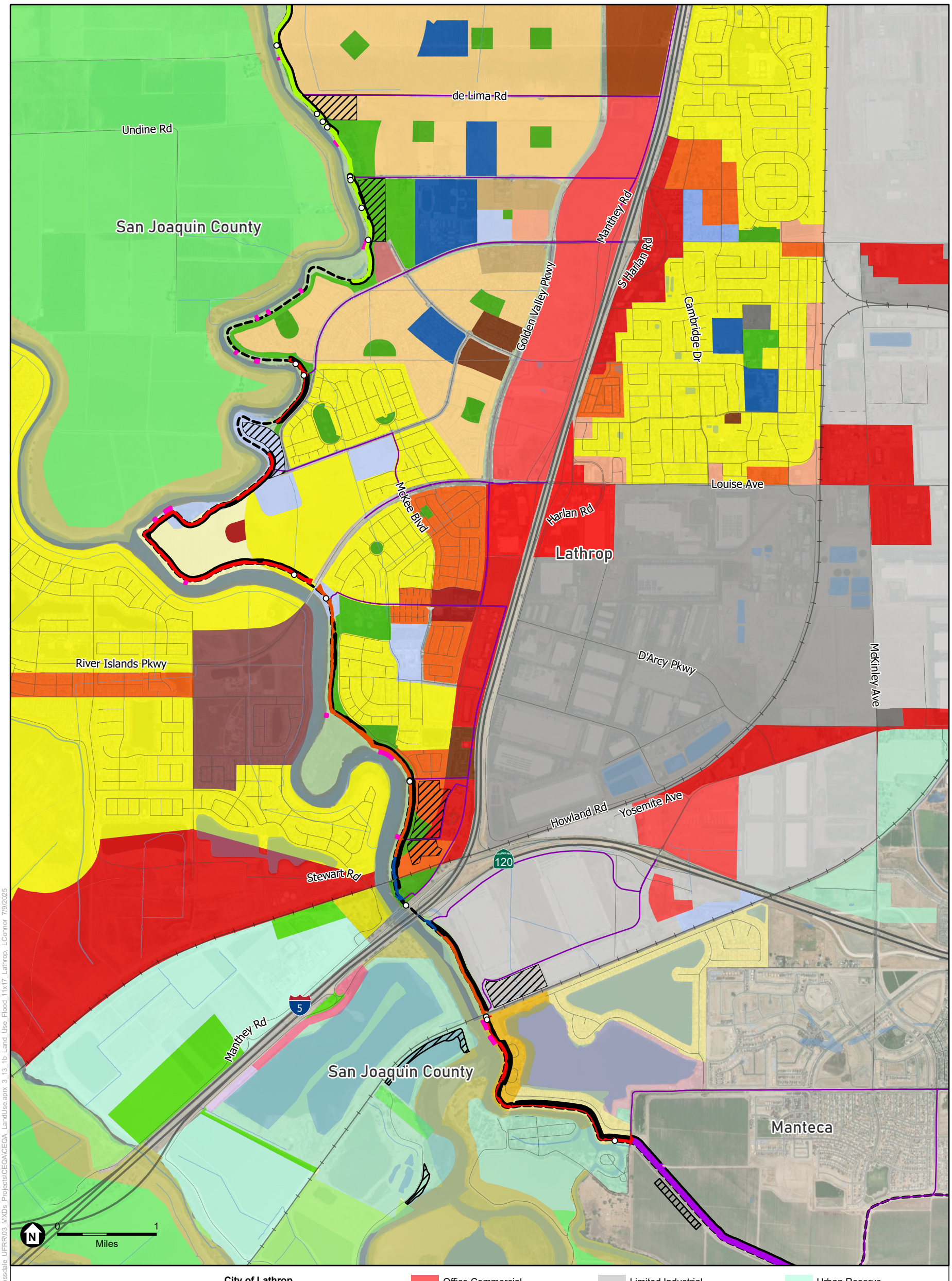
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SOURCE: MAXAR, 2021; KSN, 2022; PBI, 2022; Land Uses: City of Lathrop, City of Manteca, City of Stockton, San Joaquin County, 2022; ESA, 2022

Mossdale Tract Area Urban Flood Risk Reduction Project

Figure 3.13-1a
Existing Land Uses in the Proposed Project Area (Stockton Vicinity)
Flood Risk Reduction Components

ESA



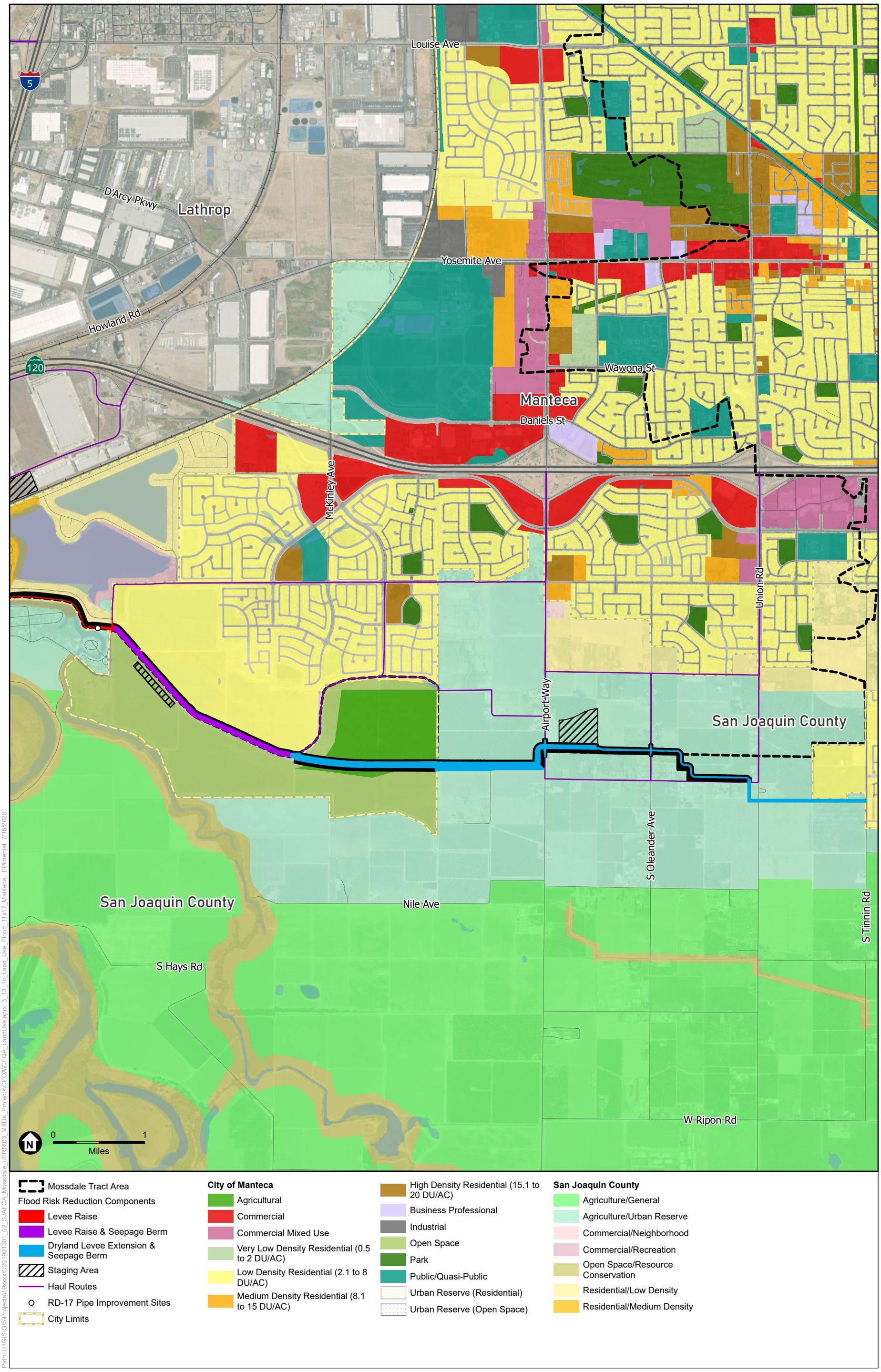
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SOURCE: MAXAR, 2021; KSN, 2022; PBI, 2022; Land Uses: City of Lathrop, City of Manteca, City of Stockton, San Joaquin County, 2022; ESA, 2022

Mossdale Tract Area Urban Flood Risk Reduction Project

Figure 3.13-1b
Existing Land Uses in the Proposed Project Area (Lathrop Vicinity)
Flood Risk Reduction Components

ESA



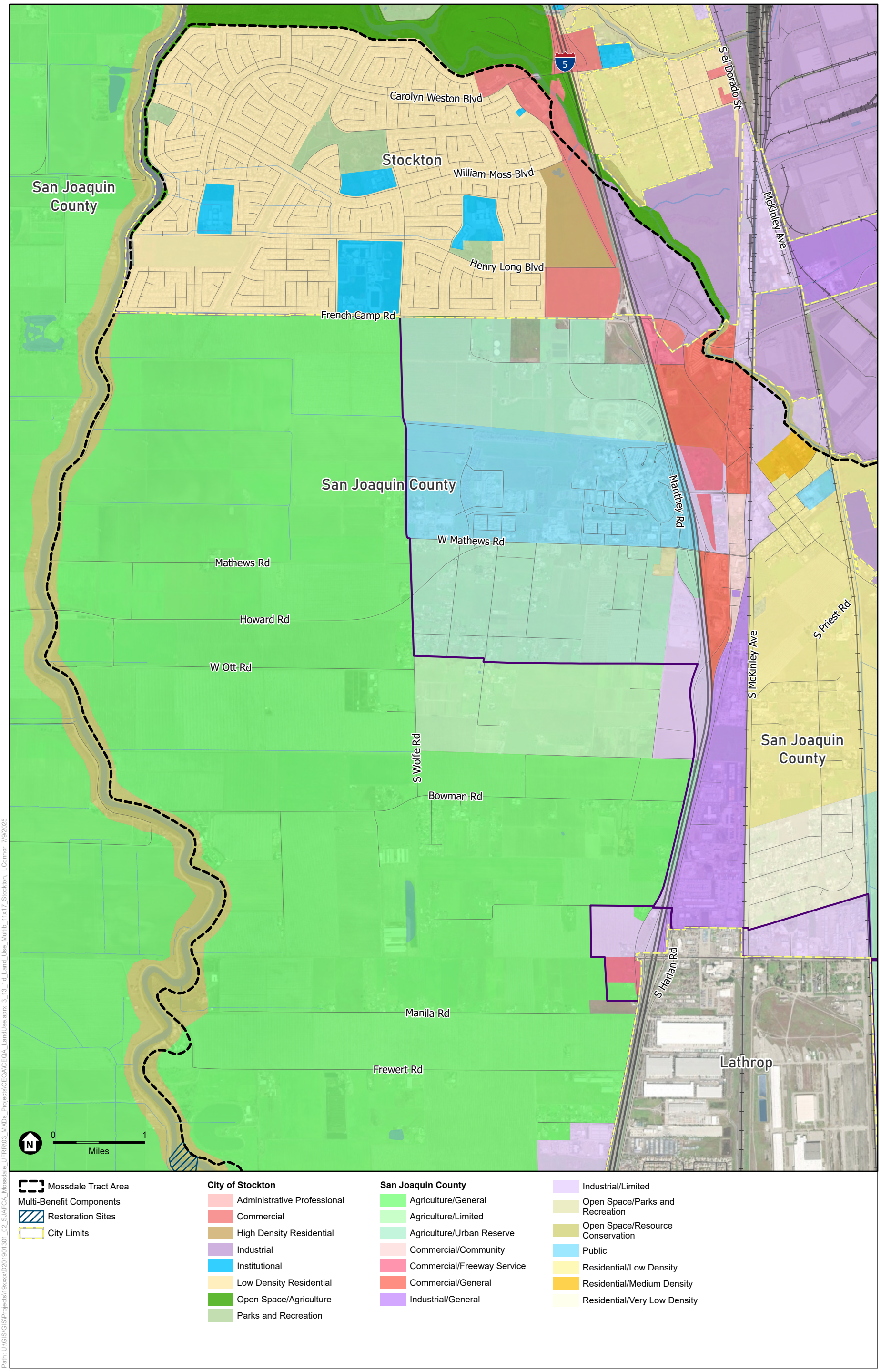
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SOURCE: MAXAR, 2024; KSN, 2025; PBI, 2025; Land Uses: City of Lathrop, City of Manteca, City of Stockton, San Joaquin County, 2025; ESA, 2025

Mossdale Tract Area Urban Flood Risk Reduction Project

Figure 3.13-1c
Existing Land Uses in the Proposed Project Area (Manteca Vicinity)
Flood Risk Reduction Components

ESA



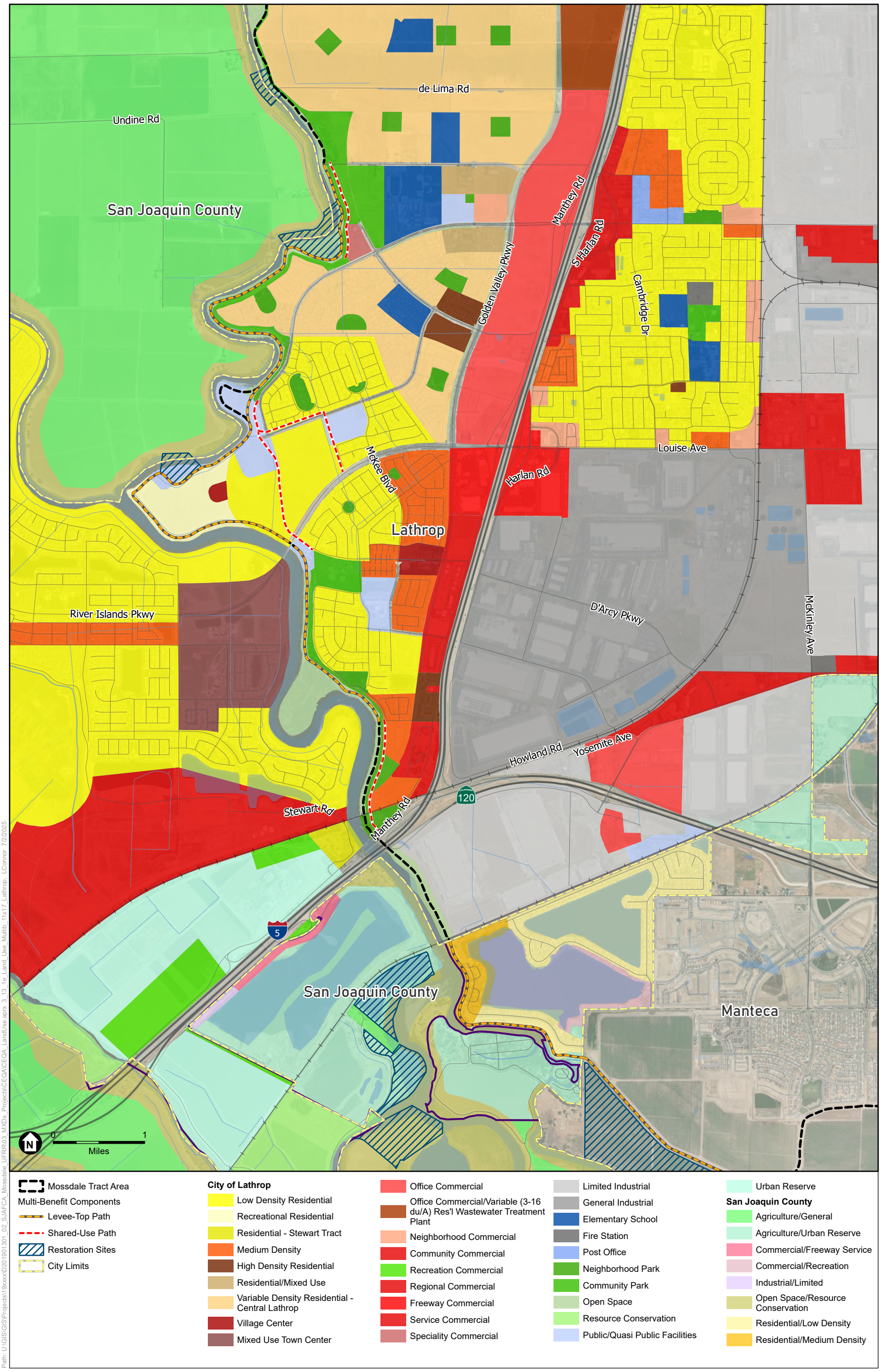
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SOURCE: MAXAR, 2021; KSN, 2022; PBI, 2022; Land Uses: City of Lathrop, City of Manteca, City of Stockton, San Joaquin County, 2022; ESA, 2022

Mossdale Tract Area Urban Flood Risk Reduction Project

Figure 3.13-1d
Existing Land Uses in the Proposed Project Area (Stockton Vicinity)
Multi-Benefit Components

ESA



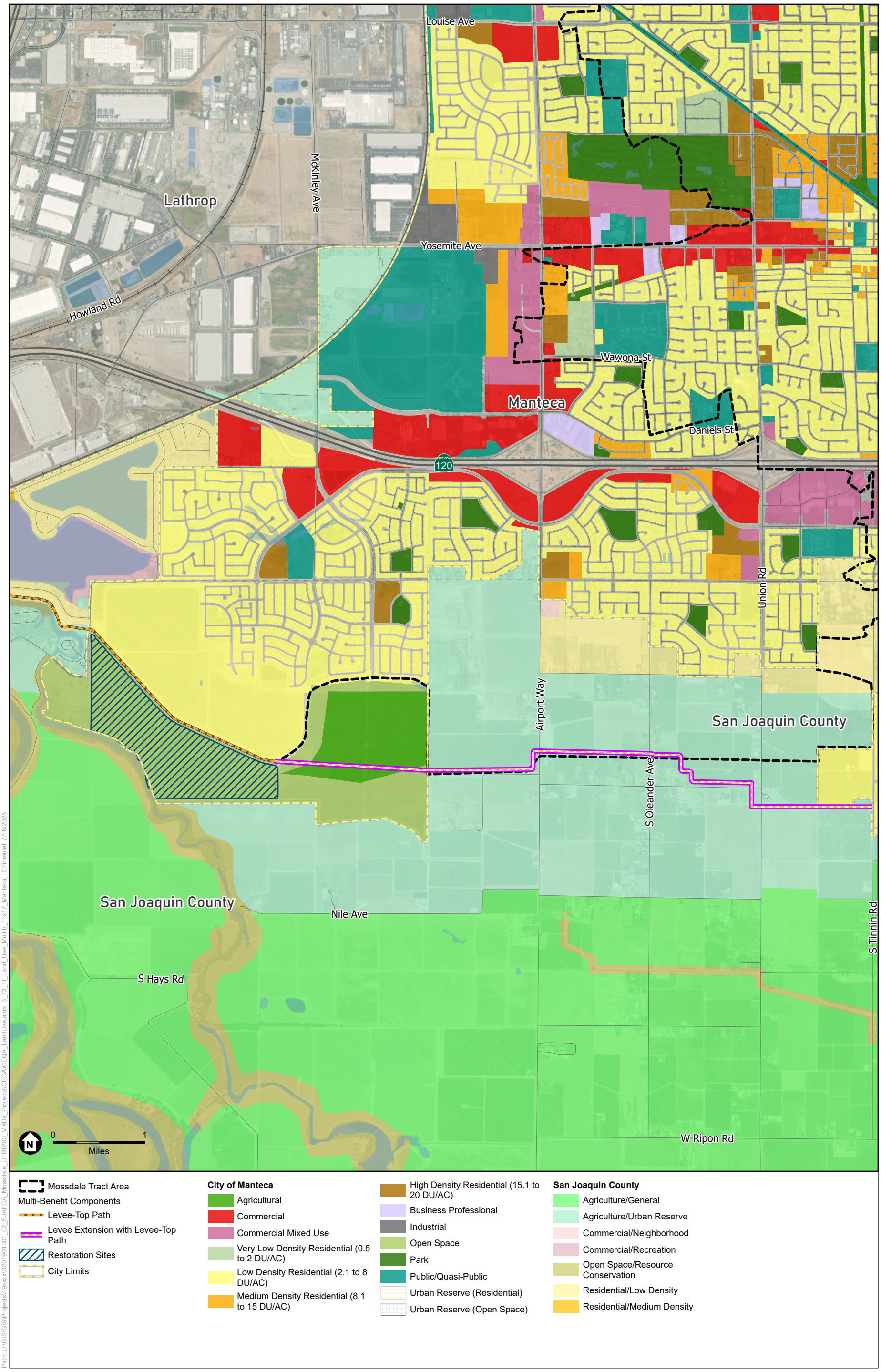
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SOURCE: MAXAR, 2021; KSN, 2022; PBI, 2022; Land Uses: City of Lathrop, City of Manteca, City of Stockton, San Joaquin County, 2022; ESA, 2022

Mossdale Tract Area Urban Flood Risk Reduction Project

Figure 3.13-1e
Existing Land Uses in the Proposed Project Area (Lathrop Vicinity)
Multi-Benefit Components

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SOURCE: MAXAR, 2024; KSN, 2025; PBI, 2025; Land Uses: City of Lathrop, City of Manteca, City of Stockton, San Joaquin County, 2025; ESA, 2025

Mossdale Tract Area Urban Flood Risk Reduction Project

Figure 3.13-1f
Existing Land Uses in the Proposed Project Area (Manteca Vicinity)
Multi-Benefit Components

ESA

Other Multi-benefit Components

Figures 3.13-1d through 3.13-1f show the land use designations associated with the surrounding jurisdictions of the San Joaquin County and the cities of Stockton, Lathrop, and Manteca in the vicinity of the other multi-benefit components including additional ecosystem restoration sites, and recreation features along the levee system.

Figure 3.13-1d shows the other multi-benefit components in the vicinity of the City of Stockton and the county which includes an additional ecosystem restoration site; there are no proposed recreation features along the levee system in this area. The surrounding parcels under the land use authority of the City of Stockton and the county are the same designations as surrounding land uses identified in Figure 3.13-1a above. The additional ecosystem restoration site identified in this area is located within San Joaquin County and is designated as Open Space/Resource Conservation and Agriculture/General.

Figure 3.13-1e shows the other multi-benefit components in the vicinity of the City of Lathrop and San Joaquin County which includes additional ecosystem restoration sites, and recreation features along the levee system. The surrounding parcels under the land use authority of the City of Lathrop and the county are the same designations as surrounding land uses identified in Figure 3.13-1b above. There are four additional ecosystem restoration sites shown on Figure 3.13-1e, three of these sites straddle between the boundaries of the City of Lathrop and the county, and one is located entirely in San Joaquin County. The land use designations for the three that are partially within the City of Lathrop are Open Space, Public/ Quasi Public Facilities, and community park; the portions partially within the county are designated as Open Space/Resource Conservation. The additional ecosystem restoration site entirely within the county is designated as Open Space/Resource Conservation.

Figure 3.13-1f shows the other multi-benefit components in the vicinity of the City of Manteca and San Joaquin County which includes recreation features along the levee system; there are no proposed additional ecosystem restoration sites in this area. The surrounding parcels under the land use authority of the City of Manteca and the county are the same designations as surrounding land uses identified in Figure 3.13-1a above.

Existing Zoning within the Proposed Project Area

Flood Risk Reduction Components and Restoration Sites 13, 14, and 16

Figures 3.13-2a through 3.13-2c show the zoning designations associated with the surrounding jurisdictions of San Joaquin County and the cities of Stockton, Lathrop, and Manteca in the vicinity of the flood risk reduction components.

Figure 3.13-2a shows the flood risk reduction components in the vicinity of the City of Stockton and San Joaquin County. The surrounding parcels under the land use authority of the City of Stockton are zoned as PF (Public Facilities) and RL (Residential Low Density). The surrounding parcels under the land use authority of the county are zoned as AG-40 (General Agricultural – parcel size 40 acres) and AG-80 (General Agricultural – parcel size 80 acres). There are three staging areas in this location, the three staging areas located on parcels under San Joaquin County jurisdiction and are zoned as AG-40.

Figure 3.13-2b shows the flood risk reduction components in the vicinity of the City of Lathrop and San Joaquin County. The surrounding parcels under the land use authority of the City of Lathrop are zoned as Low Density Residential, Medium Density Residential, Variable Density Residential, Recreational Residential, Parkland, Village Commercial, Service Commercial, Resource Conservation, and Limited Industrial. The surrounding parcels under the land use authority of the County are zoned as AG-40 and AG-80. There are eight staging areas in this area, six are within the City of Lathrop and two are within San Joaquin County. The six staging areas within the City of Lathrop are zoned, from north to south, as: (1) Variable Density Residential; (2) Public Schools, Parks Open Space; (3) Resource Conservation; (4) Medium Density Residential, Service Commercial, and Resource Conservation; and (5) Limited Industrial. The two staging areas within the county are zoned as AU-20.

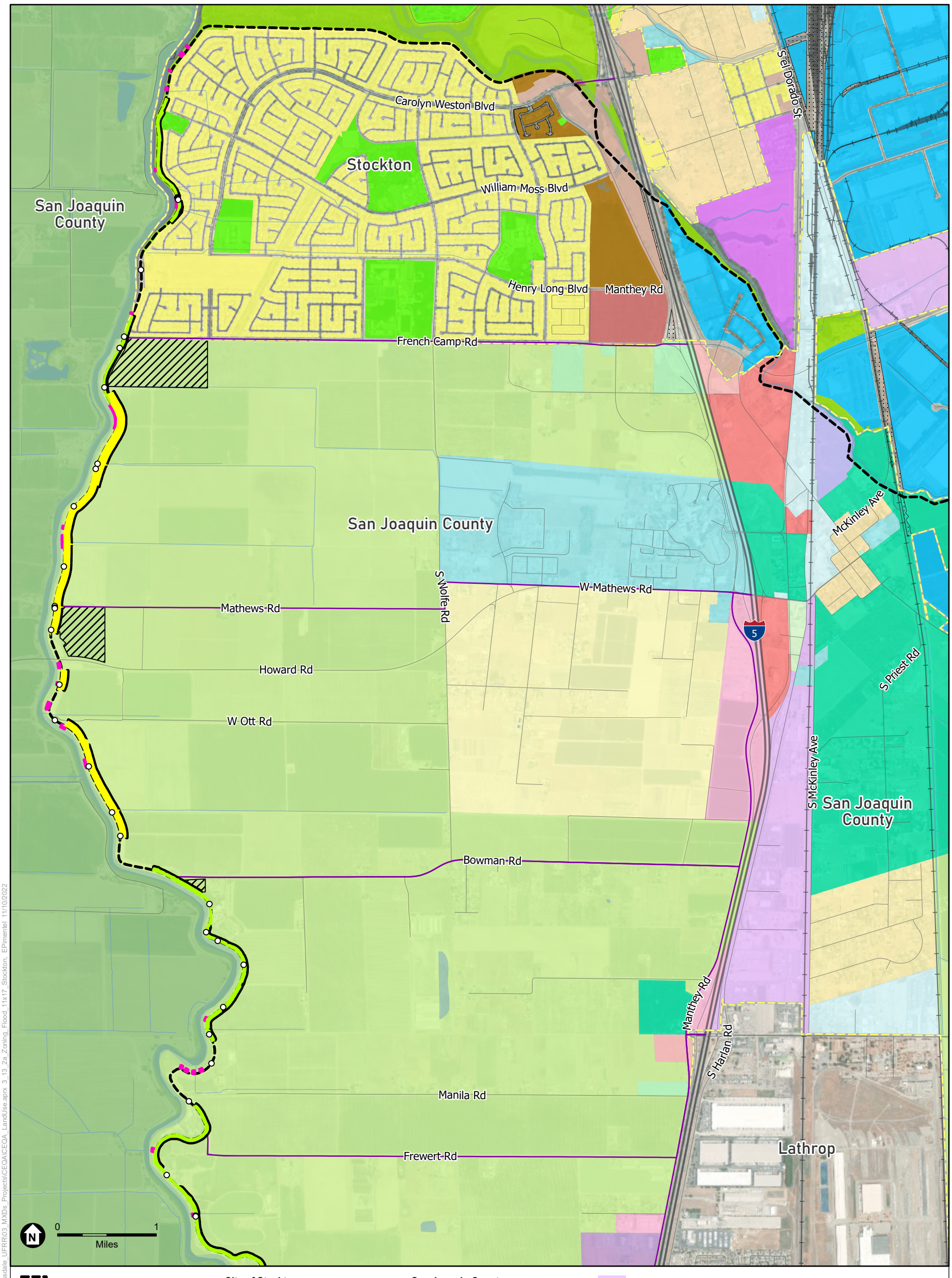
Figure 3.13-2c shows the flood risk reduction components in the vicinity of the City of Manteca and San Joaquin County. The surrounding parcels under the land use authority of the City of Manteca are zoned as R1 (One-Family Dwelling Zoning District), RE (Residential Estate Zoning District), and OS (Open Space). The surrounding parcels under the land use authority of the County are zoned as AG-40, R-L/S-13 (Low Density Residential), R-M/S-13 (Medium Density Residential), and CR (Commercial Recreation). There are two staging areas in the location, one is located within the City of Manteca and one is within San Joaquin County. The staging area within the City of Manteca is zoned as Open Space. The staging area within the county is designated AG-40.

Restoration Sites 13, 14, and 16

Figures 3.13-2d through 3.13-2f show the zoning designations associated with the surrounding jurisdictions of San Joaquin County and the cities of Stockton, Lathrop, and Manteca in the vicinity of ecosystem restoration Sites 13, 14, and 16.

Figure 3.13-2d shows the ecosystem restoration features at Sites 13, 14, and 16 in the vicinity of the City of Stockton and San Joaquin County; however, Sites 13, 14, and 16 are not located within the City of Stockton or this portion of the county. The surrounding parcels under the land use authority of the City of Stockton and San Joaquin County are zoned with the same zoning designation described in Figure 3.13-2a above.

Figure 3.13-2e shows the ecosystem restoration features at Sites 13, 14, and 16 in the vicinity of the City of Lathrop and San Joaquin County. The surrounding parcels under the land use authority of the City of Lathrop and the county are zoned with the same zoning designation described in Figure 3.13-2b above. Sites 13, 14, and 16 are also located in this area; Site 13 is only partially shown and is located in the City of Manteca; therefore, it is discussed below. The zoning designation for Sites 14 and 16, which are located in San Joaquin County, are zoned as AU-20 (Agricultural-Urban Reserve – parcel size 20 acres) and AG-40.



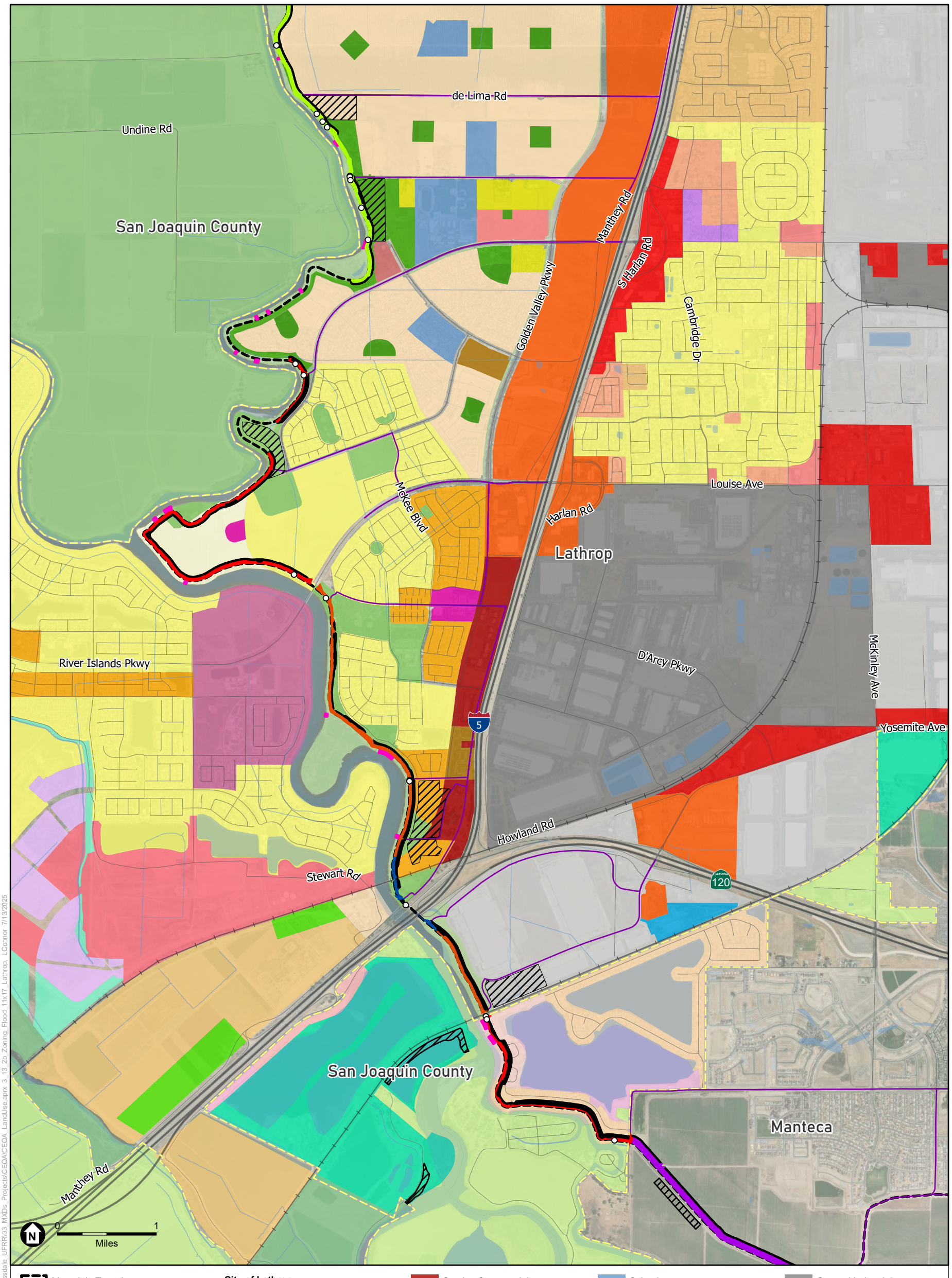
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SOURCE: MAXAR, 2021; KSN, 2022; PBI, 2022; Land Uses: City of Lathrop, City of Manteca, City of Stockton, San Joaquin County, 2022; ESA, 2022

Mossdale Tract Area Urban Flood Risk Reduction Project

Figure 3.13-2a
Existing Zoning in the Proposed Project Area (Stockton Vicinity)
Flood Risk Reduction Components

ESA

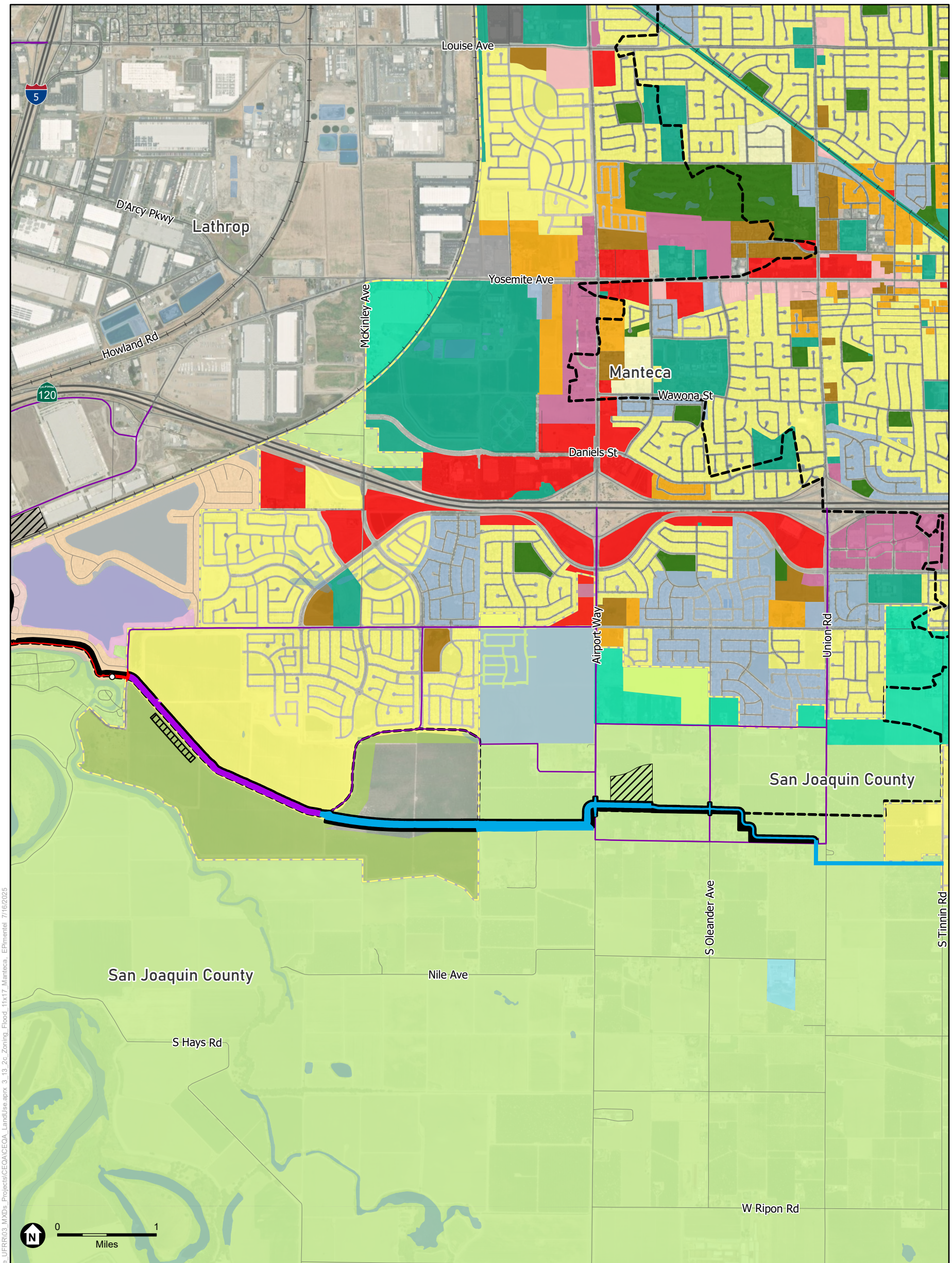


SOURCE: MAXAR, 2021; KSN, 2022; PBI, 2022; Land Uses: City of Lathrop, City of Manteca, City of Stockton, San Joaquin County, 2022; ESA, 2022

Mossdale Tract Area Urban Flood Risk Reduction Project

Figure 3.13-2b
Existing Zoning in the Proposed Project Area (Lathrop Vicinity)
Flood Risk Reduction Components

ESA



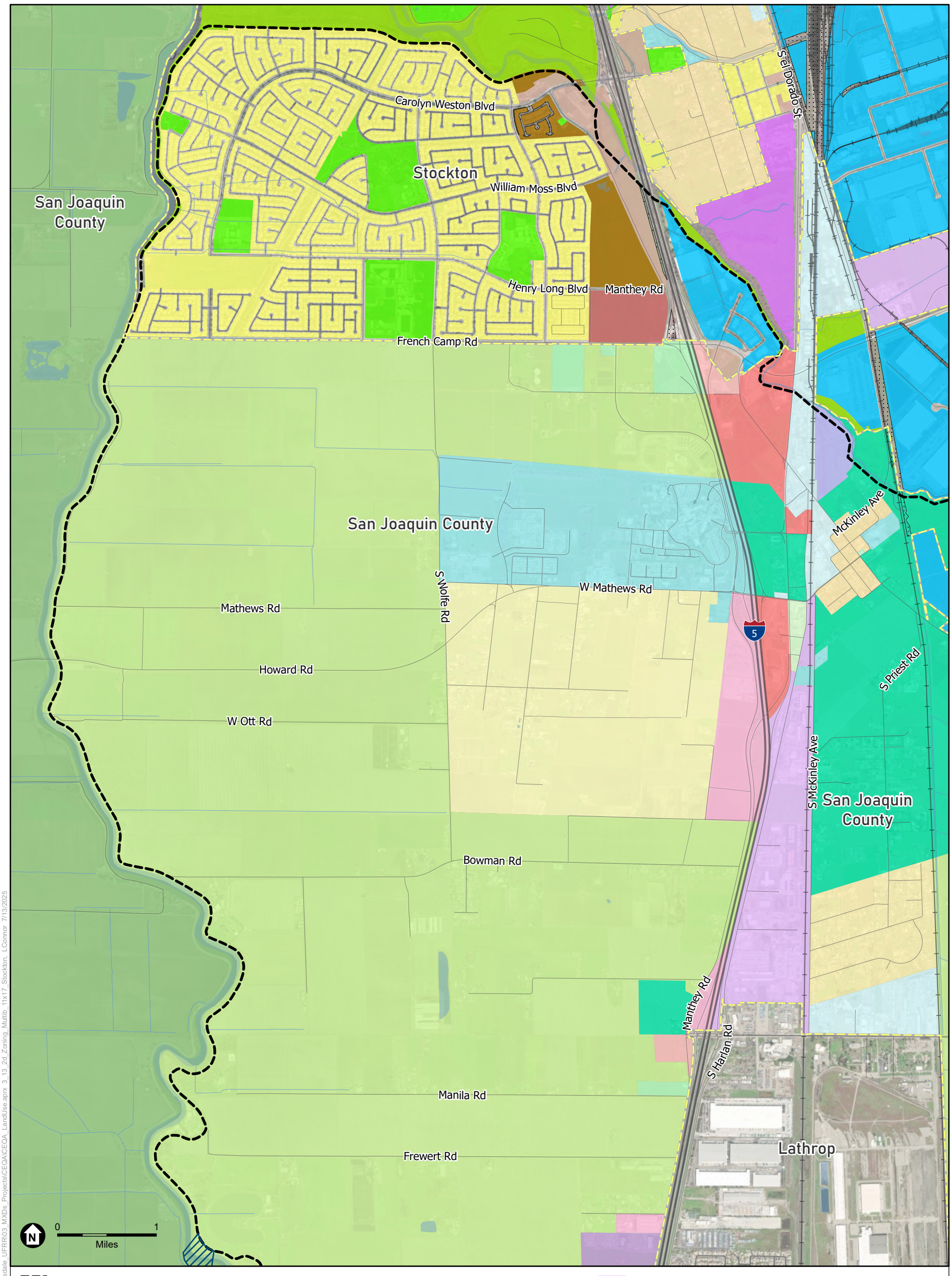
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SOURCE: MAXAR, 2024; KSN, 2025; PBI, 2025; Land Uses: City of Lathrop, City of Manteca, City of Stockton, San Joaquin County, 2025; ESA, 2025

Mossdale Tract Area Urban Flood Risk Reduction Project

Figure 3.13-2c
Existing Zoning in the Proposed Project Area (Manteca Vicinity)
Flood Risk Reduction Components

ESA



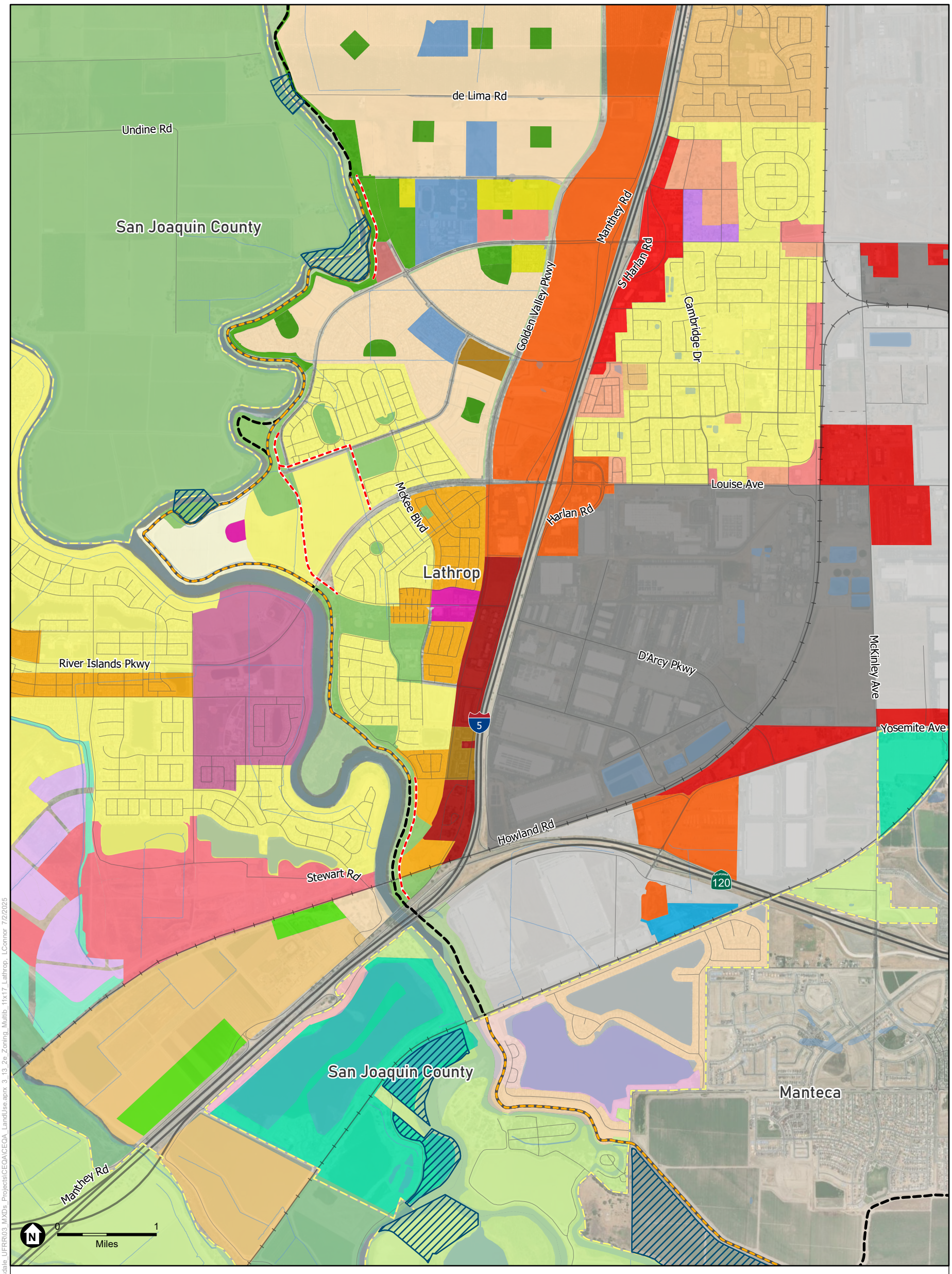
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SOURCE: MAXAR, 2021; KSN, 2022; PBI, 2022; Land Uses: City of Lathrop, City of Manteca, City of Stockton, San Joaquin County, 2022; ESA, 2022

Mossdale Tract Area Urban Flood Risk Reduction Project

Figure 3.13-2d
Existing Zoning in the Proposed Project Area (Stockton Vicinity)
Multi-Benefit Components

ESA



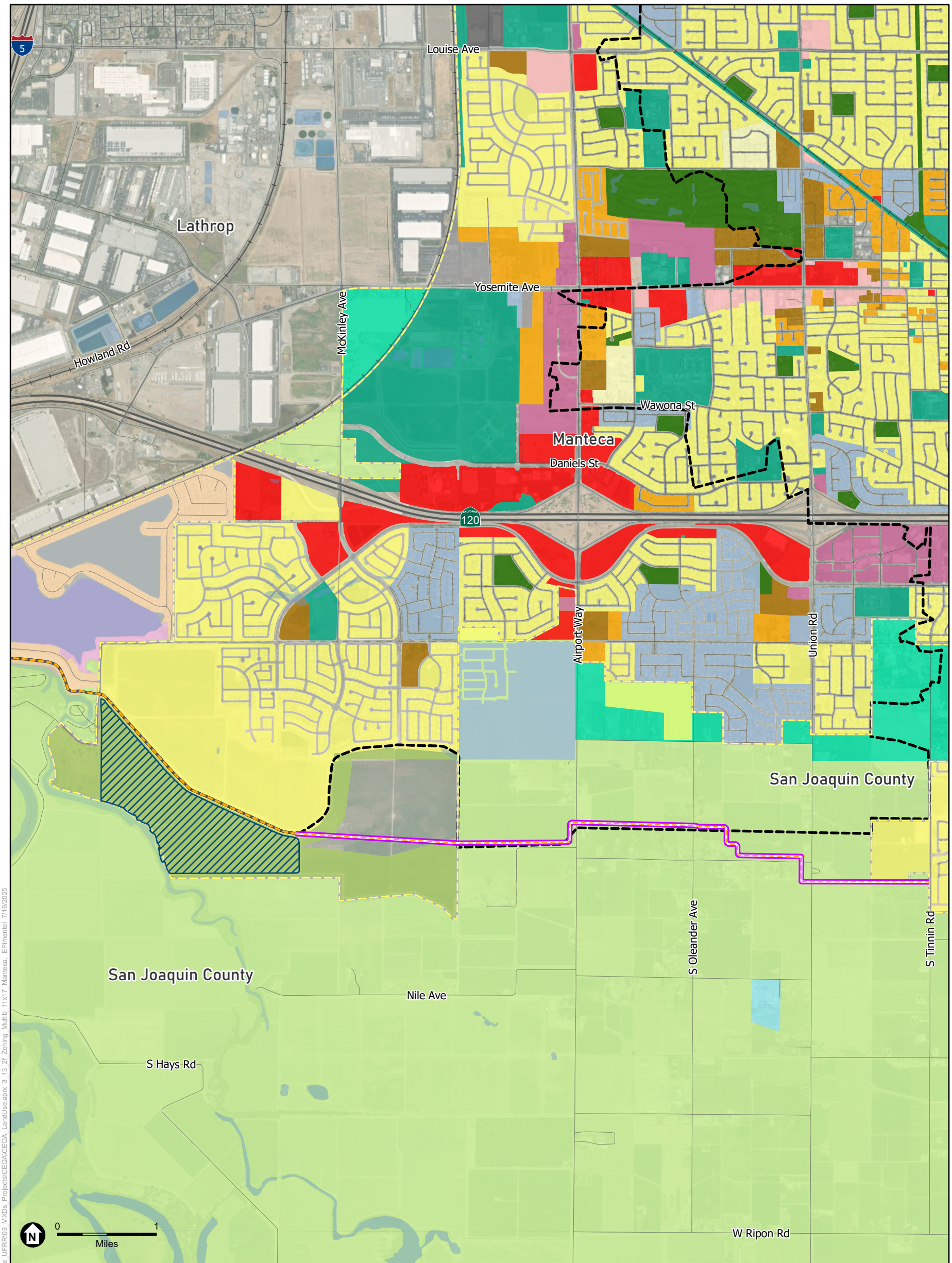
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SOURCE: MAXAR, 2021; KSN, 2022; PBI, 2022; Land Uses: City of Lathrop, City of Manteca, City of Stockton, San Joaquin County, 2022; ESA, 2022

Mossdale Tract Area Urban Flood Risk Reduction Project

Figure 3.13-2e
Existing Zoning in the Proposed Project Area (Lathrop Vicinity)
Multi-Benefit Components

ESA



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SOURCE: MAXAR, 2024; KSN, 2025; PBI, 2025; Land Uses: City of Lathrop, City of Manteca, City of Stockton, San Joaquin County, 2025; ESA, 2025

Mossdale Tract Area Urban Flood Risk Reduction Project

Figure 3.13-2f
Existing Zoning in the Proposed Project Area (Manteca Vicinity)
Multi-Benefit Components

ESA

Figure 3.13-2f shows the ecosystem restoration features at Sites 13, 14, and 16 in the vicinity of the City of Manteca and San Joaquin County. The surrounding parcels under the land use authority of the City of Manteca and the county are zoned with the same zoning designation described in Figure 3.13-2c above. Ecosystem restoration 13 is located in this area, the site is within the City of Manteca and has a zoning designation of OS.

Other Multi-benefit Components

Figures 3.13-2d through 3.13-2f show the zoning designations associated with the surrounding jurisdictions of San Joaquin County and the cities of Stockton, Lathrop, and Manteca in the vicinity of the other multi-benefit components including additional ecosystem restoration sites, and recreation features along the levee system.

Figure 3.13-2d shows the other multi-benefit components in the vicinity of the City of Stockton and San Joaquin County which includes an additional ecosystem restoration site; there are no proposed recreation features along the levee system in this area. The surrounding parcels under the land use authority of the City of Stockton and the county are zoned with the same zoning designation described in Figure 3.13-2a above. There is one ecosystem restoration site identified on a parcel under the land use authority of the San Joaquin County, which is zoned as AG-40 and AG-80.

Figure 3.13-2e shows the other multi-benefit components in the vicinity of the City of Lathrop and San Joaquin County which includes additional ecosystem restoration sites, and recreation features along the levee system. The surrounding parcels under the land use authority of the City of Lathrop and the county are zoned with the same zoning designation described in Figure 3.13-2b above. There are four additional ecosystem restoration sites shown on Figure 3.13-2e, three of these sites straddle between the boundaries of the City of Lathrop and the county, and one is located entirely in San Joaquin County. The zoning designations for the three that are partially within the City of Lathrop are Resource Conservation and Community Park; the portions partially within the county are zoned as AG-80. The additional ecosystem restoration site entirely within San Joaquin County is zoned as AG-40.

Figure 3.13-2f shows the other multi-benefit components in the vicinity of the City of Manteca and San Joaquin County; there are no proposed additional ecosystem restoration sites in this area. The surrounding parcels under the land use authority of the City of Manteca and the county are zoned with the same zoning designation described in Figure 3.13-2c above.

3.13.3 Regulatory Setting

Federal

No federal laws, regulations, or policies relevant to land use and planning are applicable to the proposed project.

State

California Code of Regulations Title 24, Part 6

Title 24 of the California Code of Regulations, Part 6 (California's Energy Efficiency Standards for Residential and Nonresidential Buildings, which are referred to as "Title 24") first were established in

1978 in response to a legislative mandate to reduce California's energy consumption. The standards are updated periodically to allow consideration and possible incorporation of new energy efficiency technologies and methods. Although it was not originally intended to reduce greenhouse gas (GHG) emissions, electricity production by fossil fuels results in GHG emissions and energy efficient buildings require less electricity. Therefore, increased energy efficiency results in decreased GHG emissions. The most recent updates to Title 24 became effective on July 1, 2013.

Delta Protection Commission's Land Use and Resources Management Plan for the Primary Zone of the Delta

The Delta Protection Act of 1992 (California Public Resources Code, Section 29760 et seq.) recognized the Sacramento-San Joaquin Delta as a natural resource of statewide, national, and international significance, containing irreplaceable resources. The Land Use and Resources Management Plan (LURMP) for the Primary Zone of the Delta was adopted in 1995, and most recently updated in 2010, to create policies to recognize, preserve, and protect those resources as established by the Delta Protection Commission. The LURMP provides directions for local jurisdictions in the Delta region on land use decisions. In regard to land use, the LURMP includes goals and policies to prohibit new development within the immediate area adjacent to existing levees to ensure adequate areas are preserved for future levee expansion projects, encourage multi-jurisdictional efforts to improve flood control infrastructure, support funding to improve levees up to a 200-year flood protection level, and support efforts to address levee encroachments that are detrimental to levee maintenance (DPC 2010).

California State Senate Bill 5

Senate Bill (SB) 5 was enacted in 2007 and guides the flood management approach within the Sacramento and San Joaquin Valleys. SB 5 requires that urbanized (population greater than 10,000 people) and urbanizing areas (population greater than 10,000 people within 10 years) have 200-year flood protection by the year 2025. In addition, SB 5 prohibits these jurisdictions from issuing new discretionary permits in areas that may be inundated to a depth of more than 3 feet during a 200-year flood event, unless the jurisdiction provides 200-year flood protection, or is able to demonstrate adequate progress is being made to provide 200-year flood protection. Further, SB5 also requires that affected jurisdictions amend their general plans (by July 2015) and zoning ordinances (by July 2016) to incorporate 200-year flood protection requirements into land uses.

See the discussion under *Local* subsection below for a summary of how San Joaquin County and the cities of Stockton, Lathrop, and Manteca have met the requirements of SB 5.

Sustainable Communities and Climate Protection Act of 2008

SB 375 was enacted in 2008 and formally is referred to as "The Sustainable Communities and Climate Protection Act of 2008." SB 375 relates to regional land use and transportation policies, with an emphasis on policies to reduce statewide GHG emissions. The law requires the state's 18 metropolitan planning organizations to adopt sustainable community strategies that, if implemented, would help each region achieve their respective targets for reducing GHG emissions from automobiles and light trucks. The targets are established by the California Air Resources Board (CARB). The San Joaquin Council of Governments (SJCOG) adopted the 2022 Regional Transportation Plan and Sustainable Communities Strategy (RTP/SCS) in August 2022 to address the requirements of SB 375.

Local

San Joaquin Area Flood Control Agency

SJAFCA is a Joint Powers Authority that was created in May 1995 between the City of Stockton, San Joaquin County, and the San Joaquin County Flood Control and Water Conservation District for the purpose of addressing flood protection for the City of Stockton and surrounding county area. On November, 16, 2017, the Joint Exercise of Powers Agreement was expanded to include the cities of Lathrop and Manteca.

SJAFCA works with San Joaquin County; the cities of Stockton, Manteca, and Lathrop; and local reclamation districts to address flood protection and levee requirements in the area. This includes coordination with state and federal agencies to address Federal Emergency Management Agency Flood Insurance Rate Maps, levee standards, and flood protection issues. SJAFCA has also established an annual O&M assessment for the upkeep of flood improvements. SJAFCA levees are maintained by the San Joaquin County Flood Control and Water Conservation District (SJAFCA 2025).

San Joaquin Council of Government Regional Blueprint

The San Joaquin County Regional Blueprint (Regional Blueprint) was adopted by the SJCOG in March 2010 with the primary purpose of coordinating a long-range regional vision addressing transportation, land use, and the environment until 2050. As a guidance document, the Regional Blueprint recognizes that economic, environmental, and social issues are interdependent, and integrated approaches are needed in order to effect needed changes. The Regional Blueprint provides a long-term planning framework that shows how the region collectively could respond to growth and infrastructure challenges in a comprehensive manner.

The Regional Blueprint contains eight guiding principles, which are supported by goals and performance measures and indicators (PMI) that are used to gauge progress towards meeting the intent of the Regional Blueprint from a regional perspective. The eight guiding principles address: (1) sustainable planning and growth; (2) housing choices; (3) transportation and mobility; (4) farming and agriculture; (5) preservation of the environment; (6) economic development; (7) education and workforce development; and (8) cultural richness and unique attractions (SJCOG 2010).

San Joaquin County Multi-Species Habitat Conservation Plan

The San Joaquin County Multi-Species Habitat Conservation Plan (SJMSCP) was adopted by the SJCOG in 2000 (SJCOG 2000). The SJMSCP was prepared by the county and the U.S. Fish and Wildlife Service (USFWS) to provide comprehensive measures to minimize and mitigate impacts on various biological resources and habitats and to compensate for some impacts on recreational, agricultural, scenic enjoyment, and other beneficial open space uses (SJCOG 2000). San Joaquin County and the cities of Escalon, Lathrop, Lodi, Manteca, Ripon, Stockton, and Tracy are permittees under the SJMSCP, which allows these jurisdictions to issue incidental take permits for species covered in the SJMSCP. In the SJMSCP, approximately 109,000 acres of various categories of open space lands (including agriculture, range lands, and natural habitat) in the county are anticipated to be converted to non–open space uses between 2001 and 2051, based on full buildout of each of the general plans in the county and construction of all anticipated transportation and other public projects (SJCOG 2000). The SJMSCP assists in the implementation of the resources management and open space management goals and policies of local

general plans but does not replace locally adopted land use plans and regulations and does not supersede any local agency's land use authority.

Projects that would cause impacts associated with specifically covered species are required to implement avoidance and minimization measures to lessen the impacts by emphasizing measures aimed at averting the actual killing or injury of individual species covered by the SJMSCP to minimize incidental take and minimizing impacts on habitat for such species. Compensation for conversion of open space land is required through payment of fees or in-lieu land dedication. These fees are to be used to fund the purchase of conservation easements on agricultural lands and the preservation and creation of natural habitats to be managed in perpetuity through the establishment of habitat preserves. SJCOG determines final management of SJMSCP conservation areas.

San Joaquin Council of Government Regional Transportation Plan / Sustainable Communities Strategy

The SJCOG Board adopted the 2022 Regional Transportation Plan/Sustainable Communities Strategy (RTP/SCS) Update, Envision 2050 on August 25, 2022. The 2022 RTP/SCS will continue to provide a sustainability vision through the year 2046 that recognizes the significant impact the transportation network has on the region's public health, mobility, and economic vitality. As the region's comprehensive long-range transportation planning document, the 2022 RTP/SCS serves as a guide for achieving public policy decisions that will result in balanced investments for a wide range of multimodal transportation improvements (SJCOG 2022).

General Plans

The proposed project area includes lands in San Joaquin County and the cities of Stockton, Lathrop, and Manteca. Each of these jurisdictions has a general plans with goals and policies that address land use and planning. Applicable general plan goals and policies are summarized below in **Table 3.13-1** along with relevant local regulations.

TABLE 3.13-1
APPLICABLE GENERAL PLAN GOALS AND POLICIES – LAND USE AND PLANNING

General Plan	Goals and Policies
San Joaquin County	Land Use Element, Goal LU-8, Policies LU-8.1 and LU-8.3; Public Facilities and Safety Element, Goal IS-1, Policies IS-1.1, IS-1.7, and IS-1.11, Goal PHS-2, Policies PHS-2.3 through PHS-2.6; Natural and Cultural Resources Element, Goal D-3, Policies D-3.1, D-3.4, D-3.5, and D-3.6, Goal D-7, Policies D-7.2 and D-7.5
City of Stockton	Land Use Element, Goal LU-6, Policy LU-6.6; Safety Element, Goal SAF-2, Policies SAF-2.3, SAF-2.4, and SAF-2.6
City of Lathrop	Land Use Element, Goal LU-3, Policy LU-3.6; Public Facilities and Services Element, Goal PFS-4, Policies PFS-4.1 and PFS-4.2; Public Safety Element, Goal PS-3, Policies PS-3.1, PS-3.3, PS-3.4, PS-3.5, and PS-3.6; and Recreation and Resources Element, Goal RR-7, Policy RR-7.6
City of Manteca	Land Use Element, Goal LU-1, Policies LU-1.3 and LU-1.5, Goal LU-9, Policies LU-9.1, LU-9.2 and LU-9.3, and Goal LU-10, Policies LU-10.1 and LU-10.4; Community Development Element, Goal CD-6, Policies CD-6.4 and CD-6.5; Safety Element, Goal S-3, Policies S-3.1 through S-3.7

SOURCES: City of Lathrop 2022; City of Manteca 2024; City of Stockton 2018; San Joaquin County 2016a

San Joaquin County

San Joaquin County General Plan

San Joaquin County General Plan 2035 has land use regulatory authority over all of the unincorporated lands in the county, which includes all areas except land within the city limits of Escalon, Lathrop, Lodi, Manteca, Ripon, Stockton, Tracy, or land owned/managed by either the state or federal governments and areas not under county jurisdiction (e.g., public schools, prisons). San Joaquin County's General Plan has land use authority over approximately 90 percent of land in the county, where the vast majority of land is designated as agricultural uses. The San Joaquin County General Plan includes goals and policies that address land use such as improvements within the Delta and the existing levee system of the San Joaquin River, siting appropriate land uses adjacent to the San Joaquin River, introducing new and/or additional recreational facilities along the San Joaquin River, and increasing public safety from potential flooding risks associated with the San Joaquin River through coordination with other applicable agencies. This includes policies consistent with SB 5 which require the county to assess whether new development is reasonably safe from flood risk, to investigate and implement projects that would provide 200-year level of flood protection, and to update land uses reflecting current floodplain mapping data.

San Joaquin County Development Title

The San Joaquin County Zoning Code, also known as Title 9, Development, contains the various zoning designations and provides information regarding use types and specific uses, accessory and temporary uses and structures, lot and yard requirements, height and building intensity, etc. for parcels under the land use authority of the county. The Development Title is purpose is to protect and promote the public health, safety, and general welfare and implement the San Joaquin County General Plan. The code also has the goal of supporting economic development, promoting a safe and efficient transportation system, providing ample open space, securing safety from hazards, facilitating the provision of public services and utilities, conserving property value, and conserving natural beauty in the county (San Joaquin County 2025).

City of Stockton

Envision Stockton 2040 General Plan

The City of Stockton's Envision Stockton 2040 General Plan represents a substantial change in the policy framework for future development in Stockton compared to the prior General Plan with a fundamental shift from emphasizing growth in outfill areas at the periphery of the city to focusing new construction and redevelopment in existing infill neighborhoods. This change is reflected in the land use map and the associated map depicting the transportation network required to serve future development, and in the goals, policies, and actions throughout the General Plan. Specifically, along the waterfront of the San Joaquin River, future uses would promote a live/work/play environment to boost the downtown's vitality. The City of Stockton General Plan includes goals and policies that address land uses such as increasing public safety from potential flood risks, siting appropriate land uses adjacent to the San Joaquin River, and coordinating with other local and regional agencies to improve flood control infrastructure. This includes policies consistent with SB 5 which require the City of Stockton to assess whether new development is reasonably safe from flood risk, to investigate and implement projects that would provide 200-year level of flood protection, and to update land uses reflecting current floodplain mapping data.

City of Stockton Zoning Ordinance

The City of Stockton's Zoning Code, also known as Title 16 Development Code, classifies and regulates the uses of land and structures within the City of Stockton; by protecting and promoting the public health, safety, and general welfare; and by preserving and enhancing the aesthetic quality of the city. The Development Code provides standards for the orderly growth and development of the City of Stockton and promotes a stable pattern of land uses consistent with the Stockton General Plan. The code also has the goals of protecting property values, conserving and protecting natural resources, protecting character and social economic stability, maintain a high quality of life, and providing regulations for the subdivision of land (City of Stockton 2025).

City of Lathrop

City of Lathrop General Plan

The City of Lathrop adopted its updated General Plan in August 2022. The Lathrop General Plan identifies the community's vision for the future and provides a framework that will guide decisions on growth, development, and conservation of open space and resources in a manner that is consistent with the quality of life desired by the city's residents and businesses. The City of Lathrop General Plan includes goals and policies that address land use such as coordination with other agencies to improve the levee system to reduce risks of flooding impact associated with the San Joaquin River, appropriately siting adjacent land uses to the levee system, and maintaining areas and funding for flood infrastructure. This includes policies consistent with SB 5 which require the City of Lathrop to assess whether new development is reasonably safe from flood risk, to investigate and implement projects that would provide 200-year level of flood protection, and to update land uses reflecting current floodplain mapping data.

City of Lathrop Zoning Ordinance

The City of Lathrop's Zoning Code, also known as Title 17, Zoning, of the Lathrop Municipal Code, preserves, protects and promotes the public health, safety, peace, comfort, convenience, prosperity and general welfare of the city. In addition, the City of Lathrop's Zoning Code provides a zone plan to guide physical development of the city in such a manner as to achieve progressively the general arrangement of land uses described and depicted in the Lathrop General Plan (City of Lathrop 2025).

City of Manteca

City of Manteca General Plan

The City of Manteca adopted its updated General Plan in February 2024. The City of Manteca's General Plan addresses the downtown area, economic development, residential development, and community amenities. The City of Manteca General Plan promotes the community's vision for the future and provides a framework that will guide decisions on growth, development, and conservation of open space and resources in a manner that is consistent with the quality of life desired by the city's residents and businesses. The City of Manteca General Plan includes goals and policies that address land use such as providing for logical orderly growth, maintaining family orientated community character, preserving access to the areas agricultural and natural resources, revitalizing the downtown area, providing high quality housing and jobs, and maintaining strong fiscal sustainability. Additionally, the City of Manteca's General Plan includes goals which require the protection of life and property from flood events by providing a planning framework for flood protection and risk management consistent with federal and state law and pursuing flood control solutions that minimize environmental impacts. This includes

policies consistent with SB 5 which aim to assess whether new development is reasonably safe from flood risk before approving permits, to investigate and implement projects that would provide 200-year level of flood protection, and to update land uses reflecting current floodplain mapping data.

City of Manteca Zoning Ordinance

The City of Manteca's Zoning Code, also known as Title 17, Zoning, of the Manteca Municipal Code, provides a precise guide for the physical development of the city in such a manner as to progressively achieve the arrangement of land uses depicted in the Manteca General Plan consistent with the goals and policies of the General Plan. The City of Manteca's Zoning Code provides information on allowable uses and permitted activities for the various zoning designations included within the city (City of Manteca 2025).

3.13.4 Impacts and Mitigation Measures

Methods of Analysis

The *CEQA Guidelines* Section 15125(d) requires that an EIR discuss any inconsistencies with applicable general plans, specific plans, and regional plans adopted for the purpose of avoiding or mitigating an environmental impact. For purposes of this analysis, the proposed project is considered consistent with regulatory plans if it meets the general intent of the plans and/or would not preclude the attainment of their primary goals. This analysis describes consistency of the proposed project with the applicable goals and policies of San Joaquin County and the cities of Lathrop, Manteca, and Stockton's General Plans as well as other regional plans to determine the consistency of the proposed project with current land use policies.

Thresholds of Significance

In accordance with Appendix G of the CEQA Guidelines, an impact is considered significant if the proposed project would:

- Physically divide an established community.
- Cause a significant environmental impact due to a conflict with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental impact.

Impacts and Mitigation Measures

Table 3.13-2 summarizes the impact conclusions presented in this section.

TABLE 3.13-2
SUMMARY OF IMPACT CONCLUSIONS – LAND USE AND PLANNING

Impact Statement	Flood Risk Reduction Components	Restoration Sites 13, 14, and 16	Other Multi-Benefit Components
3.13-1: Implementation of the proposed project could have the potential to physically divide an established community.	LS	LS	LS
3.13-2: Implementation of the proposed project could have the potential to cause a significant environmental impact if the proposed project conflicted with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental impact.	LS	LS	LS

NOTE: LS = Less than Significant

Impact 3.13-1: Implementation of the proposed project could have the potential to physically divide an established community.

Flood Risk Reduction Components and Restoration Sites 13, 14, and 16

The flood risk reduction components included as part of the proposed project involve various fix-in-place and potential setback levee improvements, a dryland levee extension extending east to Tinnin Road, and various staging areas. In addition, the proposed includes installation of ecosystem restoration features at Sites 13, 14, and 16 that includes excavated floodplains, floodplain side channels, brush mat, habitat wood structures, willow baffles, and upland brush piles. These proposed project components are described in Chapter 2, *Project Description*. Figures 3.13-1a through 3.13-1c show the location of the flood risk reduction components within the proposed project area as well as the land use designations per each jurisdiction where the flood risk reduction components and ecosystem restoration of Sites 13, 14, and 16 are proposed.

The levee components would be constructed within the existing or acquired easements and/or rights-of-way along the San Joaquin River, which is already developed with existing flood control infrastructure. The San Joaquin River is an already established corridor, where implementation of the proposed project would improve the flood control infrastructure to withstand a 200-year flood event. While development of some of the levee components could require acquisition of additional easements and/or rights-of-way, the land adjacent to the San Joaquin River has been identified for future flood control activities and would occur on parcels already designated for such use. While construction of the flood risk reduction components could block access to portions of the San Joaquin River, this would be a temporary condition and access to other parts of the river would be provided as construction would occur in various places over the approximate 5-year construction schedule. Therefore, construction of the flood risk reduction components would not permanently block access to the San Joaquin River nor would it introduce new parcels or roadways which would disrupt the current land use patterns of the surrounding jurisdictions.

In addition to the levee components, various staging areas would be required during construction of the proposed project. All of the staging areas would be located within portions of existing levee maintenance easements, RD 17 property, and/or private property. The staging areas would be temporary as they would only be utilized during construction of the flood risk reduction components, which is anticipated to occur over a 5-year period and would return back to existing conditions after construction is completed. The staging areas would be contained within existing parcels and would not change the existing surrounding land use patterns during construction.

Therefore, construction the flood risk reduction components would occur within already developed parcels where flood control infrastructure and rural land development is already allowed. The land uses within the proposed project's boundaries are connected with themselves and the land surrounding them. Construction of the flood risk reduction components would not change this condition and would not hinder access within the proposed project area.

O&M of the flood risk reduction components would occur within San Joaquin River corridor, including on any acquired easements and/or rights-of-way needed prior to construction. At this stage of the proposed project, the staging areas used during construction of the flood risk reduction components would be returned to their existing condition. For these reasons, O&M activities would not change the existing

land use patterns surrounding the proposed project area and would not introduce new roadways or infrastructure that would physically divide an established community. Therefore, this impact would be **less than significant**.

Other Multi-benefit Components

The proposed project also includes implementation of other multi-benefit components including additional ecosystem restoration sites, and recreation features along the levee system. These other multi-benefit components are described in Chapter 2, *Project Description*. Table 2-2 in Chapter 2 lists the type of ecosystem restoration, habitat acreage, and approximate grading volumes for the additional proposed ecosystem restoration sites. Proposed recreational features include the development of recreational paths along the top of levee and landside toe within the San Joaquin River corridor.

Figures 3.13-1d through Figure 3.13-1f shows the locations of the additional ecosystem restoration sites and recreation features in addition to the land use designations per each jurisdiction in the proposed project area.

As shown on Figures 3.13-1d through Figure 3.13-1f, the recreational facilities components would be located within the San Joaquin River corridor within the existing or acquired easements and/or rights-of-way. While the proposed recreational facilities would introduce new linear features in the proposed project area, the proposed recreational facilities would increase connectivity to the surrounding jurisdictions' existing bicycle and pedestrian circulation systems. In addition, the proposed recreation facilities would not prohibit access to the San Joaquin River but would increase access along the river to residents and visitors alike.

The proposed additional ecosystem restoration sites would be located on undeveloped land on the water side of the levee system in order to meet restoration criteria based on existing land habitats, elevations, and other opportunities for gaining natural ecosystem functions appropriate for the lower San Joaquin River. While the final locations of the proposed ecosystem restoration sites are unknown at this time, ecosystem restoration at the additional ecosystem restoration sites would be contained within identified parcels and would not change the existing surrounding land use patterns with construction and operation of the ecosystem restoration sites. Since the proposed project area is already defined into parcels according to their corresponding jurisdiction's land use maps and plan, any future parcels used for the ecosystem restoration sites would already be connected with adjacent parcels and would not physically divide an established community. Therefore, this impact would be **less than significant**.

Mitigation Measures

Mitigation Measures (FRR/RS/MB): None required.

Impact 3.13-2: Implementation of the proposed project could have the potential to cause a significant environmental impact if the proposed project conflicted with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental impact.

Consistent with the CEQA Guidelines, Section 15125(d), an EIR shall discuss any inconsistencies between a proposed project and applicable general plan and regional plans. The following analysis addresses this requirement, as it pertains to land use. In addition, policies related to specific

environmental issues are addressed in other sections of this EIR within the particular topical section (e.g., Section 3.2, *Aesthetics*; Section 3.3, *Agriculture Resources*; 3.4, *Air Quality*).

As discussed in subsection 3.13.3, *Regulatory Framework*, applicable land use plans, policies, and regulations include the Delta Protection Commission LURMP, SJCOG Regional Blueprint, SJCOG 2022 RTP/SCS, San Joaquin Multi-Species Habitat Conservation Plan, the San Joaquin County General Plan and Development Title, City of Stockton General Plan and Zoning Ordinance, City of Lathrop General Plan and Zoning Ordinance, and City of Manteca General Plan and Zoning Ordinance. The proposed project's consistency for each of the above-listed land use plans, policies, and regulations is addressed in greater detail below for the flood risk reduction, ecosystem restoration Sites 13, 14, and 16, and the other multi-benefit components.

In addition, as described above, each of the local jurisdiction's general plans include policies consistent with SB 5 which require them to assess whether new development is reasonably safe from flood risk, to investigate and implement projects that would provide 200-year level of flood protection, and to update land uses reflecting current floodplain mapping data.

Delta Protection Commission Land Use and Resource Management Plan

The LURMP provides direction for local jurisdictions in the Delta region on land use decisions, including improving flood control and levee infrastructure. In regard to land use, the LURMP includes various goals and policies to prohibit new development within the immediate area adjacent to existing levees to ensure adequate areas are preserved for future levee expansion project, encourage multi-jurisdictional efforts to improve flood control infrastructure, support funding to improve levees up to a 200-year flood protection level, and support efforts to address levee encroachments that are detrimental to levee maintenance (DPC 2010).

The proposed project is consistent with the flood control and levee maintenance goals and policies of the LURMP as the proposed project itself is implementing those goals and policies. The construction of the flood risk reduction components would include various fix-in-place and potential setback levee improvements as well as a dryland levee extension to Tinnin Road to achieve a 200-year flood urban level of protection for the proposed project area. All flood risk reduction components would be constructed within existing easements and/or rights-of-way or would require the acquisition of additional adjacent easements or right-of-way lands, which have been identified as buffer lands from adjacent land uses for the potential expansion of the existing flood control infrastructure. O&M of the flood risk reduction components would ensure the proposed flood control infrastructure continues to provide 200-year flood protection for the proposed project area for the foreseeable future. Therefore, construction and operation of the flood risk reduction components would be consistent with the goals and policies of the LURMP.

Another goal of the LURMP is to protect the unique character and qualities of the Primary Zone by preserving the cultural heritage, strong agricultural/economic base, unique recreational resources, and biological diversity of the Primary Zone. The proposed project is located within the Primary Zone of the LURMP and would be consistent with the goal of protecting recreational resources and biological diversity. Construction and operation of ecosystem restoration at Sites 13, 14, and 16 and addition ecosystem restoration sites would support establishment of biological diversity and preserve open space within the proposed project area. Construction of proposed recreation features would introduce new

recreational facilities along the San Joaquin River that would attract residents and visitors to the proposed project area. Moreover, the recreational facilities would highlight the San Joaquin River as a natural resources destination and would provide another open space area for the local population. Therefore, construction and operation of the proposed project would be consistent with the goals and strategies established in the LURMP.

San Joaquin Council of Government Regional Blueprint

The SJCOG Regional Blueprint provides a long-range regional vision until 2050 that recognizes that economic, environmental, and social issues are interdependent, and integrated approaches are needed in order to effect needed changes. Of the eight guiding principles included in the Regional Blueprint, Principle 5, Preservation of the Environment, is applicable to the proposed project. Principle 5, Preservation of the Environment, aims to protect and/or increase the amount of open space, species and habitat preserves, rivers and the San Joaquin Delta. Principle 5 includes a goal to support preservation of natural resources and open space lands as distinct from production agricultural lands and a performance measure of preserving acreage through a variety of sources, including the SJMSCP (SJCOG 2010).

The proposed project is consistent with the goals and performance measure included under Principle 5 of the Regional Blueprint. The flood risk reduction components would include habitat mitigation areas to mitigate for the loss of biological resources associated with expanded footprints of the levee improvements for impacts that cannot be mitigated through avoidance, minimization, or remediation. Any biological mitigation areas proposed would be revegetated and maintained as part of the proposed project by SJAFCA throughout O&M. Furthermore, construction and operation of the flood risk reduction components would ensure that surrounding land uses would be protected from a 200-year flood event, which would allow for the continued use of open space, recreational, and biological resources areas in the proposed project area. Therefore, construction and operation of the flood risk reduction components would be consistent with the principles and goals of the Regional Blueprint.

Construction and operation of ecosystem restoration at Sites 13, 14, and 16 and addition ecosystem restoration sites would support establishment of biological diversity and preserve open space within the proposed project area. Construction of proposed recreation features would introduce new recreational facilities along the San Joaquin River Implementation of proposed project ecosystem restoration features would be consistent with the principles and goals of the Regional Blueprint as these proposed project components would aid in preserving open space and protecting areas solely for the purpose of supporting biological resources. In addition, implementation of proposed project recreation features allows residents and visitors to have access to recreational facilities throughout the proposed project area for passive recreation activities and as an open space resource in the region. Therefore, the construction and operation of the proposed project would be consistent with the principles and goals of the Regional Blueprint.

San Joaquin Council of Government 2022 Regional Transportation Plan/Sustainable Communities Strategy

While the SJCOG 2022 RTP/SCS is the region's comprehensive long-range transportation planning document, the 2022 RTP/SCS also includes policies and strategies that are applicable to the proposed project, as a non-transportation project. The 2022 RTP/SCS includes a policy to enhance the environment for existing and future generations, which is supported by strategies to encourage preservation of natural

resources (Strategy No. 2) and provide transportation improvement to facilitate nonmotorized travel (Strategy No. 7) (SJCOG 2022).

While the proposed project is not a transportation project and would not induce growth through the development of housing or jobs in the region, the proposed project would aid in increasing the protection of the proposed project area by improving the existing flood control infrastructure. Construction and operation of the flood risk reduction components would enhance the existing flood control infrastructure to withstand a 200-year flood event, which in turn would help to reduce flooding risks to surrounding land uses, including natural resources. In addition to the levee improvements, implementation of the flood risk reduction components would also include on- and off-site mitigation for biological resources impacted in the expanded levee footprints for impacts that cannot be mitigated through avoidance, minimization, or remediation. Any mitigation areas proposed would be revegetated and maintained throughout O&M by SJAFCA. Thus, construction and operation of the flood risk reduction components would help to preserve and enhance the natural environment in the proposed project area, which otherwise could de damaged or destroyed in the event of a 200-year flood without the proposed project. For these reasons, implementation of the flood risk reduction components would be consistent with the goals and strategies of the 2022 RTP/SCS.

Construction and operation of ecosystem restoration at Sites 13, 14, and 16 and addition ecosystem restoration sites would support establishment of biological diversity and preserve open space within the proposed project area. Construction of proposed recreation features would introduce new recreational facilities along the San Joaquin River While the new recreational facilities would not provide a new main facility for nonmotorized travel throughout the region, the recreational facilities would provide another means of connectivity for pedestrians and bicyclists throughout the proposed project area and could promote the use of nonmotorized travel as a source of recreation in the area. Therefore, implementation of the proposed project would be consistent with the goals and strategies outlined in the 2022 RTP/SCS.

San Joaquin County Multi-Species Habitat Conservation Plan

Due to its location in the county, the proposed project would be within the area covered by the SJMSCP (SJCOG 2000). Specifically, the proposed project area is identified in the SJMSCP as a part of the Central Zone, which encompasses the lands surrounding each of the county's seven incorporated cities. The SJMSCP identifies the Central Zone as the area where most of the county's existing urban development is located and where proposed new development is anticipated to occur (SJCOG 2000). The SJMSCP defers to the cities' General Plans and the San Joaquin County General Plan for land use designations within the Central Zone. Therefore, regarding land use and planning, the proposed project's consistency with the county and cities of Stockton, Lathrop, and Manteca's General Plans would also provide consistency with the SJMSCP. As discussed in greater detail below, the proposed project would be consistent with the land use and zoning designations as well as the goals and policies of the county and cities of Stockton, Lathrop, and Manteca's General Plans. Furthermore, no potential SJMSCP conservation lands have been identified for use during the construction or operation of proposed project components. Therefore, implementation of the proposed project would not conflict with any known SJMSCP land preservation efforts and the proposed project would be consistent with the SJMSCP.

San Joaquin County General Plan and Development Title

The San Joquin County's General Plan and Development Title has land use authority over the parcels in the proposed project area located in areas of unincorporated county. As stated in Chapter 2, *Project Description*, of this Draft EIR, the proposed project does not include any land use or zoning amendments to any parcels located under the county's jurisdiction. While the majority of the flood risk reduction components would be able to be constructed within their existing easements and/or rights-of-way, some of the flood risk reduction components could require the acquisition of additional land to be constructed or could extend past the existing easement/right-of-way footprints. If additional easement or right-of-way is required, then the appropriate land use and zoning applications and/or permits would be required to be processed with San Joaquin County to relinquish the additional easement and/or right-of-way for use by the proposed project. However, as this is a typical land use and zoning process, acquiring additional easements and/or right-of-way would not create a land use or zoning conflict that would result in an environmental impact.

In addition, as shown in Figures 3.13-1a through 3.13-1c and Figures 3.13-2a thought 3.13-2c, various staging areas have been identified within the county to support the construction activities for the flood risk reduction components. All of the staging areas would be located within portions of existing levee maintenance easements, RD 17 property, and/or private property as negotiated with property owners. Once construction is completed, these parcels would return to existing conditions and would continue to support their designated land use and zoning uses.

Construction and operation of the flood risk reduction components would achieve San Joaquin County's General Plan goals and policies of improving the existing flood control infrastructure to provide 200-year flood urban level of protection to the proposed project area. The proposed project would increase public safety against flood risks, protect surrounding land uses, and would use associated funding to support the enhancement of the San Joaquin River flood control infrastructure against larger storm events that could occur in the future, especially in light of climate change. Therefore, implementation of the flood risk reduction components would be consistent with San Joaquin County's General Plan and Development Title.

Construction and operation of ecosystem restoration at Sites 13, 14, and 16 and the additional ecosystem restoration sites would support establishment of biological diversity and preserve open space within the proposed project area. Construction of proposed recreation features would introduce new recreational facilities along the San Joaquin River. Construction and operation of proposed project ecosystem restoration and recreation features would achieve San Joaquin County's goal of adding new recreational facilities and open space within the region, attract residents and visitors to the San Joaquin River and Delta, and protect natural resources in the proposed project area. The new recreational facilities would be located within the designated San Joaquin River corridor, which allows such uses. While the final locations of the proposed ecosystem restoration sites are unknown at this time, ecosystem restoration at the additional ecosystem restoration sites would undergo all applicable land use and zoning requirements at the time their final locations are selected, and the proposed project is in the approval process.

Therefore, implementation of the proposed project would be consistent with the goals, policies, and regulations of San Joaquin County's General Plan and Development Title.

City of Stockton General Plan and Zoning Ordinance

The City of Stockton General Plan and Zoning Ordinance has land use authority over the parcels in the proposed project area located within the City of Stockton. As stated in Chapter 2, *Project Description*, of this Draft EIR, the proposed project does not include any land use or zoning amendments to any parcels located under the City of Stockton's jurisdiction. As shown on Figures 3.13-1a and 3.13-2a, all flood risk reduction components proposed within the City of Stockton would be limited to the San Joaquin River corridor, which is designated and zoned for flood control infrastructure. No staging areas for the flood risk reduction components are proposed in the City of Stockton. Furthermore, as shown on Figures 3.13-1d and 3.13-2d, there are no ecosystem restoration sites or other multi-benefit components proposed within the City of Stockton. Therefore, no land use or zoning conflicts would occur with construction and operation of the proposed project.

In addition, implementation of the proposed project would achieve the City of Stockton's goals and policies to develop 200-year flood control infrastructure for the San Joaquin River to increase public safety associated with flood risks. Therefore, development of the proposed project would be consistent with the City of Stockton's General Plan and Zoning Ordinance.

City of Lathrop General Plan and Zoning Ordinance

The City of Lathrop General Plan and Zoning Ordinance has land use authority over the parcels in the proposed project area located within the City of Lathrop. As stated in Chapter 2, *Project Description*, of this Draft EIR, the proposed project does not include any land use or zoning amendments to any parcels located under the City of Lathrop's jurisdiction. As shown in Figures 3.13-1b and 3.13-2b, the majority of the flood risk reduction components would be able to be constructed within their existing easements and/or rights-of-way. However, some of the flood risk reduction components could require the acquisition of additional land to be constructed or could extend past the existing easement/right-of-way footprints. If additional easement or right-of-way is required, then the appropriate land use and zoning applications and/or permits would be required to be processed with the City of Lathrop to relinquish the additional easement and/or right-of-way for use by the proposed project. However, as this is a typical land use and zoning process, acquiring additional easements and/or right-of-way would not create a land use or zoning conflict that would result in an environmental impact.

In addition, six staging areas have been identified within the City of Lathrop to support the construction activities for the flood risk reduction components within the city. All of the staging areas would be located within portions of existing levee maintenance easements, RD 17 property, and/or private property as negotiated with property owners. Once construction is completed, these parcels would return to existing conditions and continue to support their designated land use and zoning uses. Therefore, no land use or zoning conflicts would occur with use the staging areas in the City of Lathrop.

Construction and operation of the flood risk reduction components would achieve the City of Lathrop's General Plan goals and policies of improving the existing flood control infrastructure to provide 200-year flood urban level of protection to the proposed project area. The proposed project would increase public safety against flood risks, protect surrounding land uses, and would utilize associated funding to support the enhancement of the San Joaquin River flood control infrastructure against larger storm events that could occur in the future, especially in light of climate change. Therefore, implementation of the flood risk reduction components would be consistent with the City of Lathrop's General Plan and Zoning Ordinance.

Construction and operation of ecosystem restoration at Sites 13, 14, and 16 and additional ecosystem restoration sites would support establishment of biological diversity and preserve open space within the proposed project area. Construction of proposed recreation features would introduce new recreational facilities along the San Joaquin River. The new recreational facilities would be located within the designated San Joaquin River corridor, which allows such uses. While the final locations of the proposed ecosystem restoration site are unknown at this time, ecosystem restoration at the additional ecosystem restoration sites would undergo all applicable land use and zoning requirements at the time their final locations are selected, and the proposed project is in the approval process. Therefore, implementation of the proposed project would be consistent with the goals, policies, and regulations of the City of Lathrop's General Plan and Zoning Ordinance.

City of Manteca General Plan and Zoning Ordinance

The City of Manteca General Plan and Zoning Ordinance has land use authority over the parcels in the proposed project area located within the City of Manteca. As stated in Chapter 2, *Project Description*, of this Draft EIR, the proposed project does not include any land use or zoning amendments to any parcels located under the City of Manteca's jurisdiction. As shown on Figures 3.13-1c and 3.13-2c, the flood risk reduction components proposed within the City of Manteca include levee raise and seepage berm and dryland levee extension to Tinnin Road and a seepage berm, which could require the acquisition of additional land to be constructed or could extend past the existing easement/right-of-way footprints. If additional easement or right-of-way is required, then the appropriate land use and zoning applications and/or permits would be required to be processed with the City of Manteca to relinquish the additional easement and/or right-of-way for use by the proposed project. However, as this is a typical land use and zoning process, acquiring additional easements and/or right-of-way would not create a land use or zoning conflict that would result in an environmental impact.

In addition, one staging area has been identified within the City of Manteca to support the construction activities for the flood risk reduction components within the city. This staging area would be located within proposed ecosystem restoration Site 13, which has a land use and zoning designation of open space. Once construction is completed, this parcel would continue to support its designated land use and zoning uses. Therefore, no land use or zoning conflicts would occur with use of the staging areas in the City of Manteca.

Construction and operation of the flood risk reduction components would achieve the City of Manteca's General Plan goals and policies of improving the existing flood control infrastructure to provide 200-year flood urban level of protection to the proposed project area. The proposed project would increase public safety against flood risks, protect surrounding land uses, and would utilize associated funding to support the enhancement of the San Joaquin River flood control infrastructure against larger storm events that could occur in the future, especially in light of climate change. Therefore, implementation of the flood risk reduction components would be consistent with the City of Manteca's General Plan and Zoning Ordinance.

Construction and operation of ecosystem restoration at Sites 13, 14, and 16 and additional ecosystem restoration sites would support establishment of biological diversity and preserve open space within the proposed project area. Construction of proposed recreation features would introduce new recreational facilities along the San Joaquin River. The new recreational facilities would achieve the City of

Manteca's goal of combining recreational facilities with the San Joaquin River to provide a new recreational resources and open space for the residents of the city. Therefore, implementation of the proposed project would be consistent with the goals, policies, and regulations of the City of Manteca's General Plan and Zoning Ordinance.

Impact Summary

As demonstrated above, the proposed project would be consistent with the goals, policies, and visions of San Joaquin County's General Plan and the cities of Stockton, Lathrop, and Manteca's General Plans and Zoning Codes as well as with the Regional Blueprint, 2022 RTP/SCS, SJMSCP, and LURMP. Since the proposed project would be consistent with all applicable land use and zoning plans, policies, and regulations, implementation of the proposed project would result in **less-than-significant** impacts related to resulting in an environmental impact due to a conflict with an applicable land use plan.

Mitigation Measures

Mitigation Measures (FRR/RS/MB): None required.

3.14 Noise

3.14.1 Introduction

This section addresses the potential for the construction and operation of the proposed project to result in significant noise and vibration impacts.

No comments specifically addressing aesthetics were received in response to the NOP. See Appendix A to this Draft EIR for NOP comment letters.

3.14.2 Environmental Setting

This section describes relevant metrics used in the assessment of noise and vibration impacts, as well as provides a generalized description of the regional noise environments within the cities of Stockton, Lathrop, Manteca, and unincorporated San Joaquin County.

Noise Background

Sound is characterized by various parameters that describe the rate of oscillation (frequency) of sound waves, the distance between successive troughs or crests in the wave, the speed that the sound wave travels, and the pressure level or energy content of a given sound. The sound pressure level has become the most common descriptor used to characterize the loudness of an ambient sound, and the decibel (dB) scale is used to quantify sound intensity. Because sound can vary in intensity by over one million times within the range of human hearing, a logarithmic loudness scale is used to keep sound intensity numbers at a convenient and manageable level. Since the human ear is not equally sensitive to all sound frequencies within the entire spectrum, human response is factored into sound descriptions in a process called "A-weighting," expressed as "dBA." The dBA, or A-weighted decibel, refers to a scale of noise measurement that approximates the range of sensitivity of the human ear to sounds of different frequencies. On this scale, the normal range of human hearing extends from about 0 dBA to about 140 dBA. An increase of 10 dBA in the level of a continuous noise represents a perceived doubling of loudness. The noise levels presented herein are expressed in terms of dBA, unless otherwise indicated. **Table 3.14-1** shows some representative noise sources and their corresponding noise levels in dBA (Caltrans 2013).

Planning for acceptable noise exposure must consider the types of activities and corresponding noise sensitivity in a specified location for a generalized land use type. Some general guidelines are as follows: sleep disturbance can occur at noise levels above 35 dBA; interference with human speech begins at about 60 dBA (FICON 1992). Hearing damage can result from prolonged exposure to noise levels in excess of 85 to 90 dBA as an 8-hour time weighted average (NIOSH 2024).

Attenuation of Noise

Noise from line sources, such as roadway traffic, attenuates (lessens) at a rate of 3.0 to 4.5 dBA per doubling of distance from the source, based on the inverse square law and the equation for cylindrical spreading of noise waves over hard and soft surfaces.

TABLE 3.14-1
TYPICAL SOUND LEVELS MEASURED IN THE ENVIRONMENT

Common Outdoor Activities	Decibels (dBA)	Common Indoor Activities
	110	Rock Band
Jet Flyover at 1,000 feet		
	100	Very Loud
Gas Lawnmower at 3 feet		
	90	
Diesel Truck at 50 feet at 50 mph	85	Food Blender at 3 feet
Near Freeway Auto Traffic	80	Garbage Disposal at 3 feet
Noisy Urban Area, Daytime	75	
Gas Lawnmower at 100 feet	70	Vacuum Cleaner at 10 feet
	65	Normal Speech at 3 feet
Commercial Area Heavy Traffic at 300 feet	60	
	55	Large Business Office
Quiet Urban Daytime	50	Dishwasher in Next Room
Quiet Urban Nighttime	40	Theater, Large Conference Room Background
	30	Library
Quiet Rural Nighttime	25	Bedroom at Night

SOURCE: Caltrans 2013

Noise from point sources, including stationary mobile sources such as idling vehicles or on-site construction equipment, attenuates at a rate of 6.0 to 7.5 dBA per doubling of distance from the source, based on the inverse square law and the equations for spherical spreading of noise waves over hard and soft surfaces. For this analysis, it is assumed that noise from line and point sources to a distance of 200 feet attenuates at rates of between 3.0 and 6.0 dBA per doubling of distance, and the noise from line and point sources at a distance greater than 200 feet attenuates at a rate of 4.5 to 7.5 dBA per doubling of distance, to account for the absorption of noise waves due to ground surfaces such as soft dirt, grass, bushes, and intervening structures (Caltrans 2013).

Noise Descriptors

An individual's noise exposure is a measure of noise over a period of time. A noise level is a measure of noise at a given period of time. Community noise varies continuously over a period of time with respect to the contributing sound sources of the community noise environment. Community noise is primarily the product of many distant noise sources, which constitute a relatively stable background noise exposure, with the individual contributors unidentifiable. The background noise level changes throughout a typical day, but does so gradually, corresponding with the addition and subtraction of distant noise sources such as traffic. What makes community noise variable throughout a day, besides the slowly changing background noise, is the addition of short-duration, single-event noise sources (e.g., aircraft flyovers, motor vehicles, sirens), which are readily identifiable to the individual. These successive additions of sound to the community noise environment change the community noise level from instant to instant, requiring the measurement of noise exposure over a period of time to legitimately characterize a

community noise environment and evaluate cumulative noise effects. This time-varying characteristic of environmental noise is described using statistical noise descriptors. The most frequently used noise descriptors are summarized below:

L_{eq}: The L_{eq}, or equivalent sound level, is used to describe noise over a specified period of time in terms of a single numerical value; the L_{eq} of a time-varying signal and that of a steady signal are the same if they deliver the same acoustic energy over a given time. The L_{eq} may also be referred to as the average sound level.

L_{max}: The maximum, instantaneous noise level experienced during a given period of time.

L_{90}: The level of noise exceeded 90 percent of the time is sometimes conservatively considered as the background ambient noise level for the purposes of assessing conformity with noise ordinance standards with respect to noise from stationary equipment or entertainment venues.

L_{dn}: Also termed the day-night average noise level (DNL), the L_{dn} is the average A-weighted noise level during a 24-hour day, obtained after an addition of 10 dB to measured noise levels between the hours of 10 p.m. to 7 a.m. to account for greater nighttime noise sensitivity.

CNEL: CNEL, or Community Noise Equivalent Level, is the average A-weighted noise level during a 24-hour day that is obtained after an addition of 5 dB to measured noise levels between the hours of 7 p.m. to 10 p.m. and after an addition of 10 dB to noise levels between the hours of 10 p.m. to 7 a.m. to account for greater noise sensitivity in the evening and nighttime, respectively.

Health Effects of Environmental Noise

The World Health Organization (WHO) is perhaps the best source of current knowledge regarding the health effects of noise impacts because European nations have continued to study noise and its health effects, while the U.S. Environmental Protection Agency (U.S. EPA) all but eliminated its noise investigation and control program in the 1970s. According to WHO, sleep disturbance can occur when continuous indoor noise levels exceed 30 dBA or when intermittent interior noise levels (such as from traffic) reach 45 dBA, particularly if background noise is low. With a bedroom window slightly open (a reduction from outside to inside of 15 dB), the WHO criteria suggest that exterior continuous (ambient) nighttime noise levels should be 45 dBA or below, and short-term events should not generate noise in excess of 60 dBA. WHO also notes that maintaining noise levels within the recommended levels during the first part of the night is believed to be effective for the ability of people to initially fall asleep (WHO 1999).

Other potential health effects of high noise levels identified by WHO include decreased performance for complex cognitive tasks, such as reading, attention span, problem solving, and memorization; physiological effects such as hypertension and heart disease (after many years of constant exposure, often of workers, to high noise levels); and hearing impairment (again, generally after long-term occupational exposure, although shorter term exposure to very high noise levels, for example, exposure several times a year to concert noise at 100 dBA, can also damage hearing). Finally, noise can cause annoyance and can trigger emotional reactions like anger, depression, and anxiety. WHO reports that, during daytime hours, few people are seriously annoyed by activities with noise levels below 55 dBA or moderately annoyed with noise levels below 50 dBA.

Vehicle traffic and continuous sources of machinery and mechanical noise contribute to ambient noise levels. Short-term noise sources, such as truck backup beepers, the crashing of material being loaded or unloaded, and car doors slamming, contribute very little to 24-hour noise levels but are capable of

causing sleep disturbance and annoyance. The importance of noise to receptors depends on both time and context. For example, long-term high noise levels from large traffic volumes can make conversation at a normal voice level difficult or impossible, while short-term peak noise levels, if they occur at night, can disturb sleep.

Vibration Descriptors

Vibration is an oscillatory motion through a solid medium in which the motion's amplitude can be described in terms of displacement, velocity, or acceleration. Several different methods are used to quantify vibration. The peak particle velocity (PPV) is defined as the maximum instantaneous peak of the vibration signal. The PPV is most frequently used to describe physical vibration impacts on buildings and structures. Another useful vibration descriptor is known as vibration decibels (VdB). VdB is generally used when evaluating human response to vibration, as opposed to damage to structures (for which PPV is the more commonly used descriptor). Vibration decibels are established relative to a reference quantity, typically 1×10^{-6} inches per second and are based on the root mean square velocity amplitude (FTA 2018).

Typically, groundborne vibration generated by human activities attenuates rapidly with distance from the source of the vibration. Sensitive receptors to vibration include people (especially residents, the elderly, and sick people), structures (especially older masonry structures), and vibration-sensitive equipment.

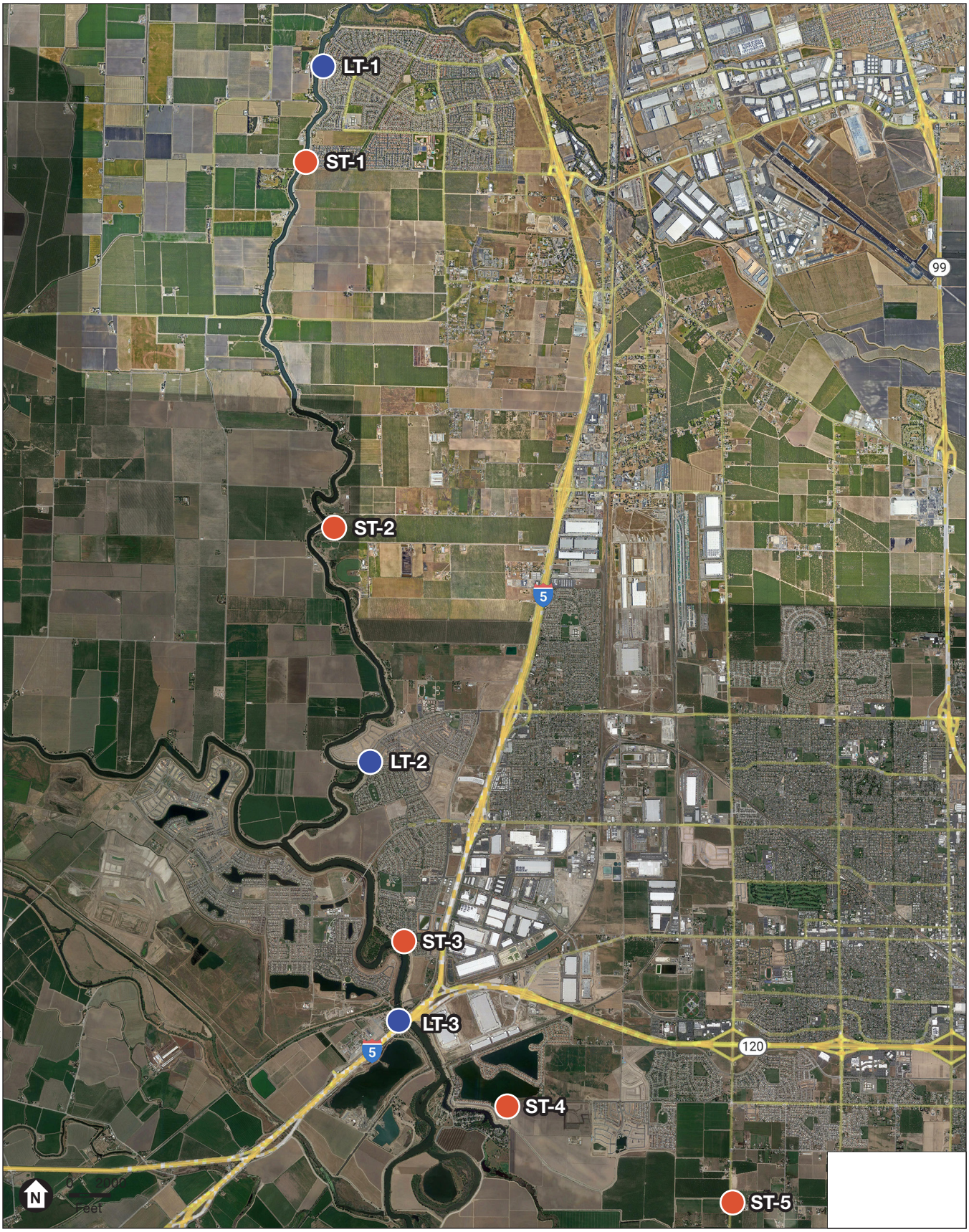
The background vibration velocity levels in residential areas are typically 50 VdB or lower, and the threshold of perception for humans is approximately 65 VdB. A vibration level of 85 VdB in a residence can result in strong annoyance (FTA 2018).

Existing Noise and Vibration Environment

Sources of noise in the proposed project area include traffic on Interstate 5 (I-5), State Route (SR) 120; local roads; railroad operations; aircraft operations; commercial uses; and agricultural operations. In more remote locations, background noise levels in the absence of the above-described sources are caused by distant traffic, wind in the trees, running water, birds, and distant industrial or other stationary noise sources.

To characterize the existing ambient noise environment in the vicinity of the proposed project, short-term (15-minute) and long-term (24-hour) ambient noise level measurements were collected at locations adjacent to the proposed project area (see **Figure 3.14-1** for an illustration of the noise measurement locations and Appendix H of this Draft EIR for measurements and results). These locations were chosen to best represent the ambient noise environments at the closest noise-sensitive uses to the proposed project work areas. The short-term measurements are characterized in terms of the equivalent sound level (L_{eq}) to describe noise over a specified period, in terms of a single numerical value that is the constant sound level which would contain the same acoustic energy as the varying sound level, during the same time period (i.e., the average noise exposure level for the given time period, in this case 15 minutes); as well as the L_{max} and L_{min}, which represent the instantaneous maximum and minimum noise levels, respectively, measured during the 15-minute measurement periods.

Table 3.14-2 shows the results of the short-term noise monitoring survey. L_{eq} noise levels ranged from approximately 45 dBA to 70 dBA, L_{max} noise levels ranged from approximately 58 dBA to 82 dBA, and L_{min} noise levels ranged from approximately 32 to 47 dBA.



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SOURCE: Google Earth Pro, 2022; ESA, 2022

SJAFCA Mossdale Tract Urban Flood Risk Reduction Project

Figure 3.14-1
Noise Monitoring Locations

ESA

TABLE 3.14-2
MEASURED SHORT-TERM AMBIENT NOISE MEASUREMENT RESULTS

No.	Location Description	Time Period	Noise Level (dBA)			Sources
			L_{eq}	L_{max}	L_{min}	
ST-1	Galley Way, adjacent to San Joaquin River	12:26 p.m.–12:41 p.m.	46.4	58.3	32.3	Kids playing in backyard house, rustling vegetation, birds.
ST-2	Frewhert Road, at gated entrance to private community.	2:30 p.m.–2:45 p.m.	45.3	60.0	37.4	Vehicle traffic, rustling vegetation, birds.
ST-3	William S Moss Park across the street on Inland Passage Way	12:49 p.m.–1:05 p.m.	56.8	77.7	41.4	Traffic on Inland Passage Way, backyard construction activity, electrical buzzing from the park facility building.
ST-4	Woodward Avenue, approximately 400 feet north of W Aplicella Ct	1:35 p.m.–1:50 p.m.	60.7	76.9	47.2	Cars and trucks on Woodward Avenue, nearby construction activity from across the street.
ST-5	Corner of Fig Avenue and Airport Way	2:06 p.m.–2:22 p.m.	70.3	82.4	41.0	Cars and trucks on Airport Way

NOTES: dBA = A-weighted decibels; L_{eq} = equivalent sound level; L_{max} = maximum sound level; L_{min} = minimum sound level.

Measurements at ST-3, ST-4 and ST-5 were short-term, collected over 15-minute periods on Tuesday, October 25, 2022, and measurements at ST-1 and ST-2 were collected Tuesday, November 1, 2022.

SOURCE: Appendix H to this this Draft EIR

In addition to short-term measurements, three long-term (24-hour) measurements were collected to characterize the day-night noise level (Ldn), which is the energy average of the sound levels occurring during a 24-hour period and which accounts for the greater sensitivity of most people to nighttime noise by weighting noise levels at night ("penalizing" nighttime noises) between 10:00 p.m. and 7:00 a.m. by adding 10 dBA to consider the greater annoyance of nighttime noises. The long-term measurements are also used to characterize the daytime and nighttime L_{eq} levels. **Table 3.14-3** shows the results of the long-term noise monitoring survey (see also Appendix H of this Draft EIR). As shown in Table 3.14-3, L_{dn} noise levels at LT-1, LT-2, and LT-3 were approximately 52 dBA, 59 dBA, and 81 dBA, respectively; daytime Leq noise levels were approximately 50 dBA, 59 dBA, and 76 dBA, respectively; and nighttime Leq noise levels were approximately 46 dBA, 54 dBA, and to 76 dBA, respectively. Elevated noise levels at LT-3 are primarily due to the proximity to I-5.

TABLE 3.14-3
MEASURED LONG-TERM AMBIENT NOISE MEASUREMENT RESULTS

No.	Location Description	Noise Level (dBA)		
		L_{dn}	Daytime (8 a.m. to 8 p.m.) L_{eq}	Nighttime (8 p.m. to 8 a.m.) L_{eq}
LT-1	Eastside of Honorable Sandra B. Smith Park, adjacent to San Joaquin River	52	50	46
LT-2	Across the street from residences where Lathrop Road meets Spartan Way	59	59	54
LT-3	Across Lathrop Irrigation District on Manthey Road	81	76	76

NOTES: dBA = A-weighted decibels; L_{dn} = day-night noise level; L_{eq} = equivalent sound level.

Measurements at LT-1, LT-2, and LT-3 were collected on October 26, 2022.

SOURCE: Appendix H to this Draft EIR

Sensitive Receptors

Human response to noise varies considerably from one individual to another. Effects of noise at various levels can include interference with sleep, concentration, and communication, and can cause stress and hearing loss. Given these effects, some land uses are considered more sensitive to ambient noise levels than others. In general, residences, schools, hotels, hospitals, and nursing homes are considered to be the most sensitive to noise. Places such as churches, libraries, and cemeteries, where people tend to pray, study, and/or contemplate are also sensitive to noise. Commercial and industrial uses are considered the least sensitive to noise.

The alignment of the proposed flood reduction components is located along Crestmore Circle, Mist Trail Drive, Jetty Drive, Galley Way, Lathrop Road, Inland Passage Way, W Aplicella Court, and Airport Way within the cities of Stockton, Lathrop, Manteca, and unincorporated San Joaquin County. Sensitive receptors in the form of scattered residences are located along parts of the alignment with the nearest residence (along W Aplicella Court) located as close as 40 feet from the proposed flood risk reduction components alignment. In addition, residential uses are also located along Barbra Terry Boulevard, Upper Pasture, River Island Parkway, Sadler Oak, Woodward Avenue, and Joshua Street from the proposed staging areas.

3.14.3 Regulatory Setting

This section discusses federal, state, and regional and local plans, policies, regulations, laws, and ordinances pertaining to noise and vibration. Implementation of any project or management action may be subject to the laws and regulations listed below, as well as other local plans, policies, and ordinances, depending on the project location.

Federal

Federal Aviation Administration

The Federal Aviation Administration (FAA) develops noise exposure maps that use average annual CNEL noise contours around an airport as the primary noise descriptor. The FAA states that all land uses are considered compatible when aircraft noise effects are less than 65 dB CNEL.

State

State regulations include requirements for the construction of new hotels, motels, apartment houses, and dwellings other than detached single-family dwellings that are intended to limit the extent of noise transmitted into habitable spaces. These requirements are collectively known as the California Noise Insulation Standards and are found in Title 24 of the California Code of Regulations.

The 2016 California Building Code (CBC) included the most recent update to the sound transmission standards (CBC, Title 24, Part 2 of the California Code of Regulations) and requires that walls and floor/ceiling assemblies separating dwelling units from each other, or from public or service areas, have a Sound Transmission Class (STC) of at least 50, meaning they can reduce noise by a minimum of 50 dB (CBC Section 1207.4). The CBC also specifies a maximum interior noise limit of 45 dBA (L_{dn} or CNEL) in habitable rooms, and requires that common interior walls and floor/ceiling assemblies meet a minimum STC rating of 50 for airborne noise (CBC Section 1207.4, Allowable Interior Noise Levels).

Local

The proposed project area includes lands in San Joaquin County and the cities of Stockton, Lathrop, and Manteca. Each of these jurisdictions have general plans with goals and policies that address noise and vibration (see **Table 3.14-4**). Applicable general plan goals and policies are summarized below along with relevant local regulations. Municipal Code sections governing noise are presented in **Table 3.14-5**.

TABLE 3.14-4
APPLICABLE GENERAL PLAN GOALS AND POLICIES – NOISE

General Plan	Goals and Policies
San Joaquin County	Public Health and Safety Element, Goal PHS-9, Policies PHS-9.1, PHS-9.4, and PHS-9.6
City of Stockton	Safety Element, Policy SAF-2.5, Actions SAF 2.5A–2.5E.
City of Lathrop	Hazard Management Element, Goal 8, Policies 1–5.
City of Manteca	Safety Element, Goal S-5, Policies S-5.1, S-5.3–S-5.8, S-5.10, S-5.11, S-5.13, and S-5.15.
SOURCES: City of Lathrop 2022; City of Manteca 2024; City of Stockton 2018; San Joaquin County 2016	

TABLE 3.14-5
MUNICIPAL CODE SECTIONS GOVERNING NOISE

Municipal Code	Sections Governing Noise
San Joaquin County	Chapter 9-1025 (Performance Standards)
City of Stockton	Chapter 16.60 (Noise Standards) – 16.60.030 (Activities deemed violations of this chapter) (A) Construction Noise
City of Lathrop	Title 8, Chapter 8.20 (Noise)
City of Manteca	Title 9, Chapter 9.52 (Residential Noise).
SOURCES: City of Lathrop 2025; City of Manteca 2025; City of Stockton 2025; San Joaquin County 2025	

San Joaquin County

San Joaquin County General Plan

The San Joaquin County General Plan includes goals and policies that address noise and vibration. Goal PHS-9 of the San Joaquin County's General Plan directs the county to protect its residents from the harmful and nuisance effects of exposure to excessive noise by implementing noise and vibration standards. San Joaquin County has established maximum allowable noise exposure from non-transportation noise sources at outdoor activity areas for sensitive receptors of 65 dBA Ldn and for indoor spaces of 45 dBA Ldn. With respect to construction-related vibration, the county requires construction projects anticipated to generate a significant amount of vibration to ensure acceptable interior vibration levels at nearby vibration-sensitive uses based on FTA criteria. The General Plan also requires the county to continue to enforce state and federal noise laws regarding vehicle operation, equipment, and building insulation.

San Joaquin County Municipal Code

Noise generated by the proposed project and experienced at nearby residential properties within unincorporated San Joaquin County would be subject to the San Joaquin County Municipal Code noise

limits. While San Joaquin County Code Chapter 9-1025 establishes performance standards with respect to noise exposure, subsection (c) (3) exempts noise sources associated with construction, provided such activities do not take place before 6:00 a.m. or after 9:00 p.m. on any day (San Joaquin County 2025).

City of Stockton

Envision Stockton 2040 General Plan

Policy SAF-2.5 of the City of Stockton General Plan implements Action Plans to protect the community from health hazards and annoyance associated with excessive noise levels but none of these Action Plans address construction-related activity for an infrastructure project.

City of Stockton Municipal Code – Chapter 16.60 Noise Standards

Noise generated by the proposed project and experienced at nearby residential properties would be subject to the City of Stockton Municipal Code noise limits. The following text presents the City of Stockton Code noise level limits as defined in City of Stockton Code Chapter 16.60 Noise Standards and would be applicable to construction-related activity for an infrastructure project (City of Stockton 2025).

> **Construction Noise.** Operating or causing the operation of tools or equipment on private property used in alteration, construction, demolition, drilling, or repair work between the hours of 10:00 p.m. and 7:00 a.m., so that the sound creates a noise disturbance across a residential property line, except for emergency work of public service utilities.

City of Lathrop

City of Lathrop General Plan

The City of Lathrop General Plan includes goals and policies that address noise and vibration. The following goals and policies from the City of Lathrop's 2040 Hazard Management Element: Section B - Noise, implements Policies to protect the community from health hazards and annoyance associated with excessive noise levels but none of these policies address construction-related activity for an infrastructure project.

City of Lathrop Municipal Code

Noise generated by the proposed project and experienced at nearby residential properties would be subject to the City of Lathrop Municipal Code noise limits. Chapter 8.20 of the City of Lathrop Municipal Code establishes noise level limits for construction of buildings and projects. Specifically, it is unlawful for any person within a residential zone or within a radius of 500 feet therefrom, to operate equipment or perform any outside construction or repair work on buildings, structures, or projects or to operate any pile driver, power shovel, pneumatic hammer, derrick, power hoist, or any other construction type device between the hours of 10:00 p.m. of one day and 7:00 a.m. of the next day, or 11:00 p.m. and 9:00 a.m. Fridays, Saturdays, and legal holidays, in such a manner that a reasonable person of normal sensitiveness residing in the area is caused discomfort or annoyance unless beforehand a permit therefore has been duly obtained from the office or body of the city having the function to issue permits of this kind. No permit shall be required to perform emergency work as defined in Sections 8.20.010 through 8.20.040 (City of Lathrop 2025).

City of Manteca

City of Manteca General Plan

The City of Manteca General Plan includes goals and policies that address noise and vibration. Goal S-6 of the City's General Plan directs the city to protect residents' quality of life by protecting the community from harmful and excessive noise by regulating construction-related noise to reduce impacts on adjacent uses. The City of Manteca has established maximum allowable noise exposure from mobile noise sources performance standards for stationary noise sources of 55 dBA Leq from 7:00 a.m. to 10:00 p.m., and 45 dBA Leq from 10:00 p.m. to 7:00 a.m.

City of Manteca Municipal Code

Noise generated by the proposed project and experienced at nearby residential properties would be subject to the City of Manteca Municipal Code noise limits. The following text presents the City of Manteca Municipal Code noise level limits as defined in city Code Chapter 9.52 Residential Noise (City of Manteca 2025).

Construction Equipment. The use or operation of any construction equipment between the hours of 8:00 p.m. and 7:00 a.m. and is sufficiently loud as to be plainly audible at the property line of the property from which the sound is emanating. (Ord. 1374 Section 1, 2007).

3.14.4 Impacts and Mitigation Measures

Methods of Analysis

The analysis of environmental impacts for noise and vibration focuses on the potential for construction-related noise or vibration levels to exceed thresholds established by the General Plan noise elements or Municipal Codes for the cities of Stockton, Lathrop, and Manteca and San Joaquin County. Flood risk reduction components implemented under the proposed project are evaluated in terms of how typical construction and operation could affect existing noise and vibration conditions at sensitive receptor locations.

With respect to multi-benefit components, this analysis focuses on reasonably foreseeable noise sources from implementation of the components and identifies mitigation measures that might be taken in the future, consistent with the level of detail appropriate for a program-level analysis.

Permanent impacts are those that would continue through the life of a project as a result of the environmental conditions caused by flood risk reduction components implemented under the proposed project (e.g., operational-related activities). Temporary impacts are those that would be temporary in nature (e.g., construction-related activities). Impacts were evaluated separately for flood risk improvements and multi-benefit components. While the impact conclusions reached may be the same, this approach facilitates a discussion of any potential differences given that direct and in-lieu recharge projects rely more on constructed features than management actions for implementation.

Significance determinations assume that the components implemented under the proposed project will comply with relevant federal, state, and local ordinances and regulations described in subsection 3.14.3, *Regulatory Setting.* Thresholds of significance used to evaluate impacts are based on Appendix G of the

CEQA Guidelines. Additional thresholds are proposed for potential issues identified as relevant to the proposed project area.

Because most jurisdictions in the proposed project area exempt daytime construction noise from their noise ordinance standards, construction noise is also evaluated and compared to criteria established by the FTA.

While the FTA's *Transit Noise and Vibration Impact Assessment Manual* was developed for determining significant noise and vibration impacts for transit projects and is not a regulation, it is one of the few federal sources that suggest both a methodology and criteria for assessing construction noise impacts (FTA 2108). The FTA noise impact criteria used to assess construction noise impacts on residential uses is 90 dBA during daytime hours and 80 dBA during nighttime hours. These criteria are absolute contribution values from construction activity and are independent of existing background noise levels. If the FTA criteria are exceeded, there could be adverse community reaction.

Construction vibration impacts are considered significant if they would either result in levels substantial enough to result in damage to nearby structures or buildings or result in vibration levels that exceed FTA's groundborne vibration impact criteria.

Thresholds of Significance

In accordance with Appendix G of the CEQA Guidelines, an impact is considered significant if the proposed 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 applicable standards of other agencies.
- Generate excessive groundborne vibration or groundborne noise levels.
- 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.

Impacts Not Further Evaluated

Exposure to excessive noise levels due to proximity to airport

The closest airport is the Stockton Metropolitan Airport, approximately 1.5 miles east of the proposed project area. The proposed project would not introduce a new noise-sensitive land use or a new place of employment and, therefore, would not result in exposure of people residing or working in the proposed project area to excessive noise levels. The proposed project area is well outside of the 65 CNEL noise contours for the airport (SJALUC 2018) and, therefore, would not result in exposure of people working in the proposed project area to excessive noise levels. Consequently, there would be no impact associated with exposing people near an airport or private airstrip to excessive noise levels and this issue is not further evaluated in the EIR.

Impacts and Mitigation Measures

Table 3.14-6 summarizes the impact conclusions presented in this section.

TABLE 3.14-6
SUMMARY OF IMPACT CONCLUSIONS – NOISE

Impact Statement	Flood Risk Reduction Components	Restoration Sites 13, 14, and 16	Other Multi-Benefit Components
3.14-1: Implementation of the proposed project could generate a substantial temporary or permanent increase in ambient noise levels in the vicinity of the proposed project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies.	SU	SU	SU
3.14-2: Construction of the proposed project could generate excessive groundborne vibration or groundborne noise levels.	LSM	LS	LSM

NOTES: LS = Less than Significant; LSM = Less than Significant with Mitigation; SU = Significant and Unavoidable

Impact 3.14-1: Implementation of the proposed project could generate a substantial temporary or permanent increase in ambient noise levels in the vicinity of the proposed project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies.

Flood Risk Reduction Components

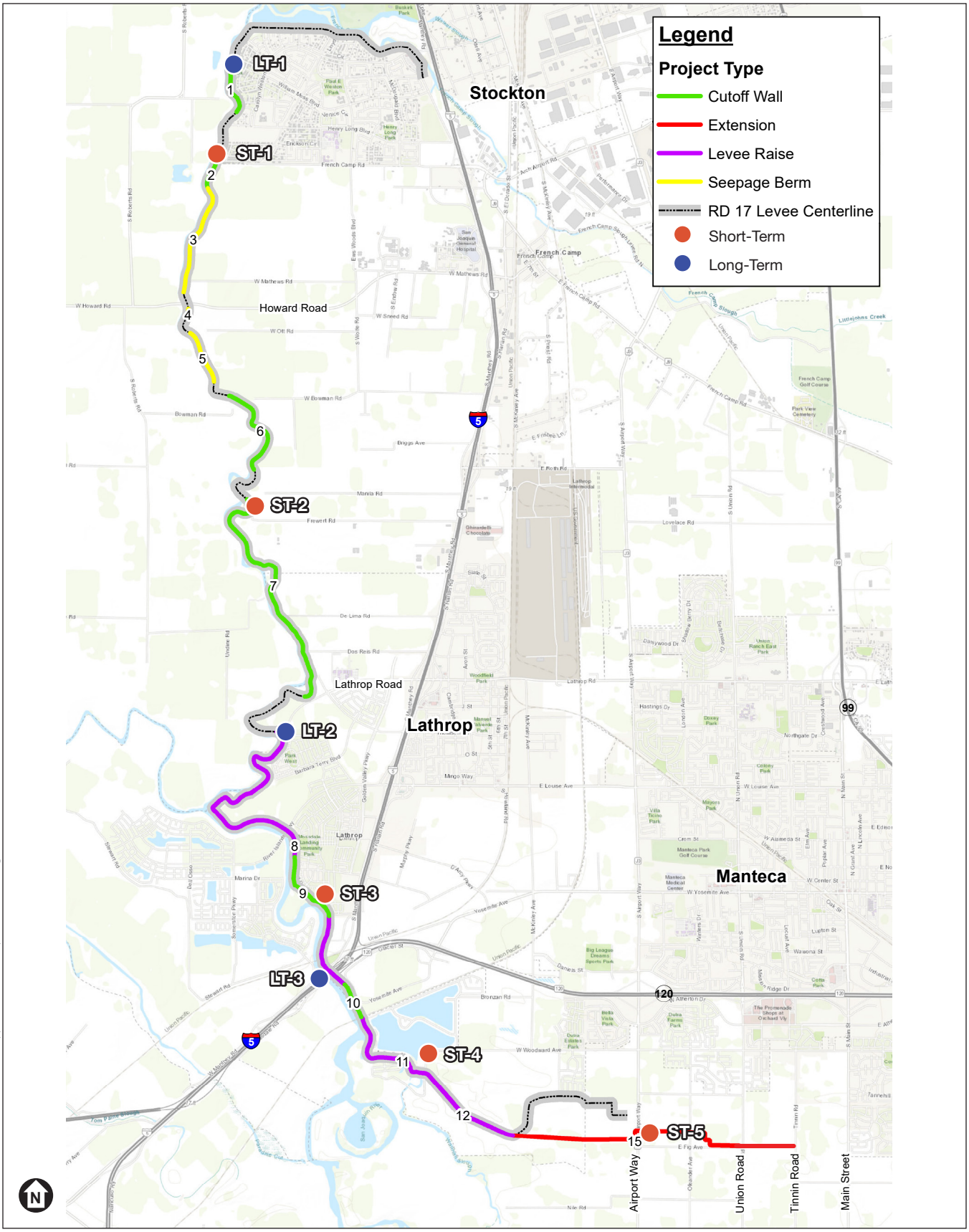
Construction

Construction Equipment

Noise from the construction of proposed flood risk reduction components would primarily be generated from heavy duty equipment, which includes equipment such as excavators, cranes, dozers, and rollers. Construction of the proposed flood risk reduction components would include site preparation (vegetation clearing, demolition, utilities relocation), grading, excavation, compaction, and hauling and placement of materials, and site cleanup and demobilization. .

The flood risk reduction components require construction activities that could include the mobilization of substantial off-road equipment and materials and removal of substantial soil quantities from borrow sites or off-site locations which would generate truck trips and temporary construction noise that could impact noise-sensitive land uses if they are located near the construction or staging areas. Additionally, impact- or vibratory-pile driving may be required for sheet pile installation for the floodwall.

Flood risk reduction components of the proposed project include fix-in-place levee improvements and a dryland levee extension, which are numbered from 1 to 15 from north to south in Table 2-1 in Chapter 2, *Project Description*. Refer to **Figure 3.14-2** for proposed project component locations. The approximate geographical length of each proposed project component segment ranges from 400 feet for project component 4 to 15,800 feet for project component 8a. Each proposed project component would require several unique construction activities to reach completion, and each activity has a set of construction equipment as described in Chapter 2, subsection 2.5.3.



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SOURCE: KSN, Inc., 2022

SJAFCA Mossdale Tract Urban Flood Risk Reduction Project

Figure 3.14-2
Locations of Project Component IDs

ESA

Peak construction noise along each proposed project component was modeled using the Roadway Construction Noise Model (RCNM) for the nearest noise-sensitive receptor. The RCNM analysis includes the calculation of noise levels (L_{max} and L_{eq}) at incremental distances for a variety of types of construction equipment. The model inputs include acoustical use factors and L_{eq} values at various distances depending on the receptor locations analyzed. FTA's general assessment approach recommends assessing the two noisiest pieces of construction equipment operating concurrently at the center of a project site.

Table 3.14-7 presents the results of the modeling of construction stages showing the predicted noise levels of each proposed project component at the nearest sensitive receptors. Construction noise levels were calculated for each stage of construction based on the equipment list provided included in Table 2-8 in Chapter 2, *Project* Description. The nearest sensitive receptors are residential dwellings. These predicted noise levels are worst-case estimates, and the duration of noisy activity would vary with each proposed project component location from 24 days for project component 4 to 268 days along project component 15.

Construction hours would comply with the noise ordinances of the cities of Stockton, Lathrop, and Manteca and San Joaquin County. Therefore, as noted in Chapter 2, subsection 2.5.4, construction would occur during the following days and times for proposed project components located within the following local jurisdictions: any day between 6:00 a.m. and 9:00 p.m. for proposed project components in unincorporated San Joaquin County; Monday through Thursday between 7:00 a.m. and 10:00 p.m. and Fridays and Saturdays between 9:00 a.m. and 11:00 p.m. in the City of Lathrop; any day between 7:00 a.m. and 8:00 p.m. in the City of Manteca; and, any day between 7:00 a.m. and 10:00 p.m. in the City of Stockton. Depending on the allowable duration/schedule for proposed project and/or each phase night work could be necessary.

As indicated in Table 3.14-7, the construction noise levels would be below the daytime construction noise impact criteria of 90 dBA. However, construction could occur in unincorporated San Joaquin County between 6:00 a.m. and 7:00 a.m. and within the City of Lathrop on Fridays and Saturdays between 10:00 p.m. and 11:00 p.m. which would be intervals considered nighttime hours (San Joaquin County 2016; City of Lathrop 2022).

Construction would occur during the exempted construction workdays and hours in unincorporated San Joaquin County and cities of Lathrop, Manteca, and Stockton. In addition, resultant noise levels at the closest receptors would be below the 90 dBA daytime criterion established by FTA. Therefore, the impact of the effects of daytime construction activities associated with flood risk reduction components would be less than significant.

However, as some activities could occur in unincorporated San Joaquin County between 6:00 a.m. and 7:00 a.m. and within the jurisdiction of the City of Lathrop on Fridays and Saturdays between 10:00 p.m. and 11:00 p.m., which are considered by their respective General Plans to be intervals considered nighttime hours, the quantitative FTA noise impact criterion of 80 dBA during nighttime hours would apply. As indicated in Table 3.14-7, the construction noise levels would exceed nighttime construction noise impact criteria of 80 dBA at receptor locations closer than 90 feet from any of the proposed non-pile driving activity. Therefore, nighttime construction activities associated with flood risk reduction components would be significant.

TABLE 3.14-7
ESTIMATED CONSTRUCTION NOISE LEVELS – FLOOD RISK REDUCTION COMPONENTS

Representative Receptor	Existing Daytime Noise Level (dBA L_{eq})	Loudest Two Noise Sources	Reference Noise Level (dBA)[a]	Distance to Nearest Receptor (feet)[b]	Acoustical Usage Factor (%)	Adjusted L_{eq} Level (dBA)[c]	Exceed 90 dBA FTA Daytime/80 dBA nighttime Criterion?
Project Component 1: Cutoff Wall							
Clearing and Grubbing							
Mist Trail Drive Residences	50	Grader, Chipper/grinder	85.0/88.9	45	40/20	85.4	No/Yes
Project Component 2 Cutoff Wall							
Clearing and Grubbing							
Galley Way Residences	46.4	Grader, Chipper/grinder	85.0/88.9	50	40/20	84.5	No/Yes
Project Component 3 Seepage Berm							
Clearing and Grubbing							
Residences across San Joaquin River	--	Grader, Chipper/grinder	85.0/88.9	300	40/20	68.9	No/No
Project Component 4 Seepage Berm							
Clearing and Grubbing							
Residence across San Joaquin River	--	Grader, Chipper/grinder	85.0/88.9	300	40/20	66.4	No/No
Project Component 5 Seepage Berm							
Clearing and Grubbing							
Residence across San Joaquin River	--	Grader, Chipper/grinder	85.0/88.9	390	40/20	66.7	No/No
Project Component 6 Cutoff Wall							
Clearing and Grubbing							
Bowman Road Residences	--	Grader, Chipper/grinder	85.0/88.9	90	40/20	79.4	No/No
Project Component 7 Cutoff Wall							
Clearing and Grubbing							
Frewert Road Residences	45.3	Grader, Chipper/grinder	85.0/88.9	50	40/20	84.5	No/Yes
Project Component 8a (now 9) Levee Raise & Cutoff Wall							
Clearing and Grubbing							
Lathrop Road Residences	59	Grader, Chipper/grinder	85.0/88.9	180	40/20	73.4	No/No
Inland Passage Way Residences	56.8	Grader, Chipper/grinder	85.0/88.9	170	40/20	73.9	No/No

Representative Receptor	Existing Daytime Noise Level (dBA L_{eq})	Loudest Two Noise Sources	Reference Noise Level (dBA)[a]	Distance to Nearest Receptor (feet)[b]	Acoustical Usage Factor (%)	Adjusted L_{eq} Level (dBA)[c]	Exceed 90 dBA FTA Daytime/80 dBA nighttime Criterion?
Project Component 8b Levee Raise & Floodwall							
Floodwall							
Back Bay Drive Residences	76	Impact type drop hammer, Generator	101/81	500	20/50	74.4	No/No
Project Component 8c Levee Raise & Floodwall							
Floodwall							
Mossdale Road Residences	76	Impact type drop hammer, Generator	101/81	945	20/50	68.8	No/No
Project Component 8d (Now 10) Levee Raise & Cutoff Wall							
Clearing and Grubbing							
Oakwood Lake Mobile Estates Residences	--	Grader, Chipper/grinder	85.0/88.9	700	40/20	61.6	No/No
Project Component 8e Levee Raise							
Clearing and Grubbing							
Oakwood Lake Mobile Estates Residences	--	Grader, Chipper/grinder	85.0/88.9	40	40/20	86.4	No/Yes
Project Component 11 Levee Raise							
Asphalt Pavement							
W Aplicella Ct Residences	60.7	Asphalt Paving Machine, Asphalt Pickup Machine	77.2/85.0	40	50/20	81.5	No/Yes
Project Component 12 Levee Raise & Seepage Berm							
Clearing and Grubbing							
Residence across San Joaquin River	--	Grader, Chipper/grinder	85.0/88.9	230	40/20	71.2	No/No
Project Component 15 New Levee & Seepage Berm							
Asphalt Pavement							
Airport Way Residence	70.3	Asphalt Paving Machine, Asphalt Pickup Machine	77.2/85.0	200	50/20	67.5	No/No

NOTES: dBA = A-weighted decibels; L_{eq} = equivalent sound level; NA = not applicable

a. The instantaneous maximum noise level (L_{max}) at 50 feet.
b. Distance between the approximate location of equipment and the property line of the sensitive receptor.
c. The L_{eq} level is adjusted for distance and percentage of usage.

SOURCE: FHWA 2006; data compiled by Environmental Science Associates 2025.

Construction Traffic

Construction activities would also introduce additional vehicle traffic on local roadways such as on-road vehicle trips of haul trucks for delivering construction material, and construction worker commute trips to and from the proposed project area that could increase localized increase at receptors along access routes. The predicted truck trips are estimated to range from 85 truck trips per day for project component 11 to as many as 294 daily truck trips for project component 15a in the City of Manteca.[1]

Using project component 15a as a worst-case scenario, the 294 truck trips would be distributed over the allowed 13-hour work window which would result in approximately 23 truck trips per hour which is equivalent to a truck pass-by event every 2 to 3 minutes. Most of the area roadways serve a limited volume of traffic; therefore, the modeled noise levels are assumed to represent substantial increases compared to existing traffic noise levels. Not only would truck trips associated with project component 15 result in substantially more vehicle trips along the haul routes near residences and along public roadways with residences, but the vehicles would be predominantly haul trucks, which generate considerably more noise than passenger vehicles. The contribution to hourly average noise from 23 hourly truck trips could vary from 59 dBA at 25 miles per hour to 63 dBA at 55 miles per hour at a distance of 50 feet from the roadway center.

Noise generated along public roadways are outside the jurisdiction of local noise ordinances. Consequently, increases in traffic noise are generally considered relative to Caltrans' definition of perceptible increases in noise levels of 3 dBA in areas already impacted by noise (an exterior noise level exceeding 60 dBA). Because the modeled noise levels are assumed to represent substantial increases compared to existing traffic noise levels, construction-related haul truck noise would be a significant impact.

Operations and Maintenance

Regular O&M activities would consist of inspections, weed abatement, removal of encroachments and high-hazard vegetation to ensure levee integrity, replacement and re-working of displaced or launched revetment following large flood events, and adequate levee access along the levee toe road. O&M inspections would consist of a patrol vehicle traveling along the levee and small machinery for weed abatement such as mowers and weed whackers/trimmers. These activities would only be required on an intermittent basis and would result in a minor increase in motor vehicle trips. As a practical matter, these vehicle trips would not result in increased roadside noise levels. Generally, roadway traffic volumes must double to result in a significant (3 dBA) increase in roadside noise levels, which would not occur from occasional O&M activities. Therefore, this operational impact would be less than significant.

Impact Summary

As discussed above, construction of the flood risk reduction components would not generate a substantial temporary or permanent increase in ambient noise levels in the vicinity of the proposed project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies during most construction and O&M activities. However, should construction within San Joaquin County or the City of Lathrop occur during nighttime hours, noise levels would be substantially greater than ambient noise levels. Further, increased roadway noise from construction truck and vehicle trips would be substantially greater than ambient noise levels. Therefore, this impact would be **significant**.

[1] Daily construction trips were assumed for the purpose of estimating construction emissions, as described in subsection 3.4.4, *Impacts and Mitigation Measures*, under the topic 'Method of Analysis' and as detailed in Appendix B to this Draft EIR.

Restoration Sites 13, 14, and 16

Construction

Construction Equipment

Construction activities associated with ecosystem restoration at Sites 13, 14, and 16 would clearing and grading performed using large construction equipment that could include scrapers, bulldozers, excavators, bobcats, loaders, rubber track carriers, and dump trucks. The two loudest pieces of equipment assumed to be used simultaneously are a grader and chipper/grinder.

Table 3.14-8 presents the estimates of noise levels associated with these activities at nearest residential sensitive receptors. Construction noise levels were estimated based on the equipment list included in Table 2-8 in Chapter 2, *Project Description*. These predicted noise levels are worst-case estimates assuming construction equipment to be operating at the point of the ecosystem restoration sites closest to sensitive receptors; construction noise would vary based on where on the ecosystem restoration sites the equipment is operating.

As noted in Chapter 2, *Project Description*, subsection 2.5.4, construction activities associated with ecosystem restoration at Sites 13, 1,4 and 16 hours would occur any day between 7:00 a.m. and 8:00 p.m. in the City of Manteca and would comply with the City of Manteca's noise standards and restrictions. As indicated in Table 3.14-8, the construction noise levels would be below the daytime construction noise impact criteria of 90 dBA.

Because construction would occur during the exempted construction workdays and hours in the City of Manteca, and resultant noise levels at the closest receptors would be below the 90 dBA daytime criterion established by FTA, the impact of the effects of daytime construction activities associated with ecosystem restoration at Sites 13, 14, and 16 would be less than significant.

Construction Traffic

Construction activities associated with the ecosystem restoration sites would generate worker and truck trips associated with hauling cleared vegetation, excavation materials and import of construction materials. Truck trips would be minimized by reusing cut material on-site, where feasible; however, for sites where it is not feasible to balance cut and fill or where excess cut material may be beneficially reused off-site, excess fill would be transported using haul trucks with end-dump trailers or similar equipment. Approximately 77,500 cubic yards of cleared vegetation is anticipated to be hauled to the refuse facility while approximately 509,600 cubic yards of excavation material is anticipated to be hauled to the dryland levee. Approximately 8,900 cubic yards of aggregate base would be imported.

Hauling activities associated with ecosystem restoration at Sites 13, 14, and 16 would result in approximately 379 truck trips per day over the one-year construction period. These truck trips would be distributed over the allowed 13-hour work window which would result in approximately 29 truck trips per hour, which is equivalent to a truck pass-by event every 2 minutes. As most of the area roadways are rural and serve a limited volume of traffic, the noise introduced by construction traffic would represent substantial increases compared to existing traffic noise levels along the haul routes near residences and along public roadways with residences.

Because noise levels are assumed to represent substantial increases compared to existing traffic noise levels, construction-related haul truck noise is considered a significant impact.

TABLE 3.14-8
ESTIMATED CONSTRUCTION NOISE LEVELS – RESTORATION SITES 13, 14, AND 16

Representative Receptor	Existing Daytime Noise Level (dBA L_{eq})	Loudest Two Noise Sources	Reference Noise Level (dBA)[a]	Distance to Nearest Receptor (feet)[b]	Acoustical Usage Factor (%)	Adjusted L_{eq} Level (dBA)[c]	Exceed 90 dBA FTA Daytime/80 dBA nighttime Criterion?
Site 13							
Clearing, Grubbing and Grading							
Islander Mobile Home Park, Manteca	60.7	Grader, Chipper/grinder	85/88.9	160	40/20	74.4	No/No
Sites 14 and 16							
Clearing, Grubbing and Grading							
Aplicella Court Residences, Manteca	--	Grader, Chipper/grinder	85/88.9	610	40/20	62.8	No/No

NOTES: dBA = A-weighted decibels; L_{eq} = equivalent sound level; NA = not applicable

a. The instantaneous maximum noise level (L_{max}) at 50 feet.
b. Distance between the approximate location of equipment and the property line of the sensitive receptor.
c. The L_{eq} level is adjusted for distance and percentage of usage.

SOURCE: FHWA 2006; data compiled by Environmental Science Associates in 2025.

Operations and Maintenance

Once construction is complete, O&M activities associated with the ecosystem restoration sites would include smaller equipment used for planting, irrigation, weed control and other maintenance activities such as mowers and weed whackers/trimmers which would generate minimal noise. The number of operational vehicle trips generated, and the associated noise levels would also be minimal. Therefore, the operational impact of ecosystem restoration at Sites 13, 14, and 16 would be less than significant.

Impact Summary

As discussed above, construction of ecosystem restoration at Sites 13, 14, and 16 would not generate a substantial temporary or permanent increase in ambient noise levels in the vicinity of the proposed project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies during construction and O&M activities. However, increased roadway noise from construction trucks and vehicle trips would substantially increase ambient noise levels at receptors along truck routes. Therefore, this impact would be **significant**.

Other Multi-benefit Components

Construction

Construction Equipment

Construction of additional ecosystem restoration and recreational features along the levee system would have limited potential to result in construction noise. Mass grading in vegetated areas would be performed using large construction equipment that could include scrapers, bulldozers, excavators, loaders, rubber track carriers, and dump trucks and could potentially involve pile driving for coffer dams or embankment support. Construction hours would comply with the noise ordinances of the cities of Stockton, Lathrop, and Manteca and San Joaquin County. However, as discussed for flood risk reduction components, even with noise ordinance exemptions some activities could occur during periods commonly considered to be nighttime hours (before 7:00 a.m. or after 10:00 p.m.). Because the locations of additional ecosystem restoration and recreational features are unknown as are the proximity of noise-sensitive receptors, the potential exists for the impact with respect to noise generation from temporary construction activities to be a significant impact.

Construction Traffic

While there would be some degree of additional truck trips generated by construction activities for development of the other multi-benefit project components, where feasible, cut material would be reused on-site to create higher elevation upland areas and wildlife habitat. For sites where it is not feasible to balance cut and fill or where excess cut material may be beneficially reused off-site, excess fill would be removed using haul trucks with end-dump trailers or similar equipment and would be minimal compared to flood risk reduction components. Therefore, the construction-related noise impacts associated with ecosystem restoration and recreational features would be less than significant.

Operations and Maintenance

While conservation management actions could require O&M activities to inspect project features and/or evaluate program effectiveness, these activities would only be required on an intermittent basis and would result in a minor increase in motor vehicle trips. Additionally, some of these O&M activities could be considered agricultural activities and would therefore be exempt from operational noise restrictions of the

San Joaquin County Municipal Code. Therefore, O&M vehicle trips would not result in a noticeable increase in roadside noise levels and would have a less-than-significant noise impact.

Impact Summary

As discussed above, construction of the other multi-benefit components would not generate a substantial temporary or permanent increase in ambient noise levels in the vicinity of the proposed project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies during most construction and O&M activities. However, should construction within the county or City of Lathrop occur during nighttime hours, noise levels could be substantially greater than ambient noise levels, depending on proximity of sensitive receptors. Therefore, this impact would be **significant**.

Mitigation Measures

Mitigation Measure 3.14-1 (FRR/RS/MB): SJAFCA shall require its contractors to implement the measures below, as a condition of contract, to avoid and minimize temporary and short-term construction noise effects on sensitive receptors. These measures shall be implemented during construction, particularly when construction occurs during the nighttime (10:00 p.m. to 7:00 a.m.) and is within 90 feet of a sensitive receptor in unincorporated San Joaquin County or City of Lathrop, to avoid and minimize temporary and short-term construction noise effects on sensitive receptors:

a. All construction equipment shall be equipped with noise-reduction devices, such as mufflers, to minimize construction noise, and all internal combustion engines shall be equipped with exhaust and intake silencers, in accordance with manufacturers' specifications.

c. The use of bells, whistles, alarms, and horns shall be restricted to safety warning purposes only.

d. Noise-reducing enclosures shall be used around stationary noise-generating equipment (e.g., compressors and generators at slurry pond locations).

e. Mobile and fixed construction equipment (e.g., compressors and generators), construction staging and stockpiling areas, and construction vehicle routes will be located at the most distant point feasible from noise-sensitive receptors.

f. When noise-sensitive uses are located within 450 feet of and subject to prolonged construction noise, noise attenuating buffers, such as structures, truck trailers, or soil piles, shall be located between noise generation sources and sensitive receptors.

g. Contractors shall properly maintain all heavy trucks and will equip them with noise-control devices (e.g., mufflers), in accordance with manufacturers' specifications, at each work site during project construction to minimize construction traffic noise effects on sensitive receptors.

h. Before haul truck trips are initiated during a construction season on roads within 500 feet of residences located along haul routes, written notification will be provided to the potentially affected residents identifying the hours and frequency of haul truck trips. Notification materials will include contact information for a designated noise disturbance coordinator and also will identify a mechanism for residents to register complaints with the appropriate jurisdiction if haul truck noise levels are overly intrusive or occur outside the exempt daytime hours for the applicable jurisdiction.

i. Queuing locations for haul trucks shall be designated at locations at least 500 feet from noise-sensitive receptors.

Significance After Mitigation: Implementing Mitigation Measure 3.14-1 would reduce the impacts of construction noise generated from construction equipment and hauling but may not reduce noise levels at all times and locations to a less-than-significant level because of the close proximity of noise-sensitive receptors to construction activities along all elements of the proposed project, and the limited feasibility of mitigating construction noise and haul truck noise to acceptable levels. No additional feasible mitigation measures are available to reduce this impact. Therefore, these temporary and short-term impacts would remain **significant and unavoidable**.

Impact 3.14-2: Construction of the proposed project could generate excessive groundborne vibration or groundborne noise levels.

Flood Risk Reduction Components

Construction

Construction activities associated with the proposed flood risk reduction components could include off-road equipment known to generate vibration. Specifically, operation of pile drivers, compactors, and bulldozers are associated with groundborne vibration. Activities that would potentially generate excessive vibration, such as vibratory or impact pile driving would be expected to occur from floodwall elements of the flood risk reduction components. Specifically, there are two locations within the proposed project where sheet pile installation is proposed. One location is at the Mossdale Crossing County Park, and the other location is at I-5. Compaction would be required for cutoff walls, levee raises, and levee extensions.

Receptors sensitive to vibration include structures (especially older masonry structures), people (especially residents), and equipment (e.g., magnetic resonance imaging equipment, high resolution lithographic, optical and electron microscopes). Regarding the potential effects of groundborne vibration to people, except for long-term occupational exposure, vibration levels rarely affect human health.

An analysis was conducted using a matrix of vibration from construction activities with distances to receptors. This matrix presented in **Table 3.14-9** uses dark-shaded areas to indicate the distances at which vibration levels would exceed the criterion for damage to conventional structures. The lighter shaded areas indicate the distances at which the criterion for historic structures or buildings that are documented to be structurally weakened would be exceeded.

The highest vibration levels would be generated by pile driving activities at Mossdale Crossing County Park and at I-5. Both locations would be approximately 500 feet from residences across the San Joaquin River. At this distance vibration from pile driving would be reduced to approximately 0.007 inches/second PPV, which is equivalent to approximately 65 VdB. This level of vibration would be less than FTA's 80 VdB criterion for infrequent (construction-related) events at residential receptors. The nearest structure to either location would be ancillary building of the Mossdale Crossing County Park approximately 150 feet from pile locations. At this distance vibration from pile driving would be reduced to approximately 0.044 inches/second PPV, which is below FTA's 0.5 inches/second PPV criterion for building damage to modern construction. Therefore, pile driving associated with flood walls would have a less-than-significant impact with respect to vibration.

TABLE 3.14-9
VIBRATION LEVELS FOR CONSTRUCTION ACTIVITY

Equipment	Estimated Peak Particle Velocity (inches per second)					
	At 25 Feet (reference)	At 40 Feet	At 75 Feet	At 100 Feet	At 420 Feet	At 700 Feet
Loaded Trucks	0.076	0.038	0.023	0.017	0.001	0.001
Large Bulldozer	0.089	0.044	0.027	0.019	0.001	0.001
Vibratory Roller	0.20	0.103	0.063	0.046	0.003	0.001
Impact Pile Driver	0.65	0.321	0.194	0.141	0.009	0.004
Vibratory Pile Driver	0.65	0.321	0.194	0.141	0.009	0.004

NOTES:
Dark-shaded areas indicate distances where vibration levels would exceed the damage criterion for conventional structures.
Lighter shaded areas indicate the distances at which the criterion for historic structure or buildings that are documented to be structurally weakened would be exceeded.
SOURCES: Caltrans, 2020; FTA, 2018

The nearest residential building to all other non-pile driving work activity (Oakwood Lake Mobile Estates) is located approximately 40 feet of the proposed project work areas. The highest vibration levels would be generated by vibratory compaction equipment. At a distance of 40 feet, vibration from operation of vibratory compaction equipment would be reduced to approximately 0.010 inches/second PPV, which is equivalent to approximately 88 VdB. This level of vibration would be below FTA's 0.5 inches/second PPV criterion for building damage to modern construction. A vibration level of 88 VdB would exceed FTA's 80 VdB criterion for infrequent (construction-related) events at residential receptors which would occur at receptors located within 75 feet of compaction activity. Receptors within this proximity are located in the cities of Stockton and Manteca and in unincorporated San Joaquin County.

As discussed above, while all of these jurisdictions limit construction to specific hours per local noise ordinance, which would generally avoid the nighttime hours when most people sleep which is the basis for FTA's criterion with respect to residential land uses and human annoyance from vibration some of these jurisdictions allow construction work to be conducted before 7:00 a.m. and after 10:00 p.m. during which a resident may reasonably be expected to sleep. Therefore, the proposed project's impact with respect to generation of excessive groundborne vibration from construction activities associated with the flood risk reduction components would be significant.

Operations and Maintenance

Once construction is complete, O&M inspections would consist of a patrol vehicle traveling along the levees and small machinery for weed abatement such as mowers and weed whackers/trimmers. These activities would only be required on an intermittent basis and would result in a minor increase in motor vehicle trips and would not involve vibration-generating activities. Therefore, this operational impact with respect to vibration would be less than significant.

Impact Summary

As discussed above, construction of the flood risk reduction would not generate a substantial temporary or permanent vibration effect. However, should construction within the county or City of Lathrop occur during nighttime hours, vibration levels could result in an adverse community response based on the

criteria established by FTA, depending on proximity of sensitive receptors. Therefore, this impact would be **significant**.

Restoration Sites 13, 14, and 16

Construction

Activities that would potentially generate excessive vibration, such as vibratory or impact pile driving would not be used for construction of ecosystem restoration sites. However, construction activities would involve the use of bulldozers, rollers, and trucks to transport materials. As shown in Table 3.14-9, rollers would exceed FTA thresholds resulting in significant vibration within 25 feet of construction activities, while vibration generated by bulldozers and loaded trucks would not be significant even at the reference distance of 25 feet. Structures and sensitive receptors are located approximately 610 feet from Sites 14 and 16, and approximately 160 feet from Site 13. As these distances, vibration from construction activities associated with ecosystem restoration at Sites 13, 14, and 16 would result in vibration levels that would not be considered significant for both structural damage and human annoyance. Therefore, the proposed project's impact with respect to generation of excessive groundborne vibration from construction activities associated with ecosystem restoration at Sites 13, 14, and 16 would be less than significant.

Operations and Maintenance

Once construction is complete, O&M activities associated with the ecosystem restoration sites would not include use of any vibration-generating equipment. Planting, irrigation, weed control and other maintenance activities would use small machinery such as mowers and weed whackers/trimmers. These activities would not generate significant vibration. Therefore, the operational impact of ecosystem restoration at Sites 13, 14, and 16 with respect to vibration would be less than significant.

Impact Summary

As discussed above, due to the distance separating construction activities associated with ecosystem restoration at Sites 13, 14, and 16 and the nearest sensitive receptors, construction activities would not generate a substantial temporary or permanent vibration effect. Therefore, this impact would be **less than significant**.

Other Multi-benefit Components

Construction

Additional ecosystem restoration and recreational features along the levee system would have limited potential to generate construction vibration. Mass grading in unvegetated areas would be performed using large construction equipment that could include scrapers, bulldozers, excavators, loaders, rubber track carriers, and dump trucks and could potentially involve pile driving for coffer dams or embankment support. Construction hours would comply with the noise ordinances of the cities of Stockton, Lathrop, and Manteca and San Joaquin County. However, as discussed for flood risk reduction components, even with noise ordinance exemptions some activities could occur during periods commonly considered to be nighttime hours (before 7:00 a.m. or after 10:00 p.m.). Because the locations of additional ecosystem restoration and recreational features are unknown as are the proximity of noise-sensitive receptors, the potential exists for the impact with respect to vibration generation from temporary construction activities to result in a significant impact.

Operations and Maintenance

While operations of additional ecosystem restoration and recreational features could require O&M activities to inspect proposed project features and/or evaluate program effectiveness, these activities would only be required on an intermittent basis and would result in a minor increase in motor vehicle trips. Therefore, O&M vehicle trips would not result in a new source of vibration and would have a less-than-significant impact.

Impact Summary

As discussed above, construction of the other multi-benefit components would not generate a substantial temporary or permanent vibration effect. However, should construction within the county or City of Lathrop occur during nighttime hours, vibration levels could result in an adverse community response based on the criteria established by FTA, depending on proximity of sensitive receptors. Therefore, the impact would be **significant**.

Mitigation Measures

Mitigation Measure 3.14-2 (FRR/MB): Contractors shall implement the following measures at work sites within 90 feet of sensitive receptors during project construction to avoid and minimize the effects of temporary and short-term construction-related groundborne vibration on sensitive receptors.

- Equipment shall be operated as far away as practical from vibration-sensitive receptors.
- Contractors, as a condition of contract, shall limit compaction activities to the hours of 8:00 a.m. to 6:00 p.m. when work is within 90 feet of a sensitive land use.
- Where practicable, contractors shall use smaller vibratory rollers to minimize vibration levels during compaction activities where needed to meet vibration standards.

Significance After Mitigation: Implementing this mitigation measure would reduce the impacts of construction noise generated from construction equipment and ensure that the most substantial vibration-generating activities would avoid hours when nearby residents would reasonably be expected to sleep which is the basis for the FTA's vibration criterion for human annoyance. In addition, vibration levels would be reduced by using alternative equipment. Therefore, after implementation of mitigation, the residual impact would be **less than significant**.

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3.15 Public Services

3.15.1 Introduction

This section describes the existing public services in the proposed project area and evaluates the physical environmental impacts that could result in order to maintain provision of adequate public services with implementation of the proposed project. The services evaluated in this section include police protection, fire protection, public schools, and parks. Additional discussion of impacts to parks and other recreational uses is included in Section 3.16, *Recreation*.

The analysis included in this section was developed based on review of information provided in the San Joaquin County General Plan, the Envision Stockton 2040 General Plan, the City of Lathrop General Plan, the City of Manteca General Plan, as well as other project materials and relevant websites.

No comments specifically addressing public services were received in response to the NOP. See Appendix A to this Draft EIR for NOP comment letters.

3.15.2 Environmental Setting

Fire Protection

The proposed project area is served by the City of Stockton Fire Department, Lathrop-Manteca Fire District, the French Camp McKinley Fire Protection District, and the City of Manteca Fire Department. The City of Stockton Fire Department has one fire station located within close proximity to the northern portion of proposed project components: Station 2 is located at 110 W. Sonora Street, Stockton, approximately 2.4 miles north of the proposed project area (City of Stockton 2025a). The Lathrop-Manteca Fire District has several fire stations located close to the southwestern portion of the proposed project components. The closest is Fire Station 34, which is approximately 0.7 miles east of the proposed project area, is located at 460 River Islands Parkway in Lathrop (Lathrop-Manteca Fire District 2025). In 2023, the Lathrop-Manteca Fire District had 76 total authorized positions, including career and reserve firefighters, and processed 68.9 percent of all calls in under one minute and 60 seconds, the National Fire Protection Association standard for call processing is 90 percent handled within 60 seconds of calling (Lathrop-Manteca Fire District 2023). The French Camp McKinley Fire Protection District has one fire station located close to the central portion of proposed project components: Station 11-1 is located at 310 French Camp Road in French Camp, approximately 3.4 miles east of the proposed project area (French Camp McKinley Fire Protection District 2025). Furthermore, the southern portion of the proposed project area is served by Fire Station 242 as part of the City of Manteca Fire Department. Station 2 is located at 1154 South Union Road in Manteca, approximately 2.5 miles north of the proposed project area (City of Manteca 2025a).

Police Protection

San Joaquin County Sheriff's Department provides law enforcement services for the unincorporated areas of the county. This police department has 138 patrol deputies deployed onto 10 patrol teams on two days off sequences (five teams on duty each day). The county is divided into eight geographical areas or beats which are staffed around the clock, providing emergency and non-emergency responses to calls for service within the unincorporated areas. The San Joaquin Sheriff's Office is located at 7000 Michael

Canlis Boulevard, French Camp California and is approximately 1.9 miles east of the proposed project area (San Joaquin County Sheriff's Office 2025). The City of Stockton is served by the City of Stockton Police Department; the Department consists of the Records Section, Traffic Section, and the Neighborhood Services Section; the Stockton Police Department is located at 22 E Market Street, Stockton California and is located approximately 2.6 miles north of the proposed project area (City of Stockton 2025b). The City of Manteca is served by the City of Manteca Police Department. Law enforcement services are provided by the Operations Division; this is the larger of the city's two divisions, which also include the Services Division. The City of Manteca Police Department is located at 1001 W. Center Street, Manteca California and is located approximately 2.6 miles northeast of the proposed project area (City of Manteca 2025b). The City of Lathrop is served by the City of Lathrop Police Department. Law enforcement services are provided by the Operations Division; this is the larger of the city's two divisions, which also include the Support Division. The Lathrop Police Department is located at 940 River Islands Parkway, Lathrop California and is located approximately 0.12 miles west of the proposed project area (City of Lathrop 2025a).

Schools

Manteca Unified School District provides educational services to most of the proposed project area. The Banta Unified School District provides services along the western edge of the proposed project area (San Joaquin County 2025).

Parks

Several parks districts oversee recreational facilities in the proposed project area; these include San Joaquin County Parks, the City of Manteca Department of Recreation and Community Services, the City of Stockton Community Services Department, as well as the City of Lathrop Parks and Recreation Department (San Joaquin County Parks 2025; City of Manteca 2025c; City of Stockton 2025c; City of Lathrop 2025b). For a complete list of parks and recreational opportunities within the vicinity of the proposed project, see Section 3.16, *Recreation*.

Libraries

The proposed project area is served by the Stockton-San Joaquin County Public Library. There are 16 libraries located within the city of Stockton and throughout the unincorporated areas of San Joaquin County (City of Stockton 2025c).

3.15.3 Regulatory Setting

Federal

No federal laws or regulations related to public services apply to the proposed project.

State

No state laws or regulations related to public services apply to the proposed project.

Local

The proposed project area includes lands in San Joaquin County and the cities of Stockton, Lathrop, and Manteca. Each of these jurisdictions have general plans with goals and policies that address public services (see **Table 3.15-1**). Applicable general plan goals and policies are summarized below along with relevant local regulations.

TABLE 3.15-1
APPLICABLE GENERAL PLAN GOALS AND POLICIES – PUBLIC SERVICES

General Plan	Goals and Policies
San Joaquin County	Public Facilities and Services Element, Goal IS-1, Policies IS-1.1, IS-1.2, IS-1.4, IS-1.5, IS-1.9, IS-1.12, and IS-1.13
City of Stockton	Land Use Element, Goal LU-6, Policies LU-6.1 and LU-6.3; Safety Element, Goal SAF-2, Policies SAF-2.1, SAF-2.2, and SAF-2.5
City of Lathrop	Public Facilities and Services Element, Goal PFS-1, Policy PFS-1.13 and Goal PFS-7, Policy PFS-7.1 and Public Safety Element, Goal PS-2, Policy PS-2.2
City of Manteca	Land Use Element, Goal LU-7, Policy LU-7.4; Growth Management Element, Goal GM-1, Policy GM-1.1; and Community Facilities and Services Element, Goal CF-1, Policy CF-1.5, Goal CF-2, Policy CF-2.2, Goal CF-3, Policy CF3.1, and Goal CF-4, Policy CF-4.1

SOURCES: City of Lathrop 2022; City of Manteca 2024; City of Stockton 2018; San Joaquin County 2016

San Joaquin County

San Joaquin County General Plan

The San Joaquin County General Plan includes goals and policies that address the provision of quality, cost-effective, and sustainable public facilities and services through the maintenance of facilities and acceptable service levels, adherence to county requirements and standards, and the assessment of current needs.

City of Stockton

Envision Stockton 2040 General Plan

The City of Stockton General Plan includes goals and policies that address the need for infrastructure to support new development, the maintenance of adequate police and fire staffing levels, and the need for all neighborhoods to have access to well-maintained public facilities. The General Plan also addresses the need for new development to provide adequate access for emergency vehicles and evacuation routes.

City of Lathrop

City of Lathrop General Plan

The City of Lathrop General Plan includes goals and policies that address the need for equality of opportunity in the provision and availability of public services and facilities, the provision of adequate public safety including medical and emergency services, and the maintenance of fire and police service standards.

City of Manteca

City of Manteca General Plan

The City of Manteca General Plan includes goals and policies that address the management of new development to ensure that adequate public facilities and services are provided, the utilization of innovative technologies to provide the best available level of public services in a cost-effective manner, and the need to provide affordable public services and infrastructure to existing city residents. Additionally, the General Plan addresses the City of Manteca's requirements to assess the need and provide for adequate police and fire protection services.

3.15.4 Impacts and Mitigation Measures

Methods of Analysis

The analysis considered whether the proposed project would increase the demand for police or fire protection or increase demand on public facilities, such as schools and parks. The analysis considers how construction (short-term, temporary), and O&M (long-term, permanent) activities would result in changes to existing conditions.

Thresholds of Significance

In accordance with Appendix G of the CEQA Guidelines, an impact is considered significant if the proposed project would:

- Result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times, or other performance objectives for any of the public services:
  - Fire protection
  - Police protection
  - Schools
  - Parks
  - Other public facilities

Impacts and Mitigation Measures

Table 3.15-2 summarizes the impact conclusions presented in this section.

TABLE 3.15-2
SUMMARY OF IMPACT CONCLUSIONS – PUBLIC SERVICES

Impact Statement	Flood Risk Reduction Components	Restoration Sites 13, 14, and 16	Other Multi-Benefit Components
3.15-1: Implementation of the proposed project could result in substantial unplanned adverse physical impacts associated with the provision of new or physically altered governmental facilities, or the need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times, or other performance objectives for any of the public services.	NI	NI	NI
NOTE: NI = No Impact			

Impact 3.15-1: Implementation of the proposed project could result in substantial unplanned adverse physical impacts associated with the provision of new or physically altered governmental facilities, or the need for new or physically altered governmental facilities, the construction of which would cause significant environmental impacts, in order to maintain acceptable service ratios, response times, or other performance objectives for any of the public services.

All Project Components

The construction and operation of the proposed project would not result in an increase in demand for fire protection, police protection, schools, parks, or libraries to an extent that would result in substantial adverse physical impacts associated with the construction or alteration of governmental facilities. Specifically, the proposed flood risk reduction components included as part of the proposed project would consist of fix-in-place levee improvements as well as a dryland levee extension, which would not involve any residential, commercial, or other uses which would increase use of the area. Therefore, there would not be an increase in need for additional fire protection services, police protection services, schools, parks, or library facilities resulting from the flood risk reduction components. The proposed ecosystem restoration and recreation features would also not involve any residential or commercial uses which would represent a long-term population increase in the area. While it is possible that some construction workers might temporarily relocate from other areas, the proposed project is not expected to result in a substantial unplanned increase in the local population (as described in Chapter 5, *Other CEQA Considerations*, Growth Inducement) and thus would not result in increased response times or decreased facility capacity such that new or physically altered facilities would be required to maintain service. Therefore, there would be no resulting increase in need for additional schools, police protection facilities, or fire protection facilities due to implementation of the ecosystem restoration and recreation features of the proposed project.

Implementation of ecosystem restoration at Sites 13, 14, and 16, and other multi-benefit components including additional ecosystem restoration sites, and recreation features along the levee system could result in an increase in public visitation in the proposed project area. Specifically, the proposed recreational features would allow more people to access Dos Reis and Mossdale Crossing Regional Parks as well as other areas throughout the levee. However, the recreational features would not add residents to the proposed project area and would therefore not add to the demand for services. Proposed recreation features would be expected to primarily be used by residents who are already accounted for in the local land use plans General and for the area, which guide development within the sphere of influence of San Joaquin County and cities within and thus the proposed project area.

Fire protection services in a given area are based on the number of residents in that area, and the local land use plans determine the future need for fire protection services that would result from its proposed increase in residents. Therefore, residents that are most likely to use the proposed project recreation features are accounted for in fire protection services for the area. Similarly, because the required amount of police protection services in a given area is based on the number of residents in that area, the buildout of local land use plans determines the future need for police protection services in the proposed project area. Therefore, residents that are most likely to use the proposed project recreation features are accounted for in police protection services for the area.

The proposed project would not result in an increase in population to the project area and would therefore not result in the need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times, or other performance objectives. Therefore, **no impact** would occur.

Mitigation Measures

Mitigation Measures (FRR/RS/MB): None required.

3.16 Recreation

3.16.1 Introduction

This section describes existing recreational uses in the vicinity of the proposed project area and evaluates potential recreational impacts associated with construction and operation of the proposed project.

The analysis included in this section was developed based on review of information provided in the San Joaquin County General Plan, the Envision Stockton 2040 General Plan, the City of Lathrop General Plan, the City of Manteca General Plan, as well as other project materials and relevant websites.

Comments addressing recreation were received in response to the NOP. Comments requested that the EIR include an analysis of effects on existing recreation users. See Appendix A to this Draft EIR for NOP comment letters.

3.16.2 Environmental Setting

Nearby Parks and Recreational Opportunities

Several parks are located within and in the vicinity of the proposed project area. The following parks are located within 0.5 mile of one or more proposed project component:

- Arbor Bend Park, 2130 Basin Ln
- Crescent Park, 15980 Crescent Park Cir
- Dos Reis Park, 890 Dos Reis Rd
- Green Belt Park, the City of Stockton
- Honorable Sandra B. Smith Park, 2606 William Moss Blvd
- Latitude Park, 1874 Garden Farms Ave
- Lathrop Dog Park, 17801 Inland Passage Way
- Michael Vega Park, 980 Lakeside Dr
- Mossdale Crossing Regional Park, 19091 S Manthey Rd
- Mossdale Landing Community Park, 700 Towne Centre Dr
- Park West, 16130 Sheltered Cove E
- Reflections Park, 1640 Mulholland Dr
- River Park North, 16001 South, Lathrop Rd
- River Park South, 758 Honey Comb Ln
- William S. Moss Park, 593 Inland Passage Way

In addition to the more formal recreational facilities in the proposed project area, the San Joaquin River provides a variety of recreational opportunities, including water-related and land-based recreational

activities. Recreational boating is one of the primary uses of the San Joaquin River. Boat ramps are located in some nearby parks, such as Mossdale Crossing Regional Park and Dos Reis Park.

3.16.3 Regulatory Setting

The following regulations are applicable to the proposed project as they relate to recreational facilities.

Federal

No federal regulations related to recreation apply to the proposed project.

State

Quimby Act

California Government Code Section 66477, referred to as the Quimby Act, permits local jurisdictions to require the dedication of land and/or payment of in-lieu fees solely for park and recreation purposes. The required dedication and/or fee are based upon the residential density and housing type, land cost, and other factors. Land dedicated and fees collected pursuant to the Quimby Act may be used for developing new, or rehabilitating existing, park or recreational facilities.

Local

The proposed project area includes lands in San Joaquin County and the cities of Stockton, Lathrop, and Manteca. Each of these jurisdictions have general plans with goals and policies that address recreation (see **Table 3.16-1**). Applicable general plan goals and policies are summarized below along with relevant local regulations.

TABLE 3.16-1
APPLICABLE GENERAL PLAN GOALS AND POLICIES – RECREATION

General Plan	Goals and Policies
San Joaquin County	Community Development Element, Goal LU-8, Policies LU-8.3 and LU-8.4, Goal ED-5, Policy ED-5.4; Public Facilities and Services Element, Goal TM-4, Policies TM-4.1 and TM-4.7; Public Health and Safety Element, Goal PHS-2, Policy PHS-2.13; Resources Element, Goal NCR-8, Policies NCR-8.1, NCR-8.11, NCR-8.12, NCR-8.16, and NCR-8.24
City of Stockton	Land Use Element, Goal LU-3, Policy LU-3.3; Transportation Element, Goal TR-2, Policies TR-2.1 and TR-2.3; Community Health Element, Goal CH-1, Policy CH-1.1; Safety Element, Goal SAF-2, Policies SAF-2.3 and SAF-2.4
City of Lathrop	Land Use Element, Goal LU-1, Policy LU-1.9; Circulation Element, Goal CIR-2, Policy CIR-2.1; Economic Development Element, Goal ED-4, Policy ED-4.3; Recreational Resources Element, Goal RR-1, Policies RR-1.1 and RR-1.2; Environmental Justice Element, Goal EJ-3, Policy EJ-3.2, Goal EJ-6, Policies EJ-6.3 and EJ-6.4
City of Manteca	Land Use Element, Goal LU-7, Policy LU-7.6, Goal LU-9, Policy LU-9.3, Goal LU-10, Policies LU-10.4, LU-10.5, and LU-10.6; Circulation Element, Goal C-4, Policy C-4.3; Community Facilities and Services Element, Goal CF-4. Policies CF-4.1, CF-4.2, and CF-4.4; and Resource Conservation Element, Goal RC-6, Policies RC-6.3 and RC-6.9

SOURCES: City of Lathrop 2022; City of Manteca 2024; City of Stockton 2018; San Joaquin County 2016

San Joaquin County

San Joaquin County General Plan

The San Joaquin County General Plan includes goals and policies that address the preservation of open space lands for recreational and hazard management uses, the sufficient provision of trails throughout San Joaquin County, the promotion of recreation-based tourism, the development of a bicycle system which connects people to recreational facilities, the encouragement of multi-purpose flood control project in the county, the development of a comprehensive park system which serves unincorporated communities at a sufficient ratio, is accessible by the target service population, and protects resources, and the inclusion of a Park and Recreation Master Plan as well as a study of the recreational potential of selected waterways.

City of Stockton

Envision Stockton 2040 General Plan

The City of Stockton General Plan includes goals and policies that address the maintenance and expansion of the currently available amount of public park and open space area in each neighborhood, the development of safe and interconnected bicycle and pedestrian facilities, including along "complete" streets that target multiple travel modes, the utilization of natural features and routes with lower traffic volumes and speeds to encourage residents to walk and wheel more frequently, and the development of bikeways on separate rights-of-way and the maintaining of walking and wheeling facilities and parks that are safe and accessible in all areas of Stockton.

City of Lathrop

City of Lathrop General Plan

The City of Lathrop General Plan includes goals and policies that address the need for a supply of developable lands sufficient to meet desired levels of housing, jobs, economic, educational, and recreational needs of the city over the planning horizon, the need for a network of identified bicycle and pedestrian routes connecting residential areas with schools, recreation, shopping, and employment areas within the city, the development of a high-quality parks and recreation system; the development of a public park and trail system that offers a diverse range of recreation types while maximizing resident access and ease of use.

City of Manteca

City of Manteca General Plan

The City of Manteca General Plan includes goals and policies that address the development of public and quasi-public uses, including parks, schools, and community facilities, to support existing and new development and the community's needs, the consideration of disadvantaged communities when planning for recreational facilities, the development of projects to provide adequate and appropriately located land, easements, or other accommodation for recreational uses while ensuring accessibility by the city's pedestrian and bicycle network, the development of a safe, secure, comfortable, and convenient pedestrian and bicycle system that connects riders of all ages and abilities to schools, including safe routes to schools, retail, employment centers, public facilities, and parks, and the development of a network of diverse, safe, and accessible open spaces.

3.16.4 Impacts and Mitigation Measures

Methods of Analysis

Impacts on recreation are evaluated based on temporary and permanent changes to those resources that would occur from implementation of the proposed project.

Thresholds of Significance

In accordance with Appendix G of the CEQA Guidelines, an impact is considered significant if the proposed project 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.
- Include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment.

Impacts Not Further Evaluated

Construction or expansion of recreational facilities resulting in adverse physical effects.

The proposed project would not involve residential or commercial uses that would require additional recreational facilities to be constructed or existing facilities to be expanded. The proposed project would involve the construction of a Class I shared-use path, levee-top trail access improvements, and other parking and path access improvements; therefore, the proposed project includes construction of recreational facilities, the construction of which could cause adverse physical effects on the environment. The impacts of construction of new recreation facilities, the construction disturbance and replacement of existing facilities, and operation of new recreation facilities, are evaluated in the appropriate sections of this Draft EIR including Sections 3.4, 3.10, 3.14, and 3.17. There are no impacts beyond those discussed in relevant sections of this EIR. Therefore, the impact to the potential construction or expansion of recreational facilities resulting from the proposed project is not further evaluated.

Impacts and Mitigation Measures

Table 3.16-2 summarizes the impact conclusions presented in this section.

TABLE 3.16-2
SUMMARY OF IMPACT CONCLUSIONS – RECREATION

Impact Statement	Flood Risk Reduction Components	Restoration Sites 13, 14, and 16	Other Multi-Benefit Components
3.16-1: Construction, operation, and maintenance of the proposed project could cause existing parks to physically deteriorate	LS	LS	LS

NOTE: LS = Less than Significant

Impact 3.16-1: Construction, operation, and maintenance of the proposed project could cause existing parks to physically deteriorate.

Flood Risk Reduction Components

The flood risk reduction components involve various fix-in-place levee improvements as well as a dryland levee extension which would extend east towards Tinnin Road. Construction of these components, particularly the removal of high-hazard encroachments, would involve extensive demolition at Mossdale Crossing Regional Park. The required demolition, which would include existing asphalt pavement, would result in the physical impact on existing Mossdale Crossing Regional Park facilities. However, all construction work would be conducted according to site-specific construction plans that would identify areas for clearing, grading, and revegetation so that ground disturbance would be minimized. Any roads or other access areas damaged by construction would be repaired and restored to pre-construction conditions. The recreational function of the park itself would not be removed by construction demolition. The short time closure of recreation facilities, or noise and disturbance from construction, could result in individuals who typically use Mossdale Crossing Regional Park to instead visit other nearby parks and recreation areas. Further construction activities could result in a short-term increase in the proposed project area population due to the minimal number of construction workers over the 5-year construction period, which could result in a slight increase in use of area recreation resources by the increased population. However, the increased use would be distributed among the extensive recreational areas in the vicinity of the proposed project area, specifically along the existing levee. Therefore, the increased use of other local or regional recreation resources that could be attributable to proposed project construction would not be enough to result in physical degradation of existing recreational resources.

The O&M of these components would occur on existing levee maintenance roads and would therefore not take place within recreational areas or facilities. O&M activities would only occur periodically, as under existing conditions, and would not introduce new land uses into the area. Furthermore, full operation of the flood risk reduction components would not generate new residential or commercial uses which could increase the use of existing recreational facilities.

The construction, and O&M of the proposed flood risk reduction components would not increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated. While construction of these components would involve demolition within existing recreational facilities, the use of these features would be restored with full implementation of the proposed project. Therefore, this impact would be **less than significant.**

Restoration Sites 13, 14, and 16 and Other Multi-benefit Components

Implementation of ecosystem restoration at Sites 13, 14, and 16, and other multi-benefit components including additional ecosystem restoration sites, and recreation features along the levee system could result in an increase in public visitation in the proposed project area. The proposed recreational features included within the multi-benefit components include the completion of a Class I shared-use path between Dos Reis and Mossdale Crossing Regional Parks, levee-top trail access improvements at two locations between Dos Reis and Mossdale Crossing Regional Park, and a gravel path on top of the dryland levee extension, as well as two new levee-top access points where the levee crosses Airport Way and Union

Road before terminating at Tinnin Road. These features would enhance existing recreational opportunities, preventing physical deterioration of existing facilities.

Construction activities could result in a short-term increase in the proposed project area population due to the minimal number of construction workers over the 5-year construction period, which could result in a slight increase in use of area recreation resources by the increased population. However, the increased use would be distributed among the extensive recreational areas in the vicinity of the proposed project area, specifically along the existing levee. Therefore, the increased use of other local or regional recreation resources that could be attributable to proposed project construction would not be enough to result in physical degradation of existing recreational resources.

Any generated material and debris from the construction of these features would be hauled off site and disposed of at a suitable landfill. Construction and staging areas would be restored to pre-construction conditions. Additionally, no significant physical effects to existing recreational facilities in the vicinity of the proposed project area would occur as a result of the temporary increase in population from proposed project construction. As described above in the Environmental Setting, there are numerous park facilities in the proposed project area to accommodate the short-term population increase. Maintenance activities would be minimal and occur only periodically. Operation of the proposed recreational enhancements would result in increased access to recreational opportunities as well as increased capacity for those opportunities. Therefore, this impact would be **less than significant**.

Mitigation Measures

Mitigation Measures (FRR/RS/MB): None required.

3.17 Transportation and Circulation

3.17.1 Introduction

This section discusses the existing transportation and circulation network and facilities in the proposed project area and vicinity.

The analysis included in this section was developed based on review of information provided in the San Joaquin County General Plan, the Envision Stockton 2040 General Plan, the City of Lathrop General Plan, the City of Manteca General Plan, as well as other project materials and relevant websites.

Comments addressing transportation and circulation were received in response to the NOP. Comments stated that an Encroachment Permit would be required for any work done within California Department of Transportation (Caltrans) right-of-way. See Appendix A to this Draft EIR for NOP comment letters.

3.17.2 Environmental Setting

Regional Access

Interstate 5

I-5 is the most prominent freeway in the vicinity of the proposed project area. I-5 serves as the major north/south facility serving San Joaquin County. The proposed project area extends along I-5 from its intersection with Carolyn Weston Boulevard and Downing Avenue in the north to its crossing over the San Joaquin River adjacent to Manthey Road in the south. This segment of I-5 would be utilized as a haul route for construction of the proposed flood risk reduction components of the proposed project.

State Route 120

In the proposed project area, SR 120 is an east/west freeway that connects the City of Manteca with I-5 to the west and SR 99 to the east. This segment of SR 120 has two eastbound and two westbound through-lanes.

Local Access by Jurisdiction

San Joaquin County

As shown in Figure 2-2, Flood Risk Reduction Components, in Chapter 2, *Project Description*, of this EIR as well as Figure TM-1 of the San Joaquin County General Plan, six haul routes have been specified in San Joaquin County's jurisdiction: French Camp Road, West Mathews Road, Bowman Road, Frewert Road, Glacier Street, and Yosemite Avenue. Each of these roads are considered collectors, which connect residential and local-serving commercial areas with the arterial roadway system, except Glacier Street, which is a local road. Yosemite Avenue is a northeast/southwest two-lane collector that extends northeast from SR 120 to the Manteca city limits. French Camp Road, West Mathews Road, Bowman Road, and Frewert Road are considered collectors because they provide east/west access either to South Manthey Road, an arterial street, or to an I-5 on- and off-ramp.

City of Stockton

Carolyn Weston Boulevard is an identified haul route that is an east-west collector road, as shown in Figure 4-1 of the Envision Stockton 2040 General Plan and Figure 2-2 in Chapter 2 of this EIR.

City of Lathrop

Figure CIR-1 of the City of Lathrop General Plan and Figure 2-2 in Chapter 2 of this EIR show that 14 roads in the jurisdiction of the City of Lathrop have been identified as haul routes. Dos Reis Road is an east/west collector that provides access to South Manthey Road, which is an arterial street that parallels Lathrop Road. Louise Avenue is a four-lane arterial street. River Islands Parkway is also an east/west arterial street. Spartan Way, Towne Centre Drive, and De Lima Road are two-lane collector roads. Barbara Terry Boulevard, McKee Boulevard, Golden Valley Parkway, Sadler Oaks Drive, Jefferson Way, Mossdale Road, and Queirolo Road are classified as local roads.

City of Manteca

There are nine roads which are identified as haul routes for the proposed project in the jurisdiction of the City of Manteca, as shown in Figure 2-2 of this EIR and Figure 4.3 of the City of Manteca General Plan. South Airport Way is a north/south arterial, while Woodward Avenue is an east/west two-lane local road. Airport Way is a north/south two-lane local road, as well as Union Road. Lathrop Road and McKinley Avenue are east/west four-lane roads. Fig Road, Oleander Avenue, Dredger Cut, and Peach Avenue are local roads.

Transit Facilities and Routes

Existing public transit service within the vicinity of the proposed project area is primarily provided by the San Joaquin Regional Transit District (RTD). The RTD provides both weekend and weekday bus service including Hopper Route 90, Route 555, Route 510, and Route 710 (San Joaquin Regional Transit District 2022). These routes provide access to the northernmost area of the proposed flood risk reduction components of the proposed project near Stockton. Access to the southernmost area of the proposed project containing both flood risk reduction and multi-benefit components is provided by San Joaquin Regional Rail Commission's Altamont Corridor Express commuter rail service (San Joaquin Regional Rail Commission 2022). The Lathrop/Manteca station is located at 17800 Shideler Parkway, approximately 2.5 miles north of the southernmost proposed project components.

3.17.3 Regulatory Setting

Federal

There are no federal laws or regulations that are relevant to the potential impacts of the proposed project.

State

Senate Bill 743

SB 743, passed in 2013, required the California Governor's Office of Planning and Research (OPR) to develop new CEQA Guidelines that address traffic metrics under CEQA. As stated in the legislation, upon adoption of the new guidelines, "automobile delay, as described solely by level of service or similar measures of vehicular capacity or traffic congestion shall not be considered a significant impact on the

environment pursuant to this division, except in locations specifically identified in the guidelines, if any." On December 28, 2018, the Resources Agency adopted CEQA Guidelines Section 15064.3. Under this guideline, vehicle miles traveled (VMT) is the primary metric used to identify transportation impacts. On July 1, 2020, the provisions of Section 15064.3 became effective statewide.

Immediately following adoption of CEQA Guidelines Section 15064.3, OPR published *Technical Advisory on Evaluating Transportation Impacts in CEQA* ("Technical Advisory") (OPR 2018), which provided guidance for implementing SB 743. The Technical Advisory is focused on two types of projects that could be expected to generate long-term VMT: land use projects (e.g., residential, office, retail), or transportation projects that expand capacity for motor vehicles, and include the following key guidance:

- VMT is the most appropriate metric for evaluating a project's transportation impact.
- OPR recommends using tour- and trip-based travel models to estimate VMT but ultimately defers to local agencies to determine the appropriate tools.
- OPR recommends measuring VMT for residential and office projects on a "per rate" basis.
- OPR states that a per capita or per employee VMT that is 15 percent below that of existing development may be a reasonable threshold. In other words, an office project that generates VMT per employee that is more than 85 percent of the regional VMT per employee could result in a significant impact. OPR notes that this threshold is supported by evidence that connects this level of reduction to the state's emissions goals.
- OPR states that where a project replaces existing VMT-generating land uses, if the replacement would lead to a net overall decrease in VMT, the project would lead to a less-than-significant transportation impact. If the project would lead to a net overall increase in VMT, then the thresholds described above should apply.
- OPR recommends that screening thresholds (referred to herein as "VMT screening criteria") be used to identify projects that do not require a detailed VMT analysis to determine the significance of the impact. VMT screening criteria could include project characteristics such as project size, geographic location, transit availability, and the provision of affordable housing.
- Lead agencies have the discretion to set or apply their own significance thresholds.

It should be noted that VMT significance thresholds and screening criteria adopted subsequent to the release of the Technical Advisory, by either the county or local jurisdictions where the flood risk reduction component sites are located (City of Lathrop 2020, San Joaquin County 2020), were reviewed in preparation of this EIR and were found to be consistent with the VMT significance threshold and screening criteria provided in the Technical Advisory.

California Streets and Highways Code

The California Streets and Highways Code authorizes Caltrans to control encroachment within the state highway right-of-way. Encroachment is defined in Section 660 of the Streets and Highways Code as any tower, pole, pole line, pipe, pipeline, fence, billboard, stand, or building, or any structure or object of any kind or character that is within the right-of-way but not a part of the Caltrans facility. Encroachments allow temporary or permanent use of a highway right-of-way by a utility, a public entity, or a private party. Encroachments include all public and private utilities within state rights-of-way, such as

communication, electric power, water, gas, oil, petroleum products, steam, sewer, drainage, irrigation, and similar facilities. Encroachments also include any temporary or permanent break in access or use of a highway right-of-way for grading, excavating, or filling or removal of materials by public agencies, developers, or private individuals.

The Caltrans Right-of-Way and Asset Management Program, through district offices, is responsible primarily for acquisition and management of property required for state transportation purposes. Transportation purposes may include highways, mass transit guideways and related facilities, material sites, and any other purpose that may be necessary for Caltrans operations. The responsibilities of the Right-of-Way and Asset Management Program include managing Caltrans' real property for transportation purposes, reducing the costs of operations, disposing of property that is no longer needed, and monitoring right-of-way activities on federally assisted local facilities (including I-5 and SR 120).

Local

San Joaquin County Regional Bicycle Master Plan

San Joaquin County's Regional Bicycle Master Plan addresses the local bicycle plans of Stockton, Tracy, Manteca, Escalon, Lathrop, Lodi, and Ripon. The plan provides a regional framework for bikeway improvements. San Joaquin County has proposed Class I, II, and III bikeways that regionally connect its cities. Through Lathrop, proposed bikeways on Manthey Road, Airport Way, and Yosemite Avenue offer access to other towns in San Joaquin County. The plan also suggests Class II bikeways within Lathrop's inner street network along Thomsen Street at Fifth Street.

General Plans

The proposed project area includes lands in San Joaquin County and the cities of Stockton, Lathrop, and Manteca. Each of these jurisdictions have general plans with goals and policies that address transportation and circulation (see **Table 3.17-1**). Applicable general plan goals and policies are summarized below along with relevant local regulations.

TABLE 3.17-1
APPLICABLE GENERAL PLAN GOALS AND POLICIES – TRANSPORTATION AND CIRCULATION

General Plan	Goals and Policies
San Joaquin County	Public Facilities and Services Element, Goals TM-1, TM-2, and TM-4, Policies TM-4.1, TM-4.6, and TM-4.7
City of Stockton	Transportation Element, Goals TR-1 and TR-2, Policy TR-2.1
City of Lathrop	Land Use Element, Goal LU-4, Policies LU-4.1 and LU-4.2; Circulation Element, Goal CIR-2, Policy CIR-2.1
City of Manteca	Circulation Element, Goals C-1 and C-4, Policies C-1.1, C-4.1, C-4.3, and C-4.5

SOURCES: City of Lathrop 2022; City of Manteca 2024; City of Stockton 2018; San Joaquin County 2016

San Joaquin County

San Joaquin County General Plan

The San Joaquin County General Plan includes goals and policies that address the continued operation and service levels of emergency services, the development of a multimodal transportation system, the development of the San Joaquin Council of Governments Regional Transportation Plan, county support of alternative transportation choices, energy conservation throughout San Joaquin County's transportation system, the elimination of gaps in existing transportation infrastructure, and the connection of residential areas to other areas through the bicycle system. The General Plan policies also address the implementation of San Joaquin County's Bicycle Master Plan to include bicycle routes of adequate width.

City of Stockton

Envision Stockton 2040 General Plan

The City of Stockton's Envision Stockton 2040 General Plan includes goals and policies that address the provision of an integrated transportation system that enables safe and efficient movement and offers active transportation opportunities for the entire community.

City of Lathrop

City of Lathrop General Plan

The City of Lathrop General Plan includes goals and policies that address development consistency with the capacity of the transportation system, the supporting of land use patterns and site designs that promote active transit, and the establishment of a network of pedestrian and bicycle routes connecting residential areas with other areas of the city.

City of Manteca

City of Manteca General Plan

The City of Manteca General Plan includes goals and policies that address the establishment of a safe and convenient bicycle network, the expansion of off-street bicycle facilities to accommodate cyclists who prefer to travel on dedicated trails, the provision of facilities compliant with Americans with Disabilities Act (ADA) requirements, and the inclusion of all areas envisioned for development by the City of Manteca's General Plan into the Bicycle Master Plan.

3.17.4 Impacts and Mitigation Measures

Methods of Analysis

Impacts on transportation and circulation are evaluated based on temporary and permanent changes to those resources that would occur from implementation of the proposed project.

Thresholds of Significance

In accordance with Appendix G of the CEQA Guidelines, an impact is considered significant if the proposed 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 CEQA Guidelines Section 15064.3 (b).
- Substantially increase hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment).
- Result in inadequate emergency access.

Impacts and Mitigation Measures

Table 3.17-2 summarizes the impact conclusions presented in this section.

TABLE 3.17-2
SUMMARY OF IMPACT CONCLUSIONS – TRANSPORTATION AND CIRCULATION

Impact Statement	Flood Risk Reduction Components	Restoration Sites 13, 14, and 16	Multi-Benefit Components
3.17-1: Construction, operation, or maintenance of the proposed project could conflict with a program, plan, ordinance, or policy addressing the circulation system, including transit, roadway, bicycle, and pedestrian facilities.	LSM	LSM	LSM
3.17-2: Construction, operation, or maintenance of the proposed project could conflict or be inconsistent with CEQA Guidelines Section 15064.3(b).	LS	LS	LS
3.17-3: Construction, operation, or maintenance of the proposed project could substantially increase hazards due to a geometric design feature or incompatible uses.	LS	LS	LS
3.17-4: Construction, operation, or maintenance of the proposed project could result in inadequate emergency access.	LSM	LSM	LSM

NOTES: LS = Less than Significant; LSM = Less than Significant with Mitigation

Impact 3.17-1: Construction, operation, or maintenance of the proposed project could conflict with a program, plan, ordinance, or policy addressing the circulation system, including transit, roadway, bicycle, and pedestrian facilities.

All Project Components

The flood risk reduction components of the proposed project, which would consist of fix-in-place levee improvements as well as a dryland levee extension, would be consistent with existing uses occurring at the proposed project area. The proposed project components would comply with the various general plan goals and policies listed above in subsection 3.17.3, *Regulatory Setting*, and O&M of the implemented flood risk reduction components would not affect any transit facilities long term.

However, temporary construction traffic would include a substantial number of haul trips, which could temporarily degrade conditions for multimodal travel near the construction sites. The number of truck trips that would occur during construction for the flood risk reduction components could reach numbers as high as 294 trips daily, for construction of the new dryland levee extension and seepage berm.[1] In addition, improvements for the existing dryland levee and construction of the dryland levee extension

[1] Daily construction trips were assumed for the purpose of estimating construction emissions, as described in Section 3.4, *Air Quality*.

would require the temporary closure of public roads where they intersect the alignment, including Woodward Avenue, Airport Way, Oleander Avenue, Fig Road, and Union Road.

Proposed ecosystem restoration features at ecosystem restoration Sites 13, 14, and 16 would include excavated floodplains, floodplain side channels, brush mat, habitat wood structures, willow baffles, and upland brush piles. The proposed project also includes implementation of other multi-benefit components including additional ecosystem restoration sites, and recreation features along the levee system. These proposed multi-benefit components are described in Chapter 2, *Project Description*, and are presented on Figure 2-3. These ecosystem restoration and recreation features would not result in long-term impacts to transit facilities near the proposed project area. The recreational features would implement an ADA-accessible Class I path along with levee-top access improvements. Buildout of the Class I path between Dos Reis and Mossdale Crossing Regional Parks would be consistent with the facilities planned for the Lathrop Bicycle Master Plan (City of Lathrop 1995). The ecosystem restoration features would be consistent with existing activities occurring in the proposed project area, and O&M of the features would not conflict with any program, plan, ordinance, or policy addressing the circulation system near the proposed project area.

However, as described above, construction of proposed project components would result in a substantial number of haul trips that could temporarily degrade conditions for multimodal travel near construction sites. In addition, construction of the dryland levee extension would require temporary closure of public roads where they intersect the alignment. As described in Chapter 2, *Project Description*, neighborhoods along haul routes would be notified of haul routes, ingress and egress points, staging areas, detours, lane closures (if any), and closed recreational areas (including bike paths) approximately 1 week prior to commencement of construction activities. Signage would be installed at all ingress and egress locations to alert the public of construction activities and potential restrictions on access during construction activities. Nevertheless, because construction of the proposed project would involve substantial haul trips to and from construction sites and the temporary closure of intersections for construction of the dryland levee, this impact would be **significant**.

Mitigation Measures

Mitigation Measure 3.17-1 (FRR/RS/MB):

SJAFCA shall require that contractors prepare and implement a construction traffic management plan to manage traffic flow during construction, reduce potential interference with local emergency response plans, reduce potential traffic safety hazards, and ensure adequate access for emergency responders. Development and implementation of this plan shall be coordinated with local agencies with jurisdiction over affected roadways, and/or the construction contractor(s) shall ensure that the plan is implemented during construction. The plan may include but not be limited to the following measures:

- Identify construction truck haul routes and timing to limit conflicts between truck and automobile traffic on nearby roads. The identified routes will be designed to minimize impacts on vehicular, bicycle, and pedestrian traffic, circulation, and safety.
- Implement comprehensive traffic control measures, including scheduling of major truck trips and deliveries to avoid peak traffic hours, warning and detour signs, lane closure procedures, and traffic cones for drivers indicating potential road hazards or detours.

- Coordinate construction activities to ensure that one lane of traffic in each direction remains open at all times, unless flaggers or temporary traffic controls are in place, to provide emergency access.
- Evaluate the need to provide flaggers or temporary traffic control at project driveways and entries to staging areas.
- Notify affected adjacent property owners and public safety personnel regarding the timing of major deliveries, detours, and lane closures.
- Develop a process for responding to and tracking issues pertaining to construction activity impacts on traffic, including identification of an on-site traffic manager. Post 24-hour contact information for the traffic manager on all construction sites.
- Document road pavement conditions for all routes that would be used by construction vehicles before and after proposed project construction. Make provisions to monitor the condition of roads used for haul routes so that any damage or debris attributable to haul trucks can be identified and corrected. Roads damaged by construction vehicles shall be repaired to their pre-construction condition.

Significance After Mitigation: Mitigation Measure 3.17-1 requires the preparation and implementation of a construction traffic management plan, such that implementation of the proposed project components would not conflict with regulations related to pedestrian or bicycle access or impede the circulation system. Implementing this mitigation measure would reduce the potentially significant impact related to conflict with a program, plan, ordinance, or policy addressing the circulation system to a **less-than-significant level**.

Impact 3.17-2: Construction, operation, or maintenance of the proposed project could conflict or be inconsistent with CEQA Guidelines Section 15064.3(b).

As discussed in subsection 3.17.3, *Regulatory Setting,* CEQA Guidelines Section 15064.3(a) calls for evaluation of a project's transportation impacts in terms of VMT, which refers to the amount and distance of automobile travel attributable to a project. Section 15064.3(a) also includes the following provisions:

- Except as provided in Section 15064.3(b), Criteria for Analyzing Transportation Impacts (e.g., land use and transportation projects), a project's effects on automobile delay shall not constitute a significant environmental impact.
- CEQA lead agencies are allowed to tailor their criteria for determining the significance of transportation impacts, including using VMT.

Section 15064.3(b) describes the criteria for analyzing transportation impacts for projects, including instances where a qualitative analysis is appropriate such as when analyzing project construction traffic.

All Project Components

The increase in vehicle trips associated with the proposed project is primarily associated with temporary construction activities. Implementation of the proposed project is not expected to increase the level of on-going O&M activities. O&M activities along the existing levee alignment generate low levels of intermittent vehicular traffic, which would not materially change upon completion of the fix-in-place levee improvements or the dryland levee extension. Similarly, upon establishment of the ecosystem restoration sites, maintenance and monitoring activities would be required for approximately 3 years,

generating minimal levels of intermittent vehicular traffic. Consequently, VMT is estimated to return to existing levels after construction is completed.

Because of the temporary nature of construction and its lack of long-term operational changes, the proposed project does not readily fit into the overall transportation (SB 743) VMT analysis framework. The statewide VMT significance thresholds and screening criteria defined in OPR's Technical Advisory would not be applicable to the proposed project as it is neither a land use nor a transportation project, nor would it generate a substantial increase in long-term VMT (i.e., VMT generated by the proposed project would primarily be temporary, construction-related VMT). For these reasons, no further analysis of consistency with CEQA Guidelines Section 15064.3 (b) is required, and the impact would be **less than significant**.

Mitigation Measures

Mitigation Measures (FRR/RS/MB): None required.

Impact 3.17-3: Construction, operation, or maintenance of the proposed project could substantially increase hazards due to a geometric design feature or incompatible uses.

Flood Risk Reduction Components

Neither construction nor O&M activities for the proposed flood risk reduction components would result in increased hazards due to geometric design features or incompatible uses. As part of the flood risk reduction components, high-hazard encroachments would be removed, and erosion repairs would be performed. These as well as other improvements would enhance levee safety. The proposed flood risk reduction components would not modify land use in the proposed project area, and the improvements would be compatible with what already exists on-site.

The flood risk reduction components of the proposed project would not increase hazards due to any design features or incompatible uses. The proposed project components would improve levee function and safety, and the resulting impact would be **less than significant.** Potential conflicts on transportation facilities which could occur during proposed project construction as a result of incompatible uses from heavy equipment and hauling trucks is addressed in Impact 3.17-1.

Restoration Sites 13, 14, and 16 and Other Multi-benefit Components

The ecosystem restoration features at Sites 13, 14, and 16, additional sites, as well as the recreational features included as part of the multi-benefit components of the proposed project would not involve construction, operation, or maintenance activities that would increase hazards due to any geometric design features or incompatible uses.

The ecosystem restoration features would be compatible with existing land use at the ecosystem restoration sites and would involve the use of native plants that would be consistent with vegetation in the proposed project area. These features would not introduce any hazards to the project area.

The recreational features of the multi-benefit components would improve safety and access to the proposed project area. As stated on page 2-11 of Chapter 2, *Project Description*, the proposed shared-use paths would meet ADA and California Title 24 guidelines and be consistent with existing Caltrans and

City of Lathrop standards. Levee access would be facilitated for those who wish to utilize the proposed project area.

The multi-benefit components of the proposed project would not increase hazards due to any design features or incompatible uses. The proposed project components would increase levee access and safety, and the resulting impact would be **less than significant**. Potential conflicts on transportation facilities which could occur during proposed project construction as a result of incompatible uses from heavy equipment and hauling trucks is addressed in Impact 3.17-1.

Mitigation Measures

Mitigation Measures (FRR/RS/MB): None required.

Impact 3.17-4: Construction, operation, or maintenance of the proposed project could result in inadequate emergency access.

All Project Components

Because the construction and O&M circumstances regarding emergency access for the proposed project are consistent, they are analyzed together.

As described previously under Impact 3.17-1, construction traffic associated with the proposed project would include a substantial number of haul trips that could temporarily degrade conditions for multimodal travel near the construction sites. In addition, construction of the dryland levee extension would require the temporary closure of public roads where they intersect the alignment. Closure of roads and increased traffic during construction could interfere with emergency access in the vicinity of construction sites.

O&M activities for flood risk reduction components would consist of inspections, weed abatement, removal of encroachments and high-hazard vegetation to ensure levee integrity, replacement and re-working of displaced or launched revetment following large flood events, and adequate levee access along the levee toe road. O&M inspections would consist of a patrol vehicle traveling along the levee and small machinery for weed abatement such as mowers and weed whackers/trimmers. Regular O&M activities for ecosystem restoration Sites 13, 14, and 16, and other multi-benefit components would consist of inspections, weed abatement, removal of encroachments and high-hazard vegetation to ensure levee integrity, replacement and re-working of displaced or launched revetment following large flood events, and adequate levee access along the levee toe road. These activities would only occur periodically, as under existing conditions, and would not disrupt emergency access to the proposed project area. As a result, O&M activities would result in a minor increase in motor vehicle trips that would not be substantial enough to result in congestion that could interfere with emergency access.

However, as described above, construction of proposed project components would result in a substantial number of haul trips that could temporarily degrade conditions for multimodal travel near construction sites. In addition, construction of the dryland levee extension would require temporary closure of public roads where they intersect the alignment. As described in Chapter 2, *Project Description*, Haul routes would be used in both directions to prevent construction delays due to traffic or road closures that could occur for unforeseen reasons (e.g., emergencies, road construction, etc.) during the construction period. Nevertheless, because construction of the proposed project would involve substantial haul trips to and

from construction sites and the temporary closure of intersections for construction of the dryland levee, this impact would be **significant**.

Mitigation Measures

Mitigation Measure (FRR/RS/MB): Implement Mitigation Measure 3.17-1.

Significance After Mitigation: Mitigation Measure 3.17-1 requires the preparation and implementation of a construction traffic management plan, such that implementation of the proposed project components would not result in inadequate emergency access. Implementing this mitigation measure would reduce the potentially significant impact related to emergency access to a **less-than-significant level**.

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3.18 Tribal Cultural Resources

3.18.1 Introduction

This section examines the potential impacts of the proposed project on tribal cultural resources. Much of the background context and methods used for the analysis of potential impacts of the proposed project on tribal cultural resources are the same as for cultural resources (Section 3.7, *Cultural Resources*).

This section relies on the information and findings presented in *Mossdale Tract Area Urban Flood Risk Reduction Project, San Joaquin County, California: Archaeological and Architectural Resources Inventory Report*. That report (Appendix F [*Confidential*] to this Draft EIR) details the results of the cultural resources study, which examined the environmental, ethnographic, and historic background of the proposed project area, emphasizing aspects of human occupation.

Comments addressing tribal cultural resources were received in response to the NOP. Comments submitted in response to the NOP were also considered in development of the impact analysis. The NAHC provided details on some tribal cultural resource regulations pertaining to the proposed project and requested that the NAHC be contacted for a SLF search and list of California Native American Tribes for the proposed project area. See Appendix A to this Draft EIR for NOP comment letters.

Key Terms

This section includes the key term defined below.

Tribal Cultural Resource. This resource type consists of 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 (National Register), California Register of Historical Resources (California Register), or a local register of historical resources.

3.18.2 Environmental Setting

Ethnographic Context

Beginning in the early 16th century, but primarily during the late 19th and early 20th centuries, Native American lifeways and languages were documented throughout California. Whether by professional ethnographers or anthropologists, field personnel from government agencies such as the Bureau of Indian Affairs, soldiers, merchants, settlers, or travelers, ethnographic accounts partly illuminate the traditions, beliefs, and cultures of Native American groups during specific points in time. Synthesized narratives such as the *Handbook of North American Indians* (Heizer 1978) categorize Native traditions and practices; however, the complexity of regional diversity should not be overlooked. Depopulation and relocation of Central Valley Native Americans in the 19th century resulted in conflicting and incomplete information about tribal ancestral territories. Though cultural descriptions of these groups in the English language are known from as early as 1849, most of our current cultural knowledge comes from various early 20th century anthropologists (Levy 1978:413). The uncertainty regarding the territorial boundaries of the Native American groups that occupied the proposed project area and vicinity derives from the fact that ethnographies historically demarcated contact-period tribal boundaries in various and conflicting ways.

The proposed project area is in a location historically attributed to the Northern Valley Yokuts, a Penutian-speaking people (Heizer and Elsasser 1980:15). The traditional territory of the Northern Valley Yokuts encompassed much of the north end of the Southern San Joaquin Valley; an area extending from the northward bend of the San Joaquin River, northward almost to the Mokelumne River, and from the crest of the Coast Range eastward to the foothills of the Sierra Nevada. Ethnographic data regarding this group is sparse. The term *Yokuts* is only an English approximation of a Native term for "people." Cook (1955) estimated a pre-contact population of more than 25,000 in the general San Joaquin Valley area, while Baumhoff (1963) revised this estimate to more than 31,000. Baumhoff also suggested that most Yokuts lived near or adjacent to riverine areas. During the contact period the Northern Valley Yokuts population collapsed, and little historical data was recorded concerning them (Wallace 1978:462).

The Yokuts were relative latecomers to the area, probably moving northward about 500 BP. This was largely due to pressure from Numic speakers coming over the Sierra Nevada ranges. Prior to the collapse of their population, the Northern Valley Yokuts probably numbered between 25,000 and 31,000 people. Most of the population was clustered in villages along the San Joaquin River, with a density of approximately 10 persons per square mile along the river (Wallace 1978:463). The Northern Valley Yokuts were organized into tribelets of about 300 people, although the size and breakdown of these groups is tenuous.

Villages were clustered along the rivers, primarily the San Joaquin. Villages were situated on low mounds that kept occupants above the water during floods. It also gave them a good view of the surrounding area, alerting them to possible threats or groups of potential game. Structures were largely limited to single-family dwellings made of tule. Unlike their neighbors who had villages organized into neat rows, these were not organized in any particular fashion. Singular large communal structures and "sweat lodges" were also present at many villages. These semi-subterranean structures used for gatherings and ceremonial activities (Wallace 1978:464–466).

The subsistence patterns of the Northern Valley Yokuts were similar to that of their southern neighbors. Salmon runs in the spring and fall were intensively exploited. Fishing methods included the use of small dragnets weighted with stone weights and antler-tipped harpoons. Tule rafts were probably also used. Part of their catch was dried to preserve it for the long periods when the salmon were not running. Other fish targeted included white sturgeon, river perch, western suckers, and Sacramento pike. Massive flocks of waterfowl that congregated along the San Joaquin River and adjacent sloughs were another important food source. Although it is known the Northern Valley Yokuts extensively used this resource, little is known about the methods used to hunt fowl. The Spanish made extensive notes of the massive herds of antelope and elk that resided in the area but made no note of the Native Americans bird-hunting activities. Wild plant foods also made up a large part of their diet, and primary among these was the acorn. Valley oaks were relatively widely dispersed, but rich in yield, providing 300 to 500 pounds of acorns per tree annually. Acorns were harvested, pounded into flour, and used to make a thick soup or gruel. Tule roots were used in a similar fashion. Grass seeds were also extensively harvested and used to make a type of bread. The only domestic animals kept by the Northern Valley Yokuts were dogs, which they traded with neighboring tribes, and may have been used as a food source as well (Wallace 1978:464).

The technology employed by the Northern Valley Yokuts was typical of other Central California groups. Hunting implements included bow and arrow as well as nets and harpoons. Stone tools were widely

manufactured. Obsidian was a highly prized resource and had to be traded in from other areas. Basketry was also extensively employed, with some hints of a unique coiling technique. Limited evidence of ceramic vessels has been found at sites, suggesting that ceramic vessels were probably traded in from other groups. The use of mortars and pestles for pounding acorns into flour was a key technology. Most of the mortars were made of stone, but wooden varieties were probably used as well (Wallace 1978:465). Little is known about the clothing and adornment worn by the Northern Valley Yokuts. Given the climate, clothing was probably minimal. Marine shells were traded in from the coast for use as necklaces and other adornment, with a preference for *Olivella* shells (Wallace 1978:464).

Other than subsistence patterns, little is known about the daily lives of the Northern Valley Yokuts. They were loosely organized into tribelets of about 300 people. Warfare seems to have been largely avoided, with retreat to the tule marshes preferred to open conflict. Skirmishes between Yokuts triblets were known to have occurred. Similarly, little is known about their religious or spiritual practices. They are known to have used *Datura* sp., a locally occurring plant that produces psychedelic effects, and commonly used among many Valley groups. There are also hints that they participated in the *Kuksu* cult, a Native American spiritual movement that developed in response to the stresses of the incursion of Europeans. Birth, puberty, and death were typically events of significance among California Native Americans. It is known that upon death bodies were typically buried in a flexed position. In the instances of important persons, or deaths away from the village, the body was sometimes cremated (Wallace 1978:465–468).

As noted previously, the population of the Northern Valley Yokuts collapsed during the contact period. First contact probably occurred during the first decades of the 19th century, with sporadic forays by the Spanish into the Central Valley. By 1805, missionaries with the support of Spanish soldiers began making forays into the Central Valley to gather Native Americans to bring back to the coastal missions. This continued for nearly two decades, and neophytes taken to Missions San José, Santa Clara, Soledad, San Juan Batista, and San Antonio. More active missionary "recruitment" occurred after 1810. Milliken (2002:59) documents the draining of Native population into the Mission system: "All of the San Joaquin River people were at the Mission by the end of 1820, with the exception of a few individuals…"

Further intrusions into Native Americans lands came in the form of *ranchos*, expanses of land granted to individuals by the Spanish and Mexican governments. What developed was a complex interchange between the Native Americans and their new Spanish neighbors. Missionaries and soldiers made more, and further reaching, excursions to gather up Native Americans. Many Native Americans tired of life at the missions, and escaped, returning to their homeland. Simultaneously, many Native Americans attained a taste for the Spanish horse and cattle and began raiding the stocks of the missions and ranchos. The result was punitive raids by the Spanish to punish the Native Americans and bring captors back to the missions and ranchos. In 1822, control passed from Spain to Mexico, and the missions were eventually secularized, leaving many Native Americans free to return to their homes. By this time, Native American populations were greatly reduced, they had been mixed and intermarried at the mission, ties had been broken with their former tribes, and many did not return (Wallace 1978:466–468).

Several major episodes of overt resistance to Spanish and Mexican colonization of the area were undertaken by Northern Valley Yokuts, among other tribes. Of note are those led by the Northern Valley Yokuts *Cucunuchi*, who was born near the present-day Stanislaus River in the early 1790s. In 1821,

Cucunuchi and his family moved to the Mission San José, being soon thereafter baptized and given the Christian name *Estanislao*. Estanislao is described in historical accounts as being highly intelligent and educated. In 1827 or 1828, Estanislao left the Mission with around 400 followers and soon thereafter began a campaign of raids against missions (San José, Santa Clara, Santa Cruz) and Mexican settlers in the area. The Mexican army sent several military expeditions from San Francisco, Monterey, and San José to subdue Estanislao and his followers, resulting in notable battles on the Stanislaus River between in 1828 and 1829. Estanislao and his group were victorious on multiple occasions, inspiring Native Americans throughout the region (and from multiple tribes) to join Estanislao in his resistance to the Mexicans. At the end of May 1829, a large Mexican force led by Mariano Vallejo defeated Estanislao and his group on the banks of the Stanislaus River near its confluence with the San Joaquin River, in one of the most notable battles between Native Americans and Euroamericans in California history. Estanislao escaped, though soon surrendered at Mission San José, remaining there until his death of smallpox in 1838. Estanislao inspired resistance to Mexican colonizers that continued even after his death.

Disease was another major disruptive factor in the lives of Native Americans after Euroamerican contact; influenza, smallpox, venereal disease, and malaria were all major contributors to the decline of Native American populations in California. Even prior to contact, old-world diseases were wreaking havoc on Native populations (Preston 2002). In 1833, a major epidemic swept the Central Valley of California. What has since been surmised to be malaria was responsible for the deaths of up to 75 percent of the remaining Native American population in the Central Valley. The result was that by the 1840s the Northern Valley Yokuts had nearly vanished as a coherent group. The few that remained were pushed aside by the onslaught of immigrants who flooded in during the American period. By 1910, it was estimated that less than 1 percent of the Northern Valley Yokuts survived (Kroeber 1925 [1976]:887).

As with other California Native American groups, the gold rush of 1849 had a devastating effect on the Northern Valley Yokuts. The flood of miners that came to the area in search of gold brought diseases with them that decimated the populations. Those who survived were subjected to violence and prejudice at the hands of the miners, and the groups were eventually pushed out of their ancestral territory. Although this contact with settlers had a profound negative impact on the groups' populations through disease and violent actions, the Northern Valley Yokuts peoples survived and maintained strong communities and action-oriented organizations (Castillo 1978). The Northern Valley Yokuts find membership among several state and federally recognized Tribes and continue to maintain their cultures.

A review of ethnographic literature revealed that the Northern Valley Yokuts village *Coybos* was within the vicinity of the proposed project area (Cook 1955). The village was documented along the right (east) bank of the San Joaquin River, near the current location where Interstate 5 crosses the San Joaquin River, at the current Staging Area 9 portion of the proposed project area. This village likely corresponds to archaeological site P-39-000141/-000141. However, the ethnographic accounts reviewed date to the early 20th century and, given the rapid decimation of Northern Valley Yokuts soon after 19th-century Euroamerican settlement in the area, the relative few Native American settlements described in the vicinity of the current proposed project area should not be taken as definitive evidence an absence of other villages or lack of use of the area.

Existing Cultural Environment

California Historical Resources Information System Records Search

In February 2022, on behalf of SJAFCA, Environmental Science Associates (ESA) requested a cultural resources records search for the proposed project area from staff at the Central California Information Center (CCIC), California State University, Stanislaus. The study area for the records search was the proposed project area with a 0.25-mile buffer. The CCIC maintains the official California Historical Resources Information System Records (CHRIS) records of previous cultural resources studies and recorded cultural resources for the proposed project area and vicinity. With modifications to the proposed project, ESA requested several records search updates from the CCIC in 2022 for the proposed project area.

Field Survey

In 2022, ESA archaeologists and Northern Valley Yokuts Tribe (NVYT) representatives conducted an intensive pedestrian surface survey of accessible portions of the proposed project area at that time where the proposed flood risk reduction components would be located. During the course of the pedestrian survey, the entire extant levee portion of the proposed project area, along the San Joaquin River, was covered, except for the privately owned areas adjacent to the existing levee. Proposed Staging Areas 2, 3, 5, 8, and 12 were also covered during the pedestrian survey. In 2023 and 2024, as rights of entry became available, ESA completed additional intensive pedestrian surveys that included portions of the proposed dryland levee extension and ecosystem restoration Sites 13, 14, and 16.

Native American Correspondence

On behalf of SJAFCA, ESA contacted the NAHC in March 2022, requesting a search of the NAHC's SLF and a list of California Native American Tribes who may have interest in the proposed project. The NAHC replied in March 2022, stating that the SLF is positive for sacred sites in the proposed project area; the reply also included a list of and contact information for representatives from eight California Native American Tribes who may be interested in the proposed project.

In support of required Native American consultation for the proposed project pursuant to California Public Resources Code (PRC) Section 21080.3.1, SJAFCA sent a letter in April 2022 to Wilton Rancheria representatives. The letters provided information on the proposed project and requested that the recipient notify SJAFCA if they would like to consult pursuant to PRC Section 21080.3.1. SJAFCA sent a follow-up email to Wilton Rancheria representatives in April 2022; the email contained similar information as to what was in the initial notification letter. Wilton Rancheria replied to SJAFCA, via email, in June 2022, requesting to consult on the proposed project. In June 2022, SJAFCA sent an email to Wilton Rancheria with additional information on the proposed project and requesting that the Tribe provide dates and times for a potential conference call. To date, SJAFCA has not received any additional replies from Wilton Rancheria.

In April 2022, SJAFCA also sent a letter to The Confederated Villages of Lisjan (CVL) representatives providing information on the proposed project and requested that the recipient notify SJAFCA if they would like to consult on the proposed project. In April 2022, CVL representatives replied to SJAFCA, requesting additional information on the proposed project, and SJAFCA provided this additional information to CVL in June 2022. In August 2022, SJAFCA received an email from CVL requesting to

consult on the proposed project. SJAFCA also received a separate letter from CVL in September 2022 requesting that SJAFCA notify CVL of any proposed projects pursuant to PRC Section 21080.3.1; from that date onward, SJAFCA viewed consultation with CVL on the proposed project as being pursuant to PRC Section 21080.3.1. SJAFCA and CVL had a conference call in September 2022 to discuss the proposed project and Tribal concerns regarding potential impacts on cultural resources and tribal cultural resources. During the meeting, CVL expressed concern over potential impacts on indigenous archaeological resources from ground-disturbing activities associated with the proposed project. As a follow-up to that meeting, in September 2022, SJAFCA provided a summary of the CCIC records search and cultural resources pedestrian survey conducted for the proposed project, and in November 2022, SJAFCA sent an email to CVL summarizing proposed cultural resources and tribal cultural resources mitigation measures for the Draft EIR and requesting that Tribe either provide concerns on the proposed project or confirm that the Tribe agrees to conclude consultation on the proposed project. To date, SJAFCA has not received any additional correspondence from CVL.

In support of CEQA information-gathering, in April 2022, SJAFCA sent letters to representatives from the six additional California Native American Tribes whose contact information was provided in the NAHC reply. The letters provided information on the proposed project and requested that the recipient notify SJAFCA if they would like to consult on the proposed project. Other than the correspondence noted above, SJAFCA has received only one reply, from NVYT, to these initial outreach letters; this reply was received via email in April 2022 and stated that NVYT would like to consult on the proposed project. SJAFCA provided additional information on the proposed project, via email, to NVYT in June 2022. As described earlier, NVYT representatives also participated in the cultural resources pedestrian survey conducted for the proposed project in July 2022. Also in July 2022, SJAFCA and NVYT had a conference call to discuss the proposed project and Tribal concerns regarding potential impacts on cultural resources and tribal cultural resources. During the meeting, NVYT expressed concern over potential impacts on indigenous archaeological resources from ground-disturbing activities associated with the proposed project but explicitly stated that the did not have any knowledge of any tribal cultural resources that they feel may be affected by the proposed project. As a follow-up to that meeting, in September 2022, SJAFCA provided a summary of the CCIC records search and cultural resources pedestrian survey conducted for the proposed project, and in November 2022, SJAFCA sent an email to NVYT summarizing proposed cultural resources and tribal cultural resources mitigation measures for the Draft EIR and requesting that Tribe either provide concerns on the proposed project or confirm that the Tribe agrees to conclude consultation on the proposed project. To date, SJAFCA has not received any additional correspondence from NVYT.

Additionally, SJAFCA re-initiated consultation with California Native American Tribes in 2025. SJAFCA contacted the NAHC in September 2025, requesting a search of the NAHC's Sacred Lands Files and a list of California Native American Tribes that may have expressed interest in the proposed project since the 2022 consultation took place. In October 2025, SJAFCA sent letters to representatives from seven California Native American Tribes whose contact information was provided in the NAHC reply. SJAFCA received one response in November 2025 from Wilton Rancheria, which noted that they did not have comments and did not wish to open consultation on the proposed project. To date, SJAFCA has not received any additional correspondence from the Wilton Rancheria.

Summary of Existing Cultural Environment

Flood Risk Reduction Components

Through archival research, CHRIS records searches, pedestrian survey, and consultation with California Native American Tribes, three cultural resources as either within or potentially within the proposed project area where proposed flood risk reduction components would be located: P-39-000006, -000012, and -000014/000141. Resource P-39-000012 was previously recommended not eligible for the California Register. Resource P-39-000006 does not appear to have been previously evaluated for California Register-eligibility. Resource P-39-000014/000141 was previously recommended California Register-eligible. See Section 3.7, *Cultural Resources*, for a summary of these resources. Based on the known site constituents associated with these resources, P-39-000006 and -000014/000141 appear to be potentially eligible as tribal cultural resources and are considered as such for the purposes of the proposed project.

Restoration Sites 13, 14, and 16

Through archival research, CHRIS records searches, pedestrian survey, and consultation with California Native American Tribes, no tribal cultural resources or archaeological resources that could also potentially be considered tribal cultural resources have been identified at ecosystem restoration Sites 13, 14, and 16. As such, this analysis concludes that there are no known tribal cultural resources at Sites 13, 14, and 16.

Other Multi-Benefit Components

Through archival research, CHRIS records searches, pedestrian survey, and consultation with California Native American Tribes, no tribal cultural resources or archaeological resources that could also potentially be considered tribal cultural resources have been identified in the proposed project area where proposed multi-benefit components would be located. As such, this analysis concludes that there are no known tribal cultural resources within the multi-benefit components portion of the proposed project.

3.18.3 Regulatory Setting

The following laws and regulations apply to the resources covered in this section.

Federal

American Indian Religious Freedom Act

The American Indian Religious Freedom Act of 1978 (42 United States Code Section 1996) protects and preserves the right of Native Americans to believe, express, and exercise traditional religious rights and cultural practices, including access to sites of religious importance to Native Americans.

State

California Environmental Quality Act

CEQA (codified at PRC Section 21000 et seq.) is the principal statute governing environmental review of projects occurring in California. CEQA requires lead agencies to determine whether a proposed project would have a significant effect on the environment, including a significant effect on tribal cultural resources. Under CEQA (PRC Section 21084.1), a project that may cause a substantial adverse change in the significance of tribal cultural resource is a project that may have a significant effect on the environment.

Tribal Cultural Resources

Impacts on tribal cultural resources also are considered under CEQA (PRC Section 21084.2). CEQA recognizes that California Native American Tribes have expertise with regard to their tribal history and practices. PRC Section 21074(a) defines a *tribal cultural resource* as any of the following:

- Sites, features, places, cultural landscapes, sacred places, and objects with cultural value to a California Native American Tribe that are either of the following:
  - included or determined to be eligible for inclusion in the California Register; or
  - included in a local register of historical resources, as defined in PRC Section 5020.1(k).
- A resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of [PRC] Section 5024.1.

In applying these criteria, the lead agency would consider the significance of the resource to a California Native American Tribe.

A cultural landscape that meets the criteria of PRC Section 21074(a) is also a tribal cultural resource if the landscape is geographically defined in terms of the size and scope. A historical resource as described in PRC Section 21084.1, a unique archaeological resource as defined in PRC Section 21083.2, or a non-unique archaeological resource as defined in PRC Section 21083.2 may also be a tribal cultural resource under CEQA if it meets the criteria identified in PRC Section 21074(a).

CEQA requires lead agencies to analyze the impacts of projects on tribal cultural resources separately from impacts on archaeological resources (PRC Section s 21074 and 21083.09) because tribal cultural resources have cultural values beyond their ability to yield data important to prehistory or history. Tribal consultation pursuant to PRC Section 21080.3.1 applies to projects for which an NOP or notice of negative declaration/mitigated negative declaration was filed on or after July 1, 2015; therefore, these provisions apply to the proposed project.

California Register of Historical Resources

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

To be eligible for the California Register, a cultural resource must be significant at the local, state, and/or federal level under one or more of the following four criteria:

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.

A resource eligible for the California Register must be of sufficient age and retain enough of its historic character or appearance (integrity) to convey the reason for its significance. Additionally, the California Register consists of resources that are listed automatically and those that must be nominated through an application and public hearing process. The California Register automatically includes the following:

- California properties listed in the National Register (and those formally determined eligible for the National Register);
- California Registered Historical Landmarks from No. 770 onward; and
- Those California Points of Historical Interest that have been evaluated by the California Office of Historic Preservation and have been recommended to the State Historical Resources Commission for inclusion in the California Register.

Other resources that may be nominated to the California Register include:

- Historical resources with a significance rating of Category 3 through 5 (those properties identified as eligible for listing in the National Register, the California Register, and/or a local jurisdiction register);
- Individual historic resources;
- Historic resources contributing to historic districts;
- Historic resources designated or listed as local landmarks, or designated under any local ordinance, such as a historic preservation overlay zone; and
- Tribal cultural resources.

California Public Resources Code Section 5097

PRC Section 5097.99, as amended, states that no person shall obtain or possess any Native American artifacts or human remains that are taken from a Native American grave or cairn. Any person who knowingly or willfully obtains or possesses any Native American artifacts or human remains is guilty of a felony, which is punishable by imprisonment. Any person who removes, without authority of law, any such items with an intent to sell or dissect or with malice or wantonness is also guilty of a felony, which is punishable by imprisonment. PRC Section 5097.5 specifies that any unauthorized removal of paleontological remains is a misdemeanor.

California Native American Historic Resource Protection Act

The California Native American Historic Resource Protection Act of 2002 imposes civil penalties, including imprisonment and fines up to $50,000 per violation, for persons who unlawfully and maliciously excavate upon, remove, destroy, injure, or deface a Native American historic, cultural, or sacred site that is listed or may be listed in the California Register.

California Health and Safety Code Section 7050.5

Section 7050.5 of the California Health and Safety Code protects human remains by prohibiting the disinterring, disturbing, or removing of human remains from any location other than a dedicated cemetery. PRC Section 5097.98 (and reiterated in California Code of Regulations Section 15064.59[e]) also identifies steps to follow in the event of the accidental discovery or recognition of any human remains in any location other than a dedicated cemetery.

Delta Reform Act of 2009 and Delta Plan

The mission of the Delta Stewardship Council is to promote the coequal goals of water supply reliability and ecosystem restoration in a manner that protects and enhances the unique values of the Delta as an evolving place (California Water Code Section 85054). The 2009 Delta Reform Act states that the coequal goals are to be achieved in a manner that protects and enhances the unique cultural, recreational, natural resource, and agricultural values of the Delta as an evolving place. The Delta Stewardship Council has a legally enforceable management framework for the Delta and Suisun Marsh called the Delta Plan, which applies best available science to further the coequal goals.

The Delta Stewardship Council was granted specific regulatory and appellate authority by the California Legislature under the 2009 Delta Reform Act over certain actions that take place in the Delta or Suisun Marsh, in whole or in part. The Delta Stewardship Council exercises that authority by developing and implementing the Delta Plan and its accompanying regulations.

According to the Delta Reform Act, state or local agencies approving, funding, or carrying out projects, plans, or programs, upon determining that their project is a "permitted action" subject to regulations of the Delta Plan, must certify the consistency of the project with the Delta Plan policies (California Water Code Section 85225).

Local

The proposed project area includes lands in San Joaquin County and the cities of Stockton, Lathrop, and Manteca. Each of these jurisdictions have general plans with goals and policies that address tribal cultural resources (see **Table 3.18-1**). Applicable general plan goals and policies are summarized below along with relevant local regulations.

TABLE 3.18-1
APPLICABLE GENERAL PLAN GOALS AND POLICIES – TRIBAL CULTURAL RESOURCES

General Plan	Goals and Policies
San Joaquin County	Natural and Cultural Resources Element, Goal NCR-6, Policies NCR-6.1, NCR-6.2, NCR-6.3, NCR-6.5, NCR-6.6, and NCR-6.9
City of Stockton	Land Use Element, Goal LU-5, Policy LU-5.2
City of Lathrop	Recreation and Resources Element, Goal RR-3, Policies RR-3.1 through RR-3.4
City of Manteca	Recreation and Resources Element, Goals RC-11 and RC-12, Policies RC-P-37 and RC-P-38

SOURCES: City of Lathrop 2022; City of Manteca 2024a; City of Stockton 2018; San Joaquin County 2016

San Joaquin County

San Joaquin County General Plan

The San Joaquin County General Plan contains goals and policies associated with protection of tribal cultural resources relevant to the proposed project including but not limited to policies addressing consultation with Native American Tribes regarding proposed development projects and land use policy changes consistent with the state's Local and Tribal Intergovernmental Consultation requirements.

City of Stockton

Envision Stockton 2040 General Plan

The City of Stockton General Plan contains goals and policies associated with protection of tribal cultural resources relevant to the proposed project including policies addressing consultation with Native American representatives, including early coordination, to identify locations of importance to Native Americans, such as archaeological sites and traditional cultural properties.

City of Lathrop

City of Lathrop General Plan

The City of Lathrop General Plan contains goals and policies associated with protection of tribal cultural resources relevant to the proposed project including policies addressing consultation with Native American Tribes that may be impacted by proposed development, as necessary, and in accordance with state, local, and tribal intergovernmental consultation requirements.

City of Manteca

City of Manteca General Plan 2023

The City of Manteca General Plan contains goals and policies associated with protection of tribal cultural resources relevant to the proposed project including policies addressing conducting a site evaluation and mitigation of adverse impacts to archaeological sites.

3.18.4 Impacts and Mitigation Measures

Methods of Analysis

Effective for projects for which an NOP or a notice of negative declaration/mitigated negative declaration was filed on or after July 1, 2015, CEQA requires that a project's impacts on tribal cultural resources be considered as part of the overall analysis of project impacts (PRC Sections 21080.3.1, 21084.2, and 21084.3). The significance of a resource as a tribal cultural resource is assessed by evaluating all of the following:

- Its eligibility for listing in the California Register.
- Its eligibility as a unique archaeological resource pursuant to PRC Section 21083.2.
- Its listing status in the NAHC's SLF.

In addition, a lead agency can independently determine a resource to be a tribal cultural resource. California Native American Tribes are considered experts with respect to tribal cultural resources. Thus,

the analysis of whether project impacts may result in a substantial adverse change to the significance of a tribal cultural resource depends heavily on consultation between the lead agency and culturally and geographically affiliated California Native American Tribes during the CEQA process.

Thresholds of Significance

In accordance with Appendix G of the CEQA Guidelines, an impact is considered significant if the proposed project would:

- Cause a substantial adverse change in the significance of a tribal cultural resource, defined in PRC Section 21074 as either a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American Tribe, and that is:
  - Listed or eligible for listing in the California Register, or in a local register of historical resources as defined in PRC Section 5020.1(k); or
  - A resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of PRC Section 5024.1.
    In applying the criteria set forth in subdivision (c) of PRC Section 5024.1, the lead agency shall consider the significance of the resource to a California Native American Tribe.

Impacts and Mitigation Measures

Table 3.18-2 summarizes the impact conclusions presented in this section.

TABLE 3.18-2
SUMMARY OF IMPACT CONCLUSIONS – TRIBAL CULTURAL RESOURCES

Impact Statement	Flood Risk Reduction Components	Restoration Sites 13, 14, and 16	Multi-Benefit Components
3.18-1: Implementation of the proposed project could cause a substantial adverse change in the significance of a tribal cultural resource, as defined in PRC Section 21074.	SU	SU	SU

NOTE: SU = Significant and Unavoidable

Impact 3.18-1: Implementation of the proposed project could cause a substantial adverse change in the significance of a tribal cultural resource, as defined in PRC Section 21074.

Flood Risk Reduction Components

The proposed flood risk reduction components include raising the height of levees along portions of the existing levee alignment, construction of a dryland levee extension and drained seepage berm, placement of riprap rock slope protection, and various staging areas. Each of these components are described in detail in Chapter 2, *Project Description*, and are presented on Figure 2-2. Construction of the flood risk reduction components of the proposed project would involve ground disturbance (e.g., excavation, grading, grubbing, staging), and may also affect the biological resources community (e.g., fishes, riparian vegetation), visual setting, noise levels, and air quality, among other resources. Such activities are the type that have the potential to affect tribal cultural resources through their partial or complete destruction,

introduction of new visual elements to landscapes associated with or comprising tribal cultural resources and impacts on biological resources associated with or comprising tribal cultural resources.

No tribal cultural resources, as defined in PRC Section 21074, have been identified in the proposed project area where proposed flood risk reduction components would be located through background research, pedestrian survey, or consultation with California Native American Tribes. However, there are three archaeological resources in the proposed project area that may qualify as tribal cultural resources.

Much of the proposed project area where proposed flood risk reduction components would be located is privately owned and access was not provided at the time of the survey; these areas consist of the privately owned areas adjacent to the existing levee, portions of the dryland levee, and Staging Areas 1, 4, 6, 7, 9, 10, and 11. Construction activities and operation and maintenance for the proposed project would involve activities that have the potential to affect archaeological resources. While all areas where non-staging activities are located were covered in the pedestrian survey for the current analysis, many of the staging areas were not. Because the privately owned areas adjacent to the existing levee and Staging Areas 1, 4, 6, 7, 9, 10, and 11 were not covered by the pedestrian survey for the proposed project, there is the potential that as-yet unidentified archaeological resources may be present in these areas. If any archaeological resources were present in these areas and found to qualify as a tribal cultural resource, pursuant to PRC Section 21074, any impacts of these resources could be potentially **significant**.

Restoration Sites 13, 14, and 16

Proposed ecosystem restoration features at Sites 13, 14, and 16 would include excavated floodplains, floodplain side channels, brush mat, habitat wood structures, willow baffles, and upland brush piles. Construction of ecosystem restoration features at Sites 13, 14, and 16 would involve ground disturbance (e.g., excavation, grading, grubbing, planting, staging). Based on the results of the background research, pedestrian survey, consultation with California Native American Tribes, and evaluations provided above, there are no known tribal cultural resources, including archaeological resources, at Sites 13, 14, and 16.

Despite the negative survey results and relatively low potential to impact tribal cultural resources, including archaeological resources, the potential does exist for cultural materials to be uncovered during construction of the proposed project. Impacts on previously undiscovered tribal cultural resources during proposed project construction could be potentially **significant**.

Other Multi-benefit Components

The proposed project also includes implementation of other multi-benefit components including additional ecosystem restoration sites, and recreation features along the levee system. These proposed multi-benefit components are described in Chapter 2, *Project Description*, and are presented on Figure 2-3. Construction activities would involve ground disturbance (e.g., excavation, grading, grubbing, planting) and may also affect the biological resources community (e.g., fishes, riparian vegetation), visual setting, noise levels, and air quality, among other resources. Such activities are the type that have the potential to affect tribal cultural resources through their partial or complete destruction, introduction of new visual elements to landscapes associated with or comprising tribal cultural resources and impacts on biological resources associated with or comprising tribal cultural resources.

No tribal cultural resources, as defined in PRC Section 21074, have been identified in the proposed project area where proposed multi-benefit components would be located through background research, pedestrian survey, or consultation with California Native American Tribes. Therefore, there is no substantial evidence of the presence of any tribal cultural resources in the proposed project area where proposed multi-benefit components would be located. As a result, the multi-benefit components portion of the proposed project is not expected to result in an impact on any tribal cultural resources, as defined in PRC Section 21074.

However, portions of the proposed project area were not included in the pedestrian survey for the current analysis. The multi-benefit components of the proposed project would involve activities that have the potential to affect archaeological resources. However, the exact details, including precise locations, of any such activities have yet to be determined. Therefore, it is not known whether implementing the multi-benefit components portion of the proposed project would affect any archaeological resources, including those that are considered tribal cultural resources. If any archaeological resources were present in these areas and found to qualify as a tribal cultural resource, pursuant to PRC Section 21074, any impacts of these resources from implementation of the multi-benefit components of the proposed project could be potentially **significant**. Additionally, as part of the CEQA analysis for individual multi-benefit components portion of the proposed project, the CEQA lead agency would be required to consult with California Native American Tribes to identify any tribal cultural resources that could be impacted.

Mitigation Measures

Mitigation Measures (FRR/RS/MB): Implement Mitigation Measures 3.7-1, 3.7-2(b) through (f), and 3.7-3(b).

Significance After Mitigation: Mitigation Measures 3.7-1, 3.7-2(b) through (f), and 3.7-3(b) would be implemented to reduce the impacts of the proposed project on tribal cultural resources, as defined in PRC Section 21074, through development and implementation of a Cultural Resources Management Plan, which would require an inventory and significance evaluation for potential archaeological resources in the proposed project area and subsequent development and implementation of measures to avoid or reduce impacts on archaeological resources in the proposed project area, in addition to protective measures for P-39-000006 and -000014/000141 during construction, development and implementation of a cultural resources awareness program, construction monitoring, and implementation of unanticipated discovery protocol for archaeological resources and human remains. However, because the extent and exact location of proposed project multi-benefit components are not known, and because the specific characteristics of any archaeological resources that may be in portions of the proposed project area are unknown, it is not possible to conclude that the mitigation measures, or equally effective mitigation measures, would reduce significant impacts to a less-than-significant level in all cases. Therefore, this impact would be **significant and unavoidable**.

3.19 Utilities and Service Systems

3.19.1 Introduction

This section addresses the potential impacts of the proposed project on utilities and service systems, including those associated with water supply, wastewater treatment and stormwater drainage, electric power and natural gas, telecommunications, and solid waste service systems. Impacts associated with the consumption of energy are addressed in Section 3.8, *Energy*. Impacts associated with water quality and changes to regional drainage are addressed in Section 3.12, *Hydrology and Water Quality*.

No comments specifically addressing aesthetics were received in response to the NOP. See Appendix A to this Draft EIR for NOP comment letters.

3.19.2 Environmental Setting

Water Supply

Water supply in San Joaquin County consists of both surface water and groundwater. Potable water for irrigation and domestic use in the county is provided through multiple agencies and water projects, including federal, regional, and local water districts, special districts, and private systems (San Joaquin County 2016). The South San Joaquin County Water Supply Program addresses current and future needs of the southern part of San Joaquin County, including Manteca and Lathrop.

Water service providers in the Stockton Metropolitan Area include the City of Stockton Municipal Utilities Department, California Water Service Company, and San Joaquin County Maintenance Districts covering Lincoln Village and Colonial Heights. These providers deliver a combination of treated surface water supplied by the Stockton East Water District, Delta Water Supply Project water from the San Joaquin River, and pumped groundwater (City of Stockton 2018).

The City of Lathrop provides water service to 6,308 residential, commercial, agricultural, and industrial service connections from surface and groundwater supplies. In addition, private wells are used by two major industrial facilities within the city. The City of Lathrop's surface water supply is delivered fully treated from the Stanislaus River by the South County Water Supply Project, which is owned and operated by the South San Joaquin Irrigation District (SSJID). In addition to surface water, five groundwater wells supply water to residents, with a sixth that is currently not in operation. Groundwater from Wells 6, 7, 8, 9, and 10 are treated to state and federal drinking water standards at the Louise Avenue Water Treatment Facility (City of Lathrop 2022a).

The City of Manteca's water service area is contiguous with its city limits. In 2015, the City of Manteca served approximately 21,600 connections, and total potable water use was 11,235 acre-feet/year, which equates to an average daily use of 10 million gallons per day (mgd). The City of Manteca's distribution system is supplied by surface water from SSJID's South County Water Supply Program and local groundwater wells. Four turnouts deliver surface water from SSJID to the City of Manteca's system. Seventeen potable groundwater wells supply the distribution system, and 31 non-potable wells provide on-site irrigation supply to parks and other irrigated areas. The 2015 Urban Water Management Plan

projected the City of Manteca's total water demand to increase from 12,844 in 2015 to 27,530 in 2040 (City of Manteca 2022).

Wastewater

Sanitary sewer service within San Joaquin County is provided by several special districts that serve individual communities and include community service districts, public utility districts, sanitary districts, and sewer maintenance districts. Some special districts are connected to cities but operated independently, while other districts were created to serve planned developments that were never built. Some agencies provide sewer collection services only, and contract with major sewer districts who have sewer treatment facilities for wastewater treatment and disposal. The cities of Escalon, Ripon, and Tracy primarily provide service to residents in incorporated areas and rely on private septic systems to serve unincorporated areas.

The City of Stockton's wastewater is collected and treated by the Regional Wastewater Control Facility (RWCF) and the City of Stockton Wastewater Collection System Facilities. The City of Stockton Wastewater Collection System Facilities is a system of 965,289 feet of pipe and 28 pump stations which collect wastewater throughout the city for discharge to the RWCF or a downstream gravity sewer. As of 2012, the average flows through the plant were 32 mgd. The plant's permitted capacity is 42 mgd. The Stockton sewer network runs on gravity fed, trunk lines, and pressurized pipes with several pump and lift stations. The lines have not been recently inspected, and pipe conditions vary throughout the system (San Joaquin County 2014).

The City of Lathrop treats wastewater at the Lathrop Consolidated Treatment (LCTF) Facility and contracts with Manteca for use of the Manteca Wastewater Quality Control Facility (MWQCF). MWQCF treats most of the City of Lathrop's wastewater generated in areas east of I-5, excluding the Crossroads development area. The LCTF treats the wastewater generated west of I-5 and in the Crossroads, Gateway, and South Lathrop development areas. In 2016, a total average annual flow of 1.46 mgd with 0.92 mgd was treated at the MWQCF and 0.54 mgd treated at the LCTF (City of Lathrop 2022a).

The City of Manteca treats wastewater at the MWQCF and serves Manteca and Lathrop. Per contractual agreement, 8.42 mgd of plant capacity is allocated to the City of Manteca and 1.45 mgd is allocated to the City of Lathrop. The MWQCF treats an average dry weather flow of about 7.2 mgd and had an original average dry weather design capacity of 9.87 mg. The MWQCF is an activated sludge tertiary treatment plant. The facility includes an influent pump station, and primary, secondary, and tertiary treatment facilities (City of Manteca 2022).

Stormwater

San Joaquin County is the primary provider for storm drainage infrastructure to unincorporated areas in the county. Many communities do not have a storm drainage system in place and other communities rely entirely on surface drainage to convey stormwater. Surface drainage systems typically receive little maintenance and may experience increased instances of flooding. Typically, there is little time to treat stormwater runoff in these systems, posing a threat to wildlife, farm animals, and groundwater supplies as the runoff picks up contaminants from pavement and is discharged into groundwater aquifers, rivers, or irrigation ditches.

Storm drainage capture and transport in urbanized areas of the City of Stockton is provided by a system of underground storm drains which are separate from the sanitary sewer system. Stormwater flows to detention basins or to outfall points along the City of Stockton's natural drainage ways. There are several locations where storm drain catch basins feed into the sanitary collection system. The storm drainage system is generally connected to flood control canals and channels, which drain into sloughs of the San Joaquin Delta. Some unincorporated parts of the Stockton community area are served by roadside drainage ditches (San Joaquin County 2014).

The City of Lathrop's storm drainage collection system uses pipelines, surface channels, and, in some locations, detention basins that store peak flows to direct drainage to the San Joaquin River. The city's documented existing storm drain infrastructure includes approximately 916 inlets, 691 utility holes, 21 pump stations, 4 outfalls to the San Joaquin River, 13 detention basins, and 36 miles of storm drain. The last comprehensive storm drain master plan was published in 1992 and covers facilities in and adjacent to historic Lathrop. As development has occurred, specific plans have become the most current source of information on drainage facilities in each new development. These specific plans include Central Lathrop, Crossroads Business Park, Historic Lathrop, Mossdale Landing, North Lathrop, River Islands, and South Lathrop areas (City of Lathrop 2022a).

The City of Manteca operates and maintains a storm drain system to control stormwater and protect residents and business from flooding and stormwater damage. The City of Manteca's system includes approximately 150 miles of pipelines, 52 pump stations, and 54 detention basins. SSJID owns a complex network of irrigation laterals and drains that run within the City of Manteca where the city pumps stormwater, which is conveyed to the San Joaquin River either directly or via the French Camp Outlet Canal. An agreement between the City of Manteca and SSJID requires that the city monitor stormwater discharge to SSJID facilities to make sure that facilities capacities are not exceeded. The City of Manteca is also required to control stormwater quality to meet applicable regulations (City of Manteca 2022).

Solid Waste Disposal

The County Solid Waste Management Plan governs solid waste management in all county jurisdictions. The San Joaquin County Department of Public Works department is responsible for solid waste management in the county. Most waste in San Joaquin County is municipal waste residential and commercial/industrial sources. Three landfills serve San Joaquin County: the Forward Landfill, Foothill Sanitary Landfill, and North County Landfill.

San Joaquin County has implemented several aggressive special waste collection and recycling programs that have led it to surpass the recycling goals required by the state. Composting, enhanced recycling, and waste oil programs are provided at recycling centers, materials recovery facilities, and transfer facilities throughout the county. These facilities and programs include: 9 active or planned green and agricultural waste composting facilities; 9 transfer or processing facilities; and 73 recycling centers. The California Department of Resources Recycling and Recovery (CalRecycle) estimates that the three remaining landfills (the Forward Landfill, Foothill Sanitary Landfill, and North County Landfill) have sufficient capacity to serve San Joaquin County potentially through 2054 (CalRecycle 2025a).

The Certified Unified Programs Agency acts to consolidate six state-mandated environmental programs at the local level, and within San Joaquin County includes the Hazardous Materials Program and the

Hazardous Waste Program. These programs ensure the proper handling and disposal of hazardous material and wastes created by local businesses and industries, including hospitals (San Joaquin County 2014).

Electricity and Natural Gas Service

Pacific Gas and Electric Company supplies the proposed project area, including Stockton, Manteca, and Lathrop, with natural gas and electricity from the company's inter-grid system. In 2024, San Joaquin County consumed around 6,029 million kilowatt-hours per year (kWh/year) of electricity and 177 million therms of natural gas (CEC 2025).

Energy conservation efforts aim to site buildings for optimal sun exposure, implement active and passive solar heating and water systems, shade streets to reduce radiation heating, and implement land use and transportation policies that encourage fewer and shorter vehicle trips. The Title 24 California Building Codes outline energy efficiency measures for all new development and standard conditions for incorporation of solar energy conservation. Additional energy efficiency would be achieved by requiring that all new residential development meet the state Energy Star qualifications.

Telecommunication Service

Telecommunications include telephone service, cable television service, and internet service and involves the sending of information over a distance using electronic means, typically through cables, radio waves, or other communication technologies. Telecommunication services within the vicinity of the proposed project include internet and cable television services provided by AT&T, Project Genesis, T-Mobile, and Verizon; and several mobile providers including AT&T, Xfinity, Frontier, Viasat, T-Mobile, and Verizon (FCC 2025).

3.19.3 Regulatory Setting

Federal

Safe Drinking Water Act

The Safe Drinking Water Act (SDWA) was established to protect the quality of drinking water in the U.S. Originally passed by Congress in 1974, this federal law focuses on all waters actually or potentially designed for drinking use, whether from aboveground or underground sources. The SDWA authorizes the U.S. Environmental Protection Agency to establish minimum standards to protect tap water and requires all owners or operators of public water systems to comply with these primary (health-related) standards. State governments, which can be approved to implement these rules for the U.S. Environmental Protection Agency, also encourage attainment of secondary standards (nuisance-related).

State

California Safe Drinking Water Act

The California SDWA provides for the operation of public water systems and imposes on the State Water Resources Control Board (State Water Board) various duties and responsibilities for the regulation and control of drinking water in California consistent with the federal SDWA.

The State Water Board's Division of Drinking Water regulates public water systems, oversees water recycling projects, permits water treatment devices, supports and promotes water system security, and performs a number of other functions. The Division of Drinking Water consists of three branches: The Northern California Field Operations Branch, the Southern California Field Operations Branch, and the Program Management Branch. The Northern California and Southern California field operations branches are responsible for enforcing the federal and California Safe Drinking Water Acts and conducting regulatory oversight of public water systems in California. In this undertaking, staff members perform field inspections, issue operating permits, review plans and specifications for new facilities, take enforcement actions for noncompliance with laws and regulations, review water quality monitoring results, and support and promote water system security. The field operations branches also participate in funding infrastructure improvements, conducting source water assessments, overseeing water recycling projects, and supporting public water systems in drought preparation and water conservation.

Integrated Waste Management Act (Assembly Bill 939)

The regulations affecting solid waste disposal in California can be found in Title 14 of the California Public Resources Code, the Integrated Waste Management Act. Originally enacted in 1989 through Assembly Bill (AB) 939, the law is designed to increase the life of landfills by requiring diversion of solid waste from landfills in the state and conservation of other resources through increased recycling programs and incentives.

AB 939 requires counties to prepare integrated waste management plans to implement landfill diversion goals and requires cities and counties to prepare and adopt source reduction and recycling elements. These elements must establish a program for managing solid waste generated within the city or county's jurisdiction. Each source reduction and recycling element must include, but is not limited to, all of the following components for solid waste generated within the plan's jurisdictional area:

- Waste characterization
- Source reduction
- Recycling
- Composting
- Solid waste facility capacity
- Education and public information
- Funding
- Special waste

Source reduction and recycling element programs are designed to achieve landfill diversion goals by encouraging recycling in the manufacture, purchase, and use of recycled products. AB 939 also requires California cities to implement plans designed to divert the total solid waste generated within each jurisdiction by 50 percent, based on a base year of 2000. The diversion rate is adjusted annually for population and economic growth when calculating the percentage achieved in a particular jurisdiction.

California Public Resources Code Section 41780

The California Legislature set a policy goal that not less than 75 percent of solid waste generated in the state would be source reduced, recycled, or composted beginning on January 1, 2020. A 50 percent diversion rate is enforced for local jurisdictions.

Assembly Bill 1220

CalRecycle and the State Water Board completed parallel rulemaking as a result of AB 1220 (Chapter 656, Statutes of 1993). AB 1220 required clarification of the roles and responsibilities of CalRecycle and the State Water Board, the regional water boards, and CalRecycle's local enforcement agencies in regulating solid waste disposal sites. The approved regulations in California Code of Regulations (CCR) Title 27 combine the prior disposal site/landfill regulations of CalRecycle and the State Water Board, which were maintained in CCR Title 14 and Title 23, Chapter 15 (which contains requirements for disposal of hazardous waste).

The purpose of CalRecycle's regulatory standards is to protect public health and safety and the environment. The regulations apply to active and inactive disposal sites, including facilities or equipment used there. These standards clarify that the local enforcement agency has primary responsibility for enforcing the state's minimum standards, working in cooperation with the regional water board or other oversight agencies.

The CCR Title 27 regulations also include the following operating criteria and requirements for landfills and disposal sites:

- Sufficient materials to cover waste to prevent a threat to human health and the environment.
- Proper handling of waste and the equipment needs of solid waste facilities.
- Control of activities on-site.
- Control of landfill gas is made from the decomposition of wastes on-site.
- Proper operation of the site to protect the site from fire threats.

Assembly Bill 341

To reduce greenhouse gas emissions from disposal of recyclables in landfills, AB 341 requires local jurisdictions to implement commercial solid waste recycling programs. Businesses that generate 4 cubic yards (CY) or more of solid waste per week or multifamily dwellings of five units or more must arrange for recycling services. To comply with AB 341, jurisdictions' commercial recycling programs must include education, outreach, and monitoring of commercial waste generators and must report on the process to CalRecycle. Jurisdictions may enact commercial recycling ordinances to outline how the goals of AB 341 will be achieved.

To comply with AB 341, businesses must arrange for collection of recyclables by self-hauling, subscribing to a franchised hauler for collection, or subscribing to a recycling service that may include mixed waste processing that yields diversion results comparable to source separation (CalRecycle 2025b).

Assembly Bill 1826

To further reduce greenhouse gas emissions from disposal of organic materials in landfills, AB 1826 required certain businesses to recycle their organic waste beginning on April 1, 2016, with required recycling services dependent on the amount of solid waste generated per week. Similar to AB 341, jurisdictions must implement an organic waste recycling program that includes education, outreach, and monitoring of businesses that must comply. *Organic waste* refers to food waste, green waste, landscaping and pruning waste, nonhazardous wood waste, and food-soiled paper that is mixed with food waste.

Local

The proposed project area includes lands in San Joaquin County and the cities of Stockton, Lathrop, and Manteca. Each of these jurisdictions have general plans with goals and policies that address utilities and service systems (see **Table 3.19-1**). Applicable general plan goals and policies are summarized below along with relevant local regulations.

TABLE 3.19-1
APPLICABLE GENERAL PLAN GOALS AND POLICIES – UTILITIES AND SERVICE SYSTEMS

General Plan	Goals and Policies
San Joaquin County	Community Development Element, Goal C-4, Policy C-4.2; Public Facilities and Services Element, Goal IS-1, Policy IS-1.1, Goal IS-4, Policy IS-4.3, Goal IS-5, Policy IS-5.6, Goal IS-6, Policy IS-6.3, Goal IS-7, Policy IS-7.1
City of Stockton	Land Use Element, Goal LU-6, Policy LU-6.3; Safety Element, Goal SAF-3, Policies SAF-3.2 and SAF-3.4
City of Lathrop	Land Use Element, Goal LU-3, Policy LU-3.6; Public Facilities and Services Element, Goal PFS-1, Policy PFS-1.7 and Goal PFS-2, Policies PFS-2.1, PFS-2.3, PFS-2.5, Goal PFS-3, Policies PFS-3.1, PFS-3.5, Goal PFS-4. Policy PS-4.1, and PFS-4.5, Goal PFS-5, Policies PFS-5.2 and PFS-5.4, Goal PFS-9, Policy PFS-9.6
City of Manteca	Growth Management Element, Goal GM-1, Policy GM-1.8; Community Facilities and Services Element, Goal CF-1, Policy CF-1.2, Goal CF-6, Policy CF-6.1 and CF-6.7, Goal CF-7, Policy CF-7.1, Goal CF-8, Policies CF-8.1 and CF-8.2, Goal CF-10, Policy CF-10.1, Goal CF-11, Policy CF-11.1

SOURCES: City of Lathrop 2022; City of Manteca 2024a; City of Stockton 2018; San Joaquin County 2016

San Joaquin County

San Joaquin County General Plan

The San Joaquin County General Plan includes goals, policies, and implementation actions that address wastewater treatment and disposal requirements, treated water quality, and alternative treatment methods to ensure wastewater is treated to an acceptable level and disposed of safely. Relevant goals, policies, and implementation actions address ensuring reliable supplies of water for unincorporated areas to meet the needs of existing and future residents and businesses, while promoting water conservation and the use of sustainable water supply sources. Additionally, San Joaquin County requires that new Urban Communities demonstrate access to adequate water supplies to meet the ultimate buildout of the community, consistent with General Plan policies for reducing further groundwater aquifer overdraft and maintaining sufficient water supplies for agriculture. Applicants for new Urban Communities shall be required to study and guarantee that existing and future water supply needs can be met and that existing users' water supplies will not be negatively affected; and must consider the availability of a long-term, reliable potable water supply as a primary factor in the planning of areas for new growth and development. The General Plan requires the county to review and update the Waste Management Plan every 5 years as necessary.

City of Stockton

Envision Stockton 2040 General Plan

The City of Stockton General Plan includes goals and policies that address utilities and public service goals to provide for orderly, well-planned, and balanced development. The plan provides overall land use

policies for the city, including the connection between land use and utilities along with other infrastructure and ensuring that all neighborhoods have access to well-maintained public facilities and utilities that meet community service needs. The plan requires development to mitigate any impacts on existing sewer, water, stormwater, street, fire station, park, or library infrastructure that would reduce service levels, and to ensure that public facilities, infrastructure, and related land area and other elements are designed, and right-of-way is acquired to meet 2040 planned development requirements to avoid the need for future upsizing or expansion, unless planned as phased construction. The plan requires developers to work with wastewater, water, and stormwater utilities to seek funding to complete sewer, water, and stormwater systems in areas within the City of Stockton Sphere of Influence where parcels still rely on septic systems, wells, and roadside ditches.

City of Lathrop

City of Lathrop General Plan

The City of Lathrop General Plan includes a Public Facilities and Services Element that includes goals, policies, and actions that address the infrastructure, utility, and community services and facilities. The goals address water services, storm drainage, energy, solid waste and recycling, and recycled water in order to provide effective, adequate cost-efficient and high-quality community services and facilities for residents, businesses, institutions, and visitors in Lathrop. The General Plan requires that existing and projected development is provided with reliable, adequate access to clean, safe, and potable water, and that the water system will be managed to ensure that the water supply is adequate to meet the needs of existing and future development and is used in a sustainable manner. The plan requires coordination with SSJID when considering land use changes in order to assist SSJID in planning for adequate capacity to accommodate future growth and requires that during the review of development applications, the effect of incremental increases in the demands on groundwater supply, water quality, wastewater, and energy services is considered. The plan requires continued coordination with San Joaquin County to ensure adequate landfill capacity in the region and supports the use of recycled water to meet water demands.

City of Manteca

City of Manteca General Plan

The City of Manteca General Plan includes goals and policies that address improving utility and service systems. The City of Manteca General Plan includes measures related to the provision of reliable and adequate domestic water, sewage, drainage, electricity/natural gas, and solid waste. The plan requires an adequate, reliable, and safe water supply, storage, and distribution system to meet the needs of existing and projected development is provided and is used in a sustainable manner. The plan requires that an adequate sewage collection, treatment, and disposal system is maintained to meet the needs of existing and projected development, and that adequate wastewater collection and treatment infrastructure is ensured to serve existing and future development and the safe disposal of wastes. The plan also requires the maintenance and improvement of Manteca's storm drainage facilities.

3.19.4 Impacts and Mitigation Measures

Methods of Analysis

Thresholds of Significance

In accordance with Appendix G of the CEQA Guidelines, an impact is considered significant if the proposed project would:

- Require or result in the relocation or construction of new or expanded water, wastewater treatment or storm water drainage, electric power, natural gas, or telecommunications facilities, the construction or relocation of which could cause significant environmental effects.
- Have sufficient water supplies available to serve the project and reasonably foreseeable future developments during normal, dry and multiple dry years.
- Result in a determination by the wastewater treatment provider, which serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments.
- Generate solid waste in excess of state or local standards, or in excess of the capacity of local infrastructure, or otherwise impair the attainment of solid waste reduction goals.
- Comply with federal, state, and local management and reduction statutes and regulations related to solid waste.

Impacts Not Further Evaluated

Construction of new or expanded water, wastewater treatment, storm water drainage, electric power, natural gas, or telecommunications facilities.

Implementation of the proposed project would not involve the construction of any occupied structures or increase in population that would result in a change in water, wastewater treatment, storm drainage, electrical power, natural gas, or telecommunications use over existing conditions. Therefore, **no impact** would occur.

Exceed wastewater treatment provider's capacity, in addition to serving the provider's existing commitments.

Implementation of the proposed project would not involve the construction of any occupied structures or increase in population that would result in an increase in wastewater that would require treatment in excess of current wastewater treatment capacity. Therefore, **no impact** would occur.

Impacts and Mitigation Measures

Table 3.19-2 summarizes the impact conclusions presented in this section.

TABLE 3.19-2
SUMMARY OF IMPACT CONCLUSIONS – UTILITIES AND SERVICE SYSTEMS

Impact Statement	Flood Risk Reduction Components	Restoration Sites 13, 14, and 16	Other Multi-Benefit Components
3.19-1: Implementation of the proposed project would result in the need to relocate existing utilities infrastructure.	LS	LS	LS
3.19-2: Implementation of the proposed project would result in the need for water that could have an impact on water supplies during normal, dry and multiple dry years.	LS	LS	LS
3.19-3: Implementation of the proposed project could generate solid waste in excess of state or local standards, or in excess of the capacity of local infrastructure, or otherwise impair the attainment of solid waste reduction goals.	LS	LS	LS

NOTE: LS = Less than Significant

Impact 3.19-1: Implementation of the proposed project would result in the need to relocate existing utilities infrastructure.

All Project Components

The proposed project would require relocation, rehabilitation, and/or replacement of existing utilities that are within the proposed project footprint, that penetrate the existing levee, or that cross the alignment for the proposed dryland levee extension (see subsection 2.5.1). Existing electric utility poles within the footprint of the fix-in-place levee improvements and the dryland levee extension would be relocated. Modifications to the existing SSJID irrigation pipelines and ditches, and relocation of potential gas lines, would occur along the existing dryland levee and the dryland levee extension alignment, at road crossings at Woodward Avenue, Airport Way, Oleander Avenue, Fig Road, and Union Road. Irrigation and drainage pipes penetrating the existing levee would be relocated, rehabilitated, and/or replaced. In addition, site preparation could include the relocation of drinking and agricultural water wells located within the proposed project footprint.

The proposed ecosystem restoration at Sites 13, 14, and 16 and other recreational features would not result in the construction of any new facilities for stormwater, wastewater, or other utilities or result in a population increase that would generate an increase in demand for utilities and service systems requiring new construction. However, it is expected that some existing pumps, water, irrigation, and other utilities associated with prior land uses could be encountered on-site. Any such infrastructure would be removed and disposed of (if no longer necessary), replaced, or relocated.

The utilities infrastructure that is constructed during the development of the flood risk reduction components and Sites 13, 14, and 16 would replace or relocate existing infrastructure. No new demand for utilities would be made on the county's and cities' current resources. Any utility poles, gas lines, irrigation and drainage pipelines and ditches, pumps, and water wells proposed for replacement would be constructed and updated within the same footprint as existing infrastructure. The relocation of utilities would occur along adjacent alignments to existing lines or would be otherwise located within the proposed project footprint evaluated across the resource topics presented in the Draft EIR. As a result, it is not expected that this activity would cause adverse environmental effects. Therefore, this impact would be **less than significant**.

Mitigation Measures

Mitigation Measures (FRR/RS/MB): None required.

Impact 3.19-2: Implementation of the proposed project would result in the need for water that could have an impact on water supplies during normal, dry and multiple dry years.

Flood Risk Reduction Components

The proposed flood risk reduction components include raising the height of levees along portions of the existing levee alignment, construction of a dryland levee extension and drained seepage berm, and placement of riprap rock slope protection, and various staging areas. Construction of these components would require minimal water supply for dust control. Water for dust control would be supplied to construction sites by water trucks. Water would be sourced from locally available sources of non-potable water and/or municipal fire hydrants regionally based on the vicinity to the proposed project area and at volumes based on the size of the construction site. The use of water for dust control would not substantially increase non-potable water use over current conditions compared to local uses, such as agricultural irrigation. Water demand would be temporary and minor, and no new or expanded entitlements would be required. Similar to ongoing maintenance, O&M of the proposed flood risk reduction components would include inspections, weed abatement, removal of encroachments and high-hazard vegetation to ensure levee integrity, replacement and re-working of displaced or launched revetment following large flood events, and adequate levee access along the levee toe road. These activities would not require water supply. Therefore, potential impacts associated with availability of water supplies would be **less than significant**.

Restoration Sites 13, 14, and 16 and Other Multi-benefit Components

Proposed ecosystem restoration features at Sites 13, 14, and 16 would include excavated floodplains, floodplain side channels, brush mat, habitat wood structures, willow baffles, and upland brush piles. The proposed project also includes implementation of other multi-benefit components, including additional ecosystem restoration sites, and recreation features along the levee system. As described above, construction activities would require minimal water supply for dust control. Water for dust control would be supplied to construction sites by water trucks. Water would be sourced from locally available sources of non-potable water and/or municipal fire hydrants regionally based on the vicinity to the proposed project area and at volumes based on the size of the construction site. The use of water for dust control would not substantially increase non-potable water use over current conditions compared to local uses, such as agricultural irrigation. Once the construction of ecosystem restoration features are completed, ongoing maintenance would include temporary irrigation of new plants. An irrigation main line to pump water from the river edge or from a domestic water source would be used for irrigation. Water would be applied by drip or spray irrigation, and the irrigation system may be partially or entirely removed for seasonal high-water flows. Over time, maintenance frequency and intensity would be expected to decrease as the sites become more self-sustaining, irrigation lines would be removed, and less frequent activities to control invasive plants would occur; therefore, operation of the proposed project would not result in a substantial increase in demand for water supplies. Impacts on water demand would be **less than significant**.

Mitigation Measures

Mitigation Measures (FRR/RS/MB): None required.

Impact 3.19-3: Implementation of the proposed project could generate solid waste in excess of state or local standards, or in excess of the capacity of local infrastructure, or otherwise impair the attainment of solid waste reduction goals.

Flood Risk Reduction Components

Construction activities associated with proposed flood risk reduction components would result in the generation of waste as a result of the demolition of existing facilities, modification of levees, and removal of vegetation. Demolition would include buildings, barns and other agricultural structures, fencing, gates, stairs, posts, standpipes, and other minor appurtenances. More extensive demolition, including existing removal of asphalt pavement, would be required at the Mossdale Crossing County Park and removal of approximately 17 modular homes and appurtenances at the Oakwood Lake Mobile Estates at the end of Aplicella Court. Portions of the public paved roads would be demolished where the existing dryland levee and proposed dryland levee extension cross Woodward Avenue, Airport Way, Oleander Avenue, Fig Road, and Union Road. O&M activities would not introduce new land uses to the area. Similar to existing conditions, the activities would include weed abatement and vegetation upkeep which would generate green waste for disposal.

All generated material or debris would be hauled off-site and disposed of at a suitable landfill (see Chapter 2, *Project Description*, subsection 2.5.1). There are currently three permitted haulers for industrial waste: Republic Services, Waste Management, and Cal-Waste Recovery Systems. Solid waste is disposed at the Forward Landfill, Foothill Sanitary Landfill, and North County Landfill. CalRecycle estimates that the three remaining landfills have sufficient capacity to serve the county potentially through 2054. The expected volume (in CY) of construction excavation and demolition waste to be hauled off-site are provided in Table 2-6 in Chapter 2, *Project Description*. All waste would be disposed of in accordance with federal, state, and local statutes and regulations. In addition, there is no shortage of landfill capacity under current conditions; therefore, this impact would be **less than significant**.

Restoration Sites 13, 14, and 16 and Other Multi-benefit Components

Proposed ecosystem restoration features at Sites 13, 14, and 16 would include excavated floodplains, floodplain side channels, brush mat, habitat wood structures, willow baffles, and upland brush piles. The proposed project also includes implementation of other multi-benefit components, including additional ecosystem restoration sites and recreation features along the levee system. Proposed ecosystem restoration sites would be cleared and grubbed to remove existing unwanted vegetation. Where feasible, cut material would be reused on-site to create higher elevation upland areas and high-flow wildlife habitat, and soil would be compacted to allow for replanting. For sites where it is not feasible to balance cut and fill or where excess cut material may be beneficially reused off-site, excess fill would be removed using haul trucks with end-dump trailers or similar equipment.

All generated material or debris would be hauled off-site and disposed of at a suitable landfill (see Chapter 2, *Project Description*, subsection 2.5.1). All waste would be disposed of in accordance with federal, state, and local statutes and regulations. The expected volume (in CY) of construction excavation and demolition waste to be hauled off-site are provided in Table 2-6 in Chapter 2, *Project Description*. In addition, there is no shortage of landfill capacity under current conditions; therefore, this impact would be **less than significant**.

Mitigation Measures

Mitigation Measures (FRR/RS/MB): None required.

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3.20 Wildfire

3.20.1 Introduction

This section assesses potential effects related to wildfire that could result from implementation of the proposed project. The section includes relevant baseline information, including a description of existing fire protection and existing wildfire hazard conditions, and a description of potential impacts that could result from the proposed project.

No comments specifically addressing wildfire were received in response to the NOP. See Appendix A to this Draft EIR for NOP comment letters.

3.20.2 Environmental Setting

The proposed project area is surrounded by agricultural land, with some industrial and residential uses. There are no designated forestry lands within or adjacent to the proposed project area and it is not located within a heavily wooded area nor is it surrounded by wildlands or forests.

Emergency Evacuation Plans

San Joaquin County is exposed to many hazards, all of which have the potential to disrupt the community, causing damage, and creating casualties. Possible natural hazards include floods, extreme weather, and fires. San Joaquin County is a partner in the California Governor's Office of Emergency Services (Cal OES) Mutual Aid Region IV planning efforts, including the Region IV Multi-Casualty Incident Plan (San Joaquin County 2005), which includes planning with 11 counties in the Cal OES Region IV Mutual Aid Area. These include San Joaquin, Alpine, Amador, El Dorado, Calaveras, Nevada, Placer, Sacramento, Stanislaus, Tuolumne and Yolo. The plan outlines response and mutual aid sharing of resources primarily for large-scale multi-casualty incidents. The plan is updated by the San Joaquin County Emergency Medical Services Agency in concert with regional emergency medical services (EMS) agencies and fire and medical partners in emergency response. San Joaquin County's Emergency Operations Plan (EOP) is part of a suite of plans that address various elements of the county's emergency management program. While EOP focuses on basic response and recovery, other plans address San Joaquin County's approach to mitigation, continuity, and other aspects of emergency management. Interstates 5, 205, 580 and State Routes 99, 12, 88, 4, 120, 132, and 26 are the major transportation routes through the county. Interstate 5 and State Route 99 run north and south, while State Routes 4, 12, 26, 88, 120, 132, and Interstates 205 and 580 are east and west. These major highway/freeway routes would be highly utilized by both county residents and tourists as possible evacuation routes in the event of an emergency.

Fire Hazard Severity Zones

CAL FIRE is responsible for managing and protecting California's natural resources and has been charged with the identification of FHSZs. These zones include FHSZs in State Responsibility Areas (SRAs) and all Very High FHSZs within Local Responsibility Areas. Factors that account for wildfire behavior include several variables, primarily climate, weather, vegetation, topography, and human

influences, which intermix to produce local and regional fire regimes that affect how, when, and where fires burn. FHSZs are categorized as Moderate, High, and Very High, which are defined as:

- **Moderate**: Wildland areas supporting areas of typically low fire frequency and relatively modest fire behavior or developed/urbanized areas with a very high density of nonburnable surfaces including roadways, irrigated lawn/parks, and low total vegetation cover (less than 30 percent) that is highly fragmented and low in flammability (e.g., irrigated, manicured, managed vegetation).
- **High**: Wildland areas that support medium- to high-hazard fire behavior and roughly average burn probabilities or developed/urban areas, typically with moderate vegetation cover and more limited nonburnable cover. Vegetation cover typically ranges from 30 to 50 percent and is only partially fragmented.
- **Very High:** Wildland areas that support high to extreme fire behavior or developed/urban areas with high vegetation density (greater than 70 percent cover) and associated high fuel continuity. Actions taken within Very High FHSZs are subject to additional restrictions and requirements by the state and local governments.

The proposed project area and surrounding land is designated "Other Unzoned" for fire hazard severity by CAL FIRE and is located over 10 miles from the nearest High FHSZ (CAL FIRE 2024).

3.20.3 Regulatory Setting

Federal

The proposed project area is located within a Local Responsibility Area for purposes of fire protection. As such, there are no federal regulations regarding wildfire that pertain to the proposed project.

State

California Department of Forestry and Fire Protection

Title 14 of the California Code of Regulations, Division 1.5, establishes regulations for CAL FIRE in SRAs where CAL FIRE is responsible for wildfire protection. These regulations constitute the basic wildland fire protection standards of the California Board of Forestry and Fire Protection. They have been prepared and adopted for the purpose of establishing minimum wildfire protection standards in conjunction with building, construction, and development in SRAs. Additionally, Title 14, Division 1.5, Chapter 7, Subchapter 2 sets forth the minimum standards for emergency access and egress (Article 2), signage (Article 3), water supply (Article 4), and fuel modification standards (Article 5) for lands within SRAs.

Emergency Services Act

Under the Emergency Services Act, Government Code Section 8550 et seq., the state developed an emergency response plan to coordinate emergency services provided by federal, state, and local agencies. Rapid response to incidents involving wildfire and other natural and/or human-caused incidents is an important part of the plan, which is administered by Cal OES. The office coordinates the responses of other agencies, including the California Environmental Protection Agency, the California Highway Patrol, regional water quality control boards, air quality management districts, and county disaster response offices.

California Public Resources Code

Fire Hazards Severity Zones – California Public Resources Code Sections 4201–4204

California Public Resources Code Sections 4201–4204 require CAL FIRE to prepare FHSZ maps for all lands within SRAs. Each zone is to embrace relatively homogeneous lands and shall be based on fuel loading, slope, fire weather, and other relevant factors present, including areas where winds have been identified as a major cause of wildfire spread. CAL FIRE adopted FHSZ maps for SRAs in November 2007. The proposed project area is within a Very High FHSZ.

Local

The proposed project area includes lands in San Joaquin County and the cities of Stockton, Lathrop, and Manteca. Each of these jurisdictions have general plans with goals and policies that address wildfire (see **Table 3.20-1**). Applicable general plan goals and policies are summarized below along with relevant local regulations.

TABLE 3.20-1
APPLICABLE GENERAL PLAN GOALS AND POLICIES – WILDFIRE

General Plan	Goals and Policies
San Joaquin County	Public Health and Safety Element, Goal PHS-4, Policies PHS-4.3, PHS-4.4, and PHS-4.5
City of Stockton	No applicable General Plan Goals or Policies
City of Lathrop	Public Safety Element, Goal PS-2, Policy PS-2.7
City of Manteca	No applicable General Plan Goals or Policies

SOURCES: City of Lathrop 2022; City of Manteca 2024; City of Stockton 2018; San Joaquin County 2016

San Joaquin County

San Joaquin County General Plan

The San Joaquin County General Plan includes goals and policies that address the measures protecting people and property from the catastrophic effects of natural and human-caused fire. The county recognizes the threat of wildfire and has created protection plans, prevention measures, and protection coordination to ensure safety. There will be implementation of state recommendations for fire prevention in FHSZs and require new and/or existing development to provide clearance around structures, use fire-resistant ground cover, build with fire-resistant roofing materials, participate in fuel load reduction, and take other appropriate measures. New development in high fire hazard areas will have fire-resistant vegetation, cleared fire breaks separating communities or clusters of structures from native vegetation, or a long-term comprehensive vegetation and fuel management program consistent with California Public Resources Code Sections 4290 and 4291 for wildland fire interface and vegetation management.

City of Stockton

Envision Stockton 2040 General Plan

The City of Stockton General Plan did not include goals and policies that specifically address wildfire. The city has a relatively low risk of wildfire hazards, given the lack of forest areas that could serve as fuel

source for a wildfire. Therefore, the General Plan does not include specific goals or policies related to wildfire.

City of Lathrop

City of Lathrop General Plan

The City of Lathrop General Plan includes goals and policies that address public safety that are intended to reduce the risk of death, injury, property damage, economic loss, and harm due to natural and manmade disasters. The city aims to protect the safety of life and property and prepare for urban and wildfire emergencies. The plan requires regular monitoring of CAL FIRE's fire hazard overlay map for changes in fire hazard severity districts in Lathrop.

City of Manteca

City of Manteca General Plan

The City of Manteca General Plan did not include goals and policies that specifically address wildfire. The proposed project area is not located in or near any SRAs and there are no lands classified as Very High FHSZ within or near the proposed project area. Therefore, the General Plan would have no impact related to wildfire risks associated with lands in or near SRAs or lands classified as Very High FHSZ.

3.20.4 Impacts and Mitigation Measures

Methods of Analysis

Thresholds of Significance

In accordance with Appendix G of the CEQA Guidelines, an impact is considered significant if the proposed project would:

- Substantially impair an adopted emergency response plan or emergency evacuation plan.
- Due to slope, prevailing winds, and other factors, exacerbate wildfire risks, and thereby expose project occupants to pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire.
- Require the installation or maintenance of associated infrastructure (such as roads, fuel breaks, emergency water sources, power lines or other utilities) that may exacerbate fire risk or that may result in temporary or ongoing impacts to the environment.
- Expose people or structures to significant risks, including downslope or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes.

Impacts and Mitigation Measures

Table 3.20-2 summarizes the impact conclusions presented in this section.

TABLE 3.20-2
SUMMARY OF IMPACT CONCLUSIONS – WILDFIRE

Impact Statement	Flood Risk Reduction Components	Restoration Sites 13, 14, and 16	Other Multi-Benefit Components
3.20-1: Implementation of the proposed project could impair emergency access or an emergency evacuation plan in the proposed project area.	LSM	LSM	LSM
3.20-2: Implementation of the proposed project may, due to slope, prevailing winds, and other factors, exacerbate wildfire risks, and thereby expose project occupants to pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire.	LS	LS	LS
3.20-3: Implementation of the proposed project may require the installation or maintenance of associated infrastructure (such as roads, fuel breaks, emergency water sources, power lines or other utilities) that may exacerbate fire risk or that may result in temporary or ongoing impacts to the environment.	LS	LS	LS
3.20-4: Implementation of the proposed project may expose people or structures to significant risks, including downslope or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes.	LS	LS	LS

NOTE: LS = Less than Significant; LSM = Less than Significant with Mitigation

Impact 3.20-1: Implementation of the proposed project could impair emergency access or an emergency evacuation plan in the proposed project area.

All Project Components

The flood risk reduction component includes raising the height of levees along portions of the existing levee alignment, construction of a dryland levee extension and drained seepage berm, and placement of riprap rock slope protection, and various staging areas. The proposed project area and surrounding land is designated "Other Unzoned" for fire hazard severity by CAL FIRE and is located over 10 miles from the nearest High FHSZ. As described under Impact 3.17-1, temporary construction traffic would include a substantial number of haul trips, which could temporarily degrade conditions for multimodal travel near the construction sites. In addition, construction of the dryland levee extension would require the temporary closure of public roads where they intersect the alignment, including Woodward Avenue, Airport Way, Oleander Avenue, Fig Road, and Union Road.

Proposed ecosystem restoration features at Sites 13, 14, and 16 would include excavated floodplains, floodplain side channels, brush mat, habitat wood structures, willow baffles, and upland brush piles. The proposed project also includes implementation of other multi-benefit components including additional ecosystem restoration sites, and recreation features along the levee system. These proposed multi-benefit components are described in Chapter 2, *Project Description*, and are presented on Figure 2-3. As described above, the proposed project area and surrounding land is designated "Other Unzoned" for fire hazard severity by CAL FIRE and is located over 10 miles from the nearest High FHSZ. Emergency access to construction sites would be maintained throughout proposed project construction and signage would be installed at all ingress and egress locations. Haul routes would be used in both directions to prevent construction delays due to traffic or road closures and emergency vehicles would be able to access the haul routes as well. Furthermore, the proposed project does not divide an established community or otherwise restrict travel to or on major roadways that facilitate emergency response or evacuation.

However, as described above, construction of proposed project components would result in a substantial number of haul trips that could temporarily degrade conditions for multimodal travel near construction sites. In addition, construction of the dryland levee extension would require temporary closure of public roads where they intersect the alignment. As described in Chapter 2, *Project Description*, neighborhoods along haul routes would be notified of haul routes, ingress and egress points, staging areas, detours, lane closures (if any), and closed recreational areas (including bike paths) approximately one week prior to commencement of construction activities. Signage would be installed at all ingress and egress locations to alert the public of construction activities and potential restrictions on access during construction activities. Nevertheless, construction activities could result in temporary impairment of emergency access or an emergency evacuation plan in the proposed project area. Therefore, this impact is considered **significant**.

Mitigation Measures

Mitigation Measure (FRR/RS/MB): Implement Mitigation Measure 3.17-1.

Significance After Mitigation: Mitigation Measure 3.17-1 requires the preparation and implementation of a construction traffic management plan, such that implementation of the proposed project would not interfere with emergency response efforts. Implementing this mitigation measure would reduce the potentially significant impact related to impairment of emergency access or an emergency evaluation plan to a **less-than-significant level**.

Impact 3.20-2: Implementation of the proposed project may, due to slope, prevailing winds, and other factors, exacerbate wildfire risks, and thereby expose project occupants to pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire.

All Project Components

The topography of the proposed project area is generally flat (see Section 3.9, *Geology, Soils, and Mineral Resources*), which naturally limits these risks as a result of a wildfire. Furthermore, as previously described, the proposed project area and surrounding land is designated “Other Unzoned” for fire hazard severity by CAL FIRE and is located over 10 miles from the nearest High FHSZ.

During construction, fire risk would increase due to the presence of fuels and construction equipment within the proposed flood risk reduction components. Site preparation would begin with trimming and/or removal of vegetation and demolition of structures, hardscape, and surface features where construction access and activities would occur. This would eliminate dry vegetation which could serve as a fuel source during a wildfire and convert it into newly planted native species that will be maintained and pose less severe risks during a fire. Therefore, implementation of the proposed project is not anticipated to exacerbate wildfire risk that could expose people to pollutant concentrations or in the uncontrolled spread of wildfire, and this impact would be **less than significant**.

Mitigation Measures

Mitigation Measures (FRR/RS/MB): None required.

Impact 3.20-3: Implementation of the proposed project may require the installation or maintenance of associated infrastructure (such as roads, fuel breaks, emergency water sources, power lines or other utilities) that may exacerbate fire risk or that may result in temporary or ongoing impacts to the environment.

All Project Components

The proposed project would require the relocation, rehabilitation and/or replacement of existing utilities that are within the proposed project footprint but would not include new infrastructure. The proposed project is not located within or near SRAs or lands classified as Very High FHSZs. There will be no new installation of infrastructure such as roads, fuel breaks, emergency water sources, or power lines. As the relocation of existing infrastructure for flood risk reduction and ecosystem restoration site components would involve temporary relocation activities and would not be located in a High FHSZ, and the multi-benefit components would not involve the relocation or construction of infrastructure that may exacerbate fire risk or that may result in temporary or ongoing impacts to the environment, impacts would be **less than significant**.

Mitigation Measures

Mitigation Measures (FRR/RS/MB): None required.

Impact 3.20-4: Implementation of the proposed project may expose people or structures to significant risks, including downslope or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes.

Flood Risk Reduction Components

Moderate- to high-severity wildfires can greatly increase the likelihood of debris slide and debris flows, as well as the loss of soil hydrologic function, by sealing pores and causing degradation of soil structure and productivity. As a result, subsequent rainstorms after wildfires can produce flash floods and debris flows, which can affect people or structures located below an area that has burned. Implementation of proposed flood risk reduction components would involve construction of new and modified levees that would be designed, to maintain or improve flood protection. Levee placement and removal could affect drainage patterns in the proposed project area. However, as described above, the topography of the proposed project area is generally flat (see Section 3.9, *Geology, Soils, and Mineral Resources*).
In addition, the proposed project area and surrounding land is designated "Other Unzoned" for fire hazard severity by CAL FIRE and is located over 10 miles from the nearest High FHSZ. Therefore, this impact would be **less than significant**.

Restoration Sites 13, 14, and 16 and Other Multi-benefit Components

Proposed ecosystem restoration features at Sites 13, 14, and 16 would include excavated floodplains, floodplain side channels, brush mat, habitat wood structures, willow baffles, and upland brush piles. The proposed project also includes implementation of other multi-benefit components including additional ecosystem restoration sites, and recreation features along the levee system. Proposed ecosystem restoration features, including Sites 13, 14, and 16, would be designed to restore the natural functions and processes of habitat and waterways and would unlikely result in greater downstream flooding as a result of post-wildfire impacts (see Section 3.12, *Hydrology and Water Quality*, regarding impacts associated with altering drainage patterns and flooding). Habitat restoration may also increase the abundance of

vegetation that can have positive effects on localized slope stability and runoff. Furthermore, the proposed project area and surrounding land is designated "Other Unzoned" for fire hazard severity by CAL FIRE and is located over 10 miles from the nearest High FHSZ. Therefore, this impact would be **less than significant**.

Mitigation Measures

Mitigation Measures (FRR/RS/MB): None required.

CHAPTER 4
Cumulative Impacts

4.1 Introduction

This chapter describes the CEQA requirements for the analysis of cumulative impacts, the geographic scope and timeframe for cumulative analysis, existing conditions context for past activities, related projects, and the potential cumulative impacts the proposed project. As described in Chapter 2, *Project Description*, the proposed project would include the construction, O&M of flood risk reduction and multi-benefit components in and adjacent to the proposed project area, which are summarized below. Specifically, the following are the primary components of the proposed project:

1. Fix-in-place improvements with habitat enhancement and revegetation
2. Dryland levee extension
3. Ecosystem restoration at multiple sites
4. Recreational features along the levee system

CEQA requires that an EIR assess the cumulative environmental impacts of a project when the project's incremental effect is "cumulatively considerable." An EIR must assess the cumulative impacts of a project with respect to past, current, and probable future projects in the region. Section 15355 of the CEQA Guidelines defines "cumulative effects" as "two or more individual effects that, when considered together, are considerable or which compound or increase other environmental impacts." According to CEQA Guidelines Section 15130(b), the purpose of the cumulative impacts discussion is to reflect "the severity of the impacts and their likelihood of occurrence," and the discussion shall "be guided by the standards of practicality and reasonableness."

The CEQA Guidelines further indicate that the discussion of cumulative impacts should include all of the following information:

- Either (a) a list of past, present, and probable future projects producing related cumulative impacts or (b) a summary of projections in an adopted general plan or similar document, or an adopted or certified environmental document, that described or evaluated conditions contributing to a cumulative impact.
- A discussion of the geographic scope of the area affected by the cumulative effect.
- A summary of the environmental effects expected to be produced by these projects.
- Reasonable, feasible options for mitigating or avoiding the project's contribution to any significant cumulative effects.

4.2 Cumulative Context and Approach

4.2.1 Geographic Scope

The cumulative context considers both the geographical scope, and the timing of other projects related to the proposed project. The geographic scope of analysis varies depending on the type of environmental issue being considered, but in general the geographic scope is defined by the proposed project area described in Chapter 2, *Project Description* and as shown in Figure 2-1. As described in Section 2.2, *Project Location*, the proposed project area covers portions of the cities of Stockton, Lathrop, Manteca, and unincorporated San Joaquin County. It includes RD 17, the proposed project area, and areas to the west along the San Joaquin River identified for the potential development of ecosystem restoration features. In addition, when the proposed project's impacts are considered in combination with those other past, present, and reasonably foreseeable future projects presented in Section 4.4 to identify cumulative impacts, the other projects considered also may vary, depending on the type of environmental effects being assessed. Some impacts would be site specific or localized so that they would not combine with the impacts of other projects and therefore, would not be cumulative.

4.2.2 Criteria for Identifying Related Projects in the Proposed Project Area

Projects were considered for inclusion in the cumulative impact analysis based on whether they could affect resources in the proposed project area that implementation of the proposed project could also affect. A list of such past, present, and reasonably foreseeable future projects was developed based on the following criteria:

(1) The project would affect a portion of the physical environment that could also be affected by implementation of the proposed project.

(2) Sufficiently detailed information about the project is available to allow meaningful analysis without undue speculation.

(3) The project meets all of the following criteria:

- The project is actively under development (i.e., an identified sponsor is actively pursuing project development or construction).
- An NOP or a notice of intent has been released and/or environmental clearance documentation has been completed, or substantial progress has been made toward completion.
- The project is "reasonably foreseeable" given other considerations, such as site suitability, funding availability and economic viability, and regulatory limitations (e.g., the project has required regulatory permits).

(4) The project is not considered part of the proposed project.

This cumulative impact discussion considers projects and plans identified under existing conditions (which include the current effects of past projects) and reasonably foreseeable and probable future projects. The criterion used by this Draft EIR analysis for considering whether a project is reasonably foreseeable, and probable is whether the project has been defined in adequate detail to assess potential impacts, through the completion of either publicly available preliminary evaluations, feasibility studies, or

draft environmental and engineering documents. The availability of funding and regulatory permits are also considerations for whether a project is reasonably foreseeable. Projects that were only in the development phase without detailed descriptions, operations criteria, or general locations, or that were not funded or permitted at the time that this cumulative impact assessment was written, are considered speculative. Thus, those projects are not considered further in this evaluation.

4.3 Cumulative Projects

Table 4-1 summarizes the projects determined to meet the four criteria listed in subsection 4.2.2 for past, present, and reasonably foreseeable future projects and were selected for inclusion in the cumulative impact analysis.

TABLE 4-1
PROJECTS INCLUDED IN THE CUMULATIVE IMPACT ANALYSIS

Project	Description
Central Valley Flood Protection Plan (CVFPP)	The CVFPP is a long-term planning document to address flood management challenges in areas currently protected by facilities of the State Plan of Flood Control (SPFC) as part of a systemwide investment approach for sustainable, integrated flood management. The CVFPP also considers operations and management of facilities in tributary watersheds that influence SPFC-protected areas. The CVFPP is intended to provide a foundation for prioritizing Central Valley flood risk reduction and ecosystem restoration investments, including feasibility studies on the appropriate scales, from valley-wide to project-specific. The CVFPP is updated every 5 years, with each update providing support for subsequent policy, program, and project implementation.
San Joaquin River Basin Lower San Joaquin River, CA Project	The Lower San Joaquin River Project was examined in a 2018 Feasibility Report that studied the southern part of San Joaquin County along the San Joaquin River up to and through Stockton, including RD 17 lands and the Mossdale Tract. The report included the watersheds east of Stockton and covered nearly 140 miles of levees. The report resulted in the identification of a preferred alternative that will develop needed levee improvements throughout the Stockton area (but excluded RD 17 lands and the Mossdale Tract) in an effort to reach or exceed a 200-year level of flood protection.
Lower San Joaquin River Urban Protection Project	Projects like the Lower San Joaquin River Urban Flood Protection Project are being considered as part of the Lower San Joaquin River Feasibility Report. The Flood Protection Technical Advisory Committee has identified a possible San Joaquin County Urban Flood Protection Project consisting of improvements to existing project and non-project levees from Lathrop to White Slough, including levees along creek channels entering from the east, plus possible modifications to New Hogan Reservoir. The Lower San Joaquin River Urban Flood Protection Project would is intended to create improved urban protection between the primary and secondary zones of the Delta, to help attain state-mandated levels of flood protection for Lathrop, Manteca, and Stockton, and urbanized unincorporated areas of the San Joaquin County.
San Joaquin River Restoration Program	The goal of the program is to restore and maintain fish populations in the main stem of the San Joaquin River below Friant Dam to the confluence of the Merced River, and to reduce or avoid adverse water supply impacts on all of the Friant Division long-term contractors. The San Joaquin River Restoration Program involves reoperation of Friant Dam and downstream flow-control structures to release flows to the San Joaquin River, and diversion of surplus water during wet hydrologic conditions to the Friant-Kern and Madera canals.
Delta Conveyance Project	The Delta Conveyance Project proposes to modernize aging State Water Project (SWP) infrastructure in the Delta to restore and protect the reliability of SWP water deliveries consistent with the state's Water Resilience Portfolio. The Delta Conveyance Project will also allow DWR to address sea level rise and climate change, minimize water supply disruption due to seismic risk and provide operational flexibility to improve aquatic conditions in the Delta.
Smith Canal Closure Structure	A flood control gate would be installed in the Sacramento–San Joaquin Delta in the City of Stockton north of the Deep Water Channel to prevent flood flows from entering Smith Canal in the event of imminent or existing levee breach and during 100-year flood events (1 percent chance of occurring in any given year, or 0.01 AEP). This project is in the design stage and the environmental document is pending.
Paradise Cut	Improvements to Paradise Cut associated with the River Islands at Lathrop Project would increase floodwater conveyance capacity and storage capacity of Paradise Cut.

Project	Description
CALFED Levee Stability Program	Levee improvements are being considered for a project site located on the right bank of the San Joaquin River and French Camp Slough within the "legal" Delta boundary to address under seepage and through-seepage, as well as waterside erosion to reduce the flood risk to 2,000 acres of residential and industrial land. Improvements under consideration include construction of a seepage berm and installation of a slurry cutoff wall.
Oxbow Preserve	The Oxbow Preserve, located between elements VIa.2 and VIa.4, was created in 2004 by Union Pacific Homes as mitigation for a development in the City of Lathrop. This 30-acre preserve was established to protect the federally endangered riparian brush rabbit (*Sylvilagus bachmani riparius*). The Center for Natural Lands Management took ownership of the Oxbow Preserve in 2004.
Agreements to Support Healthy Rivers and Landscapes	Under the Agreements to Support Health Rivers and Landscapes, state, federal, and local agencies are working to advance a transformational, watershed-wide approach to increase river flows, restore ecosystems and strengthen water supply reliability across the state. The agreements, if approved by the State Water Resources Control Board as an implementation pathway for an updated Bay-Delta Plan, would help meet requirements to protect beneficial uses in the Sacramento and San Joaquin watersheds.

SOURCE: Data compiled by Environmental Science Associates in 2025.

4.4 Cumulative Impact Approach to Analysis

To determine the significance of the proposed project's cumulative impacts, a three-step process was followed:

- First, the extent of the cumulative impacts without the proposed project was evaluated to determine whether a significant cumulative impact on a resource would exist in the future. To do so, the combined effects of the past, present, and probable future projects listed in Table 4-1 were evaluated to determine whether there would be a significant cumulative impact.
- Second, a determination was made regarding whether the proposed project's incremental contribution to any significant cumulative impact would be cumulatively considerable. "Cumulatively considerable" means that the incremental effects of an individual project are significant when viewed in connection with the effects of past, current, and probable future projects (CEQA Guidelines Section 21083).
- Third, a determination was made as to whether mitigation measures would be required to reduce the proposed project's contribution to the cumulative impact to a less-than-considerable level, thus resulting in a less-than-significant cumulative impact. If not, then the cumulative impact would remain significant and unavoidable.

4.5 Cumulative Impact Analysis

The cumulative impact analysis is presented by resource section and in the same order as the technical resource sections in Chapter 3, *Environmental Settings, Impacts, and Mitigation Measures*. All impacts of the proposed project discussed in this chapter are described in detail in Chapter 3, Sections 3.2 through 3.20. For each issue area addressed in this EIR, the criteria applied to evaluate the significance of the overall cumulative effect are the same criteria used to evaluate direct and indirect impacts for that issue area.

4.5.1 Aesthetics

The geographic scope for aesthetic resources is the proposed project area. The visual character includes expansive agricultural fields, rural residences, and levee infrastructure, with scattered trees, utility lines, and limited views of the San Joaquin River, transitioning to suburban residential areas in parts of Stockton, Lathrop, and Manteca. Specific features in the project area and vicinity that are considered scenic resources by San Joaquin County and the cities of Stockton, Lathrop, and Manteca include the San Joaquin River, trees and riparian vegetation, agricultural land, and open space. The majority of the proposed project area contains minimal existing sources of lighting and is dark at night. Lighting from rural residences and more concentrated residential and other urban uses in the cities of Stockton, Lathrop, and Manteca generate minimal nighttime illumination in the proposed project area.

Construction and operation of projects listed in Table 4-1 would include development of flood risk reduction infrastructure (e.g., Smith Canal Closure Structure, CALFED Levee Stability Program), restoration sites and habitat (e.g., San Joaquin River Restoration Program, Agreements to Support Healthy Rivers and Landscapes), and other water supply and management infrastructure (e.g., Delta Conveyance Project) throughout the proposed project area. This development could result in a change to visual quality, affect scenic vistas and scenic resources, and introduce new sources of light and glare. These effects could be short-term and temporary (construction-related activities) as well as long-term and permanent (O&M of new structures). This could result in a cumulatively significant impact.

Construction of proposed flood risk reduction components, restoration sites, and other multi-benefit components could result in temporary, short-term loss of visual quality and cohesion within the proposed project area for sensitive viewers (e.g., recreationists and residents). These components could alter or reduce existing public views of river corridors, riparian vegetation, and surrounding rural or agricultural landscapes due to the presence and movement of construction equipment, vehicles, and personnel for varying periods of time in various locations in the proposed project area. However, these transient and temporary effects would not result in permanent or substantial effects to the existing visual character or quality. However, temporary night lighting would be used for security of staging areas, resulting in a considerable contribution to cumulative construction-related impacts.

During long-term operation of proposed project components, the visual character and quality of the proposed project area would not be altered substantially. Following the fix-in-place improvements, the existing levee would retain a visual appearance similar to its current condition; despite the introduction of some segments with taller or wider flood risk reduction features, it would not obstruct or block the majority of existing available views from public locations within the proposed project area, and abundant views of these features would remain. While the dryland levee extension would alter the views for a small number of residential viewers immediately adjacent to the alignment, the overall visual character would continue to be defined by surrounding agricultural land uses. At ecosystem restoration Sites 13, 14, and 16 and the other restoration sites, conversion from agricultural land to restoration with native vegetation would represent a change in land cover but would not degrade visual quality or character. The other multi-benefit components, such as levee-top trails and shared-use paths, would be built on top of the flood risk reduction components already discussed and would not block, alter, or degrade existing public views of the area in any additional way. O&M of the proposed project would not include any new sources of

light or glare above existing conditions. Therefore, the proposed project's contribution to permanent changes in visual character would be less than considerable.

Implementation of Mitigation Measure 3.2-3 requires all temporary lighting used for security of the staging areas be shielded or directed to ensure that no fugitive light spills out into adjacent. Therefore, although cumulative projects presented in Table 4-1 in combination with the proposed project would result in a cumulatively significant impact, the implementation of Mitigation Measure 3.2-3 would reduce the proposed project's impact associated with new sources of light and glare to less than significant and the proposed project's contribution to this significant impact would be ***less than cumulatively considerable***.

4.5.2 Agriculture and Forestry Resources

The geographic scope for agricultural and forestry resources is the proposed project area. As shown in Figures 3.3-1a and 3.3-1b, the majority of Important Farmland adjacent to the proposed project's flood risk reduction and multi-benefit components is located within unincorporated San Joaquin County. Overall, the proposed project area contains approximately 7,290 acres of designated Important Farmland, which represents approximately 1.3 percent of the overall total for San Joaquin County. Agricultural land designations within the proposed project area include Open Space/Agriculture under the City of Stockton; Agriculture under the City of Manteca; and Agriculture/General, Agriculture/Limited, and Agriculture/ Urban Reserve under San Joaquin County. The proposed project area also contains approximately 845 acres of Williamson Act lands, which represents approximately 0.2 percent of the overall total for San Joaquin County. There are no designated forestry lands within or adjacent to the proposed project area, and therefore cumulative impacts on forestry resources would not occur.

Construction and operation of projects listed in Table 4-1 would include development of flood risk reduction infrastructure (e.g., Smith Canal Closure Structure, CALFED Levee Stability Program), restoration sites and habitat (e.g., San Joaquin River Restoration Program, Agreements to Support Healthy Rivers and Landscapes), and other water supply and management infrastructure (e.g., Delta Conveyance Project) throughout the proposed project area. Implementation of these cumulative projects could conflict with local agricultural zoning or a Williamson Act contract, or result in the conversion of agricultural land, including Important Farmland, to non-agricultural uses as a result of permanent new infrastructure, structures, changes to long-term land use and/or hydrology, or disruption to ongoing agricultural operations through the use of farmland as staging areas. These effects could be short-term and temporary (construction-related activities) as well as long-term and permanent (O&M of new structures). This could result in a cumulatively significant impact.

Construction of the proposed project's flood risk reduction and multi-benefit components would involve permanent conversion of portions of Important Farmland to non-agricultural uses, including structural levee improvements (e.g., widened levee footprint, erosion protection, dryland levee extension), levee rights-of-way, and habitat restoration areas. This would result in a significant contribution to a cumulatively significant impact related to agricultural conversion. Temporary construction activities required for the proposed project may also disrupt nearby agricultural operations due to construction staging, access, and vehicle movement; however, these temporary effects would cease upon completion of construction, and affected lands would generally return to agricultural use.

Some proposed project components would occur on or near lands zoned for agriculture, but the proposed activities would not convert these lands to incompatible uses or conflict with applicable zoning requirements or land use designations under San Joaquin County or the cities of Stockton, Lathrop, or Manteca. With respect to Williamson Act contracts, the minor encroachments onto lands enrolled in the Williamson Act due to proposed project implementation are limited to narrow portions of affected parcels and would not convert the properties to non-agricultural use nor require contract cancellation. In addition, the nature of shallow, infrequent flooding on agricultural lands during extreme (200-year) flow events caused by the proposed project is not anticipated to compromise long-term agricultural viability or lead to indirect conversion of Important Farmland to non-agricultural use.

During long-term operations, the proposed project would not result in additional conversion of agricultural land beyond what occurs during construction. Flood risk reduction and restoration components would improve long-term protection of remaining agricultural lands by reducing the frequency and extent of flooding that could damage crops and infrastructure. Routine O&M activities would be limited to existing or improved levee corridors and would not interfere with surrounding agricultural uses.

With adherence to applicable city and county regulations and implementation of Mitigation Measure 3.3-1, the proposed project would reduce impacts related to the permanent conversion of Important Farmland by preserving, in perpetuity, an equivalent amount of farmland of equal or greater quality. However, because the establishment of agricultural conservation easements preserves existing farmland but does not create new farmland, the mitigation would not fully offset the conversion. Fully compensating for farmland loss in San Joaquin County is not feasible due to the limited availability of suitable and financially viable replacement properties.

Therefore, while cumulative projects presented in Table 4-1 in combination with the proposed project would result in a cumulatively significant impact, the implementation of Mitigation Measure 3.3-1 would reduce the proposed project's impact, but not to less than significant and as a result, the proposed project's contribution to this significant cumulative impact would remain ***cumulatively considerable***.

4.5.3 Air Quality

The geographic scope for air quality is the San Joaquin Valley Air Basin (SJVAB). The proposed project area is located in the SJVAB; characterized by a mix of agricultural operations, rural residences, and existing levee and water infrastructure, with occasional traffic corridors and localized sources of emissions. Air pollutant concentrations in the SJVAB vary with land use, traffic density, and seasonal weather patterns. The SJVAB is designated as nonattainment for several federal and state ambient air quality standards, and air quality management is overseen by the San Joaquin Valley Air Pollution Control District (SJVAPCD).

Construction and operation of projects listed in Table 4-1 would include development of flood risk reduction infrastructure (e.g., Smith Canal Closure Structure, CALFED Levee Stability Program), restoration sites and habitat (e.g., San Joaquin River Restoration Program, Agreements to Support Healthy Rivers and Landscapes), and other water supply and management infrastructure (e.g., Delta Conveyance Project) throughout the SJVAB. Implementation of these cumulative projects would result in criteria air pollutant emissions which would contribute to the SJVAB's ongoing nonattainment status.

These effects could be short-term and temporary (construction-related activities) as well as long-term and permanent (O&M of new structures). This could result in a cumulatively significant impact.

Construction of the proposed project's flood risk reduction components, restoration sites, and multi-benefit features would require site preparation, use of equipment, and other associated activities that would result in temporary emissions that are regulated by applicable air quality plans. Due to the temporary nature of the construction, low levels of emissions, and lack of sensitive receptors in the vicinity of the proposed project area, health risk that would result from construction-related diesel particulate matter emissions would be minimal. In addition, dust associated with earth disturbance would not result in risk of exposure to Valley Fever due to the temporary nature of these activities. However, construction of proposed project features would result in short-term temporary emissions of criteria air pollutants from the use of construction equipment, vehicle trips, and soil disturbance that would exceed the SJVAPCD's threshold for NOx emissions, resulting in a significant contribution to short-term cumulative construction-related air emissions.

During long-term operation, the proposed project would not generate substantial new sources of criteria air emissions, odors or emissions associated with health risks because activities would be intermittent, limited to small work crews and minimal vehicle use; therefore, the proposed project's contribution to long-term air emissions would be less than considerable.

Implementation of Mitigation Measure 3.4-1 would reduce proposed project construction emissions to below SJVAPCD significance thresholds; and therefore, less than significant, by requiring implementation of an emissions minimization plan using a combination of electric, alternative fuel and construction equipment meeting Tier 4 Final emissions standards. This would ensure that the proposed project's contribution to construction criteria air pollutant emissions, air quality plan consistency, and potential health risk impacts would be mitigated to less than significant. Therefore, although cumulative projects presented in Table 4-1 in combination with the proposed project would result in a cumulatively significant impact, the implementation of Mitigation Measure 3.4-1 would reduce the proposed project's construction-related air emissions to less than significant and the proposed project's contribution to this significant cumulative impact would be ***less than cumulatively considerable***.

4.5.4 Biological Resources—Aquatics

The geographic scope for aquatic biological resources is the proposed project area and the San Joaquin River and its tributaries. The proposed project area includes aquatic habitats associated with the San Joaquin River and its tributaries, agricultural drainage channels, and managed flood control facilities. These waterways support a variety of aquatic and riparian communities, including habitat for special-status fish species such as Chinook salmon, steelhead, and green sturgeon. Aquatic habitat conditions within the region are influenced by river flows, sedimentation, water quality, and connectivity between the main river channel and floodplain areas.

Construction and operation of projects listed in Table 4-1 would include development of flood risk reduction infrastructure (e.g., Smith Canal Closure Structure, CALFED Levee Stability Program), restoration sites and habitat (e.g., San Joaquin River Restoration Program, Agreements to Support Healthy Rivers and Landscapes), and other water supply and management infrastructure (e.g., Delta Conveyance Project) in the proposed project area and the San Joaquin River and its tributaries. Activities

such as levee improvements, channel modifications, and restoration projects would result in adverse effects to aquatic and riparian habitats, affect water quality, and disturb special-status fish species. These effects could be short-term and temporary (construction-related activities) as well as long-term and permanent (O&M of new structures). This could result in a cumulatively significant impact.

Construction of the proposed project's flood risk reduction components, restoration sites, and multi-benefit features associated with in-water work, excavation, clearing, and grading could temporarily affect aquatic habitats and listed fish species due to temporary increases in noise, vibration, and sediment releases into receiving waters. As a result, construction of the proposed project would make a significant contribution to this cumulative impact.

During long-term O&M, the proposed project would not result in substantial additional disturbance to aquatic habitats; therefore, the proposed project's contribution would be less than considerable. Restored floodplain areas would improve hydrologic function, enhance riparian and floodplain habitat, improve river-floodplain connectivity, and provide cover and rearing habitat for juvenile salmonids and other native fish species, thereby improving long-term aquatic ecosystem function.

Implementation Mitigation Measure 3.12-1 would reduce proposed project construction-related effects to aquatic resources to less than significant by requiring implementation of Best Management Practices (BMPs) to minimize erosion and avoid hazardous materials from entering adjacent waterways, thereby minimizing potential impacts on aquatic habitats and special-status fish species to less-than-significant levels. Therefore, although cumulative projects presented in Table 4-1 in combination with the proposed project would result in a cumulatively significant, the implementation of Mitigation Measure 3.12-1 would reduce the proposed project's impact to aquatic biological resources associated with construction activities to less than significant and the proposed project's contribution to this significant cumulative impact would be ***less than cumulatively considerable***.

4.5.5 Biological Resources—Terrestrial

The geographic scope for terrestrial biological resources is the proposed project area which includes agricultural fields, riparian corridors, levees, and patches of natural vegetation that support a range of terrestrial habitats for special-status plant and wildlife species. These include riparian woodland, grassland, and seasonal wetland habitats that provide nesting, foraging, and migration corridors for species such as Swainson's hawk, burrowing owl, riparian brush rabbit, valley elderberry longhorn beetle, monarch butterfly, and various migratory birds. Habitat quality and connectivity within the region have been reduced over time by agricultural conversion, urbanization, and levee maintenance activities.

Construction and operation of other projects listed in Table 4-1 would include development of flood risk reduction infrastructure (e.g., Smith Canal Closure Structure, CALFED Levee Stability Program), restoration sites and habitat (e.g., San Joaquin River Restoration Program, Agreements to Support Healthy Rivers and Landscapes), and other water supply and management infrastructure (e.g., Delta Conveyance Project) in the proposed project area and the San Joaquin River and its tributaries. Implementation of these cumulative projects, such as regional flood risk reduction improvements, restoration programs, and infrastructure development, may collectively alter wildlife movement corridors, remove nesting or foraging habitat, and disturb sensitive biological communities. These effects could be

short-term and temporary (construction-related activities) as well as long-term and permanent (O&M of new structures). This could result in a cumulatively significant impact.

Construction of the proposed project's flood risk reduction components, restoration sites, and multi-benefit features could temporarily or permanently affect terrestrial habitats and special-status species. Activities such as vegetation clearing, grading, and equipment operation could result in the loss of nesting or foraging areas, direct disturbance or mortality of individual species, and temporary displacement of wildlife. Species potentially affected include Swainson's hawk, burrowing owl, northern harrier, riparian brush rabbit, and valley elderberry longhorn beetle, among others. Direct and indirect effects during construction activities would contribute significantly to short-term cumulative effects on biological terrestrial resources.

During long-term O&M, the proposed project would not substantially affect terrestrial habitats. Routine O&M activities would primarily occur within previously disturbed areas and would be infrequent and temporary. Additionally, ecosystem restoration components, including Sites 13, 14, and 16, would establish native vegetation, expand riparian and upland habitat, and enhance connectivity for terrestrial species. Over time, these areas would provide ecological benefits that outweigh short-term construction impacts, resulting in a less than considerable contribution.

Implementation of Mitigation Measures 3.6-1a through 3.6-1j and 3.6-2b would involve a combination of habitat avoidance, pre-construction surveys, biological monitoring, worker awareness training, and compensatory mitigation. These actions would substantially reduce impacts to terrestrial habitats and special-status species to a less-than-significant level. Additionally, Mitigation Measures 3.6-1a through 3.6-1h, 3.6-2b, and 3.6-5b would require avoidance of sensitive habitats, creation of compensatory habitat, revegetation with native species, and replacement of heritage oaks, further minimizing potential adverse effects to special-status species and habitats. The proposed project would also be consistent with the objectives of the San Joaquin County Multi-Species Conservation and Open Space Plan, which provides protections for regional habitats and species. Therefore, although cumulative projects presented in Table 4-1 in combination with the proposed project would result in a cumulatively significant impact, the implementation of Mitigation Measures 3.6-1a through 3.6-5b would reduce the proposed project's impact to terrestrial biological resources associated with construction activities to less than significant and the proposed project's contribution to this significant cumulative impact would be ***less than cumulatively considerable***.

4.5.6 Cultural Resources

The geographic scope for cultural resources is the proposed project area and the San Joaquin River corridor. Cultural resources within the proposed project area and the region are important for their historical, scientific, and cultural value, contributing to the understanding of past human occupation and land use along the San Joaquin River corridor.

Construction and operation of other projects listed in Table 4-1 would include development of flood risk reduction infrastructure (e.g., Smith Canal Closure Structure, CALFED Levee Stability Program), restoration sites and habitat (e.g., San Joaquin River Restoration Program, Agreements to Support Healthy Rivers and Landscapes), and other water supply and management infrastructure (e.g., Delta Conveyance Project) in the proposed project area and the San Joaquin River and its tributaries. Activities

such as levee improvements, channel modifications, and restoration projects would result in adverse effects to cultural resources through the disturbance or destruction of known and unknown archaeological sites, historical structures, and paleontological resources. Regional development, infrastructure improvements, and flood protection projects that involve ground disturbance could lead to the irreversible loss of cultural resource integrity. These effects could be short-term and temporary (construction-related activities) as well as long-term and permanent (O&M of new structures). This could result in a cumulatively significant impact.

Construction of the proposed flood risk reduction components, restoration sites, and multi-benefit features could disturb or damage cultural resources, archaeological sites, and potential human remains. During long-term O&M, proposed project activities would be limited to routine inspections, vegetation management, and minor repairs within previously disturbed areas. However, ground-disturbing activities such as grading, excavation, and trenching could directly or indirectly affect these resources resulting in a significant contribution to this cumulatively significant impact.

Implementation of Mitigation Measures 3.7-1, 3.7-2(a) through (f), and 3.7-3(a) and (b) would ensure that cultural resources—including historical sites, archaeological materials, and human remains—are identified, protected, and managed in accordance with CEQA Guidelines Section 15064.5 and applicable regulations. Measures would include development and implementation of a Cultural Resources Management Plan, inventories and significance evaluations of potential archaeological resources, protective measures for known sites, cultural awareness training, construction monitoring, and unanticipated discovery protocols. However, because portions of the proposed project area have not been fully surveyed and the final design and locations of multi-benefit components are not yet determined, it cannot be ensured that all impacts would be mitigated to a less-than-significant level. Therefore, cumulative projects presented in Table 4-1 in combination with the proposed project would result in a cumulatively significant impact. The implementation of Mitigation Measures 3.7-1, 3.7-2(a) through (f), and 3.7-3(a) and (b) would reduce the proposed project's impacts to cultural resources, but not to less than significant and as a result, the proposed project's contribution to this significant cumulative impact would remain ***cumulatively considerable***.

4.5.7 Energy

The geographic scope for energy is the proposed project area. Construction and operation of projects listed in Table 4-1 would include development of flood risk reduction infrastructure (e.g., Smith Canal Closure Structure, CALFED Levee Stability Program), restoration sites and habitat (e.g., San Joaquin River Restoration Program, Agreements to Support Healthy Rivers and Landscapes), and other water supply and management infrastructure (e.g., Delta Conveyance Project) in the proposed project area and the San Joaquin River and its tributaries. Activities such as levee improvements, channel modifications, and restoration projects would result in energy consumption associated with the use of construction equipment, production and transport of materials, and O&M activities. These effects could be short-term and temporary (construction-related activities) as well as long-term and permanent (O&M of new structures). This could result in a cumulatively significant impact.

The proposed construction activities would consume energy primarily in the form of transportation fuels (e.g., diesel and gasoline) used by haul trucks, heavy-duty equipment, and worker vehicles traveling to and from construction areas. Electricity consumed by any electric-powered equipment would be minimal

relative to the amount of diesel and gasoline consumed. Natural gas is generally not used during construction. During long-term O&M, energy consumption would be minimal and similar to existing conditions. O&M activities such as levee patrols, vegetation control, and inspection of restoration sites would require occasional vehicle use but no substantial or continuous energy demand. This energy use would be temporary, limited in scale compared to regional consumption, and conducted in compliance with state and federal efficiency and emissions regulations, and as a result, energy use would be considered efficient and would not result in wasteful, inefficient, or unnecessary consumption of energy.

Therefore, although cumulative projects presented in Table 4-1 in combination with the proposed project would result in a cumulatively significant impact, the proposed project's contribution to energy consumption would be ***less than cumulatively considerable***.

4.5.8 Geology, Soils, and Mineral Resources

The geographic scope for geology, soils, and mineral resources is the proposed project area. The proposed project area is characterized by flat terrain, alluvial soils, and relatively low seismic risk. No active faults cross the proposed project area, as confirmed by California Geological Survey mapping in accordance with the Alquist-Priolo Earthquake Fault Zoning Act. The proposed project area includes portions of the San Joaquin County's MRZ-2 mineral resource zone containing sand and gravel deposits, but no active mining occurs within the proposed project area.

Construction and operation of projects listed in Table 4-1 would include development of flood risk reduction infrastructure (e.g., Smith Canal Closure Structure, CALFED Levee Stability Program), restoration sites and habitat (e.g., San Joaquin River Restoration Program, Agreements to Support Healthy Rivers and Landscapes), and other water supply and management infrastructure (e.g., Delta Conveyance Project) in the proposed project area and the San Joaquin River and its tributaries. Activities such as levee improvements, channel modifications, and restoration projects would result in ground disturbance, soil erosion, and loss of topsoil. These effects could be short-term and temporary (construction-related activities) as well as long-term and permanent (O&M of new structures). This could result in a cumulatively significant impact.

The proposed project would not contribute to cumulative impacts related to fault rupture or septic system suitability, as no components intersect active faults or include wastewater disposal systems. Flood risk reduction components such as levee raises, dryland levee extensions, seepage berms, and riprap protection, as well as restoration and recreation features, would be designed and constructed in compliance with USACE, Central Valley Flood Protection Board, and California Building Code standards for seismic safety and soil stability. Given the region's flat topography and low potential for liquefaction, lateral spreading, or landslides, construction of the proposed project would result in a less-than-significant contribution to cumulative seismic hazards. In addition, given the nature of the proposed project and the fact that there is no existing sand and gravel mining or processing operations located at proposed project component sites, implementation of the proposed project would result in a less-than-significant contribution to cumulative future loss of mineral resources. However, excavation activities could expose buried paleontological resources, which would result in a considerable contribution to cumulative impacts on paleontological resources.

O&M activities would include inspections, weed abatement, removal of encroachments and hazardous vegetation, revetment repair following flood events, and maintaining levee access. These activities would be intermittent, involving small crews and minimal equipment such as patrol vehicles and mowers or trimmers. As a result, long-term operations would result in a less than considerable contribution to this cumulative impact.

Implementation of Mitigation Measures 3.9-(a) through (c) would minimize impacts to buried paleontological resources by requiring and implementing pre-construction training, monitoring in high-sensitivity areas, and oversight of deep excavations. Therefore, although cumulative projects presented in Table 4-1 in combination with the proposed project would result in a cumulatively significant impact, the implementation of Mitigation Measure 3.9-1 through 3.9-3 would reduce the proposed project's impact to buried paleontological resources to less than significant and the proposed project's contribution to this significant cumulative impact would be ***less than cumulatively considerable.***

4.5.9 Greenhouse Gas Emissions

The geographic scope for greenhouse gases is the proposed project area. Regional development, transportation, and infrastructure projects in the proposed project area collectively contribute to greenhouse gas (GHG) emissions associated with construction and ongoing operations. As described in Section 3.10, *Greenhouse Gas Emissions*, the combination of GHG emissions from past, present, and future projects around the world have contributed and will continue to contribute to global climate change and its associated environmental impacts. There are currently no established thresholds for assessing whether the GHG emissions of a project would be considered a cumulatively considerable contribution to global climate change; however, all reasonable efforts should be made to minimize a project's contribution to global climate change.

Construction and operation of projects listed in Table 4-1 would include development of flood risk reduction infrastructure (e.g., Smith Canal Closure Structure, CALFED Levee Stability Program), restoration sites and habitat (e.g., San Joaquin River Restoration Program, Agreements to Support Healthy Rivers and Landscapes), and other water supply and management infrastructure (e.g., Delta Conveyance Project) in the proposed project area and the San Joaquin River and its tributaries. Activities such as levee improvements, channel modifications, and restoration projects would result in GHG emissions, which contribute to global climate change. These effects could be short-term and temporary (construction-related activities) as well as long-term and permanent (O&M of new structures). This could result in a cumulatively significant impact.

Construction of flood risk reduction components and ecosystem restoration at Sites 13, 14, and 16 would generate GHG emissions primarily from heavy-duty construction equipment and vehicle use during clearing, grading, levee fill, and seepage berm activities. However, construction-related emissions would be temporary, limited in duration, and would not conflict with state or regional GHG reduction targets. Therefore, construction-related GHG emissions would result in a less than considerable contribution to short-term construction-related GHG emissions. Operational GHG emissions from periodic O&M activities, such as site inspections and monitoring, would be minimal and limited to occasional vehicle trips. The proposed project would comply with applicable state and local GHG reduction plans, policies, and regulations, ensuring that emissions remain consistent with adopted climate goals.

As a result, GHG emissions associated with the proposed project would not conflict with state and regional GHG reduction strategies. Therefore, although cumulative projects presented in Table 4-1 in combination with the proposed project would result in a cumulatively significant impact, the proposed project's contribution to GHG emissions would be ***less than cumulatively considerable.***

4.5.10 Hazards and Hazardous Materials

The geographic scope for hazards and hazardous materials is the proposed project area. The proposed project is not located on or adjacent to any known hazardous materials sites and is well outside the vicinity of public airports, including Stockton Metropolitan Airport. Proposed project components are not of a height or type that would pose a safety hazard to air navigation. The proposed project area is primarily surrounded by agricultural land and located more than 10 miles from the nearest high fire hazard severity zone.

Construction and operation of related projects listed in Table 4-1 would include development of flood risk reduction infrastructure (e.g., Smith Canal Closure Structure, CALFED Levee Stability Program), restoration sites and habitat (e.g., San Joaquin River Restoration Program, Agreements to Support Healthy Rivers and Landscapes), and other water supply and management infrastructure (e.g., Delta Conveyance Project) in the proposed project area and the San Joaquin River and its tributaries. Activities such as levee improvements, channel modifications, and restoration projects would result in risk of exposure due to the transport, use, or disposal of hazardous materials. These effects could be short-term and temporary (construction-related activities) as well as long-term and permanent (O&M of new structures). This could result in a cumulatively significant impact.

Construction of the proposed project's flood risk reduction components, restoration sites, and multi-benefit features would involve the use of hazardous materials, primarily limited to fuels, lubricants, and similar substances used in small quantities during construction. Proposed project activities would also generate a substantial number of haul trips, which could temporarily degrade conditions for multimodal travel near construction sites. Additionally, construction of the dryland levee extension would require temporary closure of public roads where they intersect the alignment. These conditions could interfere with emergency access or evacuation plans, representing a considerable contribution to short-term cumulative impacts related to emergency access and evacuation.

Similar to existing conditions, regular O&M would include inspections, weed abatement, removal of encroachments and hazardous vegetation to maintain levee integrity, repair of displaced or launched revetment following major flood events, and upkeep of levee access along the toe road. No new hazardous waste storage or removal would occur. All handling, storage, and disposal of materials during long-term operation would comply with applicable federal, state, and local regulations, minimizing the risk of accidental releases. Additionally, vegetation management during site preparation and ongoing habitat maintenance would help reduce fuel loads.

While the proposed project's contribution to cumulative impacts related to hazardous materials and wildfire risk would be less than cumulatively considerable due to compliance with existing regulations and ongoing vegetation management, construction activities could interfere with emergency access or evacuation plans. Mitigation Measure 3.17-1 requires the preparation and implementation of a construction traffic management plan to ensure that proposed project components do not hinder

emergency response efforts. Implementation of this measure would reduce the potentially significant impact on emergency access and evacuation to a less-than-significant level. Therefore, although cumulative projects presented in Table 4-1 in combination with the proposed project would result in a cumulatively significant impact, the implementation of Mitigation Measure 3.17-1 would reduce the proposed project's impact to emergency response efforts to less than significant and the proposed project's contribution to this significant cumulative impact would be ***less than cumulatively considerable.***

4.5.11 Hydrology and Water Quality

The geographic scope for hydrology and water quality is the proposed project area and the San Joaquin River and its tributaries. Construction and operation of related projects listed in Table 4-1 would include development of flood risk reduction infrastructure (e.g., Smith Canal Closure Structure, CALFED Levee Stability Program), restoration sites and habitat (e.g., San Joaquin River Restoration Program, Agreements to Support Healthy Rivers and Landscapes), and other water supply and management infrastructure (e.g., Delta Conveyance Project) in the proposed project area and the San Joaquin River and its tributaries. Activities such as levee improvements, channel modifications, and restoration projects would result in degradation of receiving water quality (surface or groundwater); reduction of groundwater supplies or groundwater recharge; alterations in drainage patterns resulting in increased rates of erosion, on or off site flooding or the impediment or redirection of flood flows; release of pollutants due to being located in a flood hazard zone; and/or conflicts with water quality and groundwater management plans. These effects could be short-term and temporary (construction-related activities) as well as long-term and permanent (O&M of new structures). This could result in a cumulatively significant impact.

Construction of the proposed project's flood risk reduction components, restoration sites, and multi-benefit features would require site preparation, use of equipment, and other associated activities that would result in increased rates of erosion due to earth disturbance changes in drainage patterns, and potential discharges that could degrade surface water or groundwater quality. Construction of the proposed project would not substantially reduce groundwater supplies or interfere with recharge due to the limited amount of new impervious surface cover. In accordance with NPDES regulations, to minimize the potential effects of construction runoff on receiving water quality, the proposed project would comply with NPDES permit requirements and BMPs to minimize potential degradation of receiving water quality. However, the flood risk reduction fix-in-place levee components would involve installation of bentonite slurry cut off walls which could result in degradation of groundwater quality, resulting in a considerable contribution to short-term cumulative impacts related to groundwater quality.

O&M activities would include inspections, weed abatement, removal of encroachments and hazardous vegetation, revetment repair following flood events, and maintaining levee access. O&M activities would involve minimal water use for plant establishment, regular maintenance, and habitat enhancement activities that would not cause substantial erosion, siltation, flooding, or exceed stormwater system capacity. Long-term operation of the proposed project would enhance ecological function, improve floodplain connectivity, and support groundwater recharge, without creating new impervious surfaces or altering existing drainage in a way that would cause flooding or pollutant runoff. The proposed dryland levee extension would introduce a new levee segment that would redirect flood flows away from people and property in the proposed project area potentially displacing the water elsewhere in the proposed

project area and vicinity. However, the affected areas would experience in general 0.1 to 3 feet of inundation that would be temporarily ponded and would reduce in depth and area over a short period of time (up to 5 days). Therefore, the proposed project's contribution to long-term cumulative impacts to hydrology and water quality would be less than considerable.

Therefore, although cumulative projects presented in Table 4-1 in combination with the proposed project would result in a cumulatively significant impact, the implementation of Mitigation Measure 3.12-2 would reduce the proposed project's impact to groundwater quality to less than significant and the proposed project's contribution to this significant cumulative impact would be ***less than cumulatively considerable***.

4.5.12 Land Use and Planning

The geographic scope for land use and planning is the proposed project area. Construction and operation of related regional projects could result in land use changes, temporary conflicts, or inconsistencies with local or regional plans and policies.

Construction and operation of the projects listed in Table 4-1 would include development of flood risk reduction infrastructure (e.g., Smith Canal Closure Structure, CALFED Levee Stability Program), restoration sites and habitat (e.g., San Joaquin River Restoration Program, Agreements to Support Healthy Rivers and Landscapes), and other water supply and management infrastructure (e.g., Delta Conveyance Project) in the proposed project area and the San Joaquin River and its tributaries. Activities such as levee improvements, channel modifications, and restoration projects would result changes to surrounding land uses. These effects could be short-term and temporary (construction-related activities) as well as long-term and permanent (O&M of new structures). This could result in a cumulatively significant impact.

The construction of the proposed project components would occur primarily within developed parcels, levee rights-of-way, and previously disturbed areas, maintaining connectivity with surrounding land uses. Temporary staging areas would be restored to their original condition, and no new roads or infrastructure would divide communities. Since the proposed project would be consistent with all applicable land use and zoning plans, policies, and regulations, implementation of the proposed project would not result in a cumulatively significant impact related to land use.

Long-term operation of the proposed project would continue to be compatible with existing land uses. Flood risk reduction, restoration, and multi-benefit components would not introduce incompatible uses or substantially alter existing land use patterns. O&M activities would be limited to routine inspections, vegetation management, and levee maintenance, which are consistent with surrounding uses.

The proposed project is consistent with the San Joaquin County General Plan, the cities of Stockton, Lathrop, and Manteca General Plans and Zoning Codes, as well as regional planning frameworks such as the Regional Blueprint, 2022 Regional Transportation Plan and Sustainable Communities Strategy (RTP/SCS), San Joaquin County Multi-Species Habitat Conservation Plan (SJMSCP), and the Land Use and Resources Management Plan (LURMP). Compliance with these policies ensures that the proposed project would not conflict with adopted plans, zoning, or land use policies. Therefore, although cumulative projects presented in Table 4-1 in combination with the proposed project would result in a

cumulatively significant impact, the proposed project's contribution to land use consistency would be ***less than cumulatively considerable***.

4.5.13 Noise

The geographic scope for noise is the proposed project area. Sources of noise in the proposed project area includes traffic on I-5 and SR 120; local roads; railroad operations; aircraft operations; commercial uses; and agricultural operations. In more remote locations, background noise levels in the absence of the above-described sources are caused by distant traffic, wind in the trees, running water, birds, and distant industrial or other stationary noise sources The proposed project area lies approximately 1.5 miles from Stockton Metropolitan Airport and well outside the 65 CNEL noise contour. The proposed project would not introduce noise-sensitive uses or expose people to excessive airport noise.

Construction and operation of projects listed in Table 4-1 would include development of flood risk reduction infrastructure (e.g., Smith Canal Closure Structure, CALFED Levee Stability Program), restoration sites and habitat (e.g., San Joaquin River Restoration Program, Agreements to Support Healthy Rivers and Landscapes), and other water supply and management infrastructure (e.g., Delta Conveyance Project) in the proposed project area and the San Joaquin River and its tributaries. Activities such as levee improvements, channel modifications, and restoration projects would result in changes to ambient noise levels from construction equipment, vehicle traffic, and operation of new facilities. These effects could be short-term and temporary (construction-related activities) as well as long-term and permanent (O&M of new structures). This could result in a cumulatively significant impact.

Construction of the proposed flood risk reduction components, ecosystem restoration sites (Sites 13, 14, and 16), and other multi-benefit features would generate noise primarily from heavy-duty equipment, including excavators, cranes, dozers, and rollers. Temporary increases in roadway noise due to construction truck trips and nighttime construction activities, particularly within unincorporated San Joaquin County and the City of Lathrop, could substantially elevate ambient noise levels at nearby sensitive receptors. Vibration from nighttime construction could also disturb residents in close proximity, based on Federal Transit Administration criteria, resulting in a significant contribution to short-term cumulative construction-related noise and vibration.

Long-term operation of the flood risk reduction components, restoration sites, and multi-benefit components would not result in substantial permanent increases in ambient noise or vibration. O&M activities would be intermittent, generating minimal noise and vehicle trips, and would not exceed local noise standards or substantially disturb nearby sensitive receptors.

Implementation of Mitigation Measure 3.14-1 would reduce construction and haul-related noise, while Mitigation Measure 3.14-2 would minimize vibration impacts by limiting nighttime work and using alternative equipment. Despite these measures, temporary and nighttime construction noise near sensitive receptors cannot be fully mitigated, and some short-term impacts would remain significant and unavoidable. Therefore, cumulative projects listed in Table 4-1 in combination with the proposed project would result in a cumulatively significant impact. Implementation of Mitigation Measures 3.14-1 and 3.14-2 would reduce the proposed project's construction-related noise levels, but not to a less-than-significant level. As a result, the proposed project's contribution to this cumulative impact would remain ***cumulatively considerable***.

4.5.14 Public Services

The geographic scope for public services is the service providers service areas within the proposed project area. The proposed project area is served by multiple nearby fire stations from the City of Stockton, Lathrop-Manteca, French Camp McKinley, and City of Manteca Fire Departments, ensuring strong emergency response coverage. Law enforcement services are provided by the San Joaquin County Sheriff's Department and the police departments of Stockton, Manteca, and Lathrop, with facilities located within a few miles of the proposed project area. Manteca Unified School District primarily provides educational services, with Banta Unified serving the western edge, and recreational and library services are supported by various city and county departments, including the Stockton-San Joaquin County Public Library system.

Construction and operation of projects listed in Table 4-1 would include development of flood risk reduction infrastructure (e.g., Smith Canal Closure Structure, CALFED Levee Stability Program), restoration sites and habitat (e.g., San Joaquin River Restoration Program, Agreements to Support Healthy Rivers and Landscapes), and other water supply and management infrastructure (e.g., Delta Conveyance Project) in the proposed project area and the San Joaquin River and its tributaries. Activities such as levee improvements, channel modifications, and restoration projects would result in increased demand for public services, including fire protection, police, emergency response, and maintenance services resulting in reduced services. These effects could be short-term and temporary (construction-related activities) as well as long-term and permanent (O&M of new structures). This could result in a cumulatively significant impact.

Construction of the proposed flood risk reduction, ecosystem restoration, and recreation components could temporarily require coordination with emergency services for worker safety and access; however, these activities would occur within existing rights-of-way and developed areas and would not introduce new residential or commercial uses that increase service demand. The staging areas and construction activity would be temporary, and existing public service capacity would be sufficient to accommodate short-term needs.

During long-term O&M, the proposed project components would not substantially increase the local population or create new permanent uses that would require additional fire, police, or emergency response services. Recreational features may attract additional visitation, but this would primarily involve existing residents and would not increase the need for new schools, parks, or library facilities.

The proposed project would not create new permanent demand for public services, and temporary construction needs would be adequately managed within existing service capacities. Therefore, although cumulative projects presented in Table 4-1 in combination with the proposed project would result in a cumulatively significant impact, the proposed project's contribution to public service demand would be ***less than cumulatively considerable***.

4.5.15 Recreation

The geographic scope for recreation is the proposed project area. Several parks are located within and in the vicinity of the proposed project area. In addition to the more formal recreational facilities in the proposed project area, the San Joaquin River provides a variety of recreational opportunities, including

water-related and land-based recreational activities. Recreational boating is one of the primary uses of the San Joaquin River. Boat ramps are located in some nearby parks, such as Mossdale Crossing Regional Park and Dos Reis Park.

Construction and operation of projects listed in Table 4-1 would include development of flood risk reduction infrastructure (e.g., Smith Canal Closure Structure, CALFED Levee Stability Program), restoration sites and habitat (e.g., San Joaquin River Restoration Program, Agreements to Support Healthy Rivers and Landscapes), and other water supply and management infrastructure (e.g., Delta Conveyance Project) in the proposed project area and the San Joaquin River and its tributaries. Activities such as levee improvements, channel modifications, and restoration projects would result in changes to access to recreational facilities or resources and increase the demand for recreational services in the region. These effects could be short-term and temporary (construction-related activities) as well as long-term and permanent (O&M of new structures). This could result in a cumulatively significant impact.

Construction of the proposed flood risk reduction, ecosystem restoration, and recreation components could temporarily restrict access to certain trails, parks, or public areas due to staging, equipment use, or safety restrictions. These temporary disruptions would be managed through standard safety measures and notifications to the public and would not permanently limit recreational opportunities.

During long-term O&M, the proposed project would enhance recreational access and capacity through levee-top trails, shared-use paths, and other multi-benefit features. These enhancements would provide additional opportunities for recreation, improve connectivity between existing facilities, and restore any temporary impacts that occurred during construction. No substantial physical deterioration of existing recreational facilities would occur, and the proposed project would not attract a population increase large enough to exceed regional recreational capacity.

The proposed project would restore and expand recreational opportunities and temporary construction impacts would be managed through standard safety measures and notifications to the public and would not permanently limit recreational opportunities. Therefore, although cumulative projects presented in Table 4-1 in combination with the proposed project would result in a cumulatively significant impact, the proposed project's contribution to impacts to recreational facilities would be ***less than cumulatively considerable***.

4.5.16 Transportation

The geographic scope for transportation is the proposed project area. I-5 is the most prominent freeway in the vicinity of the proposed project area. SR 120 is an east/west freeway that connects the City of Manteca with I-5 to the west and SR 99 to the east. Local access to the proposed project area is supported by designated haul routes across San Joaquin County and the cities of Stockton, Lathrop, and Manteca, including a mix of arterial, collector, and local roads.

Construction and operation of projects listed in Table 4-1 would include development of flood risk reduction infrastructure (e.g., Smith Canal Closure Structure, CALFED Levee Stability Program), restoration sites and habitat (e.g., San Joaquin River Restoration Program, Agreements to Support Healthy Rivers and Landscapes), and other water supply and management infrastructure (e.g., Delta Conveyance Project) in the proposed project area and the San Joaquin River and its tributaries. Activities

such as levee improvements, channel modifications, and restoration projects would result in increased traffic volumes, temporary construction-related traffic disruptions, and long-term changes to roadway use patterns. These effects could be short-term and temporary (construction-related activities) as well as long-term and permanent (O&M of new structures). This could result in a cumulatively significant impact.

Construction of the proposed flood risk reduction components would involve substantial haul truck traffic and temporary closures of public roads along the dryland levee extension alignment. Similarly, construction at ecosystem restoration sites and other multi-benefit components would generate a substantial number of haul trips, potentially degrading multimodal travel conditions near construction sites. In addition, construction of the dryland levee extension would require temporary closure of public roads where they intersect the alignment. These conditions could interfere with emergency access. These temporary disruptions could affect circulation for vehicles, pedestrians, and bicyclists and represent a considerable contribution to short-term cumulative impacts on the transportation system.

During long-term O&M, the proposed project would generate only minimal, intermittent traffic primarily associated with inspections and vegetation management. Vehicle miles traveled are expected to return to existing levels, and no substantial long-term changes to roadway use or circulation are anticipated.

Implementation of Mitigation Measure 3.17-1 requires the preparation and implementation of a construction traffic management plan to ensure that proposed project components do not hinder emergency response efforts. Implementation of this measure would reduce the potentially significant impact on emergency access and evacuation to a less-than-significant level. Therefore, although cumulative projects presented in Table 4-1 in combination with the proposed project would result in a cumulatively significant impact, the implementation of Mitigation Measure 3.4-1 would reduce the proposed project's impact to transportation and circulation, including emergency access, during construction activities to less than significant and the proposed project's contribution to this significant cumulative impact would be ***less than cumulatively considerable.***

4.5.17 Tribal Cultural Resources

The geographic scope for tribal cultural resources is the proposed project area and the San Joaquin River corridor. Tribal cultural resources within the proposed project area and the region are important for their historical, scientific, and cultural value, contributing to the understanding of past human occupation and land use along the San Joaquin River corridor. Tribal cultural resources consist of 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 (National Register), California Register of Historical Resources (California Register), or a local register of historical resources.

Construction and operation of projects listed in Table 4-1 would include development of flood risk reduction infrastructure (e.g., Smith Canal Closure Structure, CALFED Levee Stability Program), restoration sites and habitat (e.g., San Joaquin River Restoration Program, Agreements to Support Healthy Rivers and Landscapes), and other water supply and management infrastructure (e.g., Delta Conveyance Project) in the proposed project area and the San Joaquin River and its tributaries. Activities such as levee improvements, channel modifications, and restoration projects would result in the disturbance or loss of known or unknown tribal cultural resources, including archaeological sites,

traditional cultural properties, and other resources of tribal significance. These effects could be short-term and temporary (construction-related activities) as well as long-term and permanent (O&M of new structures). This could result in a cumulatively significant impact.

Construction of the proposed flood risk reduction components, restoration sites, and other multi-benefit components could encounter unknown tribal cultural resources. Activities such as excavation, grading, or soil disturbance could result in direct or indirect impacts to these resources, particularly in areas not yet surveyed or where the precise locations of multi-benefit components are undetermined, resulting in a considerable contribution to this significant cumulative impact. O&M activities, including levee inspections, vegetation management, and recreational use, would have minimal ground disturbance and are not expected to result in additional impacts to tribal cultural resources beyond those associated with construction.

Mitigation Measures 3.7-1, 3.7-2(b)–(f), and 3.7-3(b) require the development and implementation of a Cultural Resources Management Plan, including site inventories, significance evaluations, protective measures, construction monitoring, cultural awareness training, and unanticipated discovery protocols. However, because portions of the proposed project area have not been fully surveyed and the final design and locations of multi-benefit components are not yet determined, it cannot be ensured that all impacts would be mitigated to a less-than-significant level. Therefore, cumulative projects presented in Table 4-1 in combination with the proposed project would result in a cumulatively significant impact. Implementation of Mitigation Measures 3.7-1, 3.7-2(a) through (f), and 3.7-3(a) and (b) would reduce the proposed project's impacts to tribal cultural resources, but not to less than significant and as a result, the proposed project's contribution to this significant cumulative impact would remain ***cumulatively considerable***.

4.5.18 Utilities and Service Systems

The geographic scope for utilities and service systems in the service providers service area in the proposed project area. The proposed project area receives water from a combination of surface and groundwater sources, with service provided by municipal utilities and regional water districts in Stockton, Lathrop, and Manteca. Wastewater is managed through City-operated treatment facilities and inter-city agreements, supporting both incorporated and unincorporated areas. Stormwater systems are maintained by San Joaquin County and the cities of Stockton, Lathrop, and Manteca, using underground drains, surface channels, and detention basins. Solid waste is handled by the county through landfills, recycling centers, and composting programs, while electricity and natural gas are supplied by PG&E. Telecommunications services are available from multiple providers, including AT&T, Verizon, and T-Mobile, offering internet, cable, and mobile connectivity.

Construction and operation of projects listed in Table 4-1 would include development of flood risk reduction infrastructure (e.g., Smith Canal Closure Structure, CALFED Levee Stability Program), restoration sites and habitat (e.g., San Joaquin River Restoration Program, Agreements to Support Healthy Rivers and Landscapes), and other water supply and management infrastructure (e.g., Delta Conveyance Project) in the proposed project area and the San Joaquin River and its tributaries. Activities such as levee improvements, channel modifications, and restoration projects would result in increased demand on utilities and service systems, including water supply, wastewater treatment, and solid waste

disposal. These effects could be short-term and temporary (construction-related activities) as well as long-term and permanent (O&M of new structures). This could result in a cumulatively significant impact.

Construction of the proposed project would include relocation of utilities along adjacent alignments to existing lines or within the proposed project footprint, which is not expected to cause adverse environmental effects. Construction activities would not substantially increase water demand or solid waste generation, and compliance with applicable regulations would ensure proper disposal of all waste.

During long-term operation, O&M of flood risk reduction components would include inspections, weed abatement, removal of encroachments, and maintenance of levee integrity, none of which would require additional water supply. Maintenance of ecosystem restoration features may require temporary irrigation of newly planted areas; water would be applied via drip or spray systems sourced from the river or a domestic water supply. Over time, irrigation and maintenance would decrease as sites become self-sustaining. Solid waste generated during O&M would be minimal and managed in accordance with federal, state, and local regulations, with no shortage of landfill capacity.

With adherence to applicable regulations and the use of efficient irrigation and waste management practices, the proposed project would not result in a substantial increase in demand on utilities or service systems. Therefore, although cumulative projects presented in Table 4-1 in combination with the proposed project would result in a cumulatively significant impact, the proposed project's contribution to impacts associated with public utilities would be ***less than cumulatively considerable***.

4.5.19 Wildfire

The geographic scope for wildfire is the proposed project area. The proposed project area is surrounded by agricultural land, with some industrial and residential uses. There are no designated forestry lands within or adjacent to the proposed project area and it is not located within a heavily wooded area nor is it surrounded by wildlands or forests. The proposed project area is generally flat, designated "Other Unzoned" for fire hazard severity by CAL FIRE, and located over 10 miles from the nearest high fire hazard severity zone.

Construction and operation of projects listed in Table 4-1 would include development of flood risk reduction infrastructure (e.g., Smith Canal Closure Structure, CALFED Levee Stability Program), restoration sites and habitat (e.g., San Joaquin River Restoration Program, Agreements to Support Healthy Rivers and Landscapes), and other water supply and management infrastructure (e.g., Delta Conveyance Project) in the proposed project area and the San Joaquin River and its tributaries. Activities such as levee improvements, channel modifications, and restoration projects would result in increases in fire risk due to the presence of construction equipment, fuels, and vegetation disturbance. These effects could be short-term and temporary (construction-related activities) as well as long-term and permanent (O&M of new structures). This could result in a cumulatively significant impact.

During construction, the proposed project could temporarily increase fire risk due to the presence of fuels and equipment within the proposed flood risk reduction components. However, site preparation activities would reduce fuel loads by removing or trimming vegetation and replacing it with maintained native plantings that pose a lower fire risk. These measures would prevent the project from substantially exacerbating wildfire hazards. Proposed project activities would also generate a substantial number of

haul trips, which could temporarily degrade conditions for multimodal travel near construction sites. Additionally, construction of the dryland levee extension would require temporary closure of public roads where they intersect the alignment. These conditions could interfere with emergency access or evacuation plans, resulting in a considerable contribution to short-term cumulative impacts related to emergency access and evacuation.

During long-term O&M, the proposed project would generate only minimal, intermittent traffic primarily associated with inspections and vegetation management. Vehicle miles traveled are expected to return to existing levels, and no substantial long-term changes to roadway use or circulation are anticipated.

While the proposed project's contribution to cumulative impacts related to wildfire risk would be less than cumulatively considerable due to compliance with existing regulations and ongoing vegetation management, construction activities could interfere with emergency access or evacuation plans. Implementation of Mitigation Measure 3.17-1 requires the preparation and implementation of a construction traffic management plan to ensure that proposed project components do not hinder emergency response efforts. Implementation of this measure would reduce the potentially significant impact on emergency access and evacuation to a less-than-significant level. Therefore, although cumulative projects presented in Table 4-1 in combination with the proposed project would result in a cumulatively significant impact, the implementation of Mitigation Measure 3.4-1 would reduce the proposed project's impact associated with wildfire risk to less than significant and the proposed project's contribution to this significant cumulative impact would be ***less than cumulatively considerable***.

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CHAPTER 5
Other CEQA Considerations

CEQA Guidelines Section 15126 requires that all phases of a project must be considered when evaluating its impact on the environment, including planning, acquisition, development and operation. As part of this analysis, the EIR must also identify: (1) significant environmental effects of the proposed project; (2) significant environmental effects that cannot be avoided if the proposed project is implemented; (3) significant irreversible environmental changes that would result from implementation of the proposed project; and (4) growth-inducing impacts of the proposed project.

Specifically, the CEQA Guidelines include the following requirements:

- *Section 15126:* An evaluation of environmental impacts must consider all aspects of a project, including planning, acquisition, development, and operation. As part of this analysis, the EIR must also identify all of the following elements:
  - Significant environmental effects of the proposed project.
  - Significant environmental effects that cannot be avoided if the proposed project is implemented.
  - Significant irreversible environmental changes that would result from implementation of the proposed project.
  - Growth-inducing impacts of the proposed project.
- *Section 15126.2(b):* An EIR must mitigate energy use if analysis of the project's energy use reveals that the project may result in significant environmental effects due to wasteful, inefficient, or unnecessary consumption use of energy, or wasteful use of energy resources. The analysis of the proposed project's energy use is contained in Section 3.8, *Energy,* and Chapter 4*, Cumulative Impacts*.
- *Section 15126.2(c):* An EIR must describe any significant impacts that cannot be avoided, even with implementation of feasible mitigation measures. Chapter 3 of this EIR presents the effects of the proposed project on various aspects of the environment. Section 5.1 of this chapter identifies any significant and unavoidable impacts identified in the technical resource sections in Chapter 3, *Environmental Setting, Impacts, and Mitigation Measures*.
- *Section 15126.2(d):* An EIR must discuss any significant and irreversible environmental changes that would be caused by the proposed project. This analysis is included in Section 5.2 of this chapter.
- *Section 15126.2(e):* An EIR must evaluate the growth-inducing impacts of a project. This analysis is presented in Section 5.3 of this chapter.
- *Section 15130(a):* An EIR must assess the cumulative impacts that could be associated with project implementation. This assessment is included in Chapter 4, *Cumulative Impacts*.

5.1 Significant and Unavoidable Impacts

The CEQA Guidelines Section 15126.2(c) states that an EIR must describe the impacts identified as significant and unavoidable should a proposed project be implemented. Impacts are determined to be significant and unavoidable when either no mitigation, or only partial mitigation, is feasible to reduce impacts to less-than-significant levels. The SJAFCA board makes a final determination of impact significance and of the feasibility of mitigation measures as part of the certification action. The environmental impacts that would result from implementation of the proposed project are presented in Chapter 3, *Environmental Setting, Impacts, and Mitigation Measures* and are summarized in the *Executive Summary*. Resource areas for which significant and unavoidable impacts were identified include:

- Agricultural and Forestry Resources
- Cultural Resources
- Noise and Vibration
- Tribal Cultural Resources

5.2 Significant Irreversible Environmental Changes

The CEQA Guidelines (Section 15126.2[d]) require an evaluation of the significant irreversible environmental changes that would be caused by a project if implemented, as described below:

> *Uses of nonrenewable resources during the initial and continued phases of the project may be irreversible since a large commitment of such resources makes removal or nonuse there after unlikely. Primary impacts, and, particularly, secondary impacts (such as highway improvement which provides access to a previously inaccessible area) generally commit future generations to similar uses. Also, irreversible damage can result from environmental accidents associated with the project. Irretrievable commitments of resources should be evaluated to assure that such current consumption is justified.*

In general, the CEQA Guidelines refer to the need to evaluate and justify the consumption of nonrenewable resources and the extent to which a project would commit future generations to similar uses of nonrenewable resources. In addition, CEQA requires the evaluation of irreversible damage resulting from an environmental accident associated with the project.

As described in Chapter 2, *Project Description*, the proposed project includes construction and operation and maintenance of flood risk reduction and multi-benefit components in and adjacent to the proposed project area.

Implementation of the proposed project could result in the commitment of nonrenewable, and slowly renewable, natural resources used in the construction process and during O&M activities, including the use of materials such as gravel, petroleum products, steel, and wood products. Construction of the proposed project is estimated to take place over a minimum five-year period with some periods of more intensive activities. As a result, use of resources would be temporary and would occur intermittently over the whole construction period. Construction activities would result in the commitment of energy resources such as fossil fuels. As discussed in Section 3.8, *Energy*, construction activities could require direct and

indirect use of energy resources. Direct energy use during construction would involve using petroleum products and electricity to operate equipment, and indirect energy use would involve consuming energy to extract raw materials, manufacture items, and transport the goods and people necessary for construction activities. The level of energy consumption would fluctuate depending on the type of construction activities underway during any particular time period. The proposed flood risk reduction component's estimated annual average diesel and gasoline use are equivalent to approximately 0.28 percent of the diesel and a very small fraction (less than 0.002 percent) of the gasoline sold in San Joaquin County annually in 2023. The proposed ecosystem restoration at Sites 13, 14, and 16's estimated diesel and gasoline use is equivalent to approximately 0.2 percent of the diesel and a very small fraction (less than 0.003 percent) of the gasoline sold in San Joaquin County annually in 2023. As a result, the proposed project would not result in a long-term increase in demand for fuel or be of sufficient magnitude to require new infrastructure be constructed or commit future generations to similar consumption of construction-phase nonrenewable resources.

General O&M activities necessary to support the implementation of the proposed project could require use of electricity for all processes, equipment, and operational lights; most of these activities would be similar to existing conditions. Compliance with all applicable state, county, and local plans, policies, and regulations pertaining to energy standards would ensure that natural resources are conserved to the maximum extent possible. It is therefore concluded that the rate and amount of energy consumed during construction and O&M activities would not result in the unnecessary, inefficient, or wasteful use of energy.

Finally, construction activities have the potential to result in accidental release of hazardous materials (discussed in Impact 3.11-1 in Section 3.11, *Hazards and Hazardous Materials*), which may lead to irreversible damage. Compliance with existing regulations (e.g., 8 California Code of Regulations Section 5194, 29 Code of Federal Regulations Section 1910.120, Department of Toxic Substances Control's applicable regulations, Construction General Permit, dewatering permit, etc.) would ensure that hazardous materials associated with construction activities would be properly stored, handled, transported and disposed of.

5.3 Growth-Inducing Impacts

The CEQA Guidelines require that an EIR evaluate the growth-inducing impacts of a proposed project (Section 15126.2[e]). A growth-inducing impact is described by the CEQA Guidelines as:

> *[T]he way in which a proposed project could foster economic or population growth, or the construction of additional housing, either directly or indirectly, in the surrounding environment. Included in this 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 characteristic 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.*

A project can have direct and/or indirect growth inducement potential. Direct growth inducement would result if a project resulted in establishing a new demand for public services, facilities, or infrastructure,

such as construction of new housing. A project would have indirect or secondary growth inducement potential if it would establish substantial new permanent employment opportunities (e.g., commercial, industrial, or governmental enterprises) or if it would involve a substantial construction effort with substantial short-term employment opportunities and indirectly stimulate the need for additional housing and services to support the new employment demand. Similarly, as explained in the CEQA Guidelines, a project would indirectly induce growth if it would remove an obstacle to additional growth and development, such as removing a constraint or increasing the capacity of a required public service, such as increased water supply capacity.

As identified in CEQA Section 15126.2(e), growth inducement is not in and of itself an "environmental impact"; however, growth can result in adverse environmental consequences. Growth inducement may constitute an adverse impact if the growth is not consistent with or accommodated by the land use plans and policies for the affected area. Local land use plans, typically general plans, provide for land use development patterns and growth policies that allow for the "orderly" expansion of urban development supported by adequate urban public services, such as water supply, sewer service, and new roadway infrastructure. A project that would induce "disorderly" growth (i.e., a project conflicting with local land use plans) could indirectly cause adverse environmental impacts: for example, the loss of agricultural land that has not been addressed in the planning process. To assess whether a project with the potential to induce growth is expected to result in significant impacts, it is important to assess the degree to which the growth associated with a project would or would not be consistent with applicable land use plans.

5.3.1 Direct Growth Inducement

The proposed project would not directly induce growth because it does not involve the development of new housing or job centers that would attract an additional population. Implementation of the proposed project would include construction activities. While it is possible that some construction workers might temporarily relocate from other areas, the proposed project is not expected to result in a substantial unplanned increase in the local population. In addition, operation and maintenance activities would be similar to those that currently exist and would not be anticipated to result in an increase in staff over that which currently exists. Therefore, implementation of the proposed project would not result in population that would require the construction of new homes, businesses, or public roads. Therefore, the proposed project would not directly induce growth.

5.3.2 Indirect Growth Inducement

A project that would generate substantial new permanent employment could indirectly generate growth by creating demand for homes and services and fostering economic and population growth. Similarly, population growth induced by a short- or long-term construction effort with substantial employment opportunities could indirectly stimulate the need for additional housing and services to support the new temporary employment demand. As described above, while it is possible that some construction workers might temporarily relocate from other areas, the proposed project is not expected to result in a substantial unplanned increase in the local population. In addition, operation and maintenance activities would be similar to those that currently exist and would not be anticipated to result in an increase in staff over that which currently exists.

As described in Chapter 2, *Project Description*, the overall objective of the proposed project is to provide increased public safety benefits by rehabilitating and improving flood risk reduction infrastructure to achieve a 200-year urban level of flood protection (ULOP) for the proposed project area. The construction and operation of flood risk reduction components of the proposed project could remove an obstacle to additional growth and development by providing a higher level of flood projection than what currently exists on urban and urbanizing lands within San Joaquin County and the cities of Stockton, Lathrop, and Manteca. By enhancing flood protection, the proposed project would remove a physical constraint to development and could therefore have an indirect growth-inducing effect under CEQA Guidelines Section 15126.2(e). However, any such growth would occur within areas already designated for urban development in the adopted general plans and applicable specific plans of the affected jurisdictions. These plans have accounted for anticipated population and employment growth, and associated infrastructure and service demands, within their planning horizons. In addition, the general plans from San Joaquin County and the cities of Stockton, Lathrop, and Manteca include policies consistent with SB 5, which require an assessment of whether new development is reasonably safe from flood risk, implementation of projects that would provide 200-year level of flood protection, and updates to land uses reflecting current floodplain mapping data. As a result, while the proposed project may facilitate growth by removing a development constraint, it would not induce growth beyond what has already been anticipated and evaluated in existing land use plans. Accordingly, the proposed project is not expected to result in significant indirect growth-inducing impacts.

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CHAPTER 6
Project Alternatives

6.1 Introduction

This chapter describes alternatives to the proposed project and compares the environmental impacts of those alternatives. This chapter also describes alternatives that were reviewed for further consideration but rejected.

The principles used to guide selection of the alternatives analyzed in this Draft EIR are provided by Section 15126.6 of the CEQA Guidelines, which specifies that an EIR must do all of the following:

- Describe a reasonable range of potentially feasible alternatives to the project that could feasibly attain most of the basic objectives of the project.
- Consider alternatives that could reduce or eliminate any significant environmental impacts of the proposed project (in this case, the proposed project), including alternatives that may be costlier or could otherwise impede the project's objectives.
- Evaluate the comparative merits of the alternatives.

The focus and definition of the alternatives evaluated in this Draft EIR are governed by the "rule of reason," in accordance with CEQA Guidelines Section 15126.6(f). That is, the range of alternatives presented in this Draft EIR must permit a reasoned choice by SJAFCA. The CEQA Guidelines (Section 15126.6) require that an EIR evaluate at least one "No-Project Alternative," evaluate a reasonable range of alternatives to the project, identify alternatives that were considered during the scoping process but eliminated from detailed consideration, and identify the "environmentally superior alternative."

Although the CEQA Guidelines (Section 15126.6[d]) require that alternatives be evaluated, they permit the evaluation to be conducted in less detail than for the proposed project (i.e., proposed project). Consistent with CEQA Guidelines Section 15126.6(d), the information provided in this Draft EIR about each alternative is sufficient to allow for a meaningful evaluation, analysis, and comparison of the alternatives with the proposed project.

The alternatives considered but rejected are discussed in subsection 6.3.3, Alternatives Considered but Rejected. The alternatives carried forward for analysis are discussed in Section 6.4, *Alternatives to the Proposed Project*. The CEQA Guidelines also require that the EIR identify the environmentally superior alternative. Section 6.6, Environmentally Superior Alternative, identifies the environmentally superior alternative and summarizes the impacts of the alternative, and its ability to meet project objectives, as compared to the proposed project.

6.2 Objectives

As presented in Chapter 2, *Project Description*, the overall objective of the proposed project is to provide increased public safety benefits by rehabilitating and improving flood risk reduction infrastructure to achieve a 200-year ULOP for the Mossdale Tract area. The objectives include the following:

1. Improve long-term operations, maintenance, repair, rehabilitation, and replacement over time.
2. Modernize the flood risk reduction infrastructure to accommodate future performance and climate change resiliency goals identified in the Central Valley Flood Protection Plan and in SJAFCA's Climate Change Adaptation Policy.
3. Implement a multi-benefit flood risk reduction project that: (1) improves ecological function and habitat in the flood system, and (2) contributes additional societal benefits such as recreation where feasible.

6.3 Alternatives Considered and Screening Criteria

This section describes the development of a reasonable range of alternatives to the proposed project, the method used to screen the alternatives, and the alternatives considered but eliminated from detailed consideration in this document.

6.3.1 Development of a Reasonable Range of Alternatives

CEQA requires that an EIR describe and evaluate a reasonable range of 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.

6.3.2 Method Used to Screen Alternatives

Potential alternatives were screened based on their ability to feasibly attain most of the basic project objectives, their feasibility within the limits of the SJAFCA's jurisdiction, and their ability to reduce or eliminate any significant environmental impacts of the proposed project.

- **Meeting project objectives—**The project objectives are listed in Section 6.2, Objectives. The CEQA Guidelines state that alternatives must feasibly attain most of the basic objectives of the project. Alternatives that did not meet the majority of the objectives for the proposed project were screened out and not carried forward for further evaluation in the Draft EIR.
- **Feasibility—**Alternatives that do not meet the requirements of applicable laws and regulations were not carried forward for further evaluation in the Draft EIR.
- **Avoiding or lessening any potentially adverse environmental effect of the proposed project—** Consistent with the CEQA Guidelines, alternatives should avoid or substantially lessen one or more of the significant environmental effects of the proposed project. Alternatives that would not lessen or avoid a potentially significant environmental impact may be eliminated from detailed evaluation in the Draft EIR.

6.3.3 Alternatives Considered but Rejected

The CEQA Guidelines require an EIR to identify any alternatives that were considered by the lead agency but were rejected as infeasible, and to briefly explain the reasons underlying the lead agency's determination. Section 15126.6(c) of the CEQA Guidelines states the following:

> *The EIR should identify any alternatives that were considered by the lead agency but were rejected as infeasible during the scoping process and briefly explain the reasons underlying the lead agency's determination…Among the factors that may be used to eliminate alternatives from detailed consideration in an EIR are: (i) failure to meet most of the basic project objectives, (ii) infeasibility, or (iii) inability to avoid significant environmental impacts.*

A range of alternatives were discussed in the Mossdale Tract Area Urban Flood Risk Reduction Study (Peterson Brustad Inc. 2021), which include changes to various components of the proposed project's design. These alternatives generally considered three of the following main changes to the proposed project:

- Construction of a dryland levee north of the City of Lathrop;
- Construction of a setback levee, breach of the existing levee, and installation of an aquatic habitat ecosystem restoration site at river mile (RM) 52; and
- Installation of an additional dryland habitat ecosystem restoration site at RM 52 without the proposed levee breaches or setback levee.

Each of these structural alternatives were considered but rejected from further analysis for the reasons described below.

Dryland Levee North of the City of Lathrop

The dryland levee north of the City of Lathrop alternative would include the same fix-in-place levee improvements as the proposed project in the southern end of the project area within the jurisdiction of the Cities of Lathrop and Manteca. This alternative would not include improvements to the levee alignment in the northern end of the proposed project area in the jurisdictions of San Joaquin County and City of Stockton. The proposed ecosystem restoration sites and multi-benefit components would be largely the same as the proposed project. Under this alternative, a new dryland levee north of the City of Lathrop would be constructed along unnamed agricultural access roads south of Frewert Road and north of De Lima Road. The new levee would extend from the existing levee along the San Joaquin River and head east toward Interstate 5 before turning north and terminating near the intersection of Briggs Avenue and Manthey Road providing flood protection to the cities of Lathrop and Manteca from the north.

This alternative was rejected from further analysis because it would not meet the overall objective and would not achieve all of the specific objectives of the proposed project. This is because the dryland levee north of the City of Lathrop would not make any significant improvements to long-term O&M of the levee system. Additionally, this alternative would also leave areas north of the City of Lathrop within the jurisdiction of San Joaquin County and the City of Stockton unprotected, and the dryland levee could potentially be at risk of flanking by flood waters under a future climate change scenario reducing the effectiveness of the proposed project. Further, it was determined that this alternative would only make

minor improvements to reduce residual risk to property, life safety, and critical infrastructure. As a result, this alternative was rejected.

RM 52 Setback Levee and Aquatic Habitat Ecosystem Restoration

This alternative would include an aquatic habitat ecosystem restoration site at RM 52 and construction of a setback levee to be located behind the existing levee at RM 52 near the base of the peninsula close to Lathrop Road and River Islands Parkway. This alternative would also include a breach of the existing levee to hydrologically connect the proposed aquatic habitat ecosystem restoration site to the adjacent San Joaquin River. The existing levee would remain and would still be improved; however, all agricultural lands between the existing levee and proposed setback levee would be acquired and converted to riparian, marsh, and inundated floodplain habitat. This alternative also considered potential dryland habitat that would be restored adjacent to the aquatic habitat on the east side of the proposed setback levee. This alternative would include the same fix-in-place levee improvements to both the northern and southern ends of the levee alignment as the proposed project. It would also include the same multi-benefit components.

Although this alternative would make improvements along the levee alignment equating to similar O&M demands as the proposed project, the addition of a setback levee would result in the need for additional O&M activities to maintain both the existing levee and the proposed setback levee. Construction and operation of the setback levee would result in additional costs, which would affect the proposed project's ability to economically obtain an ULOP; and therefore, the overall proposed project objective of providing increased public safety benefits by rehabilitating and improving flood risk reduction infrastructure to achieve a 200-year ULOP for the Mossdale Tract area. In addition, this alternative would require additional earthmoving, grading, and levee breaches not considered in the proposed project. As such, this alternative would fail to lessen a potentially significant environmental impact as it would likely increase construction activity. As a result, this alternative was rejected.

RM 52 Dry Habitat Ecosystem Restoration without Setback Levee

This alternative would involve installation of a dry habitat ecosystem restoration site at RM 52 near the divergence of the San Joaquin River and Old River and the same fix-in-place levee improvements to both the northern and southern ends of the levee alignment as the proposed project. It would also include the same multi-benefit components; however, it would include an additional ecosystem restoration site behind the existing levee at RM 52. The ecosystem site would consist of upland dry habitat, and the existing levees would be maintained to provide adequate flood protection. This alternative would not include breaching of the existing levee breach, and no setback levee would be required.

This alternative would lead to additional incurred costs, which could affect the proposed projects' ability to economically obtain an ULOP; and therefore, the overall proposed project objective of providing increased public safety benefits by rehabilitating and improving flood risk reduction infrastructure to achieve a 200-year ULOP for the Mossdale Tract area. As a result, this alternative was rejected.

6.4 Alternatives to the Proposed Project

Consistent with CEQA Guidelines Section 15126.6(d), the information provided in this EIR about the alternative is sufficient to allow for a meaningful evaluation, analysis, and comparison of the alternative with the proposed project. If the alternative would cause one or more significant effects in addition to those identified for the proposed project, the effects are discussed, but in less detail than for the proposed

project. In the following section, impacts are described with respect to whether they are likely to be similar to, more severe than, or less severe than the corresponding impacts of the proposed project.

Two alternatives were identified for further evaluation in the Draft EIR. These alternatives are:

- No Project
- Dryland Levee Extension to Union Road

Each alternative is described below, including an evaluation of the alternative's ability to achieve the proposed project objectives presented in Section 6.2, Objectives. A comparison of the potential impacts of the alternatives to the impacts of the proposed project is presented in Section 6.5, Comparative Analysis of Alternatives.

6.4.1 No Project Alternative

Description of Alternative

CEQA Guidelines Section 15126.6(e) requires consideration of a "no project" alternative. The purpose of this alternative is to allow the decision makers to compare the impacts of the proposed project with the impacts of not approving the proposed project. The No Project Alternative consists of existing conditions at the time the NOP is published, and what would be reasonably expected to occur in the foreseeable future if the proposed project were not approved, based on current plans and consistent with available infrastructure.

Under the No Project Alternative, none of the proposed flood risk reduction or multi-benefit components would be implemented, including the dryland levee extension and ecosystem restoration at Sites 13, 14, and 16. As a result, the approximately 17 miles of levee system protecting the proposed project area would not achieve a ULOP consistent with Senate Bill 5 requirements for urban areas, and the Mossdale Tract area would continue to be at risk to flooding; however, applicable existing regulatory restrictions on development in a flood plain would still apply under the No Project Alternative. There would be no improvement in the net quantity, diversity, and connectivity of riparian and floodplain habitats along the lower San Joaquin River corridor, and no enhancement of recreation opportunities for the surrounding communities.

Relationship to Project Objectives

The No Project Alternative would not meet any of the proposed project objectives. There would be no improvement in long-term operations, maintenance, repair, rehabilitation and replacement over time. The existing flood risk reduction infrastructure would not be modernized to accommodate future performance and climate change resiliency goals as identified in the Central Valley Flood Protection Plan and in SJAFCA's Climate Change Adaptation Policy. There would be no improvement of ecological function and habitat in the flood system or recreational features or opportunities in the proposed project area.

6.4.2 Dryland Levee Extension to Union Road

Description of Alternative

Under this alternative, the proposed dryland levee extension would include construction of a new approximately 2.3-mile-long levee east to Union Road, as needed to prevent flood waters from going around the existing dryland levee and flooding the Mossdale Tract area during extreme flood events. Identical to the proposed project dryland levee extension, under this alternative the levee extension would be approximately four to 18 feet high with a crown width of 20 feet and a base width of 50 to 200 feet. The proposed dryland levee extension under this alternative would also include a 100-foot-wide and 5-foot-high seepage berm as well as a 20-foot-wide operation and maintenance corridor on both sides of the levee. Under this alternative the dryland levee extension would intersect several public paved roads within San Joaquin County, including Airport Way, Oleander Avenue, and Woodward Avenue.

Similar to the proposed project, development of this alternative would require demolition and reconstruction of portions of these roadways, as well as the relocation and/or reconstruction of existing utilities, such as South San Joaquin Irrigation District irrigation and drainage facilities. Debris resulting from demolition activities would be disposed of at local landfills permitted to accept this type of material.

The other flood risk reduction components, ecosystem restoration at Sites 13,14, and 16, and other multibenefit components proposed under the project would also be implemented under this alternative.

Relationship to Project Objectives

The Dryland Levee Extension to Union Road would partially achieve the overall objectives of the proposed project to provide increased public safety benefits through improved flood risk reduction infrastructure to achieve a 200-year level of flood protection. Current (2022) hydrology flood flows would be contained, and no flanking of the dryland levee extension is anticipated. However, this alternative would offer a lower level of long-term system resilience compared to the proposed project that extends to Tinnin Road. Terminating the levee at Union Road would result in reduced freeboard at the eastern terminus, making the system more vulnerable to future hydrologic uncertainties and climate change impacts, such as increased flood magnitudes or altered flow routing. This alternative does not offer the same level of system robustness or adaptability as a longer extension to Tinnin Road as proposed by the project. In comparison, the proposed project would provide enhanced performance under future conditions and better align with project objectives to modernize flood risk reduction infrastructure and accommodate future performance and climate change resiliency goals as identified in the Central Valley Flood Protection Plan and in SJAFCA's Climate Change Adaptation Policy.

Because the other flood risk reduction components, ecosystem restoration at Sites 13,14, and 16, and other multi-benefit components proposed under the project would still be implemented, this alternative would achieve the objective of implementing a multi-benefit project that would improve ecological function and habitat in the flood system and contribute additional social benefits such as recreational features or opportunities in the proposed project area.

6.5 Comparative Analysis of Alternatives

Consistent with CEQA Guidelines Section 15126.6(d), the information provided in this Draft EIR about the alternatives is sufficient to allow for a meaningful evaluation, analysis, and comparison of the alternatives with the proposed project. **Table 6-1** presents a comparison of the environmental impacts of the proposed project compared to the No Project Alternative and the Dryland Levee Extension to Union Road. In the resource sections of Chapter 3, *Environmental Setting, Impacts, and Mitigation Measures*, the potential impacts of implementation of the proposed project were evaluated for each proposed project component (i.e., flood risk reduction components; ecosystem restoration at Sites 13, 14, and 16; and a program-level analysis of additional multi-benefit restoration sites and recreation components). In some cases, the significance determination varied across each proposed project component (e.g., less-than-significant impact for the other multi-benefit components, but less than significant with mitigation for the flood risk reduction components). The impacts of the alternatives are therefore compared against the most conservative significance determination for each impact threshold, to be representative of the potential impact of implementation of the proposed project as a whole.

Note that Table 6-1 focuses on an evaluation of the comparative merits of the proposed project and the No Project Alternative related to significant effects of the proposed project (i.e., impacts determined less than significant with mitigation or significant and unavoidable), per CEQA Guidelines Section 15126.6. Impacts of the proposed project determined to be less than significant have not been included, because a reduction in already less-than-significant impacts would not offer meaningful contributions to an evaluation of the comparative merits. For such impacts, Table 6-1 provides an explanation as to whether the impact determination would be the same or different for the No Project Alternative as compared to the proposed project.

TABLE 6-1
COMPARISON OF THE ENVIRONMENTAL IMPACTS OF THE PROPOSED PROJECT AND ALTERNATIVES

Resource Topic		Proposed Project	No Project	Dryland Levee Extension to Union Road
3.2 Aesthetics	**3.2-3:** Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area.	**Less than Significant with Mitigation** Depending on the allowable duration/schedule for the project and/or each phase, night work could be necessary for construction of the proposed project. This could create new sources of nighttime light that could be visible by neighboring residences and vehicles passing near the staging areas.	**No Impact** None of the proposed flood risk reduction or multi-benefit components would be implemented. Therefore, no construction activities would occur, and no night work would be required resulting in new sources of nighttime lighting.	**Reduced** A reduced construction footprint along the dryland levee extension component would result in reduced potential for night work and new sources of nighttime light. While this significant impact would be less in magnitude, proposed project mitigation measures would be required to reduce this impact to a less-than-significant level.
3.3 Agricultural and Forestry Resources	**3.3-1:** Implementation of the proposed project could convert existing Important Farmland to non-agricultural uses.	**Significant and Unavoidable** Construction of the flood risk reduction components and ecosystem restoration at Sites 13, 14, and 16 would overlap with designated Important Farmland in certain areas, causing a conversion to non-agricultural uses (i.e., flood protection infrastructure and habitat).	**No Impact** None of the proposed flood risk reduction or multi-benefit components would be implemented. Therefore, there would be no changes to conversion of existing Important Farmland.	**Reduced** The dryland levee extension to Tinnin Road is located on Important Farmland, so terminating the dryland levee at Union Road would result in reduced acreage of affected Important Farmland. While less in magnitude, this impact would be significant. Proposed project mitigation measures would be required to reduce this impact, but it would remain significant and unavoidable.
3.4 Air Quality	**3.4-1:** Implementation of the proposed project could conflict or obstruct the implementation of air quality plans adopted by the SJVAPCD and any other applicable air quality plans.	**Less than Significant with Mitigation** Construction activities associated with the flood risk reduction components and the ecosystem restoration features at Sites 13, 14, and 16 would be considered to generate emissions that conflict with or obstruct the implementation of the SJVAPCD's air quality plans. Construction activities associated with the other multi-benefit components of the proposed project have the potential to exceed SJVAPCD significance thresholds, primarily for NOx emissions.	**No Impact** None of the proposed flood risk reduction or multi-benefit components would be implemented. Therefore, no construction activities would occur and there would be no increase in air emissions that could conflict with or obstruct the implementation of SJVAPCD air quality plan.	**Reduced** A reduced construction footprint along the dryland levee extension component would result in reduced construction activities generating emissions. While this significant impact would be less in magnitude, proposed project mitigation measures would be required to reduce this impact to a less-than-significant level.
	3.4-2: Implementation of the proposed project could result in an increase of criteria pollutants for which the project region is non-attainment under an applicable federal or state ambient air quality standard.	**Less than Significant with Mitigation** Construction activities associated with the flood risk reduction components and the ecosystem restoration features at Sites 13, 14, and 16 would result in a cumulatively considerable net increase of NO_x, resulting in an exceedance of the applicable SJVAPCD construction threshold.	**No Impact** None of the proposed flood risk reduction or multi-benefit components would be implemented. Therefore, no construction activities would occur and there would be no increase in criteria pollutants for which the proposed project area is in non-attainment.	**Reduced** A reduced construction footprint along the dryland levee extension component would result in reduced construction activities generating a cumulatively considerable net increase of NO_x. While this significant impact would be less in magnitude, proposed project mitigation measures

Resource Topic		Proposed Project	No Project	Dryland Levee Extension to Union Road
		Without a quantification of emissions, it cannot be determined with certainty that emissions associated with the construction of the other multi-benefit components would not exceed the SJVAPCD thresholds.		would be required to reduce this impact to a less-than-significant level.
	3.4-3: Implementation of the proposed project could result in health risk impacts from exposure of sensitive receptors to substantial pollutant concentrations.	**Less than Significant with Mitigation** Projects that generate less than the significance thresholds can be considered to not cause exceedances of the standards or associated health impacts. However, NO_x emissions associated with proposed project construction would be exceeded in 2026 and 2027.	**No Impact** None of the proposed flood risk reduction or multi-benefit components would be implemented. No construction activities would occur and there would be no associated generation of NO_x, which could result in health risk impacts in the proposed project area thereby exposing sensitive receptors to harmful pollutant concentrations.	**Reduced** A reduced construction footprint along the dryland levee extension component would result in reduced construction activities generating NO_x. While this significant impact would be less in magnitude, proposed project mitigation measures would be required to reduce this impact to a less-than-significant level.
3.6 Biological Resources - Terrestrial	**3.6-1:** Implementation of the proposed project could result in substantial adverse effects, either directly or through habitat modifications, to species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by CDFW or USFWS.	**Less than Significant with Mitigation** Implementation of the flood risk reduction components and construction and operation of additional restoration sites and recreational features associated with the other multi-benefit components of the proposed project could substantially affect special-status wildlife and plant species.	**No Impact** None of the proposed flood risk reduction or multi-benefit components would be implemented. There would be no construction or operational activities that would adversely affect special-status species and/or their habitat.	**Reduced** A reduced construction footprint along the dryland levee extension component would result in reduced acreage of potential effects to special-status species and their habitats. While this significant impact would be less in magnitude, proposed project mitigation measures would be required to reduce this impact to a less-than-significant level.
	3.6-2: Implementation of the proposed project could result in adverse effects to riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations, or by CDFW or USFWS.	**Less than Significant with Mitigation** The flood risk reduction components may result in the loss of riparian habitat, irrigation ditches (considered a sensitive natural community), and other waters. Construction at the ecosystem restoration sites would result in a temporary but significant loss of sensitive natural community acreage.	**No Impact** None of the proposed flood risk reduction or multi-benefit components would be implemented. Because no construction activities would occur, there would be no impacts to sensitive natural communities to the proposed project area.	**Same** This alternative would include construction of the flood risk reduction components that could result in the loss of riparian habitat, irrigation ditches and other waters. In addition, it would also include construction of ecosystem restoration sites that could result in temporary loss of sensitive natural community acreage. This significant impact would be the same as the proposed project and proposed project mitigation measures would be required to reduce this impact to a less-than-significant level.

Resource Topic		Proposed Project	No Project	Dryland Levee Extension to Union Road
	3.6-3: Implementation of the proposed project could result in adverse effects on state or federally protected wetlands (including but not limited to marsh, vernal pool, and coastal) through direct removal, filling, hydrological interruption, or other means.	**Less than Significant with Mitigation** The impact of the construction of the flood risk reduction components on aquatic features protected under state or federal regulations could be significant. There could be a temporary adverse effect on aquatic resources during construction of the ecosystem restoration sites.	**No Impact** None of the proposed flood risk reduction or multi-benefit components would be implemented. Because no construction activities would occur, there would be no impacts on state or federally protected wetlands.	**Same** This alternative would include construction of the flood risk reduction components that could impact aquatic features protected under state or federal regulations. In addition, it would include construction of ecosystem restoration sites which could result in temporary adverse effects on aquatic resources. This significant impact would be the same as the proposed project and proposed project mitigation measures would be required to reduce this impact to a less-than-significant level. .
	3.6-4: Implementation of the proposed project could interfere with the movement of native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors or impede the use of native wildlife nursery site.	**Less than Significant with Mitigation** Implementation of the flood risk reduction components would result in habitat modification or loss that could interfere with wildlife movement corridors and nursery sites. Construction activities at the ecosystem restoration sites would have similar temporary impacts on wildlife movement as the flood risk reduction components.	**No Impact** None of the proposed flood risk reduction or multi-benefit components would be implemented. Because there would be no change from existing conditions, there would be no impacts on wildlife movement corridors or nursery sites from habitat loss or modification.	**Reduced** A reduced construction footprint along the dryland levee extension component would result in slightly less habitat modification or loss that could interfere with wildlife movement corridors and nursery sites. While this significant impact would be less in magnitude, proposed project mitigation measures would be required to reduce this impact to a less-than-significant level.
	3.6-5: Implementation of the proposed project could conflict with local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance.	**Less than Significant with Mitigation** Construction and O&M activities for the flood risk reduction, ecosystem restoration Sites 13, 14, and 16, and other multi-benefit components of the proposed project have the potential to remove trees and high-hazard vegetation (which may include trees). This activity could remove trees that are regulated by local ordinances for trees.	**No Impact** None of the proposed flood risk reduction or multi-benefit components would be implemented. Because no construction activities or change in O&M activities would occur, there would be no removal of trees regulated by local ordinances.	**Reduced** A reduced construction footprint along the dryland levee extension component would result in less vegetation and tree removal. While this significant impact would be less in magnitude, proposed project mitigation measures would be required to reduce this impact to a less-than-significant level.
3.7 Cultural Resources	**3.7-1:** Implementation of the proposed project could cause a substantial adverse change in the significance of a historical resource pursuant to CEQA Guidelines Section 15064.5.	**Significant and Unavoidable** Construction activities and O&M for the proposed flood risk reduction components and other multi-benefit components would involve activities that have the potential to affect historical resources, such as ground disturbance, vibration, and modification of architectural resources.	**No Impact** Under the No Project Alternative, none of the proposed flood risk reduction or multi-benefit components would be implemented. Therefore, there would be no construction or O&M activities that could potentially to adversely affect architectural resources.	**Reduced** A reduced construction footprint along the dryland levee extension component would result in fewer activities that have the potential to affect historical resources, such as ground disturbance, vibration, and modification of architectural resources. While less in magnitude, this impact would be significant. Proposed project mitigation measures would be required to reduce this impact, but it would remain significant and unavoidable.

Resource Topic		Proposed Project	No Project	Dryland Levee Extension to Union Road
	3.7-2: Implementation of the proposed project could cause a substantial adverse change in the significance of an archaeological resource pursuant to CEQA Guidelines Section 15064.5.	**Significant and Unavoidable** Construction activities associated with flood risk reduction components and other multi-benefit components could potentially disturb or destroy previously undiscovered archaeological resources.	**No Impact** Under the No Project Alternative, none of the proposed flood risk reduction or multi-benefit components would be implemented. Because no construction would occur, there would be no earth-disturbing activities that could potentially disturb or destroy previously undiscovered archaeological resources.	**Reduced** A reduced construction footprint along the dryland levee extension component would result in fewer activities that could unearth previously undiscovered archaeological resources. While less in magnitude, this impact would be significant. Proposed project mitigation measures would be required to reduce this impact, but it would remain significant and unavoidable.
	3.7-3: Implementation of the proposed project could disturb human remains, including those interred outside of dedicated cemeteries	**Less than Significant with Mitigation** Construction activities associated with all proposed project components could disturb human remains, in the event that human remains are discovered.	**No Impact** Under the No Project Alternative, none of the proposed flood risk reduction or multi-benefit components would be implemented. Because no construction would occur, there would be no earth-disturbing activities that could expose human remains.	**Reduced** A reduced construction footprint along the dryland levee extension component would result in fewer activities that could unearth human remains. While this significant impact would be less in magnitude, proposed project mitigation measures would be required to reduce this impact to a less-than-significant level.
3.9-5 Geology, Soils, and Mineral Resources	**3.9-5:** Implementation of the proposed project could directly or indirectly destroy a unique paleontological resource or site or unique geologic feature.	**Less than Significant with Mitigation** Portions of the proposed project area are underlain by deposits that are considered to have a high potential to contain significant paleontological resources. Therefore, excavation activities associated with construction of proposed project components could result in exposure of buried paleontological resources	**No Impact** Under the No Project Alternative, none of the proposed flood risk reduction or multi-benefit components would be implemented. No excavation associated with construction activities would occur and there would be no potential exposure of buried paleontological resources	**Reduced** A reduced construction footprint along the dryland levee extension component would result in fewer activities that could expose a paleontological resource. While this significant impact would be less in magnitude, proposed project mitigation measures would be required to reduce this impact to a less-than-significant level.
3.11 Hazards and Hazardous Materials	**3.11-3:** Implementation of the proposed project could interfere with an existing emergency response plan or evacuation plan.	**Less than Significant with Mitigation** Construction associated with all proposed project components could result in temporary interference with implementation of emergency access and/or emergency evacuation plan due to substantial haul trips to and from construction sites and the temporary closure of intersections for construction of the dryland levee.	**No Impact** Under the No Project Alternative, none of the proposed flood risk reduction or multi-benefit components would be implemented. There would be no construction-related traffic and no temporary interference with implementation of emergency access.	**Reduced** Terminating the dryland levee extension at Union Road as opposed to Tinnin Road would require the temporary closure of one less intersection for construction. While this significant impact would be less in magnitude, proposed project mitigation measures would be required to reduce this impact to a less-than-significant level.

Resource Topic		Proposed Project	No Project	Dryland Levee Extension to Union Road
3.12 Hydrology and Water Quality	**3.12-1:** Implementation of the proposed project could violate any water quality standards or waste discharge requirements, or otherwise substantially degrade surface or ground water quality.	**Less than Significant with Mitigation** Construction of the flood risk reduction components, including the soil-bentonite slurry cutoff walls and use of bentonite materials, could result in impacts on groundwater quality.	**No Impact** Under the No Project Alternative, the flood risk reduction components would be constructed, and soil-bentonite slurry cutoff walls would not be installed. Therefore, there would be no impact on groundwater quality.	**Same** This alternative would include construction of the flood risk reduction components, including the soil-bentonite slurry cutoff walls and use of bentonite materials, which could result in impacts on groundwater quality. This significant impact would be the same as the proposed project and proposed project mitigation measures would be required to reduce this impact to a less-than-significant level.
3.14 Noise and Vibration	**3.14-1:** Implementation of the proposed project could 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 applicable standards of other agencies.	**Significant and Unavoidable** Construction activities associated with all proposed project components would generate a substantial temporary increase in ambient noise levels established in the City's General Plan or noise ordinance, and applicable standards of other agencies. The impacts of noise generated from construction equipment and hauling in the proposed project area would remain significant and unavoidable after implementation of mitigation measures.	**No Impact** Under the No Project Alternative, none of the proposed flood risk reduction or multi-benefit components would be implemented. No construction activities would occur and there would be no temporary increase in ambient noise levels in the proposed project area.	**Reduced** A reduced construction footprint along the dryland levee extension component would result in fewer noise-generating activities. While less in magnitude, this impact would be significant. Proposed project mitigation measures would be required to reduce this impact, but it would remain significant and unavoidable.
	3.14-2: Construction of the proposed project could generate excessive groundborne vibration or groundborne noise levels.	**Less than Significant with Mitigation** Construction activities associated with the flood risk reduction components and other multi-benefit components would not generate excessive groundborne vibration levels. However, nighttime construction could generate excessive groundborne vibration levels depending on proximity of sensitive receptors.	**No Impact** Under the No Project Alternative, none of the proposed flood risk reduction or multi-benefit components would be implemented. No construction activities would occur and there would be no generation of temporary groundborne vibration.	**Reduced** A reduced construction footprint along the dryland levee extension component would result in reduced potential for nighttime construction generating excessive groundborne vibration levels. While this significant impact would be less in magnitude, proposed project mitigation measures would be required to reduce this impact to a less-than-significant level.
3.17 Transportation	**3.17-1:** Construction, operation, or maintenance of the proposed project could conflict with a program, plan, ordinance, or policy addressing the circulation system, including transit, roadway, bicycle, and pedestrian facilities.	**Less than Significant with Mitigation** Construction associated with all project components would result in an increase in construction traffic that could conflict with a program, plan, ordinance, or policy addressing the circulation system.	**No Impact** Under the No Project Alternative, none of the proposed flood risk reduction or multi-benefit components would be implemented. No construction activities would occur and there would be no construction traffic that could conflict with a program, plan, ordinance, or policy addressing circulation.	**Reduced** A reduced construction footprint along the dryland levee extension component would result in slightly less construction traffic and haul trips. While this significant impact would be less in magnitude, proposed project mitigation measures would be required to reduce this impact to a less-than-significant level.

Resource Topic		Proposed Project	No Project	Dryland Levee Extension to Union Road
	3.17-4: Construction, operation, or maintenance of the proposed project could result in inadequate emergency access.	**Less than Significant with Mitigation** Construction of the proposed project would involve substantial haul trips to and from construction sites and the temporary closure of intersections for construction of the dryland levee could interfere with emergency access.	**No Impact** Under the No Project Alternative, none of the proposed flood risk reduction or multi-benefit components would be implemented. No construction activities would occur and there would be no construction traffic that could result in interference with emergency access.	**Reduced** Terminating the dryland levee extension at Union Road as opposed to Tinnin Road would require the temporary closure of one less intersection for construction. While this significant impact would be less in magnitude, proposed project mitigation measures would be required to reduce this impact to a less-than-significant level.
3.18 Tribal Cultural Resources	**3.18-1:** Implementation of the proposed project may cause a substantial adverse change to tribal cultural resources.	**Significant and Unavoidable** Construction associated with all project components would involve ground-disturbing activities that could damage or destroy tribal cultural resources.	**No Impact** Under the No Project Alternative, none of the proposed flood risk reduction or multi-benefit components would be implemented. Because no construction would occur, there would be no earth-disturbing activities that could potentially disturb or destroy previously undiscovered tribal cultural resources.	**Reduced** A reduced construction footprint along the dryland levee extension component would result in fewer ground-disturbing activities that could damage or destroy tribal cultural resources. While less in magnitude, this impact would be significant. Proposed project mitigation measures would be required to reduce this impact, but it would remain significant and unavoidable.
3.20 Wildfire	**3.20-1:** Implementation of the proposed project could impair emergency access or an emergency evacuation plan in the proposed project area.	**Less than Significant with Mitigation** Construction activities associated with the proposed project would involve substantial haul trips to and from construction sites and the temporary closure of intersections for construction of the dryland levee that could impair emergency access.	**No Impact** Under the No Project Alternative, none of the proposed flood risk reduction or multi-benefit components would be implemented. No construction activities would occur and there would be no construction traffic that could potentially impair emergency access.	**Reduced** Terminating the dryland levee extension at Union Road as opposed to Tinnin Road would require the temporary closure of one less intersection for construction. While this significant impact would be less in magnitude, proposed project mitigation measures would be required to reduce this impact to a less-than-significant level.

6.6 Environmentally Superior Alternative

CEQA requires identification of the environmentally superior alternative, that is, the alternative that would have the least significant impact on the environment. CEQA Guidelines Section 15126.6(e)(2) states: "If the environmentally superior alternative is the 'no project' alternative, the EIR shall also identify an environmentally superior alternative among the other alternatives."

As shown in Table 6-1, and as discussed in the alternatives analysis above, the No Project Alternative would not result in any construction or O&M impacts when compared to the proposed project. However, none of the proposed flood risk reduction or multi-benefit objectives of the proposed project would be achieved, because the fix-in-place levee improvements, dryland levee extension, ecosystem restoration sites, and other multi-benefit components would not be developed. The approximately 17 miles of levee system protecting the proposed project area would not achieve a ULOP consistent with Senate Bill 5 requirements for urban areas; modernization of infrastructure to accommodate climate change resiliency goals would not occur; and there would be no improvement to ecological function (the net quantity, diversity, and connectivity of riparian and floodplain habitats) or recreational opportunities along the lower San Joaquin River corridors. Deficiencies in the existing levee would leave areas within the Mossdale Tract area increasingly vulnerable to flood events in the future, potentially resulting in damage to property and/or existing land uses, increased run-off, and other risk factors.

As additionally shown in Table 6-1, the Dryland Levee Extension to Union Road would require a reduced construction footprint compared to the proposed project, extending the proposed dryland levee to Union Road instead of Tinnin Road, which would result in reduced construction impacts as compared to the proposed project. The Dryland Levee Extension to Union Road would therefore be the environmentally superior alternative. However, as discussed in subsection 6.4.2, this alternative would only partially achieve the overall objectives of the proposed project. This alternative would achieve the objective of implementing a multi-benefit project that would improve ecological function and habitat in the flood system and contribute additional social benefits, such as recreational features or opportunities in the proposed project area. However, extending the dryland levee to Union Road instead of Tinnin Road would result in reduced freeboard at the eastern terminus of the levee and reduced performance under future hydrologic uncertainties and climate change scenarios. The Dryland Levee Extension to Union Road would not fully achieve proposed project objectives to modernize flood risk reduction infrastructure and accommodate climate change resiliency goals. As a result, similar to the No Project Alternative, long-term deficiencies in the existing levee would leave areas within the Mossdale Tract area increasingly vulnerable to flood events in the future.

CHAPTER 7
List of Preparers

7.1 CEQA Lead and Responsible Agencies

San Joaquin Area Flood Control Agency

- Darren Suen, P.E., PMP – Executive Director
- Glenn Prasad – Deputy Executive Director
- Ryan Curry – Senior Project Manager

Department of Water Resources

- Larry Ito, P.E., PMP – Senior Engineer, Flood Projects Branch, Division of Flood Planning and Improvements
- Kalia Schuster – Senior Environmental Scientist, Environmental Support Unit, Flood Projects Branch, Division of Flood Planning and Improvements
- Ryan Young, P.E., Senior Project Manager, Flood Projects Branch, Division of Flood Planning and Improvements

7.2 Consultants

Environmental Science Associates

- Catherine McEfee –Project Manager, Technical Review
- Rachael Carnes – Deputy Project Manager, Agricultural and Forestry Resources, Cumulative Analysis, Alternatives Analysis
- Stephanie Villegas – Aesthetics, Geology and Soils, Hazards and Hazardous Materials, Wildfire, Cumulative Analysis
- Madison Castelazo – Air Quality
- Jyothi Iyer – Air Quality, Energy, Greenhouse Gas Emissions, Noise
- Nicole Dunkley – Biological Resources-Aquatic
- Paul Bergman – Biological Resources-Aquatic
- Chuck Hughes – Biological Resources-Terrestrial

- Christy Pierce – Biological Resources-Terrestrial
- Heidi Koenig – Cultural Resources, Tribal Cultural Resources
- John Prichard – Ecosystem Restoration Design
- Brian Haines – Ecosystem Restoration Design
- Joneil Manansala – Energy, Greenhouse Gas Emissions, Noise
- Kelley Sterle, PhD – Hydrology and Water Quality, Cumulative Analysis
- Rudy Reyes – Land Use and Planning, Public Services, Recreation, Utilities and Service Systems
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- Eric Nagy, P.E. - Principal
- Ruth Darling – Supervising Project Manager

CHAPTER 8
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