THE RIVERS EROSION SITE PROJECT

MITIGATED NEGATIVE DECLARATION/ FINAL INITIAL STUDY

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The Rivers Erosion Site Project

Mitigated Negative Declaration

Mitigated Negative Declaration
The Rivers Erosion Site Project

The West Sacramento Area Flood Control Agency (WSAFCA), acting as the California Environmental Quality Act (CEQA) lead agency and project proponent, has reviewed the proposed project described below to determine whether substantial evidence supports a finding that project implementation could have a significant effect on the environment. “Significant effect on the environment” means a substantial, or potentially substantial, adverse change in the any of the physical conditions within the area affected by the project, including land use, air, water, minerals, flora, fauna, ambient noise, and objects of historic or aesthetic significance.

Name of Project: The Rivers Erosion Site Project

Project Location: The project area is located along the base of the right bank of the Sacramento River, north of the intersection of Riverbank Road and Todhunter Avenue in the City of West Sacramento, California.

Project Description: The proposed project consists of constructing 65 linear feet of erosion site repairs. The erosion site is near the base of the riverbank and consists of bare soil with rock and concrete debris scattered through the area. The erosion scarp at the site was caused by a drainage swale that concentrates sheet flows from rain events to a single discharge point, and fluvial forces from the Sacramento River have exacerbated erosion at the site. The purpose of the project is to address existing erosion problems, enhance fish habitat values, and prevent future erosion from encroaching on the levee, a levee maintenance road, and adjacent recreation features.

The proposed project includes installing a ScourStop™ channel at the top of the scarp, placing vegetated mechanically stabilized earth (VMSE) along the erosion site, and constructing a longitudinal stone toe at the base of the site. Placement of the VMSE would restore the slope of the bank to match the slope upstream and downstream of the erosion site, as well as help retain soil placed as part of the project. The longitudinal stone toe would retard erosion from fluvial forces, boat wake, and discharged flows from the ScourStop™ channel, and provide a platform to anchor instream woody material. The purpose of the proposed project is to address the existing erosion problems, enhance fish habitat values, and prevent future erosion from encroaching on the levee, a levee maintenance road, and adjacent recreation features.

Construction of the proposed project would occur over 2 weeks in the fall of 2014. No known hazardous waste sites exist in the project area.

Findings: The attached Final Initial Study identifies one or more potentially significant effects on the environment. After consideration of the analysis contained in the Final Initial Study, WSAFCA finds the proposed project described above will not have a significant effect on the environment following implementation of mitigation measures described therein and listed below.

Effect	CEQA Finding	Finding with Mitigation	Mitigation Measure
3.3 BIOLOGICAL RESOURCES			
Impact BIO-1: Disturbance or Loss of VELBs and Their Habitat (Elderberry Shrub)	Significant	Less than significant	Mitigation Measure BIO-MM-1: Establish Buffers around Elderberry Shrubs Mitigation Measure BIO-MM-2: Conduct Mandatory Contractor/Worker Awareness Training for Construction Personnel
Impact BIO-2: Disturbance or Loss of Western Pond Turtles and Their Habitat	Significant	Less than significant	Mitigation Measure BIO-MM-3: Conduct Preconstruction Surveys for Western and Pacific Pond Turtles and Exclude Turtles from Work Area Mitigation Measure BIO-MM-2: Conduct Mandatory Contractor/Worker Awareness Training for Construction Personnel
Impact BIO-3: Loss of Foraging and Nesting Habitat for Swainson's Hawk and other Migratory Birds and Raptors	Significant	Less than significant	Mitigation Measure BIO-MM-4: Conduct Preconstruction Nesting Bird Surveys Mitigation Measure BIO-MM-2: Conduct Mandatory Contractor/Worker Awareness Training for Construction Personnel
3.8 CULTURAL RESOURCES			
Impact CUL-1: Inadvertent Damage of Buried Cultural Resources during Ground Disturbance	Significant	Less than significant	Mitigation Measure CUL-MM-1: Stop Work, Assess Resource Significance, and Mitigate If Needed
Impact CUL-2: Inadvertent Damage of Human Remains during Construction	Significant	Less than significant	Mitigation Measure CUL-MM-2: Stop Work and Treat Remains in Accordance with State Laws

Public Review Period: The Rivers Erosion Site Project Initial Study and proposed Mitigated Negative Declaration (IS/MND) was available for review and comment from March 27, 2014, to April 28, 2014. The Supplemental Initial Study and proposed Mitigated Negative Declaration (Supplemental IS/MND) was available for review and comment from May 3, 2014, to June 3, 2014. The IS/MND and Supplemental IS/MND were available for public review at the following locations and upon request.

- WSAFCA: 1110 West Capitol Avenue, West Sacramento, CA 95691
- online at http://www.cityofwestsacramento.org/city/flood/library.asp.

Public Comment: WSAFCA received three comment letters on the Draft IS/MND and two comment letters on the Supplemental IS/MND. In response to public comment and additional lead agency review, the following changes were made to finalize the Initial Study.

- Page 3.2-3: Information added to clarify that in-water work is not expected to restrict recreational boating on the Sacramento River.
- Pages 3.8-14 to 3.8-16: Cultural Resources impact statements and mitigation measures were updated to include information collected from records searches.
- Page 3.9-1: At the request of the Central Valley Flood Protection Board, an analysis of hydraulic impacts that may relate to the project was added. The project was determined to have no impact to hydraulics, hydrology, or water quality.

Name: _____

Title: _____

Signed: _____

Date: _____

The Rivers Erosion Site Project

Final Initial Study

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Acronyms and Abbreviations

2009 Plan	Northern Sacramento Valley Planning Area 2009 Triennial Air Quality Attainment Plan
AB	Assembly Bill
ACHP	Advisory Council on Historic Preservation
AD	anno Domini
ARB	California Air Resources Board
asl	above mean sea level
Basin Plan	Regional Water Board's Water Quality Control Plan
BMPs	best management practices
BP	Before Present
CAA	federal Clean Air Act
CAAQS	California ambient air quality standards
California CAA	California Clean Air Act
Caltrans	California Department of Transportation
CCR	California Code of Regulations
CDFW	California Department of Fish and Wildlife
CEQA	California Environmental Policy Act
CESA	California Endangered Species Act
CFR	Code of Federal Regulations
CGC	California Government Code
CH_4	Methane
CHRIS	California Historical Resources Information System
CHSC	California Health and Safety Code
CNDDB	California Natural Diversity Database
CNEL	community noise equivalent level
CO	carbon monoxide
CO_2	carbon dioxide
CO_2e	carbon dioxide equivalents
County	Yolo County
CSHC	California Health and Safety Code
CSLC	California State Lands Commission
CVFPB	California Central Valley Flood Control Board
CWA	federal Clean Water Act
dB	decibel
dBA	A-weighted decibel
DPS	distinct population segment
DWR	California Department of Water Resources
EFH	essential fish habitat
EIP	The Rivers Early Implementation Project
EIR	Environmental Impact Report
EIS/EIR	Environmental Impact Statement/Environmental Impact Report
EPA	U.S. Environmental Protection Agency
ESA	federal Endangered Species Act

ESU	Evolutionarily Significant Unit
FR	Federal Register
GHG	greenhouse gas
GPS	global positioning system
GWP	global warming potential
HCP	habitat conservation plan
HFC	hydrofluorocarbons
ICBO	International Conference of Building Officials
in/sec	inches per second
IPCC	Intergovernmental Panel on Climate Change
JPA	Yolo County Habitat Conservation Joint Powers Agency
L_{dn}	day-night sound level
L_{eq}	equivalent sound level
L_{min}	minimum sound levels
L_{max}	maximum sound levels
L_{xx}	percentile-exceeded sound levels
MBTA	Migratory Bird Treaty Act
Mitigation Agreement	Agreement Regarding Mitigation for Impacts to Swainson's Hawk Foraging Habitat in Yolo County
MLD	most likely descendant
MRZ-3	Mineral Resource Zone-3
N_2O	nitrous oxide
NAAQS	national ambient air quality standards
NAVD 88	North American Vertical Datum 1988
NCCP	Natural Community Conservation Plan
NCIC	North Central Information Center
NHPA	National Historic Preservation Act
NMFS	National Marine Fisheries Service
NO_2	nitrogen dioxide
NO_X	nitrogen oxides
NTUs	Nephelometric turbidity units
NWIC	Northwest Information Center
OHWM	ordinary high water mark
PFCs	perfluorinated carbons
PM	particulate matter
PM10	PM less than or equal to 10 microns in diameter
PM2.5	PM less than or equal to 2.5 microns in diameter
ppm	parts per million
ppv	peak particle velocity
PRC	California Public Resources Code
QA	qualified archaeologist
RD	Reclamation District
Regional Water Board	Central Valley Regional Water Quality Control Board
ROG	reactive organic gases
SF_6	sulfur hexafluoride
SFNA	Sacramento Federal Nonattaiment Area

SO_2	sulfur dioxide
SPCCP	spill prevention, control, and counter-measure plan
SPRR	Southern Pacific Railroad
SRA	shaded riverine aquatic
Superfund	Comprehensive Environmental Response, Compensation, and Liability Act
SVAB	Sacramento Valley Air Basin
SWAMP	Surface Water Quality Ambient Monitoring Program
U.S.C.	U.S. Code
USACE	U.S. Army Corps of Engineers
USC	U.S. Code
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey
VELB	valley elderberry longhorn beetle
VMSE	vegetated mechanically stabilized earth
WSAFCA	West Sacramento Area Flood Control Agency
WSLIP EIP	West Sacramento Levee Improvements Program CHP Academy and The Rivers EIPs 408 Permission
YSAQMD	Yolo-Solano Air Quality Management District

Chapter 1
Introduction

1.1 Project Purpose

The West Sacramento Area Flood Control Agency (WSAFCA) is proposing to construct approximately 65 linear feet of erosion site repairs along the Sacramento River in West Sacramento (proposed project). The primary purpose of this effort is to prevent further erosion from undercutting an existing pedestrian platform overlook (overlook), which would be at risk of collapsing down the riverbank. The purpose of the proposed project is also to avoid future damage to a maintenance road that provides inspection, operation, and maintenance access to the levee upstream of the project area. Continued erosion at the site would also shorten the seepage pathway between the riverbank and the Sacramento River North Levee that lies farther up the bank from the erosion site, potentially increasing the risk of seepage through the levee. Lastly, the proposed project would improve the quality of fish habitat in the project area, which is considered critical habitat for several species of fish.

1.2 Document Purpose and Use

This initial study was prepared in accordance with Article 5, Section 15060 et seq. of the California Environmental Policy Act (CEQA) Guidelines (California Code of Regulations [CCR], Title 14, Division 6, Chapter 3). This initial study describes the existing environmental resources in the project area, evaluates the environmental impacts of the proposed project on these resources, and identifies mitigation measures to avoid or reduce any potentially significant impacts to a less-than-significant level.

The CEQA Lead Agency, WSAFCA, will consider the findings of this initial study in determining whether preparation of an environmental impact report (EIR) is necessary prior to implementation of the proposed project. The initial study will also be used by multiple responsible, trustee, and cooperating agencies, including the City of West Sacramento, California Department of Fish and Wildlife (CDFW), Central Valley Regional Water Quality Control Board (Regional Water Board), California State Lands Commission, and California Central Valley Flood Control Board (CVFPB), in taking action under CEQA and other regulatory schemes to authorize implementation of the proposed erosion site repairs.

1.3 Project Area and Setting

The project area is located along the base of the right bank of the Sacramento River, just below River Mile 62, in the city of West Sacramento (Figure 1-1). The city of West Sacramento is located in eastern Yolo County at the confluence of the American and Sacramento Rivers. The city lies within the natural floodplain of the Sacramento River—which bounds the city along the east and north—and is made up of reclaimed land protected from floods by levees and the Yolo and Sacramento Bypass systems.

Located at the north end of the city in an area currently classified as open space, the project area is bounded by the Sacramento River to the north, the Sacramento River North Levee to the south, open space to the east, and a California Department of Water Resources (DWR) maintenance yard to the west (Figure 1-2). DWR currently maintains the project area as part of its Maintenance Area 4. The existing paved overlook is located approximately 20 feet up the riverbank from the erosion site, and the overlook is connected to a pedestrian trail system that extends east of the project area through open space. An aggregate base levee maintenance road provides access from the south and turns west to run along the Sacramento River and the north side of the DWR maintenance yard.

The erosion site is between elevations of +13 and +23 feet North American Vertical Datum 1988 (NAVD 88) on the riverbank, and is approximately 65 feet long. In the project area, the riverbank rises steeply from the edge of the river and then transitions to an approximately 200-foot-wide bench before reaching the Sacramento River North Levee. The project area is located outside of the theoretical levee prism of the Sacramento River North Levee. The Sacramento River flows from west to east in the project area, and has an ordinary high water mark (OHWM) of approximately +20 feet NAVD 88. The Sacramento River near the delineation area is subject to tidal influence, which is the same elevation as the OHWM.

1.4 Project Background

In February 2011, the U.S. Army Corps of Engineers (USACE) and WSAFCA prepared a joint environmental impact statement/environmental impact report (EIS/EIR) addressing the construction of flood risk–reduction measures for The Rivers Early Implementation Project (EIP). The Rivers EIP, completed in December 2011, included constructing a slurry cutoff wall and landside slope flattening along approximately 3,000 feet of the Sacramento River North Levee. The upstream end of The Rivers EIP started directly up the riverbank from the proposed project and extended eastward, parallel to the Sacramento River. No in-water work was conducted as part of The Rivers EIP, because the crown of the levee is set back from the edge of the river by approximately 250 feet. However, the maintenance road that provided access to the area between the DWR maintenance area and the Sacramento River was stabilized with the addition of 6 inches of aggregate base to provide more reliable access. Recreational features such as the overlook and paved pedestrian trails were constructed on the waterside of the levee. In addition, a concrete V-ditch drainage swale was constructed to direct sheet flows from the maintenance road and pedestrian trail to the Sacramento River. The swale has energy-dissipating riprap located where it discharges above the erosion site.

In the year and a half since The Rivers EIP was constructed, an erosion scarp has formed as a result of the drainage swale concentrating sheet flows from rain events to a single site along the Sacramento River. Fluvial forces from the Sacramento River have exacerbated erosion at the site, which has unraveled the riverbank face and exposed the roots of riparian vegetation, creating a vertical face along the bank. The erosion scarp has now moved to within approximately 20 feet of the overlook foundation, and also threatens the maintenance road. The site also potentially increases seepage pressure on the recently improved levee.

1.5 Regulatory Compliance

In implementing the proposed project, WSAFCA would seek all necessary permissions, authorizations, concurrences and permits to comply with the following regulatory schemes, as relevant.

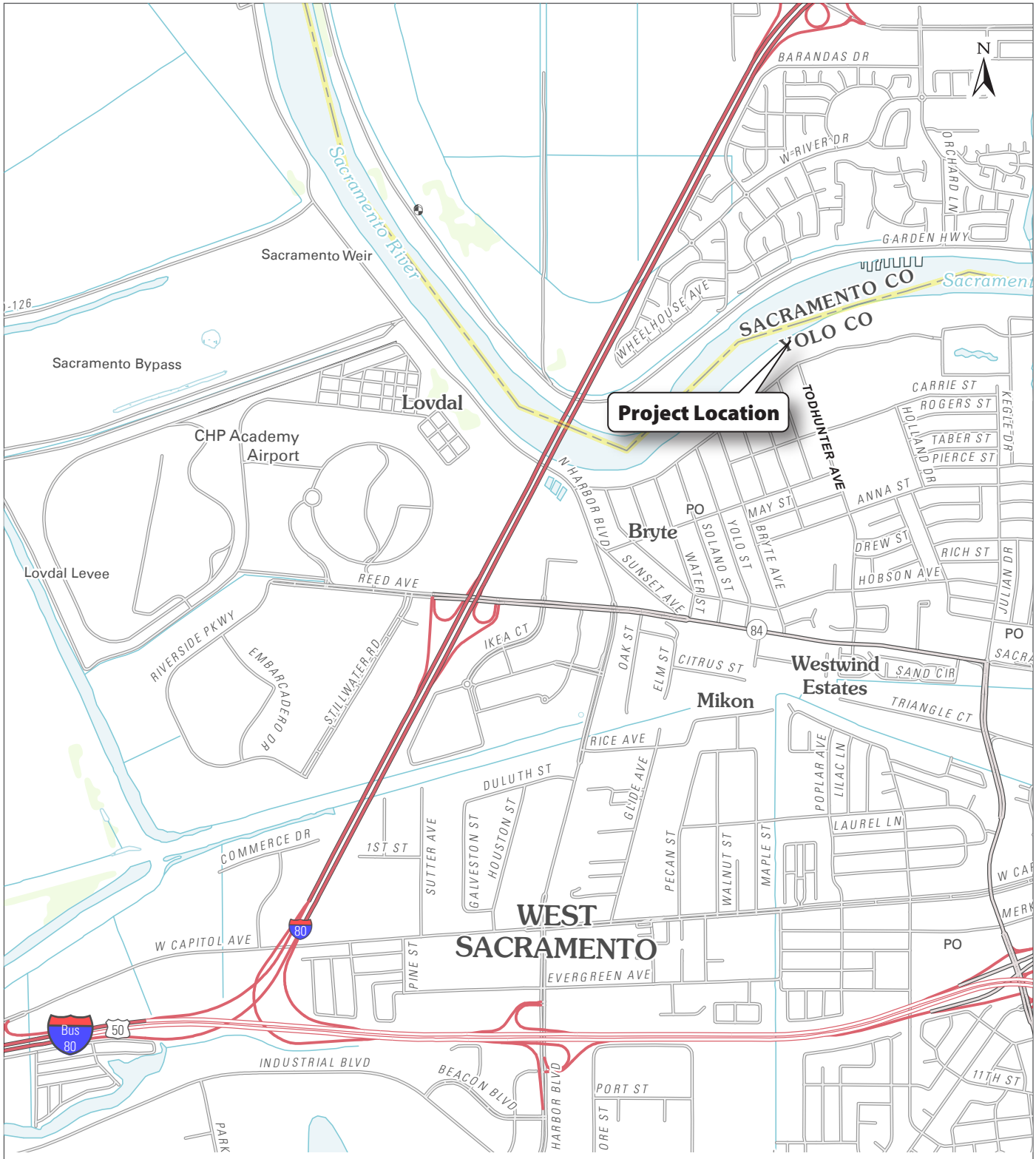
- Clean Water Act Sections 404 and 401
- California Fish and Game Code Section 1602
- National Historic Preservation Act Section 106
- Federal Endangered Species Act
- California Endangered Species Act
- Porter-Cologne Water Quality Control Act
- Federal Clean Air Act
- California Clean Air Act

1.6 Document Organization

This document is organized as follows.

- Chapter 1, *Introduction*, describes the project background, elements, purpose, and regulatory compliance.
- Chapter 2, *Project Description*, describes the project area.
- Chapter 3, *Environmental Setting and Impacts*, describes the environmental resources present in the project area, and analyzes the proposed project's potential to affect such resources.
- Chapter 4, C*umulative Impacts*, discusses the potential for the proposed project's incremental effect to be cumulatively considerable when combined with other projects causing related impacts.
- Chapter 5, *References*, provides a list of all printed references and personal communications used to prepare the initial study.
- Chapter 6, *List of Preparers*, presents a list of all personnel who assisted in the preparation of this document.
- Appendix A, *Environmental Checklist*, contains the Environmental Checklist Form, CEQA Guidelines Appendix G.
- Appendix B, *California Natural Diversity Database (CNDDB) Results*, provides the results of the CNDDB search.
- Appendix C, *U.S. Fish and Wildlife (USFWS) Species*, provides a list of endangered, threatened, and proposed species that have the potential to occur near the project area.
- Appendix D, *California Native Plant Society's (CNPS) Inventory Search*, provides a list of rare and endangered plants with potential to occur near the project area.

- Appendix E, *Modeling Assumptions and Calculations*, provides the assumptions and calculations made for the air quality analysis.
- Appendix F, *Mitigation, Monitoring, and Reporting Plan for The Rivers Erosion Site Project*, provides a list of the mitigation measures associated with each resource section, as well as the timing and agency responsible for implementing each mitigation measure.



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Source: USGS, 2012

00420.12 The Rivers (03-06-14) SS

Figure 1-1
Project Location

00420.12 The Rivers (03-06-14) SS

Figure 1-2
Project Area

Chapter 2
Project Description

2.1 Introduction

This chapter describes the proposed project, which consists of constructing repairs to an erosion site along the right bank of the Sacramento River, on the waterside of the Sacramento River North Levee. The active erosion site is approximately 65 feet long and extends approximately from an elevation of +7 feet NAVD 88 at its base to an elevation of +26 feet NAVD 88 at the top of the erosion site. All elevations are in NAVD 88 datum.

2.2 Description of Proposed Project

This section includes a discussion of features and construction details, including project features, construction methods and activities, site access and staging, equipment and personnel, schedule, and operation and maintenance for the proposed project.

2.2.1 Project Features

The proposed project consists of repairing an erosion site through the installation of a ScourStop™ channel at the top of the scarp, placing vegetated mechanically stabilized earth (VMSE) along the erosion site, and constructing a longitudinal stone toe at the base of the site. VMSE is a composite of 12-inch-diameter compost socks placed parallel to river flows and stacked in a terraced fashion up the riverbank. The ScourStop™ channel would be placed above the top of the erosion site and down the face of the VMSE, to the top of the stone toe to control the discharge point of the concrete swale. Placement of the VMSE would restore the slope of the bank to match the slope upstream and downstream of the erosion site, as well as help retain soil placed as part of the project. The longitudinal stone toe would retard erosion from fluvial forces, boat wake, and discharged flows from the ScourStop™ channel, and provide a platform to anchor instream woody material. These repairs would address the existing erosion problems, enhance fish habitat values, and prevent future erosion from encroaching on the levee, the levee maintenance road, and the adjacent recreation features.

2.2.2 Construction Methods and Activities

The primary construction activities would include excavating the existing bank, placing VMSE and stone toe, and installing the ScourStop™ channel.

2.2.2.1 Mobilization

The contractor would notify the adjacent property owners at least 30 days in advance of construction activities. Chain-link fencing would be set up to establish the limits of construction. Staging areas would be established and environmental controls, as described in Section 2.2.3, *Site Access and Staging*, and Section 2.2.7, *Environmental Commitments*, would be installed (Figure 2-1). Silt fencing would be set up around the extent of the inwater work to prevent any sediment that may

be stirred up during construction from increasing turbidity in the Sacramento River. The toe of the silt fencing would be trenched so that the downslope face of the trench is flat and perpendicular to the line of flow. The fencing would be inspected weekly and repaired as needed, with accumulated silt being removed when it reaches a depth of 6 inches. Tree protection would be placed around the trees in the project area, and would consist of 2-inch-thick wooden slats bound securely with flexible nylon strapping or wrapped in orange plastic fencing. Signage notifying the public of construction activities and temporary pedestrian access closure would be displayed on the land side of the levee.

2.2.2.2 Demolition and Disposal

Existing concrete debris at the erosion site and riprap at the downstream end of the drainage swale would be removed from the bank using a track-hoe excavator. A portion of the riprap to be removed would be stockpiled for replacement once the ScourStop™ channel is complete, but approximately 50 square feet of riprap would be removed. Four large concrete blocks would also be removed. The track-hoe excavator would stockpile concrete debris in the staging areas, and a front-end loader would load the stockpiled material into a dump truck stationed on the operations and maintenance road immediately west of the project site. The dump truck would then transport the debris to the Yolo County Central Landfill. Some displaced riprap would be retained on site to be used as part of the longitudinal stone toe and for energy dissipation at the end of the drainage swale if it is deemed suitable for reuse.

2.2.2.3 Excavation

Prior to excavation, the work surface would be stripped to a depth of 0.5 foot to remove any vegetative materials, excluding protected resources. A track-hoe excavator would be used to excavate and bench the erosion site to provide a roughly uniform surface for the placement of fill material, and to effect a competent bond between the fill material and the existing bank. The maximum depth of excavation would be approximately 6 feet, and approximately 145 cubic yards of material would be excavated to construct the benches. Suitable excavated material would be stockpiled onsite in the staging area for reuse in the repairs. Unsuitable material would be loaded into dump trucks using front-end loaders and hauled to the Yolo County Central Landfill. The excavated benches would be approximately 1 foot high, and the overall benched riverbank would have a slope of approximately 2.25:1.0.

2.2.2.4 Erosion Repairs

Once the benches have been constructed, a longitudinal stone toe would be installed at the base of the site between elevations of +7 and +13 feet using USACE grade C stone riprap. Approximately 103 cubic yards of riprap would be placed along approximately 65 linear feet of the bank. The riprap would extend approximately 22 feet up the bank and would be approximately 2 feet thick with a 2:1 slope between elevations of +10 and +13 feet to create a buttress below the benches, and a slope of 10:1 between elevations +8.8 and +10 to create a shallow rock bench. The riprap would be placed using a track-hoe excavator. Riprap placement would differ slightly at the swale discharge point from adjacent areas, in that the riprap would extend farther up the bank to dissipate energy from discharged flows (Figure 2-2). Riprap would also be placed by hand at the upstream and downstream locations where the compost socks tie into the existing bank to anchor and stabilize the transitions. An existing inwater willow tree would have riprap placed around it by hand to protect the tree. Once the riprap is placed, willow branches would be set into the transition area between

the benches and the riprap at a minimum spacing of three 6-foot branches per linear foot. The basal ends of the branches would be inserted so that approximately 60% to 80% of their length would be below the elevation of the landward riprap. Dump trucks would haul riprap to the site and the material would be stored in the staging area until used.

Two clusters of instream woody material would be installed on the top of the riprap bench to achieve at least 50% shoreline coverage above and below the mean winter-spring water surface elevation. One cluster would be upstream of the ScourStop™ channel, and the other would begin immediately downstream of the ScourStop™ channel. Clusters of instream woody material would consist of 6 to 12 trees or tree segments with sufficient volume, area, and structural complexity to achieve the desired instream cover attributes (ICF International et al. 2010). Orientation of the individual trees would be varied and layered to create a dense mix of branches, roots, and trunks throughout the cluster. Instream woody material would be anchored by cabling a portion of the material to 3-foot-diameter boulders embedded in the riprap, and a minimum of ten boulders would be used for each cluster. A minimum of half of each boulder would be buried in the rock toe. A qualified fish biologist would assist during the final design phases of the proposed project to ensure that habitat values along the riprap toe are maximized within the engineering and site constraints of the proposed project.

Compacted fill lifts and VMSE would be placed in concert with the riprap, and would involve placing approximately 128 cubic yards of clean fill (Figure 2-3). Material excavated to form the base of the benches would be used first, followed by imported material. The VMSE would also require a base fill layer of 5 cubic yards of soil fill, and the VMSE wraps would require approximately 22 cubic yards of soil and seed mixture. All fill beneath the compost socks would be native or imported granular soil. The fill lifts would be built out from the riverbank until such a point as the soil wrap would be placed by hand. Soil fill would be placed by dozer and compactor over the anchor area for the lowest soil lift (elevation of 12 feet), and each lift would be compacted using the excavator bucket or bulldozer tracks. Final compacted fill lifts would be approximately 1 foot high and 2 feet deep for areas upstream and downstream of the ScourStop™ channel. Final compacted fill lifts for the area beneath the ScourStop™ channel would be approximately 0.5 foot high and 1 foot wide. The lowest bench for the ScourStop™ channel would be set at an elevation of +11.5 feet, and the lowest bench for the rest of the bank would be set at an elevation of +12 feet. An Enkamat would be placed on each bench, and compost socks would then be placed on top of the compacted lift by hand, along with the soil wraps (Figure 2-3). Compost socks would have a minimum durability of 1 year and would be composed of biodegradable jute, sisal, burlap, or coir fiber fabric. A 12-inch-diameter compost sock would be installed on the face of each lift, and then the compost sock and soil at each lift would be wrapped with coir fabric. The process would be repeated until the top of the erosion site is reached. Once the compost socks and soil wraps have been placed, two 6-foot live willow branch cuttings would be placed per linear foot in each of the lifts, and a 2-inch layer of topsoil would be placed over the cuttings. The area between the riprap and soil bank would be backfilled with soil, rock, or gravel after the willow branches have been placed.

Once the VMSE placement is complete, the ScourStop™ channel would be installed by hand, and the channel would run from the end of the drainage swale at the top of the bank to the top of the longitudinal stone toe (Figure 2-2). The ScourStop™ channel would be 8 feet wide, and the grade of the channel would be adjusted at the face of each lift to create a continuous slope. The channel would be constructed using a minimum of 0.625-inch-thick Enkamat as a base, with 2 inches of soil placed on top of the Enkamat. A ScourStop™ mat would then be placed on top of the soil and anchored into the ground, and slight side slopes would be maintained on the sides of the channel to

keep drainage flows from dispersing into the surrounding riverbank. Stockpiled riprap would be added to the upper half of the ScourStop™ mat to help anchor it in place. Energy dissipating rock would also be added at the base of the ScourStop™ channel to transition from the top of the lowest VMSE lift to the longitudinal stone toe. Flagstones would be installed down the face of the VMSE approximately 15 feet downstream of the ScourStop™ channel to provide access to the longitudinal stone toe during low flows (Figure 2-2). A 1.5-foot-by-3-foot flagstone would be placed on each compacted fill lift. After the VMSE and ScourStop™ channel are installed, both would be hydroseeded with a mixture of tackifier, nutrients, and a native seed mixture.

All erosion, sediment, and containment control measures would be monitored for effectiveness throughout the construction period. Once the VMSE and riprap installation is complete, all temporary environmental controls would be removed. All miscellaneous debris associated with construction would be removed and disposed of at appropriate facilities.

2.2.3 Site Access and Staging

Equipment and materials would be transported on local roadways to the construction site. Construction vehicles and personnel would access the site via the maintenance road entrance located near the intersection of Riverbank Road and Todhunter Avenue, on the land side of the levee. The maintenance road provides direct access to the project site. A staging area would be located adjacent to the northeast corner of the DWR maintenance yard at the top of the erosion site, and another would be located immediately north of the paved overlook (Figure 2-1). All waste material, consisting primarily of excavated soil, concrete debris, and displaced riprap from the proposed project, would be transported by dump truck to the Yolo County Central Landfill.

2.2.4 Construction Equipment and Personnel

Approximately five individuals would be expected to be on site daily during construction of the proposed project. Private worker vehicles would be parked in the construction staging area mentioned above, or along Riverbank Road. Typical equipment used at the project site would include one of each of the following per day: track-hoe excavator, front-end loader, dump truck, bulldozer, and compactor. All heavy equipment used in excavation, riprap placement, and fill placement would be restricted to established access roads and would be operated from the top of the treatment site above the OHWM.

2.2.5 Construction Schedule

Construction is expected to occur from 7:00 a.m. to 8:00 p.m. Monday through Friday for 2 weeks, starting in mid-September, 2014.

2.2.6 Operation and Maintenance Activities

The project area is located within DWR's Maintenance Area 4. Consistent with the operation and maintenance plan for that area, the site would be inspected every 90 days, including prior to the flood season, immediately following high water periods, and at any additional time as deemed necessary by DWR. The findings of these inspections would be reported to the chief engineer through DWR's Flood Project Integrity and Inspection Branch. Repairs at the site would be implemented by DWR if the integrity of the erosion-control measures is compromised.

2.2.7 Environmental Commitments

Environmental commitments are measures proposed as elements of the proposed project and are considered in conducting the environmental analysis and determining effects and findings. The purpose of environmental commitments is to reflect and incorporate best practices into the proposed project that would avoid, minimize, or offset potential environmental effects. These best practices tend to be standardized and compulsory; they represent sound and proven methods to reduce the potential effects of an action. The rationale behind including environmental commitments is that the project proponent commits to undertake and implement these measures as part of the proposed project in advance of impact findings and determinations in good faith to improve the quality and integrity of the proposed project, streamline the environmental analysis, and demonstrate responsiveness and sensitivity to environmental quality. To avoid and minimize construction-related effects, WSAFCA would implement the environmental commitments listed below to reduce or offset short-term, construction-related effects.

2.2.7.1 Site Monitoring Plan

To ensure the riparian plantings are successful in achieving design objectives and offsetting project-related habitat deficits, WSAFCA would prepare and implement a 5-year monitoring plan that includes methods, success criteria, and remedial actions should any success criteria not be met.

2.2.7.2 Spill Prevention, Control, and Countermeasure Plan

A spill prevention, control, and countermeasure plan (SPCCP) is intended to prevent any discharge of oil into navigable waters or adjoining shorelines. WSAFCA or its contractor would develop and implement an SPCCP to minimize the potential for and effects from spills of hazardous, toxic, or petroleum substances during construction and operation activities. The SPCCP would be completed before any construction activities begin. The SPCCP would describe spill sources and spill pathways in addition to the actions that would be taken in the event of a spill (e.g., an oil spill from engine refueling will be immediately cleaned up with oil absorbents). The SPCCP would outline descriptions of containments facilities and practices and describe how and when employees are trained in proper handling procedure and spill prevention and response procedures.

WSAFCA would review and approve the SPCCP before onset of construction activities and routinely inspect the construction area to verify that the measures specified in the SPCCP are properly implemented and maintained. WSAFCA would notify its contractors immediately if there is a noncompliance issue and would require compliance.

The federal reportable spill quantity for petroleum products, as defined in 40 Code of Federal Regulations (CFR) 110, is any oil spill that does the following.

- Violates applicable water quality standards.
- Causes a film or sheen on or discoloration of the water surface or adjoining shoreline.
- Causes a sludge or emulsion to be deposited beneath the surface of the water or adjoining shorelines.

If a spill is reportable, the contractor's superintendent would notify WSAFCA, and WSAFCA would take action to contact the appropriate safety and cleanup crews to ensure that the SPCCP is followed. A written description of reportable releases must be submitted to the Regional Water Board. This

submittal must contain a description of the release, including the type of material and an estimate of the amount spilled, the date of the release, an explanation of why the spill occurred, and a description of the steps taken to prevent and control future releases. The releases would be documented on a spill report form.

If an appreciable spill occurs and results determine that project activities have adversely affected surface or groundwater quality, a detailed analysis would be performed by a registered environmental assessor or professional engineer to identify the likely cause of contamination. This analysis would conform to American Society for Testing and Materials standards and would include recommendations for reducing or eliminating the source or mechanisms of contamination. Based on this analysis, WSAFCA and its contractors would select and implement measures to control contamination, with a performance standard that surface water quality and groundwater quality must be returned to baseline conditions.

2.2.7.3 Turbidity Monitoring

WSAFCA or its contractor would monitor turbidity in the Sacramento River during construction to determine whether turbidity is being affected by construction and ensure that construction does not affect turbidity levels, which ultimately increase the sediment loads.

The Regional Water Board's Water Quality Control Plan (2011) (Basin Plan) contains turbidity objectives for the Sacramento River. Specifically, the plan states that where natural turbidity is between 5 and 50 nephelometric turbidity units (NTUs), turbidity levels may not be elevated by 20% above ambient conditions. Where ambient conditions are between 50 and 100 NTUs, conditions may not be increased by more than 10 NTUs.

WSAFCA or its contractor would monitor ambient turbidity conditions upstream during construction and adhere to the Surface Water Quality Ambient Monitoring Program (SWAMP) requirements for turbidity monitoring. Monitoring would continue approximately 300 feet downstream of construction activities to determine whether turbidity is being affected by construction. Grab samples would be collected at a downstream location that is representative of the flow near the construction site. If there is a visible sediment plume being created from construction, the sample would represent this plume. Monitoring would occur hourly when construction encroaches into the Sacramento River. If construction does not encroach into the river, the monitoring would occur once a week on a random basis.

If turbidity limits exceed Basin Plan standards, construction-related earth-disturbing activities would slow to a point that would alleviate the problem. WSAFCA would notify the Regional Water Board of the issue and provide an explanation of the cause.

2.2.7.4 Protected Trees and Riparian Trees

WSAFCA would comply with the City's Tree Preservation Ordinance requirements and would implement the following measures.

- Protect trees that occur in the vicinity of the project site and outside the construction area by installing protective fencing. Protective fencing would be installed along the edge of the construction area (including temporary and permanent access roads) where construction would occur within 20 feet of the dripline of an oak or native tree 6 inches or more in diameter at 4.5 feet above the ground (as determined by a qualified biologist or arborist).

- Provide signs along the protective fencing at a maximum spacing of one sign per 100 feet of fencing stating that the area is environmentally sensitive and that no construction or other operations may occur beyond the fencing.
- Retain a certified arborist to perform any necessary pruning of oak or native trees along the construction area, in accordance with International Society of Arboriculture standards.

All native woody riparian trees and shrubs would be protected in place. Temporary fencing would be used to mark riparian vegetation and the boundaries of other sensitive habitat or species adjacent to the construction area.

2.2.7.5 Invasive Plant Species Prevention

WSAFCA or its contractors would implement one or more of the following actions to avoid and minimize the introduction or spread of invasive plant species. In addition, WSAFCA would coordinate with the Yolo County Agricultural Commissioner to ensure that the appropriate best management practices (BMPs) are implemented for the duration of the construction of proposed projects.

- Clean construction equipment and vehicles in a designated wash area prior to entering and exiting the project site.
- Educate construction supervisors and managers about the importance of controlling and preventing the spread of invasive plant infestations.
- Treat small, isolated infestations with eradication methods that have been approved by or developed in conjunction with the Yolo County Agricultural Commissioner to prevent and/or destroy viable plant parts or seeds.
- Minimize surface disturbance to the greatest extent feasible to complete the work.
- Use native, non-invasive species or non-persistent hybrids in erosion-control plantings to stabilize site conditions and prevent invasive plant species from colonizing.
- Use erosion-control materials that are weed-free or contain less than 1% weed seed.
- One year after construction, conduct a monitoring visit to ensure that no new occurrences have established.

2.2.7.6 Noise-Reducing Construction Practices

Construction contractors would control noise from construction activity such that noise would not exceed applicable noise ordinance standards specified by the City of West Sacramento and City of Sacramento. The following measures can be implemented to control noise.

- Locate noise-generating equipment as far away as practical from residences and other noise-sensitive uses.
- Equip all construction equipment with standard noise-attenuation devices, such as mufflers to reduce noise, and equip all internal combustion engines with intake and exhaust silencers in accordance with manufacturer's standard specifications.
- Establish equipment and material haul routes that avoid residential uses to the extent practical, limit hauling to the hours between 7:00 a.m. and 10:00 p.m., and specify maximum acceptable speeds for each route.

- Employ electrically powered equipment in place of equipment with internal combustion engines where practical, where electric equipment is readily available, and where this equipment accomplishes project work as effectively and efficiently as equipment powered with internal combustion engines.
- Restrict the use of audible warning devices such as bells, whistles, and horns to those situations that are required by law for safety purposes.
- Provide noise-reducing enclosures around stationary noise-generating equipment.
- Provide temporary construction noise barriers between active construction sites that are in proximity to residential and other noise-sensitive uses. Temporary barriers can be constructed or created with parked truck trailers, soil piles, or material stock piles.
- Route haul trucks away from residential areas where practical.
- The construction contractor would develop a construction noise-control plan that identifies specific feasible noise-control measures that would be employed and the extent to which the measures would be able to control noise to specific noise ordinance limits. The noise-control plan would be submitted to WSAFCA for approval before any noise-generating activity begins.

2.2.7.7 Construction Best Management Practices

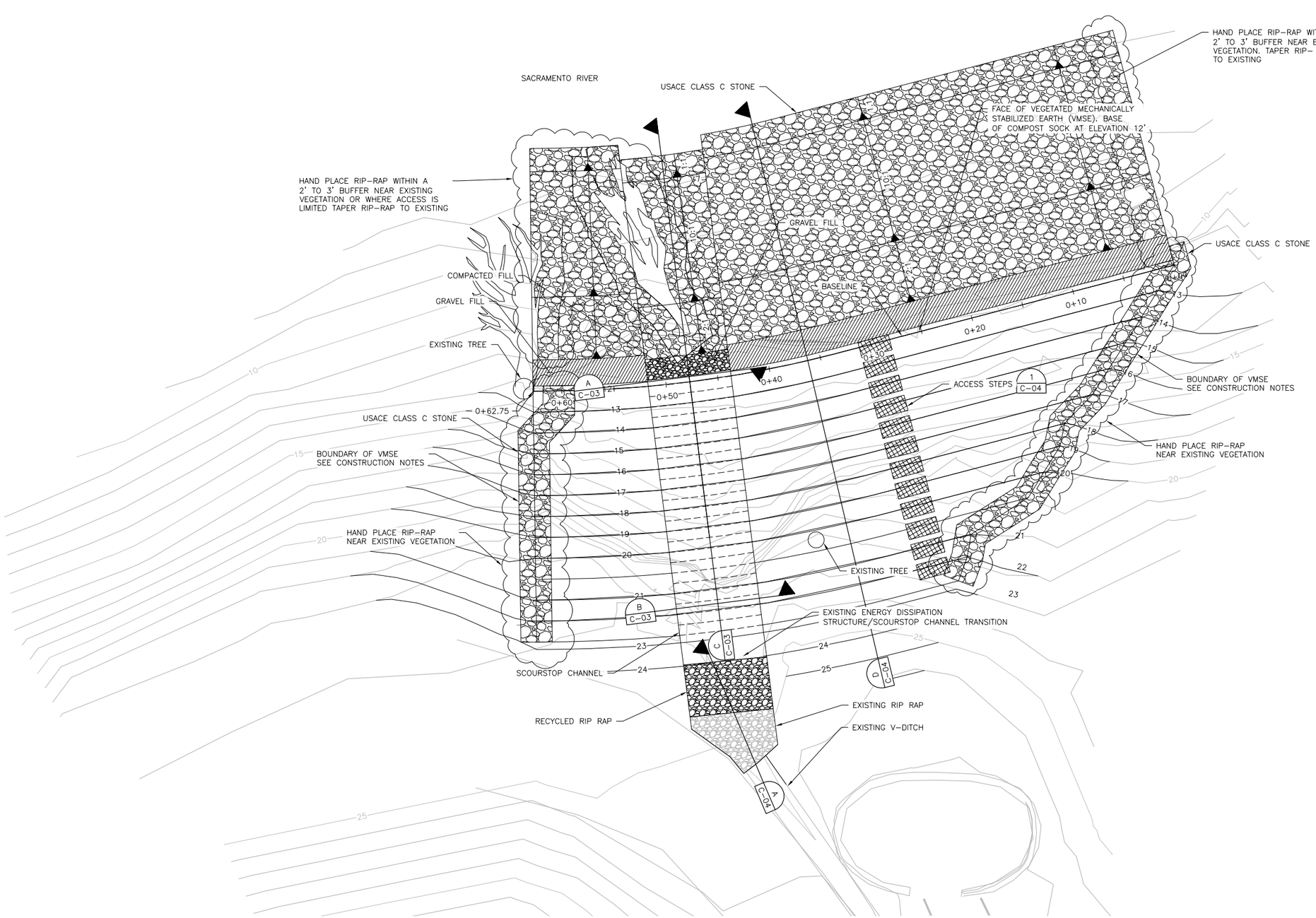
WSAFCA would require the construction contractor to implement appropriate BMPs that would be used to avoid or minimize impacts on water quality. Such BMPs would include, but would not be limited to, the following.

- **Staging construction equipment and materials**. To the extent possible, equipment and materials would be staged in areas that have already been disturbed.
- **Minimize soil and vegetation disturbance**. The construction contractor would minimize ground disturbance and the disturbance/destruction of existing vegetation. This would be accomplished, in part, through establishing designated equipment staging areas, ingress and egress corridors, and equipment exclusion zones prior to the commencement of any grading operations, as well as protecting existing trees.
- **Stabilize soil stockpiles**. Soil stockpiles generated during construction would be temporarily stockpiled in staging areas. Silt fences, fiber rolls, or similar devices would be installed around the base of the temporary stockpiles to intercept runoff and sediment during storm events. If necessary, temporary stockpiles may be covered with an appropriate geotextile to increase protection from wind and water erosion.
- **Install sediment barriers**. The construction contractor may install silt fences, fiber rolls, or similar devices to prevent sediment-laden runoff from leaving the construction area.
- **Stormwater drain inlet protection**. The construction contractor may install silt fences, sandbag barriers, and/or other similar devices.

Source: HDR (2013)

00420.12 EnvioSupportRivers\IS-MND (03-06-2014).SS

Figure 2-1
Environmental Controls and Staging



Source: HDR (2013)

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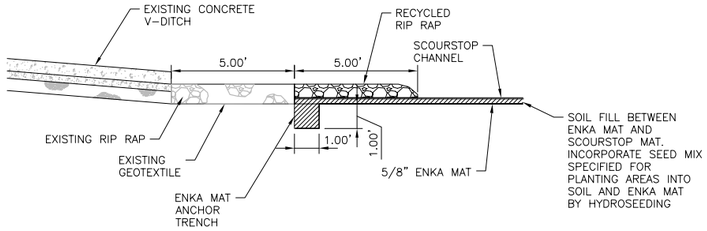
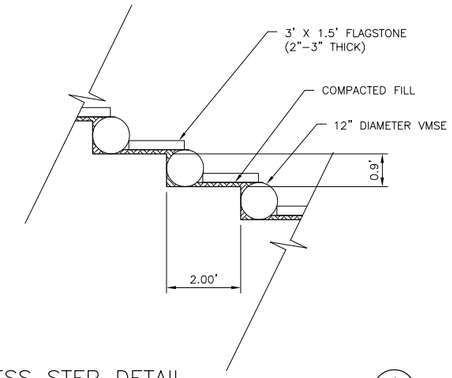
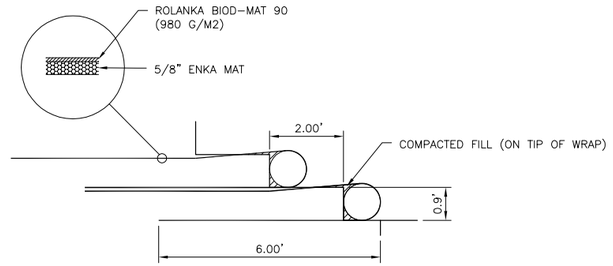
Figure 2-2
Proposed Repairs



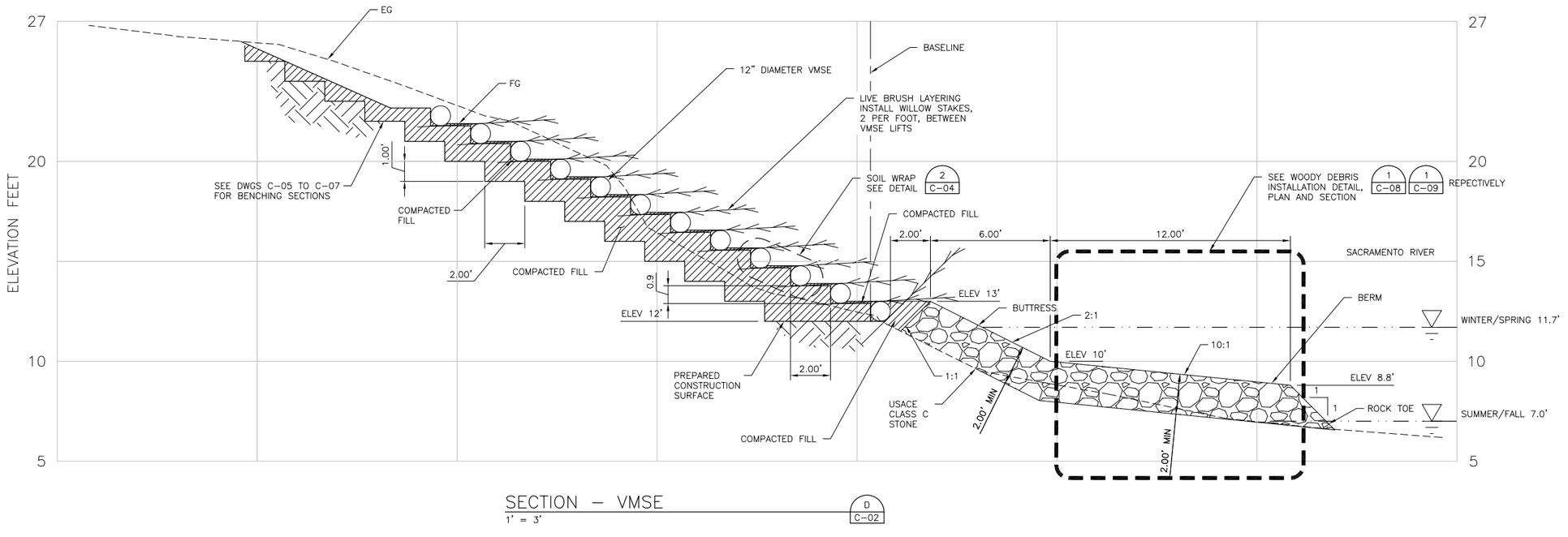
SECTION A – V-DITCH, RIP RAP, AND SCOURSTOP CHANNEL TRANSITION
1" = 3'
A / C-02



ACCESS STEP DETAIL
1" = 2'
1 / C-02



SOIL WRAP DETAIL, SECTION D
1" = 2'
2 / –



SECTION – VMSE
1" = 3'
D / C-02

Source: HDR (2013)

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Figure 2-3
Typical Cross Section

Chapter 3
Environmental Setting and Impacts

3.1 Introduction

This chapter provides an overview of the existing physical environment and regulatory requirements for each of the resources that may be affected by the proposed project. For each resource, the environmental setting is discussed, followed by an evaluation of the environmental impacts on the resource. The chapter is organized by resource topic and corresponds to the Environmental Checklist Form of the State CEQA Guidelines. A complete environmental checklist for each potentially affected resource is provided in Appendix A.

Implementation of the mitigation measures specified in the impact analysis would either avoid adverse impacts completely or reduce the impacts to a less-than-significant level. WSAFCA would adopt a mitigation and monitoring program at the time it adopts the mitigated negative declaration. The purpose of the plan is to ensure that the mitigation measures adopted as part of the project approval would be implemented when the project is constructed. Some impacts have been avoided by including certain measures in the project description.

The following terminology is used to describe the level of significance of impacts.

- A finding of no impact is appropriate if the analysis concludes that the project would not affect the particular topic area in any adverse way.
- An impact is considered less than significant if the analysis concludes that it would cause no substantial adverse change to the environment and requires no mitigation.
- An impact is considered less than significant with mitigation incorporated if the analysis concludes that it would cause no substantial adverse change to the environment with the inclusion of mitigation measures that have been agreed to by the applicant.
- An impact is considered potentially significant if the analysis concludes that it could have a substantial adverse effect on the environment and mitigation to a less-than-significant level of impact is not possible.

3.2 Resources Not Likely to Be Affected

Initial evaluation of the impacts of the proposed project indicated that there likely would be little to no impact on several resources. These resources are discussed below to add to the overall understanding of the project.

3.2.1 Aesthetics

Aesthetic impacts are typically based on viewers' responses to changes in their surroundings resulting from project construction and operation. Viewer response depends, in part, on the type of viewer exposed to the project as well as the frequency and duration of their views. Consideration of these factors, combined with the visual characteristics of the area and the proposed activities, determines the likelihood of visual impacts.

Potential sensitive visual receptors depend upon nearby land uses, which in this case include open space to the south and east, a DWR maintenance yard to the west, and the Sacramento River to the north. The only viewer group who would be affected by project activities consists of recreationists using trails near the project site, as well as those using the overlook located directly up the bank from the project site. However, because the erosion site is located below a steep drop-off, it is not readily visible from farther up the bank. The project site is located on the water side of the levee and is not visible from any roads.

Although the project site is visible from the river and the edge of the riverbank, the nature of the proposed project would improve the aesthetic value of the site. The site is currently heavily eroded and has large pieces of concrete waste along the base of the bank. The proposed project includes revegetation of the eroded bank, which would help the site blend in with the surrounding riparian vegetation and would improve the aesthetic value once the vegetation becomes established.

Aesthetic impacts would be limited to the construction period, as construction would involve the use of heavy machinery and trucks. This would prevent recreationists from using the overlook and trails in the immediate vicinity of the project site during the week of construction. However, this impact would be temporary and would have a minimal impact on aesthetic resources, and no mitigation would be required. Consequently, aesthetics are not considered further in this document.

3.2.2 Agriculture and Forestry Resources

The proposed project consists of modifications to the bank of the Sacramento River in the urbanized city of West Sacramento. The project site is surrounded by open space, a DWR maintenance yard, and a park. The erosion site repair footprint does not encompass or border any agricultural or forest resources, and would accordingly have no impact on these resources.

3.2.3 Geology and Soils

The Rivers Erosion Site Project is located in a soil map unit identified by the U.S. Department of Agriculture Natural Resources Conservation Service as Lang sandy loam (Andrews 1972). The Lang sandy loam soil type has low shrink-swell potential and the erosion hazard is considered none to

slight.[1] The project site is located in an area characterized by low seismic activity. The project site is not identified as being located in an Alquist-Priolo Earthquake Fault Zone (Bryant and Hart 2007), and the International Conference of Building Officials (ICBO) recognizes no seismic sources in the area (International Conference of Building Officials 1998). The active fault nearest to the study area is the Dunnigan Hills fault, which is 30 miles to the northwest (California Geological Survey 2010; International Conference of Building Officials 1998; Jennings 1994; U.S. Geological Survey 2010). The ground-shaking hazard at the project site is considered low (Cao et al. 2003; California Geological Survey 2008).

The proposed project is designed to stabilize and protect the soils on the riverbank and would involve the placement of soil, riprap, fabric, and willow plantings, with minimal excavation needed. No structures would be placed on top of the repaired erosion site. The proposed project would not expose people or structures to substantial adverse effects related to fault rupture, groundshaking, liquefaction, or landslides. Construction would not occur on unstable or expansive soil. The proposed project is not located in an area that requires the disposal of wastewater, or where it would destroy a paleontological resource or geologic feature. The erosion site repairs would prevent future erosion and would stabilize soils in the area, and would therefore be beneficial. Consequently, impacts related to geology and soils are not considered further in this document.

3.2.4 Land Use and Planning

The proposed project consists of repairing an erosion site at the base of the right bank of the Sacramento River. Land uses adjacent to the project site are classified as open space (City of West Sacramento 2009a). The Rivers Erosion Site Project does not propose to change the land use in the project area. Modifications to the riverbank would not physically divide an established community or conflict with any applicable land use plan, policy, or regulation, including the *City of West Sacramento General Plan*. Implementation of the project would therefore not result in any changes to existing land uses, and land use resources are not discussed further in this document.

3.2.5 Mineral Resources

Mineral extraction activities in the West Sacramento area consist primarily of sand and gravel construction aggregate, as well as clay. The project site is located in an area classified as Mineral Resource Zone-3 (MRZ-3), defined as an area containing mineral deposits of undetermined significance (City of West Sacramento 2009b). The project site is not located near a mineral extraction site; accordingly, the proposed project would not result in the loss of availability of mineral resources nor otherwise prevent the extraction of important mineral resources. The proposed project would have no impact on mineral resources.

3.2.6 Population and Housing

The proposed project would not involve the construction of any new housing, businesses, roads, or infrastructure. Implementation of the proposed project would not displace any existing housing units or residents and therefore would not necessitate the construction of replacement housing units elsewhere. The project would have no impact on population and housing.

[1] Some or all of the project site soils have been altered due to nearby levee construction/ modification and other anthropogenic activities as a result of its urban setting.

3.2.7 Public Services

Public services in the project area consist of law enforcement, fire protection, and emergency medical assistance. The West Sacramento Police Department provides law enforcement services, and the West Sacramento Fire Department provides fire and emergency medical services. Construction of the proposed project would not result in any loss of service ratios, response times, or other performance objectives as there would be no road closures involved, and the proposed project would not block access to any local areas.

Bryte Park, Golden State Middle School, and Riverbank Elementary School are located southeast of the project area and can be accessed from Riverbank Road. Construction vehicles accessing the project site would use Riverbank Road and could potentially slow traffic during construction hours. However, the number of vehicles and vehicle trips needed for construction would be minimal, and they would not disrupt access to the park or the schools. Accordingly, impacts on public services are not considered further in this document.

3.2.8 Recreation

Construction of the proposed project would not increase the use of existing recreational facilities and would therefore not cause physical deterioration of any recreational facilities. The proposed project would not require the construction or expansion of recreation facilities. The project would be constructed in mid-September when water surface elevations in this section of the Sacramento River are estimated to be around the mean sum/fall elevation of +7.0 feet. Inwater work is expected to extend less than three feet out from the edge of the water given this elevation, and therefore restriction of recreational use for boaters would be negligible. Furthermore, construction activities would be short-term and limited in scope. The project would have no impact on recreational facilities.

3.2.9 Transportation/Traffic

Construction of the proposed project would involve minimal vehicle trips due to its small size. A total of five personnel would be onsite on any given day, and only one dump truck would be needed to haul material to and from the site. Construction vehicles accessing the site from Riverbank Road may temporarily slow traffic, but the proposed project would not conflict with any applicable plan, ordinance, or policy related to the performance of the circulation system or with any congestion management program. There would be no change to air traffic patterns and no increase in hazards because of design features; implementation of the proposed project would not result in inadequate emergency access. There are no public transit, bicycle, or pedestrian facilities that would be affected by the proposed project. Therefore, impacts related to transportation and traffic are not considered further in this document.

3.2.10 Utilities and Service Systems

Several utilities are located within the vicinity of the proposed project, including two manholes, a 4-inch water main, a 6-inch water main, a telephone line, and two electrical lines. However, these utilities are located south of where construction activities would occur and would be avoided. Wastewater treatment would not be part of the proposed project, and the proposed project would not require or result in the construction or expansion of stormwater drainage facilities. No

additional water supply would be needed. The proposed project would comply with statutes and regulations related to solid waste and would be served by a landfill with sufficient capacity to accommodate solid waste disposal needs. Accordingly, impacts related to utilities and service systems are not considered further in this document.

3.2.11 Growth Inducement

The proposed project would repair an erosion site and prevent future erosion from undercutting the existing overlook located farther up the riverbank from the site. Land use designations, growth rates, employment, and housing values would continue to be determined by local government regulations, and economic conditions and would not be affected by the proposed project. Accordingly, the proposed project is not growth-inducing.

3.3 Biological Resources

This section provides an analysis of potential biological impacts, including impacts to fisheries, wildlife, vegetation and wetland resources, resulting from the proposed project. Information for the analysis was obtained primarily from *The Rivers Early Implementation Project (EIP) Environmental Impact Study/Environmental Impact Report (EIS/EIR)* (ICF International 2011), which overlaps with most of the study area. The methods and findings of *The Rivers EIP EIS/EIR* are incorporated herein by reference. Updates to this information or additional review of the study area are identified below.

3.3.1 Existing Conditions

3.3.1.1 Study Area

The study area for biological resources encompasses the proposed project area (Figure 1-2), which extends approximately 300 feet northwest from an existing levee access road and newly constructed bicycle/pedestrian trail to the Sacramento River, plus an approximate 100-foot-wide buffer area around the project area to assess potential effects on nearby habitat for valley elderberry longhorn beetle (VELB). The study area is situated on the north side of the Sacramento River Levee and is relatively flat. Elevations in the study area range from approximately 20 to 26 feet above mean sea level (asl). The study area borders a DWR maintenance yard to the west.

For purposes of assessing impacts on fisheries resources, the study area also consists of the river water column, river bottom, and riverbank within the footprint of the proposed erosion repair (up to the OHWM) and adjacent aquatic habitat to the limits of temporary inwater disturbances, e.g., elevated turbidity.

3.3.1.2 Land Cover Types

The land cover types identified in *The Rivers EIP EIS/EIR* that are present in The Rivers Erosion Site study area include: Great Valley valley oak riparian forest, the Sacramento River, and unvegetated/vacant/developed areas. Each of the land cover types is discussed below and shown in Figure 3.3-1.

Great Valley Valley Oak Riparian Forest

Great Valley valley oak riparian forest occurs in a narrow corridor along the Sacramento River and has an overstory of mature, well-established trees. In the study area, the understory has been disturbed and consists primarily of nonnative grasses and ruderal herbaceous species. Great Valley valley oak riparian forest occurs in the study area adjacent to the erosion site to the east with some scattered valley oak trees to the west (Figure 3.3-1). Great Valley valley oak riparian forest is recognized as a sensitive natural community by the California Natural Diversity Database (CNDDB) (California Natural Diversity Database 2010).

Sacramento River

Within the study area, the Sacramento River comprises a small area of open water and the portion of the riverbank located below the OHWM.

Unvegetated/Vacant/Developed

The unvegetated/vacant/developed portions of the study area consist of gravel roads, paved bike/pedestrian paths, and unvegetated work areas located along the proposed access road and staging areas (Figure 3.3-1).

3.3.1.3 Sensitive Biological Resources

Special-Status Plant Species

No special-status plant species occur in the study area based on one or more of the following findings: absence of habitat, absence of suitable microhabitat, and lack of occurrence during field surveys for The Rivers EIP project.

Protected Trees

The arborist survey for *The Rivers EIP EIR/EIS* identified 14 trees in the EIP project limits that meet the definition of heritage or landmark trees as defined by the City's Tree Preservation Ordinance. None of these trees are located in the project area.

Special-Status Wildlife Species

Special-status wildlife species are wildlife that are legally protected under the federal Endangered Species Act (ESA), California Endangered Species Act (CESA), or other regulations and species that are considered rare by the scientific community. Special-status species include the following:

- Species that are listed or proposed for listing as threatened or endangered under the ESA (50 CFR 17.12 for listed plants, 50 CFR 17.11 for listed animals, and various notices in the *Federal Register* [FR] for proposed species).
- Species that are candidates for future listing as threatened or endangered under the ESA (72 FR 69034, December 6, 2007).
- Species listed or proposed for listing by the State of California as threatened or endangered under the CESA (14 CCR 670.5).
- Species that meet the definitions of rare or endangered under CEQA (State CEQA Guidelines Section 15380).
- Animals that are identified as California species of special concern or fully protected species on California Department of Fish and Game's Special Animals List (California Department of Fish and Game 2011).

Based on the USFWS (2013) species list for the Sacramento West quadrangle, a review of CNDDB (2013) occurrences within a 10-mile radius of the study area, and information collected during the 2007–2009 and 2013 field surveys, 20 special-status wildlife species were identified as having potential to occur in the project region (Table 3.3-1). Of these, 11 species would not be expected to occur in the study area because the study area is outside the species' known range or suitable habitat is absent from the study area. The remaining nine wildlife species were identified as having potential to occur in the study area based on the presence of suitable habitat in or near the study area including, valley elderberry longhorn beetle, western pond turtle, Swainson's hawk, white-tailed kite, purple martin, least Bell's vireo, hoary bat, western red bat, and pallid bat.

Table 3.3-1. Special-Status Wildlife and Fish Species with Potential to Occur in the Vicinity of the Study Area

Common and Scientific Names	Status Federal/ State	Geographic Distribution	Habitat Requirements	Potential Occurrence in Study Area
Invertebrates				
Valley elderberry longhorn beetle *Desmocerus californicus dimorphus*	T/–	Stream side habitats below 3,000 feet throughout the Central Valley.	Riparian and oak savanna habitats with elderberry shrubs; elderberries are the host plant.	High. Known occurrences within 1 mile of the study area. Two elderberry shrubs (host plant) are present within the study area.
Vernal pool fairy shrimp *Branchinecta lynchi*	T/–	Central Valley, central and south Coast Ranges from Tehama County to Santa Barbara County. Isolated populations also in Riverside County.	Common in vernal pools; also found in sandstone rock outcrop pools.	None. No suitable wetland habitat in the study area.
Vernal pool tadpole shrimp *Lepidurus packardi*	E/–	Shasta County south to Merced County.	Vernal pools and ephemeral stock ponds.	None. No suitable wetland habitat in the study area.
Amphibians				
California tiger salamander *Ambystoma californiense*	T/T	Central Valley, including Sierra Nevada foothills, up to approximately 1,000 feet, and coastal region from Butte County south to northeastern San Luis Obispo County.	Small ponds, lakes, or vernal pools in grass-lands and oak woodlands for larvae; rodent burrows, rock crevices, or fallen logs for cover for adults and for summer dormancy.	None. No suitable wetland habitat in the study area.
California red-legged frog *Rana aurora draytonii*	T/SSC	Found along the coast and coastal mountain ranges of California from Marin County to San Diego County and in the Sierra Nevada from Tehama County to Fresno County.	Permanent and semi-permanent aquatic habitats, such as creeks and cold-water ponds, with emergent and submergent vegetation. May estivate in rodent burrows or cracks during dry periods.	None. The study area is outside of this species current known range. This species is believed to be extirpated from the valley floor.

Common and Scientific Names	Status Federal/ State	Geographic Distribution	Habitat Requirements	Potential Occurrence in Study Area
Reptiles				
Giant garter snake *Thamnophis couchi gigas*	T/T	Central Valley from the vicinity of Burrel in Fresno County north to near Chico in Butte County; has been extirpated from areas south of Fresno.	Sloughs, canals, low gradient streams and freshwater marsh habitats where there is a prey base of small fish and amphibians; also found in irrigation ditches and rice fields; requires grassy banks and emergent vegetation for basking and areas of high ground protected from flooding during winter.	None. CNDDB occurrences within 3.4 miles of study area. Sacramento River does not provide suitable aquatic habitat.
Western pond turtle *Actinemys marmorata*	–/SSC	Occurs from the Oregon border of Del Norte and Siskiyou Counties south along the coast to San Francisco Bay, inland through the Sacramento Valley, and on the western slope of Sierra Nevada.	Occupies ponds, marshes, rivers, streams, and irrigation canals with muddy or rocky bottoms and with watercress, cattails, water lilies, or other aquatic vegetation in woodlands, grasslands, and open forests.	Moderate. Species observed within ponds 6 miles south of study area along South River Road. Sacramento River and adjacent uplands provide potential habitat within study area.
Birds				
Northern harrier *Circus cyaneus*	–/SSC	Occurs throughout lowland California. Has been recorded in fall at high elevations.	Grasslands, meadows, marshes, and seasonal and agricultural wetlands.	None. No CNDDB nesting records within 10 miles of the study area. Species is not expected to nest in or adjacent to the study area due to high level of disturbance, sparse vegetation, and frequent use by pedestrians and domestic dogs.
White-tailed kite *Elanus leucurus*	–/FP	Lowland areas west of Sierra Nevada from the head of the Sacramento Valley south, including coastal valleys and foothills to western San Diego County at the Mexico border.	Low foothills or valley areas with valley or live oaks, riparian areas, and marshes near open grasslands for foraging.	High. CNDDB nesting records within 3 miles of study area. Suitable nesting and foraging habitat in study area. None observed or heard during July 3, 2013 survey.

Common and Scientific Names	Status Federal/ State	Geographic Distribution	Habitat Requirements	Potential Occurrence in Study Area
Swainson's hawk *Buteo swainsoni*	–/T	Lower Sacramento and San Joaquin Valleys, the Klamath Basin, and Butte Valley. Highest nesting densities occur near Davis and Woodland, Yolo County.	Nests in oaks or cottonwoods in or near riparian habitats. Forages in grasslands, irrigated pastures, and grain fields.	High. CNDDB nesting records within 0.25 mile of study area. During July 3, 2013 survey, a juvenile Swainson's hawk was observed calling from riparian habitat on the north side of the river.
Western burrowing owl *Athene cunicularia hypugea*	–/SSC	Lowlands throughout California, including the Central Valley, northeastern plateau, southeastern deserts, and coastal areas. Rare along south coast.	Level, open, dry, heavily grazed or low stature grassland or desert vegetation with available burrows.	None. CNDDB extant nesting record 3 miles northeast of the study area. Burrowing owls are not expected to nest in or adjacent to the study area due to the lack of burrows, high level of disturbance from vehicles, pedestrians, and pets, presence of adjacent trees used as perching sites for large raptors that prey on burrowing owls, and limited foraging habitat in the vicinity of the study area.
Western yellow-billed cuckoo *Coccyzus americanus occidentalis*	C/E	Nests along the upper Sacramento, lower Feather, south fork of the Kern, Amargosa, Santa Ana, and Colorado Rivers.	Wide, dense riparian forests with a thick understory of willows for nesting; sites with a dominant cottonwood overstory are preferred for foraging; may avoid valley-oak riparian habitats where scrub jays are abundant.	None. No suitable nesting habitat in the study area; forests in study area are dominated by valley oak and contain abundant scrub jays.
Tricolored blackbird *Agelaius tricolor*	–/SSC	Permanent resident in the Central Valley from Butte County to Kern County; breeds at scattered coastal locations from Marin County south to San Diego County and at scattered locations in Lake, Sonoma, and Solano Counties; rare nester in Siskiyou, Modoc, and Lassen Counties.	Nests in dense colonies in emergent marsh vegetation, such as tules and cattails, or upland sites with blackberries, nettles, thistles, and grain fields; habitat must be large enough to support 50 pairs; probably requires water at or near the nesting colony.	None. CNDDB nesting records 2 miles south of the study area. No suitable nesting habitat in study area.

Common and Scientific Names	Status Federal/ State	Geographic Distribution	Habitat Requirements	Potential Occurrence in Study Area
Least Bell's vireo *Vireo bellii pusillus*	E/E	Small populations remain in southern Inyo, southern San Bernardino, Riverside, San Diego, Orange, Los Angeles, Ventura, and Santa Barbara Counties.	Riparian thickets either near water or in dry portions of river bottoms; nests along margins of bushes and forages low to the ground; may also be found using mesquite and arrow weed in desert canyons.	Low. Historically nested in the Sacramento Valley, but no nesting has been documented north of Santa Barbara County since prior to 1970s. Two recent male sightings have been reported from Putah Creek in Yolo County in 2010 and 2011 but no confirmed nesting (CNDDB 2013). Suitable habitat is present within the study area.
Purple martin *Progne subis*	–/SSC	Coastal mountains south to San Luis Obispo County, west slope of the Sierra Nevada, and northern Sierra and Cascade ranges. Absent from the Central Valley except in Sacramento. Isolated, local populations in southern California.	Nests in abandoned woodpecker holes in oaks, cottonwoods, and other deciduous trees in a variety of wooded and riparian habitats. Also nests in vertical drainage holes under elevated freeways and highway bridges.	Low. CNDDB nesting records from nearby freeway overpass approximately 3.5 miles southeast of the study area. Although species is known to nest in tree cavities, they have only been documented to nest within road overcrossings within the Sacramento Valley.
Bank swallow *Riparia riparia*	–/T	Occurs along the Sacramento River from Shasta County to Sacramento County, along the Feather and lower American Rivers, in the Owens Valley; and in the plains east of the Cascade Range in Modoc, Lassen, and northern Siskiyou Counties. Small populations near the coast from San Francisco County to Monterey County.	Nests in bluffs or banks, usually adjacent to water, where the soil consists of sand or sandy loam.	None. CNDDB nesting records approximately 5 miles southeast of the study area. No suitable nesting habitat in the study area.

Common and Scientific Names	Status Federal/ State	Geographic Distribution	Habitat Requirements	Potential Occurrence in Study Area
Mammals				
Hoary bat *Lasurius cinerius*	–/SSC	Occurs throughout California from sea level to 13,200 feet.	Primarily found in forested habitats. Also found in riparian areas and in park and garden settings in urban areas. Day roosts within foliage of trees.	Moderate. CNDDB occurrences approximately 2 miles from the study area. Suitable roosting habitat in riparian forest adjacent to study area.
Pallid bat *Antrozous pallidus*	–/SSC	Occurs throughout California except the high Sierra from Shasta to Kern County and the northwest coast, primarily at lower and midelevations.	Occurs in a variety of habitats from desert to coniferous forest. Most closely associated with oak, yellow pine, redwood, and giant sequoia habitats in northern California and oak woodland, grassland, and desert scrub in southern California. Relies heavily on trees for roosts	Moderate. Suitable roosting habitat in riparian forest adjacent to study area.
Western red bat *Lasiurus blossevillii*	–/SSC	Scattered throughout much of California at lower elevations.	Found primarily in riparian and wooded habitats. Occurs at least seasonally in urban areas. Day roosts in trees within the foliage. Found in fruit orchards and sycamore riparian habitats in the central valley.	Moderate. Suitable roosting habitat in riparian forest adjacent to study area.
American badger *Taxidea taxus*	–/SSC	In California, badgers occur throughout the state except in humid coastal forests of northwestern California in Del Norte and Humboldt Counties.	Badgers occur in a wide variety of open, arid habitats but are most commonly associated with grasslands, savannas, mountain meadows, and open areas of desert scrub; the principal habitat requirements for the species appear to be sufficient food (burrowing rodents), friable soils, and relatively open, uncultivated ground.	None. One historic record (1938) reported approximately 8 miles from the study area. Study area is within a heavily disturbed corridor and provides limited foraging habitat.

Common and Scientific Names	Status Federal/ State	Geographic Distribution	Habitat Requirements	Potential Occurrence in Study Area
Fish				
Delta smelt *Hypomesus transpacificus*	T/E	Primarily in the Sacramento–San Joaquin Estuary, but has been found as far upstream as the confluence of the Feather River on the Sacramento River and Mossdale on the San Joaquin River; range extends downstream to San Pablo Bay.	Occurs in estuary habitat in the Delta where fresh and brackish water mix in the salinity range of 2–7 parts per thousand (Moyle 2002).	High—during migration, spawning, and larval rearing/dispersal.
Longfin smelt *Spirinchus thaleichthys*	–/T	San Francisco estuary, Humboldt Bay, Eel River estuary, and Klamath River estuary.	Occurs in open waters of estuaries and seasonally migrates to spawn in freshwater habitats of upper estuary; spawns over sand, rocks, and aquatic plants.	High—during migration, spawning, and larval rearing/dispersal.
Sacramento splittail *Pogonichthys macrolepidotus*	–/SSC	Occurs throughout the year in low-salinity waters and freshwater areas of the Sacramento–San Joaquin Delta, Yolo Bypass, Suisun Marsh, Napa River, and Petaluma River.	Spawning takes place among submerged and flooded vegetation in sloughs and the lower reaches of rivers.	High—during adult migration and juvenile rearing/migration.
California Central Valley steelhead *Oncorhynchus mykiss*	T/–	Sacramento River and tributary Central Valley rivers.	Occurs in well-oxygenated, cool, riverine habitat with water temperatures from 7.8 to 18°C (Moyle 2002). Habitat types are riffles, runs, and pools.	High—during adult migration and juvenile rearing/migration.
Sacramento River winter-run Chinook salmon *Oncorhynchus tshawytscha*	E/E	Mainstem Sacramento River below Keswick Dam.	Occurs in well-oxygenated, cool, riverine habitat with water temperatures from 8.0 to 12.5°C. Habitat types are riffles, runs, and pools (Moyle 2002).	High—during adult migration and juvenile rearing/migration.
Central Valley spring-run Chinook salmon *Oncorhynchus tshawytscha*	T/T	Upper Sacramento River and Feather River.	Has the same general habitat requirements as winter-run Chinook salmon. Coldwater pools are needed for holding adults (Moyle 2002).	High—during adult migration and juvenile rearing/migration.

Common and Scientific Names	Status Federal/ State	Geographic Distribution	Habitat Requirements	Potential Occurrence in Study Area
Central Valley fall-/late fall–run Chinook salmon *Oncorhynchus tshawytscha*	SC/SSC	Sacramento River, San Joaquin River, and tributaries.	Occurs in well-oxygenated, cool, riverine habitat with water temperatures from 8.0 to 12.5°C. Habitat types are riffles, runs, and pools (Moyle 2002).	High—during adult migration and juvenile rearing/migration.
Green sturgeon (southern DPS) *Acipenser medirostris*	T/SSC	Sacramento, Klamath, and Trinity Rivers.	Spawn in large river systems with well-oxygenated water, with temperatures from 8.0 to 14°C.	High—during adult migration and juvenile rearing/migration.
River lamprey *Lampetra ayresi*	–/SSC	Sacramento, San Joaquin, and Napa Rivers; tributaries of San Francisco Bay (Moyle 2002; Moyle et al. 1995).	Adults live in the ocean and migrate into fresh water to spawn.	High—during adult migration and juvenile rearing/migration.
Hardhead *Mylopharodon conocephalus*	–/SSC	Sacramento, San Joaquin, and Russian Rivers and tributaries (Moyle 2002; Moyle et al. 1995).	Typically occur in undisturbed, low- to midelevation streams and mainstem Sacramento River and tributaries.	High.

Status explanations:

Federal

E = listed as endangered under the Federal Endangered Species Act.
T = listed as threatened under the Federal Endangered Species Act.
C = candidate for listing as threatened or endangered under the Federal Endangered Species Act.
– = no listing.

State

E = listed as endangered under the California Endangered Species Act.
T = listed as threatened under the California Endangered Species Act.
FP = fully protected under the California Fish and Game Code.
SSC = species of special concern in California.
– = no listing.

The protection status, distributional range, and habitat requirements for these species are presented below in Table 3.3-1.

Special-Status Fish Species

The status, distribution, habitat requirements, and likelihood of occurrence of these species in the study area are presented in Table 3.3-1. The study area includes designated critical habitat for Sacramento River winter-run Chinook salmon, Central Valley spring-run Chinook salmon, Central Valley steelhead, and southern distinct population segment (DPS) North American green sturgeon. Critical habitat includes the bed and waters of the Sacramento River and the adjacent riparian zone up to the OHWM. The study area also contains essential fish habitat (EFH) for Sacramento River winter-run Chinook salmon, Central Valley spring-run Chinook salmon, and Central Valley fall-/late fall–run Chinook salmon.

Waters of the United States, Including Wetlands

No wetlands occur in the study area. However, the study area includes a small portion of the Sacramento River, including both areas of open water and portions of the riverbank that are located below the OHWM. The area below the OHWM is subject to USACE jurisdiction under the federal Clean Water Act (CWA).

3.3.2 Regulatory Setting

3.3.2.1 Federal

The following federal regulations related to wildlife apply to implementation of the proposed project.

Federal Endangered Species Act

The ESA protects fish and wildlife species and their habitats that have been identified by the National Marine Fisheries Service (NMFS) or USFWS as threatened or endangered. *Endangered* refers to species, subspecies, or DPSs that are in danger of extinction through all or a significant portion of their range. *Threatened* refers to species, subspecies, or DPSs that are likely to become endangered in the near future.

The ESA is administered by USFWS and NMFS. In general, NMFS is responsible for protection of ESA-listed marine species and anadromous fish, and USFWS is responsible for other listed species. Provisions of Sections 7 and 9 of the ESA are relevant to this proposed project and summarized below.

Section 7: ESA Authorization Process for Federal Actions

Section 7 of the ESA provides a means for authorizing take of threatened and endangered species by federal agencies. Under Section 7, the federal agency conducting, funding, or permitting an action (the lead federal agency, such as the USACE) must consult with NMFS or USFWS, as appropriate, to ensure that the proposed project would not jeopardize endangered or threatened species or destroy or adversely modify designated critical habitat. The study area supports potential habitat for federally listed VELB, Sacramento River winter-run Chinook salmon, Central Valley spring-run

Chinook salmon, Central Valley steelhead, southern DPS green sturgeon, and delta smelt that could be adversely affected by the proposed project. Therefore, the proposed project has the potential to result in take of a federally listed species and consultation would be initiated with NMFS and USFWS.

On October 2, 2012, USFWS proposed to remove VELB from the federal list of endangered and threatened species (FR 77: 191 60238–60276). The proposed rule, if made final, would also remove the designation of critical habitat for the subspecies. The public comment period on the proposed delisting ended December 3, 2012. USFWS will review comments and make a final determination on the proposed rule. There is no official time period for this determination, and until it is made, VELB retains its protected status.

Section 9: ESA Prohibitions

Section 9 of the ESA prohibits the take of any fish or wildlife species listed under ESA as endangered. Take of threatened species also is prohibited under Section 9, unless otherwise authorized by federal regulations.[1] *Take*, as defined by ESA, means "to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct." *Harm* is defined as "any act that kills or injures the species, including significant habitat modification." In addition, Section 9 prohibits removing, digging up, cutting, and maliciously damaging or destroying federally listed plants on sites under federal jurisdiction.

Critical Habitat

Critical habitat, as defined in ESA Section 3, is the specific area within the geographic area occupied by a species, at the time it is listed in accordance with ESA, on which are found those biological features essential to the conservation of the species, and may require special management considerations or protection. It also includes specific areas outside the geographic area occupied by a species at the time it is listed, upon a determination that such areas are essential for the conservation of the species.

Magnuson-Stevens Fishery Conservation and Management Act

The Magnuson-Stevens Fishery Conservation and Management Act requires all Federal agencies to consult with NMFS regarding all actions or proposed actions permitted, funded, or undertaken that may adversely affect EFH. EFH is defined as "waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity."

Migratory Bird Treaty Act

The Migratory Bird Treaty Act (MBTA) (16 U.S. Code [USC] 703) enacts the provisions of treaties between the United States, Great Britain, Mexico, Japan, and the Soviet Union (now Russia). The MBTA prohibits the take, possession, import, export, transport, selling, purchase, barter, or offering for sale, purchase, or barter any migratory bird, their eggs, parts, and nests, except as authorized under a valid permit (50 CFR 21.11). Executive Order 13186 (January 10, 2001) directs each federal agency taking actions that have or may have a negative effect on migratory bird populations to work

[1] In some cases, exceptions may be made for threatened species under ESA Section 4(d); in such cases, USFWS or NMFS issues a "4(d) rule" describing protections for the threatened species and specifying the circumstances under which take is allowed.

with USFWS to develop a memorandum of understanding that will promote the conservation of migratory bird populations. The biological resources study area supports known migratory bird nests and potential nesting habitat that could be affected by implementation of the proposed project.

Clean Water Act

The CWA was enacted as an amendment to the federal Water Pollution Control Act of 1972, which outlined the basic structure for regulating discharges of pollutants to waters of the United States. The CWA serves as the primary federal law protecting the quality of the nation's surface waters, including lakes, rivers, and coastal wetlands.

The CWA empowers the U.S. Environmental Protection Agency (EPA) to set national water-quality standards and effluent limitations and includes programs addressing both point-source and non-point-source pollution. *Point-source pollution* is pollution that originates or enters surface waters at a single, discrete location, such as an outfall structure or an excavation or construction site. *Non-point-source pollution* originates over a broader area and includes urban contaminants in stormwater runoff and sediment loading from upstream areas. The CWA operates on the principle that all discharges into the nation's waters are unlawful unless specifically authorized by a permit; permit review is the CWA's primary regulatory tool. The following sections provide additional details on pertinent sections of the CWA.

Section 404 of the Clean Water Act

USACE and EPA regulate the discharge of dredged and fill material into "waters of the United States" under Section 404 of the CWA. USACE jurisdiction over nontidal waters of the United States extends to the OHWM, provided the jurisdiction is not extended by the presence of wetlands (33 CFR Part 328 Section 328.4). The OHWM is defined in the federal regulations to mean

> [T]hat line on the shore established by the fluctuations of water and indicated by physical characteristics such as clear, natural line impressed on the bank, shelving, changes in the character of soil, destruction of terrestrial vegetation, the presence of litter and debris, or other appropriate means that consider the characteristics of the surrounding areas. (33 CFR Part 328 Section 328.3[e].)

USACE typically will exert jurisdiction over that portion of the study area that contains waters of the United States and adjacent wetlands. This jurisdiction equals approximately the bank-to-bank portion of a creek along its entire length up to the OHWM and adjacent wetlands areas that would be directly or indirectly adversely affected by the proposed project.

Section 401 of the Clean Water Act

Under CWA Section 401, applicants for a federal license or permit to conduct activities that might result in the discharge of a pollutant into waters of the United States must obtain certification 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.

3.3.2.2 State

The following state regulations related to biological resources apply to implementation of the proposed project.

California Endangered Species Act

The CESA(CFGC Sections 2050 through 2116) states that all native species or subspecies of a fish, amphibian, reptile, mammal, or plant and their habitats that are threatened with extinction and those experiencing a significant decline that, if not halted, would lead to a threatened or endangered designation will be protected or preserved.

Under Section 2081 of the CFGC, a permit from CDFW is required for projects that could result in the take of a species that is state-listed as threatened or endangered. Under CESA, *take* is defined as an activity that would directly or indirectly kill an individual of a species. The definition does not include *harm* or *harass*, as the definition of take under ESA does. As a result, the threshold for take under CESA is higher than that under ESA. For example, habitat modification is not necessarily considered take under CESA.

Section 2090 of CFGC requires state agencies to comply with endangered species protection and recovery and to promote conservation of these species. CDFW administers the act and authorizes take through CFGC Section 2081 incidental take agreements (except for species designated as fully protected) and Section 2080.1 consistency determinations. If it is determined that the proposed project will result in take of a state-listed species, an incidental take permit or consistency determination will be obtained through consultation with CDFW. The study area supports state listed Sacramento River winter-run Chinook salmon, Central Valley spring-run Chinook salmon, delta smelt, and potential nesting habitat for the state listed Swainson's hawk.

For Swainson's hawks, CDFW has developed survey guidance, conservation strategies, and best practices for avoiding, minimizing, and mitigating project impacts on the species. The most recent guidance published by CDFW is the *Swainson's Hawk Survey Protocols, Impact Avoidance, and Minimization Measures for Renewable Energy Projects in the Antelope Valley of Los Angeles and Kern Counties, California* (California Energy Commission and California Department of Fish and Game 2010). Although this guidance is not specific to the project area, it provides the most up-to-date information on Swainson's hawk survey recommendations and protection measures.

California Fully Protected Species

CFGC Sections 3511, 3513, 4700, and 5050 pertain to fully protected wildlife species (birds in Sections 3511 and 3513, mammals in Section 4700, and reptiles and amphibians in Section 5050) and strictly prohibit the take of these species. CDFW cannot issue a take permit for fully protected species, except under narrow conditions for scientific research or the protection of livestock, or if a Natural Community Conservation Plan (NCCP) has been adopted. The study area supports potential nesting for the fully protected white-tailed kite that could be affected by implementation of the proposed project.

Sections 3503, 3503.5, 3513 of the California Fish and Game Code

CFGC Sections 3503, 3503.5, and 3513 protect all native birds, birds of prey, and all nongame birds, including eggs and nests, that are not already listed as fully protected and that occur naturally within the state. Eggs and nests of all birds are protected under Section 3503, while Section 3503.5 protects all birds of prey as well as their eggs and nests. Migratory non-game birds are protected under Section 3513. Except for take related to scientific research, take as described above is prohibited. Many bird species potentially could nest in the project area or vicinity. These birds, their nests, and eggs would be protected under these sections of the CFGC. The study area supports

known bird nests and potential nesting habitat that could be affected by implementation of the proposed project.

Section 1600 of the California Fish and Game Code

CFGC Sections 1600 through 1603 state that it is unlawful for any person or agency to substantially divert or obstruct the natural flow or substantially change the bed, channel, or bank of any river, stream, or lake in California that supports wildlife resources, or to use any material from the streambeds, without first notifying CDFW. A Lake and Streambed Alteration Agreement must be obtained if effects are expected to occur. The regulatory definition of a stream is a body of water that flows at least periodically or intermittently through a bed or channel having banks, and that supports wildlife, fish, or other aquatic life. This definition includes watercourses having a surface or subsurface flow that supports or has supported riparian vegetation. CDFW's jurisdiction within altered or artificial waterways is based on the value of those waterways to fish and wildlife extending to the tops of banks and often including the outer edge of riparian vegetation canopy cover. The Sacramento River and associated riparian habitat within the study area is likely to be within CDFW jurisdiction and subject to CFGC Section 1602.

3.3.2.3 Local

The following local policies related to wildlife apply to implementation of the proposed project.

Yolo County 2030 Countywide General Plan

The Conservation Element of the Yolo County 2030 Countywide General Plan (Yolo County 2009) includes policies to protect biological resources in the study area. These policies include preservation and restoration of open space, native vegetation and plant communities, ecological functions in the watershed, wildlife movement corridors, and special-status species.

Draft Yolo County Natural Heritage Program

The draft Yolo County Natural Heritage Program is a countywide NCCP/habitat conservation plan (HCP) to conserve the natural open space and agricultural landscapes that provide habitat for many special-status species in the county (Yolo County Natural Heritage Program 2009). The Yolo County Natural Heritage Program will describe the measures that will be undertaken to conserve important biological resources and obtain permits for urban growth and public infrastructure projects. The study area supports important biological resources to be conserved under the NCCP/HCP that would be affected by implementation of the proposed project.

Yolo County Habitat Conservation Joint Powers Agency

The Yolo County Habitat Conservation Joint Powers Agency (JPA) was formed in August 2002 for the purpose of acquiring habitat conservation easements and to serve as the lead agency for the preparation of a NCCP/HCP for Yolo County and the Cities of Davis, Woodland, Winters, and West Sacramento. The JPA is responsible for the facilitation of mitigation for effects on foraging habitat of the state-threatened Swainson's hawk by assisting in the acquisition of conservation easements. The JPA and CDFW have entered into an *Agreement Regarding Mitigation for Impacts to Swainson's Hawk Foraging Habitat in Yolo County* (Mitigation Agreement).

The Mitigation Agreement allows for the establishment of a mitigation fee program to fund the acquisition, enhancement, and long-term management of Swainson's hawk foraging habitat conservation lands. As of January 2006, the JPA has issued a Revised Swainson's Hawk Interim Mitigation Fee Program that requires a 1:1 compensation ratio (1 acre of Swainson's hawk foraging habitat preserved for every 1 acre of foraging habitat lost). The fee is currently $8,660 per acre. Projects of fewer than 40 acres could contribute to a fund for purchase of suitable conservation lands. Projects of more than 40 acres would require the developer, in coordination with the JPA, to locate and negotiate a conservation easement on an appropriate property that would contribute to the JPA's preserve design. The Mitigation Agreement does not authorize the incidental take of Swainson's hawk.

City of West Sacramento General Plan

Goals and policies in the City of West Sacramento General Plan (Part II, Section 6) (City of West Sacramento 2004) that apply to biological resources in the study area include preservation, enhancement, and no net loss of riparian and wetland habitats, particularly the Sacramento River; requiring site-specific surveys; development of setbacks from wetlands and wildlife habitat; and preservation of special-status species populations.

3.3.3 Methods

The methods used to identify biological resources consisted of a prefield investigation and field surveys. These methods and additional information obtained for the study area are described below.

3.3.3.1 Prefield Investigation

Prior to conducting the site visits for the proposed project, ICF International biologists reviewed information pertaining to vegetation and wetland resources in the project area or vicinity from the following sources.

- A CNDDB records search of the U.S. Geological; Survey (USGS) 7.5-minute Sacramento West, Sacramento East, Grays Bend, Taylor Monument, Rio Linda, Davis, Clarksburg, Saxon, and Florin quadrangles (California Natural Diversity Database 2014) (Appendix B).
- USFWS list of endangered, threatened, and proposed species for the USGS 7.5-minute Sacramento West quadrangle and Yolo County obtained from the USFWS web site (U.S. Fish and Wildlife Service 2014) (Appendix C).
- The CNPS online Inventory of Rare and Endangered Plants of California (California Native Plant Society 2014) (Appendix D).

3.3.3.2 Field Surveys

Previous surveys of the study area were conducted as part of the data collection for T*he Rivers EIP EIS/EIR*. The surveys included reconnaissance-level site visits, a delineation of wetlands and other waters, tree surveys, elderberry shrub surveys, and a botanical survey conducted between September 2007 and August 2009. An ICF International biologist conducted a reconnaissance-level site visit on July 3, 2013 and March 5, 2014 to document existing conditions and verify biological resources previously mapped within study area.

3.3.4 Environmental Effects

Potential impacts of the proposed project on biological resources are discussed in the context of State CEQA Guidelines Appendix G checklist items.

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

3.3.4.1 Special-Status Plants

The project will not affect any listed or special-status plant species because none are present in the study area.

3.3.4.2 Special-Status Wildlife

Implementation of the proposed project has the potential to affect three special-status wildlife species with habitat occurring in or adjacent to the project limits, including the VELB (federally threatened), pond turtle (species of special concern), and Swainson's hawk (state threatened). Additionally, migratory birds and raptors could nest in vegetation within and adjacent to the project area. A discussion for each of these species is provided below.

Impact BIO-1: Disturbance or Loss of VELBs and Their Habitat (Elderberry Shrub)

Two elderberry shrubs/groupings of shrubs (host plant for the VELB) are present within 100 feet of the project area (Figure 3.3-1). Shrub A is a large, mature elderberry shrub with one large trunk measuring approximately 24 inches diameter at ground level. At the time of the March 5, 2014 survey, this shrub contained several dead stems with scars from old exit or entry holes, though these holes could not be conclusively identified as VELB exit holes. Shrub A is growing alongside a small (6-inch-diameter) valley oak at the western boundary of the project area within a bermed area at the corner of a fenced maintenance yard (Figure 3.3-2, Photos 1 and 2; Figure 3.3-1). Shrub B is growing in a dense stand of willow and wild grape within valley oak riparian forest habitat along the eastern boundary of the project area and adjacent to a paved bike/pedestrian path (Figure 3.3-1). The number and size of stems on Shrub B and presence of exit holes could not be determined at the time of the July 3, 2013 site visit due to the dense tangle of vegetation around the base of the shrub.

Direct impacts on VELB may generally occur when construction occurs within 20 feet of elderberry shrubs. Indirect impacts on VELB may generally occur if elderberry shrubs are located from 20 to 100 feet of construction. Both shrubs A and B are within 20 feet of the project area. Based on the proximity of suitable VELB habitat to the project area, there is a potential for take if project activities damage elderberry stems containing VELB larvae or adults or if construction equipment collide with adult VELB while they are actively flying and foraging. Because project activities would be restricted to the month of September (low-flow period), no encounters with VELB are expected since the adult stage is March through May, when beetles are actively foraging and breeding. Although no excavation is proposed within the dripline of the shrubs, the movement of large construction equipment in the vicinity of the shrubs has the potential to inadvertently break or damage overhanging limbs. Because Shrub A is a very large shrub/tree and is growing in an elevated berm (Photos 1 and 2 in Figure 3.3-2), it is not within an area directly accessible to equipment and vehicles and the lowest overhanging braches are approximately 15 feet above ground level.

Therefore, with implementation of proper fencing and signage, avoidance of direct impacts to Shrub A during construction is feasible. Shrub B is located in a dense stand of willow shrubs that borders the new bike path. The proposed access road for construction is approximately 15 feet west of the elderberry shrub and willow habitat and construction is not anticipated to affect this grouping of shrubs. Indirect impacts on Shrubs A and B could occur as a result of increased dust generated during ground disturbance. This impact would be significant. Implementation of Mitigation Measures BIO-MM-1 and BIO-MM-2 would reduce this impact to a less-than-significant level.

Mitigation Measure BIO-MM-1: Establish Buffers around Elderberry Shrubs

The following measures would be implemented to avoid and minimize impacts on VELB.

- Protective buffer areas would be created for elderberry shrub clusters by installing K-rail fencing along the edge of the construction zone, as shown in Figure 3.3-1. Along the eastern and western portions of the project area near the overlook, there are shrubs that lie within existing tree canopy. To protect these shrubs and avoid potentially damaging existing trees a semi-circle of orange construction fencing would be installed adjacent to the construction zone in this portion of the project area. In buffer areas, signs would be posted along fencing for the duration of construction. The signs would contain the following information:
    - This area is habitat of the valley elderberry longhorn beetle, a threatened species, and must not be disturbed. This species is protected by the Endangered Species Act of 1973, as amended. Violators are subject to prosecution, fines, and imprisonment.
- Buffer area fences around elderberry shrubs/clusters would be inspected twice a week by a qualified biologist during ground-disturbing activities until project construction is complete or until the fences are removed, as approved by the biological monitor and the resident engineer. The biological monitor would be responsible for ensuring that the contractor maintains the buffer-area fences around elderberry shrubs throughout construction. Biological inspection reports would be provided to the project lead and USFWS.
- WSAFCA would ensure that the project area would be watered down as necessary to prevent dust from becoming airborne and accumulating on elderberry shrubs in and adjacent to the project site.

Mitigation Measure BIO-MM-2: Conduct Mandatory Contractor/Worker Awareness Training for Construction Personnel

Before any work occurs in the project area, including grading, a qualified biologist would conduct mandatory contractor/worker awareness training for construction personnel. The awareness training would be provided to all construction personnel to brief them on the need to avoid impacts on sensitive biological resources (e.g., riparian habitat, special-status species, special-status wildlife habitat) and the penalties for not complying with permit requirements. The biologist would inform all construction personnel about the life history of special-status species with potential for occurrence on site, the importance of maintaining habitat, and the terms and conditions of the biological opinion or other authorizing document. Proof of this instruction would be submitted to USFWS, CDFW, or another overseeing agency, as appropriate.

The training would also cover the restrictions and guidelines that must be followed by all construction personnel to reduce or avoid impacts on special-status species during project construction. The construction 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 during the construction period. General restrictions and guidelines for vegetation and wildlife that would be followed by construction personnel are listed below.

- Project-related vehicles would observe the posted speed limit on hard-surfaced roads and a 10-mile-per-hour speed limit on unpaved roads during travel in the project area.
- Project-related vehicles and construction equipment would restrict off-road travel to the designated construction area.
- All food-related trash would be disposed of in closed containers and removed from the project site at least once a week during the construction period. Construction personnel would not feed or otherwise attract fish or wildlife to the project area.
- No pets or firearms would be allowed in the project area.
- To prevent possible resource damage from hazardous materials such as motor oil or gasoline, construction personnel would not service vehicles or construction equipment outside designated staging areas.

For special-status wildlife, any worker who inadvertently injures or kills a special-status wildlife species or finds one dead, injured, or entrapped would immediately report the incident to the biological monitor. The monitor would immediately notify WSAFCA, who would provide verbal notification to the USFWS Endangered Species Office or the local CDFW warden or biologist within 3 working days. WSAFCA would follow up with written notification to USFWS or CDFW within 5 working days.

Impact BIO-2: Disturbance or Loss of Western Pond Turtles and Their Habitat

Although western pond turtle is not currently known to occur in the project area, there is potential for this species to utilize the riparian corridor adjacent to the Sacramento River for winter hibernacula and nesting. Construction would be restricted to a heavily disturbed area that is frequently used by people and pets for recreation and is not likely to support pond turtles. Implementation of Mitigation Measure BIO-MM-3 would avoid and minimize potential impacts, and would ensure this impact would be less than significant.

Pacific pond turtles are not state or federally listed; however, Pacific pond turtles are designated as a species of special concern by CDFW due to significant population declines, loss of habitat, and introduction of invasive predators throughout most of their range (Jennings and Hayes 1994). The loss of individual turtles, nesting sites, or eggs in the project area could diminish the local population and lower reproductive potential of the species, which could contribute to the further decline of this species. This impact would be considered significant. Implementation of Mitigation Measures BIO-MM-3, as well as Mitigation Measure BIO-MM-2 (described above), would avoid and minimize potential disturbance of nesting Pacific pond turtles, and would reduce this impact to a less-than-significant level.

Mitigation Measure BIO-MM-3: Conduct Preconstruction Surveys for Western and Pacific Pond Turtles and Exclude Turtles from Work Area

To avoid and minimize impacts on western and Pacific pond turtles, WASFCA would retain a qualified wildlife biologist to conduct a preconstruction survey 1 week before, and within 48

hours of, disturbance in aquatic and riparian habitats. The survey objectives would be to determine the presence or absence of pond turtles in the construction work area.

If possible, the surveys would be timed to coincide with the time of day and year when turtles are most likely to be active (during the cooler part of the day, 8:00 a.m. to 12:00 p.m. during spring and summer). Prior to conducting presence/absence surveys the biologist would locate the microhabitats for turtle basking (logs, rocks, brush thickets) and determine a location to quietly observe turtles.

Each survey would include a 30-minute wait time after arriving on site to allow startled turtles to return to open basking areas. The survey would consist of a minimum 15-minute observation time per area where turtles could be observed.

If turtles are observed during a survey, they would be relocated outside of the construction area to appropriate aquatic habitat by a biologist with a valid memorandum of understanding from CDFW and as determined during coordination with CDFW.

If turtles are present they would either be hand-captured or trapped and then moved.

If turtles are captured and moved up or downstream, an exclusion fence would be installed perpendicular to the river extending upslope at an appropriate distance, determined based on topography and site vegetation. If this is determined to be infeasible, a monitor would need to be present during inwater construction (and construction within riparian habitat areas) to ensure that turtles do not move into the construction area.

Impact BIO-3: Loss of Foraging and Nesting Habitat for Swainson's Hawk and other Migratory Birds and Raptors

Trees and shrubs within and adjacent to the project area provide potential nesting habitat for migratory birds and raptors, including Swainson's hawk and white-tailed kite. Mature riparian cottonwood and oak trees along the Sacramento River are prime nesting habitat for Swainson's hawk. Known Swainson's hawk nests have been previously documented in the CNDDB approximately 0.33 mile east of the project area within riparian habitat along the south bank of the Sacramento River and 0.22 mile northwest of the project area within riparian habitat along the north side of the river (California Natural Diversity Database 2013). A juvenile Swainson's hawk was heard calling during the July 3, 2013 site visit from a dense stand of trees on the north side of the river approximately 800 feet north of the project area. If any of these nests are occupied during project implementation, construction activities taking place during the breeding season could create sufficient noise to disrupt nesting activities and result in nest failure and potential loss of eggs or developing young, which would constitute take under CESA. While the likelihood of take of Swainson's hawk is very low since most juvenile birds will have fledged prior to the start of construction, there remains potential to disrupt nesting activities. This impact would be significant.

Known white-tailed kite nests have been previously documented in the CNDDB within 3 miles of the project area, but none were observed or heard during the July 3, 2013 site visit.

Construction of the proposed project will not remove riparian trees or annual grassland habitat and therefore will not result in the loss of migratory bird or raptor nesting or foraging habitat.

The most recent CDFW guidance for Swainson's' hawk (*Swainson's Hawk Survey Protocols, Impact Avoidance, and Minimization Measures for Renewable Energy Projects in the Antelope Valley of Los*

Angeles and Kern Counties, California [California Energy Commission and California Department of Fish and Game 2010]) was reviewed to identify appropriate protection measures for the species. Implementation of Mitigation Measure BIO-MM-4, as well as Mitigation Measure BIO-MM-2 (described above), would ensure this impact on Swainson's hawks and other migratory and nesting bird species would be less than significant.

Mitigation Measure BIO-MM-4: Conduct Preconstruction Nesting Bird Surveys

Swainson's hawks are known to nest adjacent to the project area, and project construction could affect Swainson's hawk through habitat modification. To avoid and minimize impacts on Swainson's hawk, the following measures would be implemented.

- A breeding season (generally February 1 through August 31) survey for nesting migratory birds would be conducted for all trees and shrubs 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 occurring immediately prior (within 48 hours) to project initiation. The results of the surveys would be submitted to CDFW. Other migratory bird nest surveys could be conducted concurrent with Swainson's hawk surveys. If the biologist determines that the area surveyed does not contain any active migratory bird nests, construction activities can commence without any further mitigation.
- If active nests are found, WSAFCA would maintain a 0.5-mile buffer, or other distance determined appropriate through consultation with CDFW, between construction activities and the active nest(s) until young were determined to have fledged. In addition, a qualified biologist (experienced with raptor behavior) would be present on site (daily) during construction activities occurring during the breeding season to watch for any signs of stress. If nesting birds exhibit agitated behavior indicating that they are experiencing stress, construction activities would cease until a qualified biologist, in consultation with CDFW, determines that young have fledged the active nest. If the 0.5-mile buffer is not feasible, a reduced buffer distance may be used as determined during discussions with CDFW and based on the type and extent of the proposed activity in proximity to the nest, the duration and timing of the activity, the sensitivity and habituation of the species nesting, and the dissimilarity of the proposed activity to background activities.

Implementation of these protection measures would avoid and minimize potential nesting disturbance impacts on Swainson's hawk and other nesting migratory birds, and would avoid take as defined under CESA and MBTA.

3.3.4.3 Special-Status Fish Species

Implementation of the proposed project has the potential to affect, either directly or through habitat modifications, the following special-status fish species:

- Sacramento River winter-run Chinook salmon Evolutionarily Significant Unit (ESU) (*Oncorhynchus tshawytscha*)—FE/SE.
- Central Valley spring-run Chinook salmon ESU (*O. tshawytscha*)—FT/ST.
- Central Valley fall-/late fall–run Chinook salmon ESU (*O. tshawytscha*)—FSC/SSC.

- California Central Valley steelhead DPS (*O. mykiss*)—FT.
- Southern Distinct Population Segment (DPS) of North American green sturgeon (*Acipenser medirostris*)—FT/SSC.
- Delta smelt (*Hypomesus transpacificus*)—FT/SE.
- Longfin smelt (*Spirinchus thaleichthys*)—ST
- Sacramento splittail (*Pogonichthys macrolepidotus*)—SSC.
- River lamprey (*Lampetra ayresi*)—SSC.
- Hardhead (*Mylopharodon conocephalus*)—SSC.

Potential project impacts on special-status fish species and their habitat include both short- and long-term effects. Short-term effects include temporary impacts on fish and aquatic habitat from construction activities that may last from a few hours to several weeks (e.g., suspended sediment and turbidity). Long-term effects may last months or years and are generally due to physical modification of important habitat attributes of the bank, shoreline, and adjacent river channel.

Short-Term Impacts

Excavation of the erosion site and placement of rock to construct the rock bench could result in localized, temporary disturbance of aquatic habitat that may alter natural behavior patterns of adult and juvenile fish and potentially result in physical injury and death of individuals. Potential behavioral impacts include displacement and temporary disruption of feeding, migration, and other essential behaviors from noise, suspended sediment, turbidity, and sediment deposition generated during inwater construction activities. These impacts could extend beyond the project site because noise and sediment may be propagated upstream and/or downstream.

The extent of construction-related impacts depends on the timing, duration, and inwater extent of these activities; the timing of fish presence in the action area; and their ability to successfully avoid the affected areas. Construction activities, including potential inwater activities, are scheduled for a two week period starting in mid-September 2014 and therefore should avoid the primary migration periods of adult and juvenile winter-run Chinook salmon, spring-run Chinook salmon, fall-/late fall–run Chinook salmon, and steelhead (November through June). Of greatest concern are Chinook salmon fry (less than 50 millimeters juveniles) because of their preference for shallow, nearshore areas of the river, their limited swimming ability, and there relatively high vulnerability to predation if forced to move away from protective cover. However, these life stages occur in the action area primarily from December through March, with peak abundance typically occurring after the onset of major winter storm flows in the Sacramento River (National Marine Fisheries Service 2008).

The proposed construction window would also avoid the periods when delta smelt may occur in the action area. The Sacramento River in the action area provides migration and potential spawning habitat for delta smelt, and functions to transport larvae from upstream spawning areas to rearing areas in the Sacramento-San Joaquin estuary. Adults may occur in the action area from December through June with spawning occurring from late February to June. Larvae are typically most abundant in the Sacramento–San Joaquin Delta and estuary from mid-April through May. Longfin smelt are also unlikely to occur in the action area during the proposed construction period based on the peak abundance of larval smelt (February through April) (Moyle 2002).

Green sturgeon larvae and juveniles may be present in the action area during proposed construction activities. However, the potential for harm from exposure to noise, suspended sediment, turbidity, and placement of rock along the shoreline is considered low based on their preference for benthic habitat and ability to feed under turbid conditions (Moyle 2002).

Fall-run Chinook salmon adults, steelhead adults, yearling or older juvenile steelhead, adult river lamprey, and juvenile and adult hardhead may be present in the action area during the proposed construction period but are not likely to be adversely affected by construction activities because of their large size, preference for deeper water, and ability to readily avoid areas of disturbance.

In addition to avoiding the primary periods of occurrence of sensitive fish species and life stages, the late summer construction window also typically coincides with the period of lowest flows in the river, thereby limiting the potential extent of inwater activities. WSAFCA also proposes to implement the following environmental commitments to further minimize potential short-term impacts to fisheries resources and the potential for take of threatened or endangered species, as defined by the federal and state ESAs:

- All construction materials, equipment, and vehicles will be maintained and stored in designated landside staging areas.
- All heavy equipment used in excavation, riprap placement, and fill placement will be restricted to established access roads, and will be operated from the top of the river bank above the OHWM. Installation of VMSE, soil wrap, willow cuttings, and ScourStop™ channel will be conducted by hand.
- WSAFCA or its contractor will ensure that the contractor implements appropriate BMPs and other measures, as necessary, to control erosion and minimize the discharge of soil and sediment to the river.
- WSAFCA or its contractor will monitor turbidity conditions in the Sacramento River upstream (representing ambient conditions) and downstream of construction activities to ensure that turbidity does not exceed turbidity standards in the Regional Water Board's Water Quality Control Plan.
- WSAFCA or its contractor will develop and implement a spill prevention, control, and countermeasure plan (SPCCP) to minimize the potential for and impacts from spills of hazardous or toxic materials (e.g., petroleum products) during construction and operation activities.
- All erosion, sediment, and contaminant control measures specified in the permits and construction plans will be implemented and monitored for effectiveness throughout the construction period.

Implementation of these measures would avoid or minimize the potential for significant impacts on special-status fish species and would avoid or minimize the potential for take of federally and state-listed species during project construction. Therefore, potential short-term impacts on these species would be less than significant.

Long-Term Impacts

Implementation of the proposed project would result in long-term impacts on special-status fish species as a result of physical modification of the bank, shoreline, and adjacent river channel, including the potential for take of federally listed threatened and endangered species through

modification of critical habitat. These impacts include potential modification or degradation of shaded riverine aquatic (SRA) cover, which provides important habitat for a number of native and nonnative fish and wildlife species. For example, juvenile Chinook salmon and steelhead use SRA cover for shelter, hiding, and feeding during their rearing and migration periods. SRA cover also provides important foraging, spawning, and rearing areas for other native fish species such as Sacramento splittail. Key attributes of SRA cover are natural banks and substrates supporting riparian vegetation that either overhangs or protrudes into the water, and instream areas containing woody debris (logs, branches, and roots), organic material, and variable water velocities and depths (U.S. Fish and Wildlife Service 1992). Instream cover includes dead woody material (instream woody material) or whole trees that have fallen into the river from the adjacent bank.

Based on the proposed design, including the installation of soil fill, biotechnical materials, vegetation, and instream woody material, long-term project impacts on the habitat values of special-status fish species are expected to be positive because of existing low habitat values at the site and expected long-term improvements in onsite habitat values associated with the bioengineered bank protection design. Existing habitat values at the project site are low because of the low density of overhanging and instream cover and overall low physical complexity of the site. The erosion site is currently characterized by a simple eroded bank with little or no cover between the low water shoreline and top of bank. The lower portion of the bank within the proposed treatment area consists largely of exposed soil and several large pieces of concrete rubble (active erosion area) while the middle to upper portion of the bank is covered largely by ruderal vegetation and the remains of the existing riprap drainage outfall. Below the mean low water shoreline, the bed of river is composed of fine sediment (silt/sand) and scattered concrete rubble with an approximately 10:1 slope.

The proposed design is similar in concept to other Sacramento River Bank Protection designs aimed at minimizing short-term deficits and maximizing long-term gains in habitat values relative to the needs of special-status fish species. The use of rock (riprap) at the toe of the repair would result in permanent loss of 0.03 acre of natural substrate extending from the average summer-fall shoreline (7.0 feet North American Vertical Datum of 1988 [NAVD 88]) to approximately 1 foot above the average winter-spring shoreline (11.7 feet NAVD 88) (Figures 2-2 and 2-3). However, because of the absence of instream cover and low complexity of existing site conditions, installation of IWM on the rock bench and VSME on the adjacent bank is expected to improve conditions over time. Although installation of rock at the toe of the erosion site would reduce habitat values associated with natural substrate within the typical winter-spring inundation zone, constructing the rock bench at a 10:1 slope and installing instream woody material would be expected to partially offset these losses. Based on general predictions of the Standard Assessment Methodology for similar designs, full compensation would be achieved through long-term increases in cover and shade resulting from the installation of VSME and subsequent growth of planted vegetation on the bioengineered slope. Overall, minor deficits in habitat values would be expected in the first several years following construction, followed by net gains in habitat values in subsequent years in response to increases in the size and density of vegetation on the bioengineered slope.

WSAFCA also proposes to implement the following environmental commitments to further minimize potential short-term losses and maximize long-term gains in habitat values:

- All native woody riparian trees and shrubs will be protected in place. Temporary fencing will be used to mark riparian vegetation and the boundaries of other sensitive habitat or species

adjacent to the construction area. Construction impacts on woody riparian vegetation will be limited to trimming or pruning of vegetation if necessary to construct the project features.

- All existing large woody material will be retained intact and replaced on site following construction per guidance from a qualified fish biologist.
- To ensure the riparian plantings and installed instream woody material are successful in achieving design objectives and offsetting project-related habitat deficits, WSAFCA will prepare and implement a 5-year monitoring plan that includes methods, success criteria, and remedial actions should any success criteria not be met.

With implementation of the proposed bank protection design and environmental commitments, the potential for significant impacts on special status species or take of federally listed species through modification of critical habitat would be minimized. Therefore, potential long-term impacts on these species would be less than significant.

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

The proposed project may affect riparian habitat in the study area but would be limited to minor tree or shrub trimming. No trees would be removed, and trees in the work area would be protected during construction by installation of protective barrier fencing adjacent to the construction limits, as described in Chapter 2 *Project Description*. Because the proposed project would benefit the riparian vegetation by restoring and stabilizing an area disturbed by erosion, the overall impact would be beneficial. No other sensitive natural community would be affected.

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

The erosion repair would take place on the bank of the Sacramento River located below the ordinary high water mark, which is a water of the United States and regulated under Section 10 of the Rivers and Harbors Act. The work will fill 0.076 acre of a water of the United States. However, no wetlands are present in the study area, and the proposed project would have no impact on this resource.

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

The study area is present within a potential movement corridor for native and migratory fish and wildlife species along the Sacramento River. Based on the short duration (approximately 2 weeks), small disturbance area, and analysis of impacts described above (a.), the proposed project is not expected to interfere substantially with the movement of native resident or migratory fish and wildlife species. The proposed project would have a less than significant impact.

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

The proposed project would not affect any heritage or landmark trees protected by the City of West Sacramento's Tree Preservation Ordinance because none are present in the study area. The proposed project would have no impact.

f. Conflict with the provisions of an adopted habitat conservation plan, natural community conservation plan, or other approved local, regional, or state habitat conservation plan?

The study area is not covered by any approved or adopted habitat conservation plans, natural community conservation plans, or other approved local, regional, or state habitat conservation plans. The proposed project would have no impact.

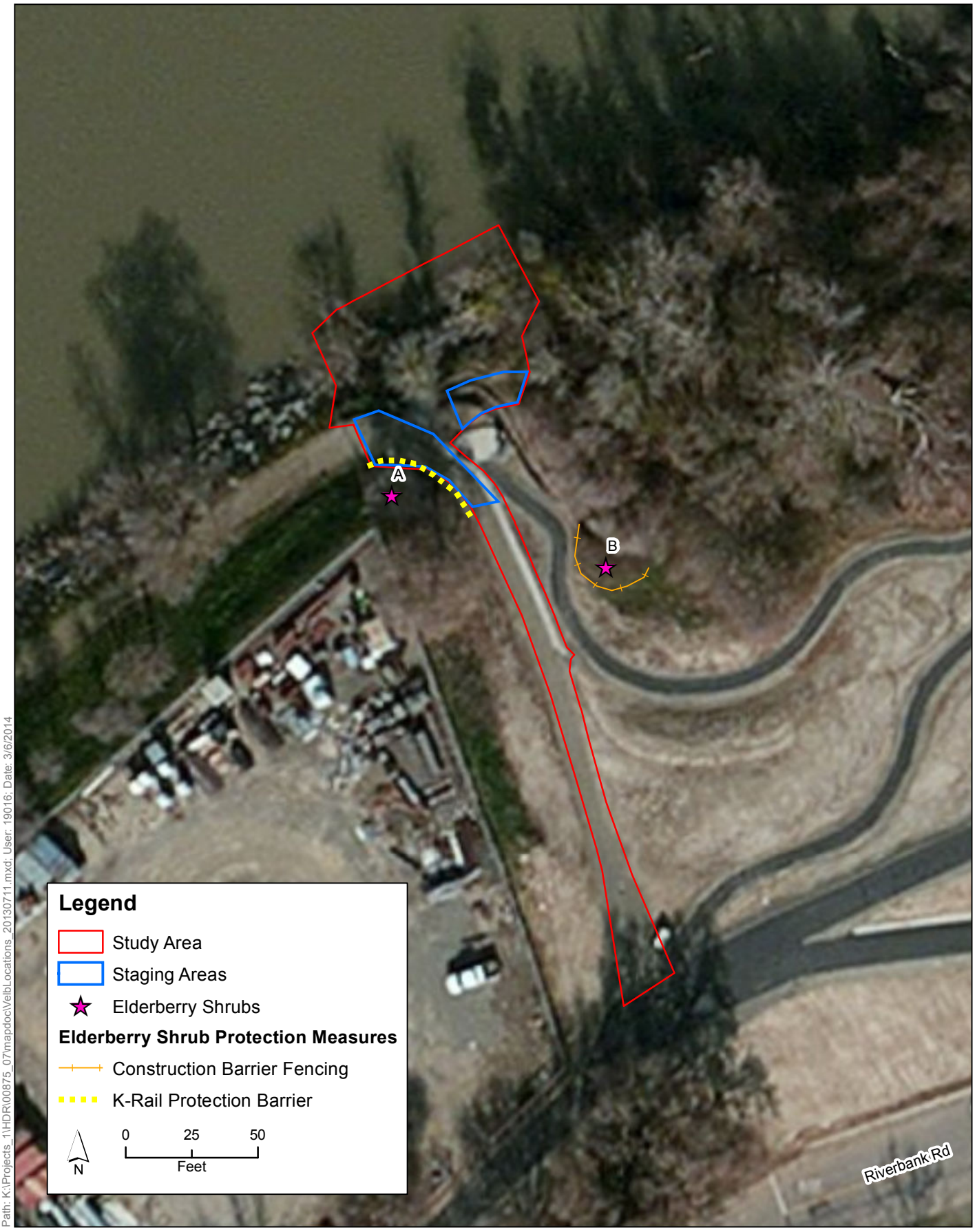

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Figure 3.3-1
Biological Resources within the Study Area

Photo 1. Looking north at large elderberry shrub-A (left side of photo) west of access road and southwest of erosion site

Photo 2. Looking southeast at elderberry shrub-A (right side of photo) with small valley oak growing adjacent to shrub

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Figure 3.3-2
Representative Photographs

3.4 Air Quality

This section provides an analysis of air quality impacts resulting from the proposed project. It describes existing air quality conditions in the project area, identifies sensitive land uses, and summarizes the overall regulatory framework for air quality management in California and the region. Environmental impacts related to air quality also are discussed.

3.4.1 Existing Conditions

The primary factors that determine air quality are the locations of air pollutant sources and the amount of pollutants emitted from those sources. Meteorological and topographical conditions are also important factors. Atmospheric conditions, such as wind speed, wind direction, and air temperature gradients, interact with the physical features of the landscape to determine the movement and dispersal of air pollutants. Air quality is indicated by ambient concentrations of criteria pollutants: ozone, carbon monoxide (CO), nitrogen dioxide (NO_2), sulfur dioxide (SO_2), lead, and particulate matter (PM), which consists of PM less than or equal to 10 microns in diameter (PM10) and PM less than or equal to 2.5 microns in diameter (PM2.5).

3.4.1.1 Climate and Topography

The project area is in Yolo County, which is located in the Sacramento Valley Air Basin (SVAB). The SVAB has a Mediterranean climate characterized by hot, dry summers and cool, rainy winters. During the year, the temperature may range from 20 to 115°F, with summer highs usually in the 90s and winter lows occasionally below freezing. Average annual rainfall is about 20 inches, with about 75% of the total falling during the rainy season (generally from November through March). The prevailing winds are moderate in strength and vary from moist, clean breezes from the south to dry land flows from the north.

The mountains surrounding the SVAB create a barrier to airflow, which can trap air pollutants under certain meteorological conditions. The highest frequency of air stagnation occurs in autumn and early winter when large high-pressure cells lie over the Sacramento Valley. The lack of surface wind during these periods and the reduced vertical flow caused by less surface heating reduce the influx of outside air and allow air pollutants to become concentrated in a stable volume of air. The surface concentrations of pollutants are highest when these conditions are combined with smoke or when temperature inversions trap cool air, fog, and pollutants near the ground.

The ozone season (May through October) in the Sacramento Valley is characterized by stagnant morning air or light winds with the Delta sea breeze arriving in the afternoon out of the southwest. Usually, the evening breeze transports the airborne pollutants to the north out of the Sacramento Valley. During about half of the days from July to September, however, a phenomenon called the Schultz Eddy prevents this from occurring. Instead of allowing the prevailing wind patterns to move north carrying the pollutants out, the Schultz Eddy causes the wind pattern to circle back south. Essentially, this phenomenon causes the air pollutants to be blown south toward the Sacramento area. This phenomenon exacerbates the pollution levels in the area and increases the likelihood of violating federal or state standards. The eddy normally dissipates around noon, when the Delta sea breeze arrives. (Yolo-Solano Air Quality Management District 2007)

3.4.1.2 Existing Air Quality Conditions

Existing air quality conditions in the project area can be characterized in terms of the federal and state air quality standards by monitoring data collected in the region. The EPA and California Air Resources Board (ARB) maintain an extensive network of monitoring stations throughout California. Table 3.4-1 presents pollutant concentrations measured at the two Yolo County monitoring stations for which complete data are available (2010–2012): UC Davis and Woodland Gibson Road. Data from the UC Davis station are presented for all monitored pollutants due to its proximity to the project (13 miles to the west). Data from the Woodland Gibson Road station are used to supplement information from the UC Davis station.

As shown in Table 3.4-1, the monitoring stations have experienced exceedances of the state and federal 8-hour ozone standards and the state PM10 standard. The state and federal ambient air quality standards are described in Table 3.4-2.

Table 3.4-1. Pollutant Concentrations Measured at the UC Davis and Woodland Gibson Road Monitoring Stations

Pollutant	2010	2011	2012
1-Hour Ozone (UC Davis)			
Maximum 1-hour concentration (ppm)	0.094	0.087	0.092
1-hour California designation value (ppm)	0.10	0.09	0.09
1-hour expected peak day concentration (ppm)	0.099	0.090	0.086
Number of days standard exceeded[a]			
CAAQS 1-hour (>0.09 ppm)	0	0	0
8-Hour Ozone (UC Davis)			
National maximum 8-hour concentration (ppm)	0.072	0.082	0.076
National second-highest 8-hour concentration (ppm)	0.071	0.070	0.075
State maximum 8-hour concentration (ppm)	0.073	0.082	0.076
State second-highest 8-hour concentration (ppm)	0.072	0.071	0.075
8-hour national designation value (ppm)	0.072	0.070	0.070
8-hour California designation value (ppm)	0.082	0.082	0.076
8-hour expected peak day concentration (ppm)	0.085	0.082	0.079
Number of days standard exceeded[a]			
NAAQS 8-hour (>0.075 ppm)	0	1	1
CAAQS 8-hour (>0.070 ppm)	3	2	4
Carbon Monoxide			
No stations monitor CO in Yolo County.			
PM10[b] (Woodland Gibson Road)			
National maximum 24-hour concentration (µg/m^3)[c]	87.4	53.2	56.4
National second-highest 24-hour concentration (µg/m^3)[c]	49.1	47.4	42.7
California maximum 24-hour concentration (µg/m^3)[d]	87.4	56.6	56.8
California second-highest 24-hour concentration (µg/m^3)[d]	48.2	48.8	42.9
California annual average concentration (µg/m^3)[e]	18.8	19.1	18.1

Pollutant	2010	2011	2012
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]	7	6	6
PM2.5 (UC Davis)			
National maximum 24-hour concentration (µg/m^3)[c]	–	–	–
National second-highest 24-hour concentration (µg/m^3)[c]	–	–	–
California maximum 24-hour concentration (µg/m^3)[d]	38.6	43.3	33.9
California second-highest 24-hour concentration (µg/m^3)[d]	34.0	41.9	29.5
National annual designation value (µg/m^3)	–	–	–
National annual average concentration (µg/m^3)	–	–	–
California annual designation value (µg/m^3)	–	13	13
California annual average concentration (µg/m^3) [e]	–	12.6	9.0
Number of days standard exceeded[a]			
NAAQS 24-hour (>35 µg/m^3)[f]	–	–	–

Source: California Air Resources Board 2014.

[a] An exceedance is not necessarily a violation.

[b] Usually, measurements 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. 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. Values have been truncated.

CAAQS = California ambient air quality standards; NAAQS = national ambient air quality standards; ppm = parts per million; µg/m^3 = micrograms per cubic meter; – = insufficient data available to determine the value.

3.4.1.1 Sensitive Receptors

Sensitive land uses are defined as locations where human populations, especially children, seniors, and sick persons, are located and where there is reasonable expectation of continuous human exposure according to the averaging period for the air quality standards (i.e., 24-hour, 8-hour, and 1-hour). Typical sensitive receptors are residences, hospitals, and schools. The nearest sensitive receptors are residential subdivisions located south of Riverbank Road. Bryte Park and Bryte Elementary school are approximately 700 and 1,100 feet south of the project site, respectively.

3.4.2 Regulatory Setting

This section summarizes federal, state, and local regulations that apply to air quality. The air quality management agencies of direct importance in the project area are the EPA, ARB, and Yolo-Solano Air Quality Management District (YSAQMD). EPA has established federal air quality standards for which ARB and YSAQMD have primary implementation responsibility. ARB and YSAQMD are also responsible for ensuring that state air quality standards are met.

3.4.2.1 Federal and State Ambient Air Quality Standards

The federal Clean Air Act (CAA) was first enacted in 1963 and has been amended numerous times in subsequent years (1965, 1967, 1970, 1977, and 1990). The CAA establishes federal air quality standards, known as national ambient air quality standards (NAAQS), and specifies future dates for achieving compliance. The CAA also mandates that the state submit and implement a State Implementation Plan for local areas not meeting those standards. The plans must include pollution control measures that demonstrate how the standards will be met.

At the state level, the California Clean Air Act (California CAA) establishes a statewide air pollution control program. The California CAA requires all air districts in the state to endeavor to meet the California ambient air quality standards (CAAQS) by the earliest practical date. Unlike the CAA, the California CAA does not set precise attainment deadlines. Instead, the California CAA establishes increasingly stringent requirements for areas that will require more time to achieve the standards. CAAQS are generally more stringent than the NAAQS and incorporate additional standards for sulfates, hydrogen sulfide, visibility-reducing particles, and vinyl chloride. The CAAQS and NAAQS are listed together in Table 3.4-2.

Table 3.4-2. National and State Ambient Air Quality Standards

Criteria Pollutant	Average Time	California Standards	National Standards[a]	
			Primary	Secondary
Ozone	1-hour	0.09 ppm	None	None
	8–hour	0.070 ppm	0.075 ppm	0.075 ppm
Particulate matter (PM10)	24-hour	50 µg/m^3	150 µg/m^3	150 µg/m^3
	Annual mean	20 µg/m^3	None	None
Fine particulate matter (PM2.5)	24-hour	None	35 µg/m^3	35 µg/m^3
	Annual mean	12 µg/m^3	12.0 µg/m^3	15 µg/m^3
Carbon monoxide	8-hour	9.0 ppm	9 ppm	None
	1-hour	20 ppm	35 ppm	None
Nitrogen dioxide	Annual mean	0.030 ppm	0.053 ppm	0.053 ppm
	1-hour	0.18 ppm	0.100 ppm	None
Sulfur dioxide[b]	Annual mean	None	0.030 ppm	None
	24-hour	0.04 ppm	0.014 ppm	None
	3-hour	None	None	0.5 ppm
	1-hour	0.25 ppm	0.075 ppm	None

Criteria Pollutant	Average Time	California Standards	National Standards[a]	
			Primary	Secondary
Lead	30-day average	1.5 µg/m³	None	None
	Calendar quarter	None	1.5 µg/m³	1.5 µg/m³
	3-month average	None	0.15 µg/m³	0.15 µg/m³
Sulfates	24-hour	25 µg/m³	None	None
Hydrogen sulfide	1-hour	0.03 ppm	None	None
Vinyl chloride	24-hour	0.01 ppm	None	None

Source: California Air Resources Board 2013a.

[a] National standards are divided into primary and secondary standards. Primary standards are intended to protect public health, whereas secondary standards are intended to protect public welfare and the environment.

[b] The final 1-hour sulfur dioxide rule was signed June 2, 2010. The annual and 24-hour standards were revoked in that same rulemaking. However, these standards remain in effect until 1 year after an area is designated for the 2010 standard, except in areas designated nonattainment for the 1971 standards, where the 1971 standards remain in effect until implementation plans to attain or maintain the 2010 standard are approved.

µg/m³ = micrograms per cubic meter; ppm = parts per million.

3.4.2.2 Local Air Quality Regulation

YSAQMD has local jurisdiction over air quality in Yolo County. Under the California CAA, YSAQMD is required to develop an air quality plan for nonattainment criteria pollutants in the air district. The *1994 Sacramento Area Regional Ozone Attainment Plan* was prepared to address reactive organic gases (ROG) and nitrogen oxides (NO_X) emissions following the region's serious nonattainment designation for the 1-hour ozone NAAQS in November 1991. The *Sacramento Regional 8-Hour Attainment and Reasonable Further Progress Plan* has also been adopted to address the region's nonattainment status for the 8-hour ozone NAAQS. Air districts within the Sacramento Federal Nonattainment Area (SFNA) have submitted the ozone plan to the EPA and are currently waiting for the agency to approve the document. Counties in the SFNA (Sacramento, Yolo, Placer, El Dorado, Solano, Sutter, and Butte) have also adopted the *Northern Sacramento Valley Planning Area 2009 Triennial Air Quality Attainment Plan* (2009 Plan). This plan outlines strategies to achieve the health-based ozone standard. The Sacramento region is also in the process of developing a plan to address PM.

All activities located in Yolo County are subject to the YSAQMD regulations in effect at the time of construction. The following YSAQMD rules may apply to the proposed project. This list of rules may not be all encompassing as additional YSAQMD rules may apply to the alternatives as specific components are identified.

- Rule 2.5 (Nuisance). This rule prevents dust emissions from creating a nuisance to surrounding properties.
- Rule 2.11 (Particulate Matter Concentration). This rule restricts emissions of PM greater than 0.1 grain per cubic foot of gas at dry standard conditions.
- Rule 2.32 (Stationary Internal Combustion Engines). This rule requires portable equipment greater than 50 horsepower, other than vehicles, to be registered with either ARB Portable Equipment Registration Program or with YSAQMD.

3.4.2.3 Attainment Status

Local monitoring data (Table 3.4-1) are used to designate areas as nonattainment, maintenance, attainment, or unclassified for the NAAQS and CAAQS. The four designations are further defined as follows.

- Nonattainment—Assigned to areas where monitored pollutant concentrations consistently violate the standard in question.
- Maintenance—Assigned to areas where monitored pollutant concentrations exceeded the standard in question in the past but are no longer in violation of that standard.
- Attainment—Assigned to areas where pollutant concentrations meet the standard in question over a designated period of time.
- Unclassified—Assigned to areas were data are insufficient to determine whether a pollutant is violating the standard in question.

Table 3.4-3 summarizes the attainment status of the project area (Yolo County) with regard to the NAAQS and CAAQS.

Table 3.4-3. Federal and State Attainment Status of the Project Area (Yolo County)

Pollutant	National Ambient Air Quality Standards	California Ambient Air Quality Standards
1-hour ozone	–	Serious nonattainment
8-hour ozone	Severe nonattainment	Nonattainment-transitional
CO	Moderate Maintenance (P)	Attainment
PM2.5	Nonattainment (P)	Attainment
PM10	Unclassified	Nonattainment

Sources: California Air Resources Board 2013b; U.S. Environmental Protection Agency 2013.
– = No applicable standard; CO = carbon monoxide; PM2.5 = particulate matter less than or equal to 2.5 microns; PM10 = particulate matter less than or equal to 10 microns;
(P) Designation applies to a portion of the county.

3.4.3 Environmental Effects

In accordance with Appendix G of the State CEQA Guidelines, the proposed project would be considered to have a significant impact if it would result in any of the conditions listed below.

- Conflict with or obstruct implementation of the applicable air quality plan.
- Violate any air quality standard or contribute substantially to an existing or projected air quality violation.
- Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is a nonattainment area for an applicable federal or state ambient air quality standard.
- Expose sensitive receptors to substantial pollutant concentrations.
- Create objectionable odors affecting a substantial number of people.

According to the State CEQA Guidelines, the significance criteria established by the applicable air quality management or air pollution control district may be relied on to make significance

determinations for potential impacts on environmental resources. As discussed above, YSAQMD is responsible for ensuring that state and federal ambient air quality standards are not violated within Yolo County. Analysis requirements for construction- and operational-related pollutant emissions are contained in the BAAQMD CEQA Handbook (Yolo-Solano Air Quality Management District 2007). The BAAQMD CEQA Handbook also contain thresholds of significance for ozone, CO, PM10, toxic air contaminants, and odors, as shown in Table 3.4-4.

Table 3.4-4. Yolo-Solano Air Quality Management Thresholds of Significance

Pollutant	Threshold
ROG	10 tons per year
NO_X	10 tons per year
CO	Exceedance of CAAQS
PM10	80 pounds per day
Toxic air contaminants	Increased cancer risk of 10 in 1 million or increased non-cancer hazard of greater than 1.0 (HI)
Odor	Result in a nuisance

Source: Yolo-Solano Air Quality Management District 2007.

– = No applicable threshold; ROG = reactive organic gas; NO_X = oxides of nitrogen; CO = carbon monoxide; CAAQS = California ambient air quality standards; PM10 = particulate matter less than or equal to 10 microns; PM2.5 = particulate matter less than or equal to 2.5 microns.

Potential impacts of the proposed project on air quality are discussed in the context of State CEQA Guidelines Appendix G checklist items. The following discussion focuses exclusively on construction-related impacts, because there would be no operational emissions as a result of project implementation.

a. Conflict with or obstruct implementation of the applicable air quality plan?

A project is deemed inconsistent with air quality plans if it would result in either population or employment growth that exceeds growth estimates included in the applicable air quality plan. Such growth would generate emissions not accounted for in the applicable air quality plan emissions budget. Therefore, proposed projects need to be evaluated to determine whether they would generate population and employment growth and, if so, whether that growth would exceed the growth rates included in the relevant air plans.

The proposed project entails only construction activities, and emissions associated with project construction would cease once construction activities have ended. In addition, the proposed project would not induce population or employment growth. Consequently, the project would not conflict with or obstruct implementation of the applicable air quality plan, and no mitigation is required.

b. Violate any air quality standard or contribute substantially to an existing or projected air quality violation?

Project construction has the potential to affect ambient air quality through the use of heavy-duty construction equipment, construction worker vehicle trips, and truck hauling trips. In addition, fugitive dust emissions would result from demolition of concrete debris and compaction of fill material. Criteria pollutant emissions generated by these sources were quantified using information

provided by the project applicant and emission factors from the CalEEMod (version 2013.2.2) and EMFAC2011 emissions models.

Estimated construction emissions are summarized in Table 3.4-5. It was conservatively assumed that all construction activities (e.g., demolition, erosion repair, fill excavation and export) would occur on the same day. This ensures a worst-case analysis of maximum daily criteria pollutant emissions. Air quality impacts are evaluated against criteria pollutant thresholds developed by YSAQMD.

Table 3.4-5. Maximum Daily (pounds) and Annual (tons) Criteria Pollutant Emissions from Project Construction

Phase	ROG	NO_X	CO	PM10[a]	PM2.5[b]
Maximum daily emissions	5	38	20	6	3
Annual emissions	0.03	0.17	0.11	0.04	0.02
YSAQMD threshold[c]	10 tons/year	10 tons/year	–	80 pounds/day	–

[a] Includes contributions from equipment exhaust (2 pounds/day) and fugitive sources (4 pounds/day)

[b] Includes contributions from equipment exhaust (2 pounds/day) and fugitive sources (1 pound/day)

[c] YSAQMD has adopted annual (tons/year) thresholds for ROG and NO_X and a daily (pounds/day) threshold for PM10.

ROG = reactive organic gases; NO_X = nitrogen oxides; CO = carbon monoxide; PM10 = particulate matter less than 10 microns in diameter; PM2.5 = particulate matter less than 2.5 microns in diameter. Please refer to Appendix A for modeling assumptions and calculations.

As shown in Table 3.4-5, construction of the proposed project would not generate criteria pollutant emissions in excess of the YSAQMD thresholds of significance. Accordingly, construction-related emissions would be less than significant, and no mitigation is required.

c. Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is a nonattainment area for an applicable federal or state ambient air quality standard (including releasing emissions that exceed quantitative thresholds for ozone precursors)?

See Item b above. The proposed project would not result in substantial increases of any criteria pollutants. Therefore, the proposed project would not result in a cumulatively considerable air quality impact. This impact would be less than significant, and no mitigation is required.

d. Expose sensitive receptors to substantial pollutant concentrations?

Diesel-fueled engines used during construction could expose adjacent residential and recreational receptors to diesel particulate matter, which is considered carcinogen. However, diesel particulate matter emissions from construction-related exhaust are expected to be minor and would not exceed 2 pounds per day. These emissions would dissipate as a function of distance and would be lower at the nearest sensitive receptor. Moreover, emissions would only occur for 12 days, which is significantly lower than the 70-year exposure period typically associated with chronic cancer health risks. Consequently, emissions of diesel particulate matter are not expected to expose sensitive populations to substantial pollutant concentrations or exceed YSAQMD thresholds. This impact would be less than significant, and no mitigation is required.

e. Create objectionable odors affecting a substantial number of people?

While offensive odors rarely cause any physical harm, they can be unpleasant, leading to considerable distress among the public and often generating citizen complaints to local governments and air districts. Project-related odor emissions would be limited to the construction period, when emissions from equipment may be evident in the immediately surrounding area. These activities would be short term and are not likely to result in nuisance odors that would violate YSAQMD standards. This impact would be less than significant, and no mitigation is required.

3.5 Greenhouse Gas Emissions

This section provides an analysis of climate change impacts resulting from the proposed project. It describes greenhouse gas (GHG) emissions commonly generated and summarizes the current regulatory framework related to GHG emissions and climate change. Environmental impacts related to climate change also are discussed.

3.5.1 Existing Conditions

Rising atmospheric concentrations of GHGs in excess of natural levels result in increasing global surface temperatures and shifts in the global climate. Assembly Bill (AB) 32 identifies the following compounds as the major GHGs: carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), perfluorinated carbons (PFCs), sulfur hexafluoride (SF_6), and hydrofluorocarbons (HFCs). The primary sources of GHGs are vehicles (including planes and trains), energy plants, and industrial and agricultural activities (such as dairies and hog farms). Because construction equipment and heavy duty trucks generate primarily GHG emissions consisting of CO_2, CH_4, and N_2O, the following discussion focuses on these pollutants.

CO_2 is the most important anthropogenic GHG, followed by CH_4 and N_2O. It is estimated that CO_2 accounts for more than 75% of all anthropogenic GHG emissions. Three quarters of anthropogenic CO_2 emissions are the result of fossil fuel burning (and to a very small extent, cement production), and approximately 25% of emissions are the result of land use change (Intergovernmental Panel on Climate Change 2007). CH_4 is the second largest contributor of anthropogenic GHG emissions and is the result of growing rice, raising cattle, fuel combustion, and mining coal (National Oceanic and Atmospheric Administration 2005). N_2O, while not as abundant as CO_2 or CH_4, is a powerful GHG. Sources of N_2O include agricultural processes, nylon production, fuel-fired power plants, nitric acid production, and fuel combustion.

In order to simplify reporting and analysis, methods have been set forth to describe emissions of GHGs in terms of a single gas. The most commonly accepted method to compare GHG emissions is the global warming potential (GWP) method defined in the Intergovernmental Panel on Climate Change (IPCC) reference documents. The IPCC defines the GWP of various GHG emissions on a normalized scale that recasts all GHG emissions in terms of CO_2 equivalents (CO_2e), which compares the gas in question to that of the same mass of CO_2 (CO_2 has a GWP of 1 by definition). Table 3.5-1 lists the GWP of CO_2, CH_4, and N_2O; their lifetimes; and abundances in the atmosphere in parts per million (ppm).

Table 3.5-1. Lifetimes and Global Warming Potentials of Principal Greenhouse Gases

Greenhouse Gas	Global Warming Potential (100 years)	Lifetime (years)	Current Atmospheric Abundance
Carbon dioxide	1	50–200	391
Methane	28	9–15	1,871
Nitrous oxide	265	120	323

Source: Myhre et al. 2013.

3.5.2 Regulatory Setting

Climate change only recently has been widely recognized as an imminent threat to the global climate, economy, and population. Thus, the climate change regulatory setting—nationally, statewide, and locally—is complex and evolving. The following section identifies key legislation relevant to the environmental assessment of project GHG emissions.

3.5.2.1 Federal

Endangerment and Cause or Contribute Findings

On December 7, 2009, the EPA signed the Endangerment and Cause or Contribute Findings for Greenhouse Gases under Section 202(a) of the federal CAA. Under the Endangerment Finding, EPA finds that the current and projected concentrations of the six key well-mixed GHGs—CO_2, CH_4, N_2O, SF_6, PFCs, and HFCs—in the atmosphere threaten the public health and welfare of current and future generations. Under the Cause or Contribute Finding, EPA finds that the combined emissions of these well-mixed GHGs from new motor vehicles and new motor vehicle engines contribute to the GHG pollution that threatens public health and welfare.

These findings do not themselves impose any requirements on industry or other entities. However, this action was a prerequisite to finalizing EPA's proposed new corporate average fuel economy standards for light-duty vehicles, which EPA proposed in conjunction with the U.S. Department of Transportation.

Regulation of GHG Emissions under the Clean Air Act (ongoing)

Under the authority of the federal CAA, EPA is beginning to regulate GHG emissions, starting with large stationary sources. In 2010, EPA set GHG thresholds to define when permits under the New Source Review Prevention of Significant Deterioration and Title V Operating Permit programs are required for new and existing industrial facilities. In 2012, EPA proposed a carbon pollution standard for new power plants.

3.5.2.2 State

California has adopted legislation, and regulatory agencies have enacted policies, addressing various aspects of climate change and GHG emissions mitigation. Much of this legislation and policy activity is not directed at citizens or jurisdictions but rather establishes a broad framework for the state's long-term GHG mitigation and climate change adaptation program. The following key legislation is applicable to the proposed project.

Assembly Bill 32, Global Warming Solutions Act (2006)

Assembly Bill 32 (AB 32) codified the state's GHG emissions target by requiring that the state's global warming emissions be reduced to 1990 levels by 2020. Since being adopted, the ARB, California Energy Commission, California Public Utilities Commission, and the Building Standards Commission have been developing regulations that will help meet the goals of AB 32. The Scoping Plan for AB 32 identifies specific measures to reduce GHG emissions to 1990 levels by 2020, and requires ARB and other state agencies to develop and enforce regulations and other initiatives for reducing GHGs. Specifically, the Scoping Plan articulates a key role for local governments,

recommending they establish GHG reduction goals for both their municipal operations and the community consistent with those of the state.

On December 11, 2008, pursuant to AB 32, ARB adopted the AB 32 Scoping Plan. This plan outlines how emissions reductions from significant sources of GHGs will be achieved via regulations, market mechanisms, and other actions. The Scoping Plan also describes recommended measures that were developed to reduce GHG emissions from key sources and activities while improving public health, promoting a cleaner environment, preserving our natural resources, and ensuring that the impacts of the reductions are equitable and do not disproportionately affect low-income and minority communities.

State CEQA Guidelines, As Amended in 2010

The State CEQA Guidelines require lead agencies to describe, calculate, or estimate the amount of GHG emissions that would result from a project. Moreover, the guidelines emphasize the necessity to determine potential climate change effects of a project and propose mitigation as necessary. The guidelines confirm the discretion of lead agencies to determine appropriate significance thresholds, but require the preparation of an EIR if "there is substantial evidence that the possible effects of a particular project are still cumulatively considerable notwithstanding compliance with adopted regulations or requirements" (Section 15064.4).

State CEQA Guidelines Section 15126.4 includes considerations for lead agencies related to feasible mitigation measures to reduce GHG emissions, which may include, among others, measures in an existing plan or mitigation program for the reduction of emissions that are required as part of the lead agency's decision; implementation of project features, project design, or other measures that are incorporated into the project to substantially reduce energy consumption or GHG emissions; offsite measures, including offsets that are not otherwise required, to mitigate a project's emissions; and measures that sequester carbon or carbon-equivalent emissions.

3.5.2.3 Local

Yolo County adopted a climate action plan in 2011. The plan outlines a variety of strategies to reduce GHG emissions by 80% by 2050. The City of West Sacramento released a draft climate action plan in August 2010. The document establishes a citywide GHG reduction target of 30% below 2020 business-as-usual emissions.

3.5.3 Environmental Effects

Based on the State CEQA Guidelines Appendix G, an impact pertaining to climate change is considered significant if it would result in any of the conditions listed below.

- Generate a significant amount of GHG emissions, either directly or indirectly.
- Conflict with any applicable plan, policy, or regulation adopted for the purpose of reducing GHGs.

Potential impacts of the proposed project on greenhouse gas emissions are discussed in the context of State CEQA Guidelines Appendix G checklist items. The following discussion focuses exclusively on construction-related impacts, because there would be no operational emissions as a result of project implementation.

a. Generate a significant amount of GHG emissions, either directly or indirectly?

Project construction would generate emissions of CO_2, CH_4, and N_2O from mobile and stationary construction equipment exhaust and employee and haul truck vehicle exhaust. Estimated construction emissions associated with the proposed project are summarized in Table 3.5-2. Please refer to Appendix A for modeling assumptions and calculations.

Table 3.5-2. Estimated Greenhouse Gas Emissions from Project Construction (metric tons per year)

CO_2	CH_4	N_2O	Other[a]	CO_2e[b]
14	0.00	0.00	0.03	14

[a] From construction worker commutes (mix of fuels). Other GHGs include CH_4, N_2O, and HFCs, which represent 5% of total GHG emissions from on-road sources (calculated by diving CO_2 emissions by 0.95 and multiplying the resulting number by 0.05).

[b] Refers to carbon dioxide equivalent, which includes the relative warming capacity (i.e., GWP) of each GHG.

As shown in Table 3.5-2, project construction would generate 14 metric tons of CO_2e. This is equivalent to adding three typical passenger vehicles per year to the road during the construction period (U.S. Environmental Protection Agency 2011). These emissions are considerably low (for comparative purposes, statewide GHG emissions in 2011 were 448.11 million metric tons CO_2e) and will cease when construction activities are completed. Accordingly, project construction is not anticipated to result in a significant amount of GHG emissions. This impact would be less than significant, and no mitigation is required.

b. Conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of greenhouse gases?

As previously discussed, the ARB adopted the AB 32 Scoping Plan as a framework for achieving AB 32. The Scoping Plan outlines a series of technologically feasible and cost-effective measures to reduce statewide GHG emissions. These strategies are geared towards sectors and activities that generate significant amounts of GHGs. For example, the majority of measures address building, energy, waste and wastewater generation, goods movement, on-road transportation, water usage, and high GWP gases. Activities associated with the proposed project are not considered by the AB 32 Scoping Plan as having a high potential to emit GHGs. This statement is substantiated by the project-level emissions analysis, which demonstrates that the GHG emission rate is considerably low (Table 3.5-2). Consequently, none of the AB 32 reduction strategies are applicable to construction of the proposed project. Implementation of the proposed project would therefore not conflict with implementation of AB 32. This impact would be less than significant and no mitigation is required.

3.6 Hazards and Hazardous Materials

3.6.1 Introduction

This section analyzes the potential effects related to hazardous, toxic, and radiological wastes. Hazardous materials and wastes are those substances that, because of their physical, chemical, or other characteristics, may pose a risk of endangering human health or safety or of endangering the environment (California Health and Safety Code Section 25260). Types of hazardous materials include petroleum hydrocarbons, pesticides, and volatile organic compounds. Hazardous materials that would be used during construction activities for the project include diesel fuel and other liquids in construction equipment.

3.6.2 Existing Conditions

3.6.2.1 Hazardous Materials

SCS Engineers completed a Phase I Environmental Site Assessment in October 2012 for assessor's parcel numbers 014-580-009 and 014-580-010, the latter of which includes the project site (SCS Engineers 2012). The purpose of the Environmental Site Assessment was to assess the likelihood that recognized environmental conditions are present at the site as a result of the current or historical site land use or from a known and reported off-site source. The Environmental Site Assessment reported that a methyl tertiary butyl ether–impacted groundwater plume, originating in the DWR maintenance yard directly west of the project site, has been mapped in the project vicinity. This site is considered a *recognized environmental condition*, and is being monitored by DWR. However, analysis of monitoring well data shows that the plume is located south of the project footprint and would be avoided by the proposed project.

3.6.2.2 Wildland Fires

The area surrounding the project site is not considered a fire-prone area.

3.6.2.3 Emergency Response and Evacuation

Emergency response and evacuation services for the project area are provided by the various departments in the City of West Sacramento and through Yolo County Sheriff, Fire, and Emergency Services Departments.

3.6.2.4 Schools

Two schools are located within 0.25 mile of the proposed project. These schools are Bryte Elementary School, located at 637 Todhunter Avenue, and Riverbank Elementary School, located at 1100 Carrie Street.

3.6.3 Regulatory Setting

3.6.3.1 Federal

The principal federal regulatory agency responsible for the safe use and handling of hazardous materials is the EPA. Two key federal regulations pertaining to hazardous wastes are described below. Other applicable federal regulations are contained primarily in CFR Titles 29, 40, and 49.

The following federal policies related to public health and environmental hazards may apply to the implementation of the project.

Resource Conservation and Recovery Act

The Federal Resource Conservation and Recovery Act enables the EPA to administer a regulatory process that extends from the manufacture of hazardous materials to their disposal, thus regulating the generation, transportation, treatment, storage, and disposal of hazardous waste at all facilities and sites in the nation.

Comprehensive Environmental Response, Compensation, and Liability Act

The Comprehensive Environmental Response, Compensation, and Liability Act (also known as Superfund) was passed to facilitate the cleanup of the nation's toxic waste sites. In 1986, the act was amended by the Superfund Amendment and Reauthorization Act Title III (community right-to-know laws). Title III states that past and present owners of land contaminated with hazardous substances can be held liable for the entire cost of the cleanup, even if the material was dumped illegally when the property was under different ownership.

3.6.3.2 State

California regulations are equal to or more stringent than federal regulations. EPA has granted the State of California primary oversight responsibility to administer and enforce hazardous waste management programs. State regulations require planning and management to ensure that hazardous wastes are handled, stored, and disposed of properly to reduce risks to human and environmental health. Several key state laws pertaining to hazardous wastes are discussed below.

Hazardous Materials Release Response Plans and Inventory Act of 1985

The Hazardous Materials Release Response Plans and Inventory Act, also known as the Business Plan Act, requires businesses using hazardous materials to prepare a plan that describes their facilities, inventories, emergency response plans, and training programs. Hazardous materials are defined as unsafe raw or unused material that is part of a process or manufacturing step. They are not considered hazardous waste. Health concerns pertaining to the release of hazardous materials, however, are similar to those relating to hazardous waste.

Hazardous Waste Control Act

The Hazardous Waste Control Act created the state hazardous waste management program, which is similar to but more stringent than the Federal Resource Conservation and Recovery Act program. The act is implemented by regulations contained in Title 26, CCR, which describes the following elements required for the proper management of hazardous waste.

- Identification and classification.
- Generation and transportation.
- Design and permitting of recycling, treatment, storage, and disposal facilities.
- Treatment standards.
- Operation of facilities and staff training.
- Closure of facilities and liability requirements.

These regulations list more than 800 materials that may be hazardous and establish criteria for identifying, packaging, and disposing of such waste. Under the Hazardous Waste Control Act and Title 26, the generator of hazardous waste must complete a manifest that accompanies the waste from generator to transporter to the ultimate disposal location. Copies of the manifest must be filed with the California Department of Toxic Substances Control.

3.6.3.3 Local

City of West Sacramento General Plan

The Health and Safety Section of the *City of West Sacramento General Plan Policy Document* (City of West Sacramento 1990) contains goals aimed at reducing the risks associated with natural and human-made hazards within the county. Any violation of these goals and policies would constitute a significant impact.

Goal A: To prevent loss of life, injury, and property damage due to geologic and seismic hazards.

Goal C: To prevent loss of life, injury, and property damage due to wildland, cropland, and structural fires, explosions and release of hazardous materials.

Goal D: To ensure that City emergency response procedures are adequate in the event of natural or man-made disasters.

3.6.4 Environmental Effects

Potential impacts of the proposed project on hazards and hazardous materials are discussed in the context of State CEQA Guidelines Appendix G checklist items.

a. Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?

b. Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?

Project implementation would require the use of hazardous materials such as fuels and lubricants to operate construction equipment and vehicles such as dump trucks. Construction contractors will be required to use, store, and transport hazardous materials in compliance with federal, state, and local regulations during project construction. However, fuels and lubricants could be accidentally released into the environment at the construction site and along haul routes, causing environmental or human exposure to these hazards.

Implementation of the Spill Prevention, Control, and Countermeasure Plan (SPCCP) Environmental Commitment, as described in Chapter 2, *Project Description*, would minimize the potential for and effects from spills of hazardous, toxic, and petroleum substances during construction and operation activities, as well as minimize the effects of unearthing previously undocumented hazardous materials. This impact is less than significant, and no mitigation is needed.

There is potential that previously undocumented hazardous materials could be encountered at the project site. Excavation and construction activities at or near areas of currently unrecorded soil or groundwater contamination could result in the exposure of construction workers, the general public, and the environment to hazardous materials such as petroleum hydrocarbons, contaminated debris, or elevated levels of other chemicals that could be hazardous. At this time, there are no known occurrences of hazardous materials at the project area. There would be no impact.

c. Emit hazardous emissions or involve handling hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?

Two schools are located within a 0.25-mile radius of the project site—Bryte Elementary School at 637 Todhunter Avenue and Riverbank Elementary School at 1100 Carrie Street, which are south and southwest of the project site, respectively. The proposed project would not involve hazardous emissions or the handling of acutely hazardous materials, substances, or waste. However, small quantities of hazardous materials (fuel, engine oil, and hydraulic line oil) would be temporarily handled on site during construction. Potential health and safety hazards related to the proposed project include possible accidental spills involving these fuels and lubricants. Because construction activities are temporary in nature, the handling of minor amounts would be in compliance with applicable regulations, and the operation of the project would not generate industrial wastes or toxic substances. Additionally, implementation of the SPCCP Environmental Commitment, described in Chapter 2, would ensure that the effect on public health and the environment would be avoided. The project effects associated with the emission of hazardous materials near an existing or proposed school would be less than significant. No mitigation is needed.

d. Be located on a site that 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?

The project area is not located on a site included on any list of hazardous materials sites. Therefore, there would be no impact.

e. Be located within an airport land use plan area or, where such a plan has not been adopted, be within two miles of a public airport or public use airport, and result in a safety hazard for people residing or working in the project area?

f. Be located within the vicinity of a private airstrip and result in a safety hazard for people residing or working in the project area?

The project area is not located within an airport land use plan are or within 2 miles of a public airport, public use airport, or in the vicinity of a private airstrip. Therefore, there would be no impact.

g. Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?

Construction-related activities would not involve temporary or permanent obstruction of any major roadways within the city and would not otherwise interfere with emergency operations or evacuations. Therefore, there would be no impact.

h. Expose people or structures to a significant risk of loss, injury, or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands?

The project is not located in a fire-prone area. Therefore, there would be no impact.

3.7 Noise

This section presents a discussion of existing noise and vibration conditions in the project area in a regional and site-specific context. Potential impacts of the proposed project related to noise and vibration also are considered, and applicable mitigation is proposed.

3.7.1 Existing Conditions

3.7.1.1 Noise Terminology

Sound is mechanical energy transmitted by pressure waves in a compressible medium such as air. Noise can be defined as unwanted sound. Sound is characterized by various parameters that include the rate of oscillation of sound waves (frequency), the speed of propagation, and the pressure level or energy content (amplitude). In particular, the sound pressure level is the most common descriptor used to characterize the loudness of an ambient sound level. The decibel (dB) scale is used to quantify sound intensity. Because sound pressure can vary enormously within the range of human hearing, the logarithmic decibel scale is used to keep sound intensity numbers at a convenient and manageable level.

The human ear is not equally sensitive to all frequencies in the entire spectrum, so noise measurements are weighted more heavily for frequencies to which humans are sensitive in a process called A-weighting. Because humans are less sensitive to low frequency sound than to high frequency sound, A-weighted decibel (dBA) levels deemphasize low frequency sound energy to better represent how humans hear. Table 3.7-1 summarizes typical A-weighted sound levels.

Table 3.7-1. Typical A-Weighted Sound Levels

Common Outdoor Activities	Noise Level (dBA)	Common Indoor Activities
	110	Rock band
Jet flyover at 1,000 feet		
	100	
Gas lawnmower at 3 feet		
	90	
Diesel truck at 50 feet at 50 mph		Food blender at 3 feet
	80	Garbage disposal at 3 feet
Noisy urban area, daytime		
Gas lawnmower, 100 feet	70	Vacuum cleaner at 10 feet
Commercial area		Normal speech at 3 feet
Heavy traffic at 300 feet	60	
		Large business office
Quiet urban daytime	50	Dishwasher in next room
Quiet urban nighttime	40	Theater, large conference room (background)
Quiet suburban nighttime		
	30	Library
Quiet rural nighttime		Bedroom at night, concert hall (background)
	20	
		Broadcast/recording studio
	10	
	0	

Source: California Department of Transportation 2009.
dBA = A-weighted decibel; mph = miles per hour.

Different types of measurements are used to characterize the time-varying nature of sound. These measurements include the equivalent sound level (L_{eq}), the minimum and maximum sound levels (L_{min} and L_{max}), percentile-exceeded sound levels (L_{xx}), the day-night sound level (L_{dn}), and the community noise equivalent level (CNEL). Below are brief definitions of these measurements and other terminology used in this section.

- **Sound.** A vibratory disturbance created by a vibrating object that, when transmitted by pressure waves through a medium such as air, is capable of being detected by a receiving mechanism, such as the human ear or a microphone.
- **Noise.** Sound that is loud, unpleasant, unexpected, or otherwise undesirable.
- **Ambient noise.** The composite of noise from all sources near and far in a given environment exclusive of particular noise sources to be measured.
- **Decibel (dB).** A unitless measure of sound on a logarithmic scale that indicates the squared ratio of sound pressure amplitude to a reference sound pressure amplitude. The reference pressure is 20 micro-pascals.

- **A-weighted decibel (dBA).** An overall frequency-weighted sound level in decibels that approximates the frequency response of the human ear.
- **Equivalent sound level (L_{eq}).** The average of sound energy occurring over a specified period. In effect, L_{eq} is the steady-state sound level that in a stated period would contain the same acoustical energy as the time-varying sound that actually occurs during the same period.
- **Exceedance sound level (L_{xx}).** The sound level exceeded XX% of the time during a sound level measurement period. For example, L_{90} is the sound level exceeded 90% of the time, and L_{10} is the sound level exceeded 10% of the time. L_{90} is typically considered to represent the ambient noise level.
- **Maximum and minimum sound levels (L_{max} and L_{min}).** The maximum and minimum sound levels measured during a measurement period.
- **Day-night level (L_{dn}).** The energy average of the A-weighted sound levels occurring during a 24-hour period, with 10 dB added to the A-weighted sound levels occurring during the period from 10:00 p.m. to 7:00 a.m.
- **Community noise equivalent level (CNEL).** The energy average of the A-weighted sound levels occurring during a 24-hour period with 5 dB added to the A-weighted sound levels occurring during the period from 7:00 p.m. to 10:00 p.m. and 10 dB added to the A-weighted sound levels occurring during the period from 10:00 p.m. to 7:00 a.m.

L_{dn} and CNEL values rarely differ by more than 1 dB. As a matter of practice, L_{dn} and CNEL values are considered to be equivalent and are treated as such in this assessment. In general, human sound perception is such that a change in sound level of 3 dB is just noticeable, a change of 5 dB is clearly noticeable, and a change of 10 dB is perceived as doubling or halving sound level.

For a point source such as a stationary compressor, sound attenuates based on geometry at rate of 6 dB per doubling of distance. For a line source such as free-flowing traffic on a freeway, sound attenuates at a rate of 3 dB per doubling of distance. Atmospheric conditions including wind, temperature gradients, and humidity can change how sound propagates over distance and can affect the level of sound received at a given location. The degree to which the ground surface absorbs acoustical energy also affects sound propagation. Sound that travels over an acoustically absorptive surface such as grass attenuates at a greater rate than sound that travels over a hard surface such as pavement. The increased attenuation is typically in the range of 1 to 2 dB per doubling of distance. Barriers such as buildings and topography that block the line of site between a source and receiver also increase the attenuation of sound over distance.

Auditory and non-auditory effects can result from excessive or chronic exposure to elevated noise levels. Auditory effects of noise on people can include temporary or permanent hearing loss. Non-auditory effects of exposure to elevated noise levels include sleep disturbance, speech interference, and psychological effects such as annoyance. Land use compatibility standards for noise typically are based on research related to these non-auditory effects.

3.7.1.2 Vibration

Operation of heavy construction equipment, particularly pile driving and other impulsive devices such as pavement breakers, creates seismic waves that radiate along the surface of the earth and downward into the earth. These surface waves can be felt as ground vibration. Vibration from operation of this equipment can result in effects ranging from annoyance of people to damage of structures. Varying geology and distance will result in different vibration levels containing different frequencies and displacements. In all cases, vibration amplitudes will decrease with increasing distance.

As seismic waves travel outward from a vibration source, they excite the particles of rock and soil through which they pass and cause them to oscillate. The actual distance that these particles move is usually only a few ten-thousandths to a few thousandths of an inch. The rate or velocity (in inches per second [in/sec]) at which these particles move is the commonly accepted descriptor of the vibration amplitude, referred to as the peak particle velocity (ppv). Table 3.7-2 summarizes typical vibration levels generated by construction equipment (Federal Transit Administration 2006).

Table 3.7-2. Vibration Source Levels for Construction Equipment

Equipment	PPV at 25 feet
Pile driver (impact)	0.644 to 1.518
Pile drive (sonic)	0.170 to 0.734
Vibratory roller	0.210
Hoe ram	0.089
Large bulldozer	0.089
Caisson drilling	0.089
Loaded trucks	0.076
Jackhammer	0.035
Small bulldozer	0.003

Source: Federal Transit Administration 2006.

Vibration amplitude attenuates over distance and is a complex function of how energy is imparted into the ground and the soil conditions through which the vibration is traveling. The following equation can be used to estimate the vibration level at a given distance for typical soil conditions. PPV_{ref} is the reference ppv at 25 feet (from Table 3.7-2):

$$PPV = PPV_{ref} \left(\frac{25}{distance}\right)^{1.5}$$

Table 3.7-3 summarizes guideline vibration annoyance potential criteria suggested by the California Department of Transportation (2004).

Table 3.7-3. Guideline Vibration Annoyance Potential Criteria

	Maximum PPV (in/sec)	
Human Response	**Transient Sources[a]**	**Continuous/Frequent Intermittent Sources[b]**
Barely perceptible	0.04	0.01
Distinctly perceptible	0.25	0.04
Strongly perceptible	0.9	0.10
Severe	2.0	0.4

Source: California Department of Transportation 2004.

[a] Transient sources create a single isolated vibration event, such as blasting or drop balls.

[b] Continuous/frequent intermittent sources include impact pile drivers, pogo-stick compactors, crack-and-seat equipment, vibratory pile drivers, and vibratory compaction equipment.

Table 3.7-4 summarizes guideline vibration damage potential criteria suggested by the California Department of Transportation (2004).

Table 3.7-4. Guideline Vibration Damage Potential Criteria

	Maximum PPV (in/sec)	
Structure and Condition	**Transient Sources[a]**	**Continuous/Frequent Intermittent Sources[b]**
Extremely fragile historic buildings, ruins, ancient monuments	0.12	0.08
Fragile buildings	0.2	0.1
Historic and some old buildings	0.5	0.25
Older residential structures	0.5	0.3
New residential structures	1.0	0.5
Modern industrial/commercial buildings	2.0	0.5

Source: California Department of Transportation 2004.

[a] Transient sources create a single isolated vibration event, such as blasting or drop balls.

[b] Continuous/frequent intermittent sources include impact pile drivers, pogo-stick compactors, crack-and-seat equipment, vibratory pile drivers, and vibratory compaction equipment.

3.7.1.3 Ambient Noise Environment

The primary sources of noise in and near the project area are traffic on area roadways, occasional planes and helicopters, residential and recreational activities, and natural sounds such as wind and wildlife.

3.7.1.4 Noise-Sensitive Land Uses

Noise-sensitive land uses are generally defined as locations where people reside or where the presence of unwanted sound could adversely affect the use of the land. Noise-sensitive land uses typically include residences, hospitals, schools, guest lodgings, libraries, and certain types of passive

recreational uses, such as parks to be used for reading, conversation, meditation (Federal Transit Administration 2006).

The nearest sensitive receptors include residences and Bryte Park located immediately south of the project site on the south side of Riverbank Road. These noise-sensitive land uses are generally 400 feet from the construction area. There are also residences located directly across the river about 750 feet from the project site. Riverbank Road will be used as a haul route, and there are residences located along that road.

3.7.2 Regulatory Setting

3.7.2.1 Federal

There are no federal noise regulations applicable to the proposed project.

3.7.2.2 State

There are no state policies related to noise or vibration that would apply to the implementation of the proposed project.

3.7.2.3 Local

Implementation of the proposed project may affect noise-sensitive uses in West Sacramento and in Sacramento across the Sacramento River. The following local policies related to noise may apply to implementation of the proposed project.

City of West Sacramento General Plan Noise Element

The City of West Sacramento noise ordinance is the primary enforcement tool for the operation of locally regulated noise sources, such as construction activity or outdoor recreation facilities, and is set forth in Chapter 17.32 of the City Code. The City noise ordinance sets noise level performance standards for non-transportation noise sources, which are summarized in Table 3.7-5. Examples of non-transportation noise sources are construction equipment, industrial operations, outdoor recreation facilities, HVAC units, and loading docks. The City noise ordinance does not specify an exemption for temporary daytime construction activity, so the daytime and nighttime limits specified in the noise ordinance are considered to apply to all construction associated with the proposed project. City transportation noise level standards are listed in Table 3.7-6.

Table 3.7-5. City of West Sacramento Non-Transportation Noise Level Standards

Land Use	Noise Level Descriptor	Exterior Noise Levels[a]		Interior Noise Levels[a]	
		Daytime (7:00 a.m. to 10:00 p.m.)	Nighttime (10:00 p.m. to 7:00 a.m.)	Daytime (7:00 a.m. to 10:00 p.m.)	Nighttime (10:00 p.m. to 7:00 a.m.)
Residential	Hourly L_{eq}, dBA	50	45	45	35
	Max. Level, dBA	70	65	–	–
Transient lodging	Hourly L_{eq}, dBA	–	–	45	35
Hospital, nursing homes	Hourly L_{eq}, dBA	–	–	45	35
Theatres, auditoriums, music halls	Hourly L_{eq}, dBA	–	–	35	35
Churches, meeting halls	Hourly L_{eq}, dBA	–	–	40	40
Office buildings	Hourly L_{eq}, dBA	–	–	45	45
Schools, libraries, museum	Hourly L_{eq}, dBA	–	–	45	45

[a] Each noise level specified above will be lowered by 5 dB for simple tone noises, noises consisting primarily of speech or music, or for recurring impulsive noises. These noise level standards do not apply to residential units established in conjunction with industrial or commercials uses (e.g., caretaker dwellings).

dBA = A-weighted decibel; L_{eq} = equivalent sound level.

Table 3.7-6. City of West Sacramento Maximum Transportation Noise Level Standards

Land Use	Outdoor Activity Areas[a]	Interior Spaces	
	L_{dn}/CNEL, dB	L_{dn}/CNEL, dB	L_{eq}, dB[b]
Residential	60[c]	45	–
Transient lodging	60[c]	45	–
Hospitals, nursing homes	60[c]	45	–
Theatres, auditoriums, music halls	–	–	35
Churches, meeting halls	60[c]	–	40
Office buildings	–	–	45
Schools, libraries, museum	–	–	45
Playgrounds, neighborhood parks	70	–	–

[a] Where the location of outdoor activity is unknown, the exterior noise level standard must be applied to the property line of the receiving land use.

[b] As determined for a typical worst-case hour during period of use.

[c] Where it is not possible to reduce noise in outdoor activity areas to 60 dB L_{dn}/CNEL or less using a practical application of the best-available noise reduction measures, an exterior noise level of up to 65 dB L_{dn}/CNEL may be allowed, provided that practical exterior noise level reduction measures have been implemented and that interior noise levels are in compliance with this table. An exterior noise level of 70 dB L_{dn}/CNEL will be allowed in the triangle specific plan area and the Washington specific plan area.

dB = decibels; L_{dn} = day-night level; L_{eq} = equivalent sound level; CNEL = community noise equivalent level.

In addition, the City Code stipulates that no operation may be installed that by its construction or nature habitually or consistently produces noticeable vibration beyond the property line. As discussed below, vibration from non-impact construction equipment (which typically produces steady state vibration) is not anticipated to result in a significant effect. As indicated in Table 3.7-4, human response to transient vibration sources (such as impact pile driving) typically becomes "distinctly perceptible" at or above 0.25 in/sec ppv (California Department of Transportation 2004).

West Sacramento General Plan

The primary purpose of the noise element of the *West Sacramento General Plan* is to protect city residents from the harmful effects of excessive noise (City of West Sacramento 1990). To this end, the noise element serves to set acceptable limits for the land use compatibility of new developments or land uses as it relates to noise exposure. The noise element applies the noise standards in Table 3.7-5 and Table 3.7-6 as land use compatibility standards for new development.

City of Sacramento Noise Ordinance

The City of Sacramento's noise ordinance limits described below have been used in this initial study as a noise effect criterion for homes inside the city.

The City of Sacramento noise ordinance is the primary enforcement tool for the operation of locally regulated noise sources, such as construction activity, and is set forth in Chapter 8.68 of the City Code. The noise ordinance sets exterior noise level standards for noise sources that affect residential or agricultural property. These exterior noise level performance standards are summarized in Table 3.7-7. Noise associated with the erection (including excavation), demolition, alteration, or repair of any structure occurring between 7:00 a.m. and 6:00 p.m., Monday through Saturday, and between 9:00 a.m. and 6:00 p.m. on Sunday is exempted from the provisions of the City noise ordinance.

Table 3.7-7. City of Sacramento Exterior Noise Level Standards

Cumulative Duration of the Intrusive Sound in Any One Hour	Daytime[a] (7:00 a.m. to 10:00 p.m.)	Nighttime[a] (10:00 p.m. to 7:00 a.m.)
30 minutes	55	50
15 minutes	60	55
5 minutes	65	60
1 minute	70	65
Level not to be exceeded	75	70

[a] Each of the noise limits specified shall be reduced by 5 dBA for impulsive or simple tone noise, or for noises consisting of speech or music. If the ambient noise level exceeds that permitted by any of the first four noise level categories, the allowable noise limit shall be increased in 5 dB increments in each category to encompass the ambient noise level. If the ambient noise level exceeds the fifth noise level category, the maximum ambient noise level shall be the noise limit for that category.

dBA = A-weighted decibel; dB = decibel; L_{eq} = equivalent sound level.

City of Sacramento General Plan

The noise element of the City of Sacramento General Plan (City of Sacramento 1988) establishes interior and exterior noise level standards for planning purposes to ensure land use compatibility for new zoned developments as it relates to noise exposure. The City of Sacramento General Plan

identifies 60 L_{dn} as the land use compatibility standard for single family, duplex, and mobile home residential uses. The standard for multi-family uses is 65 L_{dn}.

3.7.3 Environmental Effects

Potential impacts of the proposed project on noise are discussed in the context of State CEQA Guidelines Appendix G checklist items.

a. Expose persons to or generate noise levels in excess of standards established in a local general plan or noise ordinance or applicable standards of other agencies?

The proposed project will involve the use of an excavator, front-end loader, dump truck, bulldozer, and compactor. Construction is expected to occur from 7:00 a.m. to 8:00 p.m., Monday through Saturday, for 2 weeks starting in mid-September 2014.

Table 3.7-8 summarizes typically noise levels produced by this equipment (Federal Highway Administration 2006). L_{max} sound levels at 50 feet are shown along with the typical acoustical use factors. The acoustical use factor is the percentage of time each piece of construction equipment is assumed to be operating at full power (i.e., its noisiest condition) during construction operation and is used to estimate L_{eq} values from L_{max} values. For example the L_{eq} value for a piece of equipment that operates at full power 50% of the time (acoustical use factor of 50) is 3 dB less than the L_{max} value. The cumulative L_{max} and L_{eq} levels assuming concurrent operation of this equipment is given as well.

Table 3.7-8. Summary of Noise Emission Assumptions for Construction Equipment

Equipment	Acoustical Use Factor (%)	L_{max} at 50 Feet (dBA)	L_{eq} at 50 Feet (dBA)
Excavator	40	81	77
Front End Loader	40	79	75
Haul Truck, Dump Truck	40	76	72
Bulldozer	40	82	78
Compactor	40	85	81
Cumulative noise level		88	83

Table 3.7-9 summarizes predicted noise levels at the nearest noise-sensitive land uses. The analysis assumes that sound will attenuate at a rate of 6 dB per doubling of distance and that an additional 5 dB of attenuation will occur when the construction equipment is shielded by the levee (i.e., blocks the line-of-sight between the equipment and a receiver).

Table 3.7-9. Summary of Noise Emission Assumptions for Construction Equipment

Noise-Sensitive Use	L_{max} at 50 feet (dBA)	L_{eq} at 50 feet (dBA)	Distance (feet)	Distance Attenuation	Shielding Attenuation from Levee	L_{max} (dBA)	L_{eq} (dBA)
Residences directly south	88	83	400	-18	-5	65	60
Bryte Park	88	83	400	-18	-5	65	60
Bryte Elementary School	88	83	1,400	-29	-5	54	49

Residences across river	88	83	750	-24	0	64	59

The City of Sacramento noise ordinance exempts construction noise that occurs between 7:00 a.m. and 6:00 p.m. However, because construction could occur as late as 8:00 p.m. the results in Table 3.7-9 indicate that residences could be exposed to construction noise that exceeds the City of Sacramento daytime noise standard of 55 dBA. The City of West Sacramento does not have a similar exemption and construction activity would be subject to the City's 70 dBA-L_{max} and 50 dBA-L_{eq} limits for residential uses. The results in Table 3.7-9 indicate that construction noise levels at residences located to the south of the project site could be exposed to noise that exceeds City of West Sacramento noise standards. There could be as many as 19 haul-truck round trips in 1 day if none of the excavated soil is suitable for reuse and imported soil is needed to construct the VMSE benches. This corresponds to 38 truck trips per day. Over an 8-hour day this is an average of about 5 truck trips per hour. The posted speed on Riverbank Road is 25 miles per hour. Using the Federal Highway Administration Traffic Noise Model (Version 2.5), the predicted hourly traffic noise level at 50 feet is 53 dBA-L_{eq}. For truck traffic occurring over an 8-hour period this corresponds to an L_{dn} value of 48 dBA, well below the City of West Sacramento's 60 dB-L_{dn} standard for transportation noise.

This analysis indicates that construction activity could result in noise levels that exceed City of West Sacramento and City of Sacramento noise ordinance standards. However, the Noise-Reducing Construction Practices environmental commitment described in Section 2.2.7.6, *Noise-Reducing Construction Practices,* identifies measures that can be implemented to achieve compliance with applicable noise ordinance standards. Therefore, this impact would be less than significant and no additional mitigation is required.

b. Expose persons to or generate excessive groundborne vibration or groundborne noise levels?

A bulldozer is anticipated to create the highest level of groundborne vibration. From Table 3.7-2, the PPV at 25 feet is 0.089 in/sec. With the nearest structures (residences) about 400 feet away, the PPV is expected to attenuate to less than 0.001 in/sec, which would be well below the distinctly perceptible threshold of about 0.25 in/sec.

c. Result in a substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project?

The proposed project would not result in additional long-term operational activities beyond those currently ongoing. Therefore, there would be no impact.

d. Result in a substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project?

Construction activities are anticipated to produce noise levels indicated in Table 3.7-9. This will result in an increase in noise levels. However, given that construction noise will be intermittent over a 2-week period and will be reduced with implementation of Mitigation Measure NOI-MM-1, the temporary increase is not considered to be substantial.

e. Be located within an airport land use plan area, or, where such a plan has not been adopted, within two miles of a public airport or public use airport and expose people residing or working in the project area to excessive noise levels?

The project site is not located within 2 miles of a public airport. Therefore, no impacts would be expected.

f. Be located in the vicinity of a private airstrip and expose people residing or working in the project area to excessive noise levels?

The project site is not in the vicinity of a private airstrip. No impacts related to noise generated from private airstrips would result from the proposed project.

3.8 Cultural Resources

This section describes the regulatory and environmental setting for cultural resources. For the purposes of this section, cultural resources consist of historic-period and prehistoric archaeological sites, traditional cultural properties, and built environment resources.

Archaeological resources are the physical remains of past human activity that have been preserved in the ground but no longer take the form of a standing structure (e.g., a house or building). Archaeological remains may occur in the same place as standing structures but are considered a distinct element (called a component) of the larger resource.

Traditional cultural properties consist of resources that are associated with the practices or beliefs of a living community and are (a) rooted in that community's history for at least 50 years, and (b) important in maintaining the continuing cultural identity of the community.

Built environment resources consist of buildings, structures, objects, sites, or districts. Typically, built environment resources must be 50 years of age or older to qualify as cultural resources. Where these resources form a landscape unified by a coherent historical or design theme, they may qualify as a rural historic landscape.

3.8.1 Existing Conditions

3.8.1.1 Prehistoric Context

Although the Sacramento Valley may have been inhabited by humans as early as 10,000 years ago, the evidence for early human occupation is likely buried by deep alluvial sediments that accumulated rapidly during the late Holocene Epoch. Although rare, archaeological remains of this early period allegedly have been identified in and around the Central Valley. Johnson (1967) presents evidence for some use of the Mokelumne River area, under what is now Camanche Reservoir, during the late Pleistocene Epoch. These archaeological materials and similar materials in the region have been termed the Farmington Complex. Recent work in the vicinity of Camanche Reservoir, however, calls into question whether Farmington Complex exceeds an age of 10,000 years before present (BP) (Rosenthal et al. 2007:151).

Preliminary results from Tremaine & Associates' recent excavations at Sacramento City Hall (Sacramento City Hall overlies the Nisenan village of Sacum' ne, CA-SAC-38) reveal the earliest confirmed habitation of the immediate Sacramento vicinity. Obsidian hydration readings on artifacts may represent use of the site from 3000–8000 BP Tremaine & Associates also ran three radiocarbon assays, which yielded conventional dates of 5870, 6690, and 6700 BP The radiocarbon assays were taken between 9.8 feet and 11.5 feet below ground surface (Tremaine 2008:99–101).

Later periods of prehistory are better understood because of their more abundant representation in the archaeological record. Fredrickson (1973) identified three general patterns of cultural manifestations for the period between 4500 BP and 3500 BP: the Windmiller, Berkeley, and Augustine Patterns.

The Windmiller Pattern (4500 BP–3000 BP) shows evidence of a mixed economy consisting of the generalized hunting of game, fishing, and use of wild plant foods. Settlement strategies during the

Windmiller period reflect seasonal occupation of valleys during the winter and of the foothills during the summer (Moratto 1984).

Cultural changes are manifested in the Berkeley Pattern (3500 BP–2500 BP). Technological changes in groundstone from handstones and milling slabs to the mortar and pestle indicate a greater dependence on acorns, and the presence of a wide variety of projectile points and atlatls indicates hunting was still an important activity (Fredrickson 1973).

The Berkeley Pattern was superseded by the Augustine Pattern around *anno Domini* (AD) 500, and reflects a change in subsistence and land use patterns similar to those of the ethnographically known people of the proto-historic era. This pattern exhibits a great elaboration of ceremonial and social organization, including the development of social stratification. Elaborate exchange systems, further reliance on acorns, and a wide variety of artifacts (flanged tubular smoking pipes, harpoons, clamshell disc beads, and an especially elaborate baked clay industry, which included figurines and pottery vessels called Cosumnes Brownware) are associated with the Augustine Pattern. Increased village sedentism, population growth, and an incipient monetary economy are also hallmarks of this pattern (Moratto 1984).

3.8.1.2 Ethnographic Context

The project area is located at the interface of three Native American groups: the Patwin (or Wintun), the Nisenan, and the Plains Miwok. The banks of the Sacramento River and associated riparian and tule marshland habitats were inhabited by the River or Valley Patwin. The Plains Miwok and Nisenan (also called Southern Maidu), while primarily occupying territories east of the Sacramento River, used land west of the river as well (Johnson 1978; Levy 1978; Wilson and Towne 1978).

The material culture and settlement-subsistence behavior of these groups exhibit similarities, likely because of historical relationships and a shared natural environment. Historical maps and accounts of early travelers to the Sacramento Valley testify that tule marshes, open grasslands, and occasional oak groves (Jackson 1851; Ord 1843; Wyld 1849) characterized the project area. The area was generally wet in the winter and often subject to flooding; the weather was exceedingly dry in summer. Much of the floodplain was presumably sparsely inhabited, and Native Americans typically situated their larger, permanent settlements on high ground along the Sacramento and American Rivers (Bennyhoff 1977; Kroeber 1925, 1932; Levy 1978; Wilson and Towne 1978).

The Native American economy in the project area was based principally on the use of natural resources from the riparian corridors, wetlands, and grasslands adjacent to the Sacramento River. Fish, shellfish, and waterfowl were important sources of protein in the diet of these groups (Johnson 1978; Kroeber 1932). Salmon, sturgeon, perch, chub, sucker, pike, trout, and steelhead were caught with nets, weirs, lines and fishhooks, and harpoons. Mussels were harvested from the gravels along the Sacramento River channel. Geese, ducks, and mudhens were hunted using decoys and various types of nets. The majority of important plant resources in the Patwin diet came from the grasslands of the Sacramento River floodplain (Stevens 2004a: Table 1). Plants important to California Indians were also obtained from and managed in valley wetlands (Stevens 2004b:7). In addition to the staple acorn, a number of plants were important secondary food sources, including sunflower, wild oat, alfalfa, clover, and bunchgrass (Johnson 1978).

3.8.1.3 Historic Context

Early History

The project area is located in Yolo County, which is part of the original 27 counties created when California became a state in 1850. Woodland serves as the county seat of Yolo County.

Spanish explorers visited Yolo County as early as the 1700s in their search for suitable inland mission sites. In 1772, Pedro Fages passed through San Francisco Bay and the Delta and reached the San Joaquin and Sacramento rivers. Between 1793 and 1817, several other mission site reconnaissance expeditions were conducted. The first European American to travel through the area was Jedediah Strong Smith who, in the late 1820s, reported to the Hudson's Bay Company on the quantity and quality of furs in California. Joseph Walker and Ewing Young, during separate excursions, followed his general path in the 1830s. Mexican, American, and European settlers began to arrive and set down roots within the boundaries of the two counties in the 1840s and 1850s (Kyle et al. 1990).

Sacramento River

The Sacramento River played an important role in the development of Yolo County prior to and including Euroamerican occupation of the region. The River was a convenient landmark for the early explorations that also facilitated reconnaissance of the Sacramento Valley. The Spanish, in 1817, were the first Europeans to traverse the portion of Sacramento River that passes through the project area, having made an exploratory boat trip up the river as far as its confluence with the Feather River (Goldfried 1988:8). This expedition was followed by a series of Spanish, Russian, British, and American land and water forays up the Sacramento River from the 1820s through 1840s (Goldfried 1988:8–9).

River traffic through the project area became more frequent between 1839 and 1848 with the establishment of John Sutter's fort at his New Helvetia Rancho, as well other settlements upriver hosted by Peter Lassen, John Sinclair, John Bidwell's, and others (Goldfried 1988:9; Lydecker and James 2009:9; Sutter et al. 1996 [1845–1848]:1–3). The 1848 gold discovery at Coloma, however, was responsible for the vast increase in Sacramento River traffic in the project area through the 1850s, as Sutter's embarcadero, at what is now Old Sacramento, served as the principal point of departure for persons and goods headed for the Sierra Nevada diggings. Crews frequently abandoned their ships at the embarcadero during the Gold Rush, leaving them to sink or be converted by others into warehouses, stores, and hotels on the river. (Goldfried 1988:11.)

The city of Sacramento and the communities of Washington and Riverbank/Bryte provided a lasting draw to river traffic through the 1920s because water transportation was a convenient and efficient way to move large amounts of goods and people to and from San Francisco and points beyond. River transportation from the mid-19th century through the early 20th century resulted in numerous marks along the river corridor, including ferries, wharves, shipwrecks, and numerous communities (Lydecker and James 2009:28).

Yolo County

The decline of the California Gold Rush resulted in disenchanted miners who realized they could make a greater fortune through farming and ranching rather than gold prospecting; thus transforming Yolo County from an isolated farming community into a booming agricultural region.

Through both the mid-19th and 20th centuries, Yolo County commerce was generally agrarian in focus, the main crops being wheat, barley, and other grains. Commercial enterprises related to agriculture and livestock also sprang up during this period, furthering the development and growth of the region (Larkey and Walters 1987).

Settlement

Yolo County's first town was Fremont, founded in 1849 near the confluence of the Sacramento and Feather Rivers (south of present-day Knights Landing). It became the first county seat in 1850. After the damaging flood of 1851, the county seat was moved to the town of Washington (now part of present-day West Sacramento). Between 1857 and 1861, the county seat moved from Washington to Cacheville (present day Yolo) and back to Washington. However, in 1862, more flooding episodes had motivated the community voters to select the centrally located town of Woodland as the permanent county seat (Kyle et al. 1990).

Present-day West Sacramento experienced little growth until the early 1900s when levee construction along the Sacramento River encouraged settlement and development of the area. Early settlers included Jan Lows de Swart (holder of the Rancho Nueva Flandria land grant), and James McDowell. In 1911, the West Sacramento Company laid out the community of Riverbank (later called Bryte) just west of the Sacramento River. Shortly thereafter, plans were underway for the establishment of the town of West Sacramento (Corbett 1993).

Irrigation

Between 1911 and 1918, hundreds of miles of levees were constructed in order to control flooding in the Sacramento Valley. As early as 1892, farmers of Yolo County came together to construct levees along the Sacramento River from the town of Washington to roughly 9 miles downstream. In March 1911, the Sacramento Land Company (formerly the West Sacramento Land Company) assisted with the establishment of Reclamation District (RD) 900 in what is now West Sacramento. The formation of this district created a framework for using public funds through bonds, levies, and taxes to drain the land (Corbett 1993; Walters 1987).

Under the direction of civil engineers Haviland & Tibbetts, formation of RD 900 began. The district spanned 11,500 acres from the east-west line of the Southern Pacific Railroad (SPRR) tracks, south to the vicinity of Riverview. Construction involved installing drainage canals, levees, and pumphouses. The canals carried drainage to the pumphouses, which, in turn, moved the water over the levees into the Yolo Bypass. As the land was drained of water, the fields of tules were removed, establishing acres of agricultural land (Corbett 1993). Reclamation districts such as RD 900 frequently result in historically and functionally cohesive, patterned modifications of rural areas through their networks of irrigation works, roads, boundary markers, and buildings. Such rural historic landscapes have been documented in the Sacramento Valley, some of which—such as RD 1000 in Sacramento and Sutter counties—have been determined eligible for listing in the NRHP (Bradley and Corbett 1995; Jones & Stokes 2004; JRP Historical Consulting Services 1994; Peak 1997).

Following World War I, West Sacramento remained an unincorporated area populated primarily by small farms and a handful of industries. By the 1920s, the main east-west transcontinental highway (U.S. Highway 40, now West Capitol Avenue) traveled through West Sacramento; within a few years several hotels and motels were constructed along its route through town. During World War II, factories and other industries began to prosper along the west bank of the Sacramento River.

Following the war, the region—like much of the state—experienced a housing boom that would last for several decades (Corbett 1993).

In 1987, after numerous previous attempts, the City of West Sacramento was officially incorporated. The new city included the former communities of Broderick, Bryte, and surrounding urban and rural areas on the west side of the Sacramento River into Southport (Walters 1987).

3.8.2 Regulatory Setting

3.8.2.1 Federal

National Historic Preservation Act

Because the project applicant is pursuing a Habitat Conservation Plan under Section 10 of the Endangered Species Act, the project would be considered a Federal undertaking and therefore subject to Section 106 of the National Historic Preservation Act of 1966, as amended in 2006 (NHPA). The NHPA requires federal agencies, or those they fund or permit, to consider the effects of their actions on historic properties. Historic properties are defined by the Advisory Council on Historic Preservation (ACHP) regulations (36 Code of Federal Regulations [CFR] Part 800) for implementing Section 106 as follows:

Historic property means any prehistoric or historic district, site, building, structure, or object included in, or eligible for inclusion in, the NRHP maintained by the Secretary of the Interior. This term includes artifacts, records, and remains that are related to and located within such properties. The term includes properties of traditional religious and cultural importance to an Indian tribe or Native Hawaiian organization that meet the National Register criteria. (36 CFR Part 800.16[l])

To determine whether an undertaking could affect NRHP-eligible properties, cultural resources (including archaeological, historical, and architectural properties) must be inventoried and evaluated for listing in the NRHP.

For projects involving a federal agency, cultural resource significance is evaluated in terms of eligibility for listing in the NRHP. For a property to be considered for inclusion in the NRHP, it must be at least 50 years old and meet the criteria for evaluation set forth in 36 CFR Part 60.4, as follows:

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 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.

If a particular resource meets one of these criteria, it is considered as an eligible historic property for listing in the NRHP. Among other criteria considerations, a property that has achieved

significance within the last 50 years is not considered eligible for inclusion in the NRHP unless certain exceptional conditions are met.

3.8.2.2 State

California Environmental Quality Act

CEQA requires public agencies to evaluate the implications of their project(s) on the environment and includes significant historical resources as part of the environment. According to CEQA, a project that causes a substantial adverse change in the significance of an historical resource has a significant effect on the environment (California Code of Regulations [CCR] 14 Section 15064.5; California Public Resources Code [PRC] Section 21098.1). CEQA defines a substantial adverse change as follows.

- Physical demolition, destruction, relocation, or alteration of the resource or its immediate surroundings such that the significance of a historical resource would be materially impaired (CCR 14 Section 15064.5[b][1]).

CEQA guidelines state that the significance of an historical resource is materially impaired when a project results in the following.

- Demolishes or materially alters in an adverse manner those physical characteristics of an historical resource that convey its historical significance and that justify its inclusion in, or eligibility for, inclusion in the [CRHR]; or
- Demolishes or materially alters in an adverse manner those physical characteristics that account for its inclusion in a local register of historical resources pursuant to PRC Section 5020.1(k) or its identification in an historical resources survey meeting the requirements of PRC Section 5024.1(g), unless the public agency reviewing the effects of the project establishes by a preponderance of evidence that the resource is not historically or culturally significant; or
- Demolishes or materially alters in an adverse manner those physical characteristics of a historical resource that convey its historical significance and that justify its eligibility for inclusion in the [CRHR] as determined by a lead agency for purposes of CEQA (CCR 14 Section 15064.5[b][2]).

Historical Resources

The term historical resource includes, but is not limited to any object, building, structure, site, area, place, record, or manuscript which is historically or archaeologically significant, or is significant in the architectural, engineering, scientific, economic, agricultural, educational, social, political, military, or cultural annals of PRC (PRC Section 5020.1[j]). Historical resources may be designated as such through three different processes.

1. Official designation or recognition by a local government pursuant to local ordinance or resolution (PRC Section 5020.1[k]).
2. A local survey conducted pursuant to PRC Section 5024.1(g).
3. The property is listed in or eligible for listing in the [NRHP] (PRC Section 5024.1[d][1]).

The process for identifying historical resources is typically accomplished by applying the criteria for listing in the CRHR, which states that a historical resource must be significant at the local, state, or national level under one or more of the following four criteria.

1. It is associated with events that have made a significant contribution to the broad patterns of California's history and cultural heritage.
2. It is associated with the lives of persons important in our past.
3. It embodies the distinctive characteristics of a type, period, region, or method of construction, or represents the work of a master or possesses high artistic values.
4. It has yielded, or may be likely to yield, information important in prehistory or history (CCR 14 Section 4852).

To be considered a historical resource for the purpose of CEQA, the resource must also have integrity, which is the authenticity of a resource's physical identity evidenced by the survival of characteristics that existed during the resource's period of significance. Resources, therefore, must retain enough of their historic character or appearance to be recognizable as historical resources and to convey the reasons for their significance. Integrity is evaluated with regard to the retention of location, design, setting, materials, workmanship, feeling, and association. It must also be judged with reference to the particular criteria under which a resource is eligible for listing in the CRHR. (CCR 14 Section 4852[c]).

Unique Archaeological Resources

The PRC also requires the lead agency to determine whether or not the project will have a significant effect on unique archaeological resources (PRC Section 21083.2[a]).

The PRC defines a unique archaeological resource as follows.

- An archaeological artifact, object, or site about which it can be clearly demonstrated that, without merely adding to the current body of knowledge, there is a high probability that it meets any of the following criteria:
    - Contains information needed to answer important scientific research questions and that there is a demonstrable public interest in that information.
    - Has a special and particular quality such as being the oldest of its type or the best available example of its type.
    - Is directly associated with a scientifically recognized important prehistoric or historic event or person (PRC Section 21083.2).

In most situations, resources that meet the definition of a unique archaeological resource also meet the definition of historical resource. As a result, it is current professional practice to evaluate cultural resources for significance based on their eligibility for listing in the CRHR.

Madera Oversight Coalition, Inc. v. County of Madera

In the past, it was common practice for many CEQA practitioners to provide performance-based mitigation for cultural resources, stipulating that further evaluation and treatment of resources would be performed in the future. The 2011 decision from the Madera Oversight Coalition, Inc. v. County of Madera (2011) 199 Cal. App.4th 48 case held this practice to be unacceptable under CEQA

and required evaluation of cultural resources subject to CEQA at a level sufficient to characterize the resources prior to EIR certification, not during pre-construction or construction stages of a project. This approach was used for the current EIR.

Discovery of Human Remains

Section 7050.5 of the California Health and Safety Code (CHSC) states the following in regard to the discovery of human remains.

(a) Every person who knowingly mutilates or disinters, wantonly disturbs, or willfully removes any human remains in or from any location other than a dedicated cemetery without authority of law is guilty of a misdemeanor, except as provided in Section 5097.99 of the [California Public Resources Code (PRC)]. The provisions of this subdivision shall not apply to any person carrying out an agreement developed pursuant to subdivision (l) of Section 5097.94 of the [PRC] or to any person authorized to implement Section 5097.98 of the [PRC].

(b) In the event of discovery or recognition of any human remains in any location other than a dedicated cemetery, there shall be no further excavation or disturbance of the site or any nearby area reasonably suspected to overlie adjacent remains until the coroner of the county in which the human remains are discovered has determined, in accordance with Chapter 10 (commencing with Section 27460) of Part 3 of Division 2 of Title 3 of the [California] Government Code [CGC], that the remains are not subject to the provisions of Section 27491 of the [CGC] or any other related provisions of law concerning investigation of the circumstances, manner and cause of any death, and the recommendations concerning the treatment and disposition of the human remains have been made to the person responsible for the excavation, or to his or her authorized representative, in the manner provided in Section 5097.98 of the [PRC]. The coroner shall make his or her determination within two working days from the time the person responsible for the excavation, or his or her authorized representative, notifies the coroner of the discovery or recognition of the human remains.

(c) If the coroner determines that the remains are not subject to his or her authority and if the coroner recognizes the human remains to be those of a Native American, or has reason to believe that they are those of a Native American, he or she shall contact, by telephone within 24 hours, the [Native American Heritage Commission (NAHC)] (CHSC Section 7050.5).

Of particular note to cultural resources is subsection (c), requiring the coroner to contact the NAHC within 24 hours if discovered human remains are determined to be Native American in origin. After notification, NAHC will follow the procedures outlined in PRC Section 5097.98, which include notification of most likely descendants (MLDs), if possible, and recommendations for treatment of the remains. The MLD will have 24 hours after notification by the NAHC to make their recommendation (PRC Section 5097.98). In addition, knowing or willful possession of Native American human remains or artifacts taken from a grave or cairn is a felony under State law (PRC Section 5097.99).

California State Lands Commission

The California State Lands Commission (CSLC) has jurisdiction and management control over public trust lands of the State. These lands include all ungranted tidelands and submerged lands, beds of navigable rivers, streams, lakes, bays, estuaries, inlets, and straits. CSLC manages these lands for the benefit of the people of the State, subject to the Public Trust for water related commerce, navigation,

fisheries, recreation, open space, and other recognized Public Trust uses. The title to all abandoned shipwrecks, archaeological sites, and historic or cultural resources on or in the tide and submerged lands of California is vested in the State and under the jurisdiction of the CSLC.

3.8.2.3 Local

The following local policies related to cultural resources may apply to the implementation of proposed undertaking.

Yolo County General Plan

Yolo County strives to encourage the enhancement of cultural quality and education in Yolo County through the development of goals, objectives, and policies that the county has established in the Historic Preservation Element of the *Yolo County General Plan*, Part 1 (adopted July 1983) to preserve County history and historical sites.

- **HP 1—Goal**: Yolo County shall support the preservation and enhancement of historic and prehistoric resources within the County when fiscally able.
- **HP 2—Objectives:**
    - **2.1**: To preserve Yolo County's natural resources with historical significance by designating certain natural resources such as trees and vegetation as "historic" and by supporting a program to preserve them.
    - **2.2**: To preserve Yolo County's prehistoric resources by identifying and preserving Native American sites and other significant archaeological sites and by encouraging development of demonstration sites.
        - Yolo County adopted the following actions as means for helping achieve its goal and objectives:
            - Identification of historic resources within the County;
            - Recording the historic resources identified in the 1986 Yolo County Historic Resources Survey on the general plan map and maintenance and updating of the map for planning purposes;
            - Adoption of a Historic Preservation Ordinance and the establishment of a Yolo County Historic Preservation Commission;
            - Support for the conversion of older residential structures in commercial zones to commercial or office use and of older historically significant structures in agricultural areas to tourist uses through the use permit process while maintaining or enhancing their historical authenticity;
            - Encouragement of County efforts to seek financing for the preservation of the County's historic resources;
            - To encourage the property owners to revitalize their properties through incentives such as utilizing the Historic Building Code, easements, state and Federal tax exemptions as well as seeking Community Development Block Grant funds.
    - **2.4:** To promote museums to preserve the prehistorical, historical and agricultural heritage of Yolo County by the following actions:

- Continued support for the Yolo County Historic Museum;
- Promotion of museums within historic structures;
- Support for establishment of additional museums in the County.

- **2.5:** To preserve the historical records of Yolo County and make them accessible to the public by maintaining the Yolo County Archives.

City of West Sacramento General Plan

The City of West Sacramento has adopted policies for identifying, evaluating and protecting historical resources in their general plan (revised and adopted December 2004) Section V Recreational and Cultural Resources Goals and Policies.

- **Goal F**: To preserve and enhance West Sacramento's historical heritage.
  - **Policies:**
    1. The City shall set as a high priority the protection and enhancement of West Sacramento's historically and architecturally significant buildings.
    2. The City shall establish a historic district in the Old Broderick area and develop standards for preservation and rehabilitation of historic structures and compatible infill development.
    3. The City shall cooperate in the expansion and updating of the Yolo County Historical Resources Survey.
    4. The City shall work with property owners in seeking registration of historical structures and sites as State Historic Landmarks or listing on the National Register of Historic Places.
    5. The City and Redevelopment Agency shall support the efforts of property owners to preserve and renovate historic and architecturally significant structures. Where such buildings cannot be preserved intact, the City shall seek to preserve the building façades.
    6. Structures of historical, cultural, or architectural merit which are proposed for demolition shall be considered for relocation as a means of preservation. Relocation within the same neighborhood or to another compatible neighborhood shall be encouraged.
    7. New development near designated historic landmark structures and sites shall be designed to be compatible with the character of the designated historic resource.
    8. The City shall explore the possibility of establishing a city cultural center which might include a historical museum and an art gallery.
    9. The City shall consider developing and maintaining the Stone Lock as a point of historical interest.
- **Goal G**: To protect West Sacramento's Native American heritage.
  - **Policies:**

1. The City shall refer development proposals that may adversely affect archaeological sites to the California Archaeological Inventory, Northwest Information Center, at Sonoma State University.[1]
2. The City shall not knowingly approve any public or private project that may adversely affect an archaeological site without first consulting the California Archaeological Inventory [*sic*], Northwest Information Center, conducting a site evaluation as may be indicated, and attempting to mitigate any adverse effects according to the recommendations of a qualified archaeologist. City implementation of this policy shall be guided by Appendix K of the State CEQA Guidelines.[2]
3. Archaeological sites shall be protected by means of requirements in development permits requiring on-site monitoring by qualified personnel of excavation work in areas identified as archaeologically sensitive. Development work shall be required to cease in any place where artifacts or skeletal remains have been discovered until these have been examined and evaluated by a qualified archaeologist and arrangements have been made to avoid or otherwise protect valuable resources.

3.8.3 Methods

This IS analyzes whether the project would have the potential to adversely affect existing cultural resources. The identified differences have been examined for their general impact.

CEQA requires an assessment of a project's potential effects on significant historical resources (i.e., those that are listed or eligible for listing in the CRHR or in a local register or survey that meets the requirements of PRC 5020.1[k] and 5024.1[g]). This assessment entails the following steps.

- Identify potential historical resources.
- Evaluate the significance of identified historical resources.
- Evaluate the anticipated effects of a project on all significant historical resources.

Under CEQA, only effects on significant resources are considered potentially significant, so only those impacts require detailed analysis.

To identify potential historical resources, ICF conducted a records search at the applicable Information Centers, consulted the California State Lands Commission Shipwrecks Database, conducted a pedestrian survey and consulted with Native Americans.

3.8.3.1 Records Search

ICF conducted a records search at the North Central Information Center (NCIC) of the California Historical Resources Information System (CHRIS) on March 27, 2014. The NCIC maintains the CHRIS's official records of previous cultural resource studies and known cultural resources in a six-county area that includes Sacramento County. On April 3, 2014, ICF conducted a records search at the Northwest Information center (NWIC). The NWIC maintains the official CHRIS records of

[1] Note: the name of the California Archaeological Inventory has been changed to California Historical Resources Inventory System.
[2] Appendix K no longer applies to cultural resources and the text within the original Appendix K has been stricken from CEQA statutes.

previous cultural resources studies and recorded cultural resources for Yolo County, among other counties.

The records searches consulted the CHRIS base maps of previously recorded cultural resources and previously conducted cultural resources studies for the APE and all areas within ¼-mile of the APE. Additional sources of information, including previously conducted cultural resources surveys and historic maps (USGS and General Land Office), were selectively reviewed to determine areas that have a high potential for the presence of historic-period and prehistoric sites. The following resources were reviewed:

- NRHP and CRHR.
- California Office of Historic Preservation Historic Property Directory (2010).
- California Inventory of Historic Resources (1976).
- California State Historic Landmarks (1996).
- California Points of Historical Interest (1992).
- Historic Properties reference map.

The records searches and literature review identified no previously recorded cultural resources within the APE, and one previously recorded cultural resource within ¼-mile thereof. This previously recorded resource (P-57-000664/CA-YOL-2296H) is a segment of the historic-period Sacramento River North Levee, and is located immediately to the east of the APE. A total of seven previous cultural resources studies have been conducted within ¼-mile of the APE. None of these studies covered any portion of APE. A summary of these previously conducted cultural resources studies is presented in Table 3.8-1.

Table 3.8-1. Previous Cultural Resources Studies Conducted Inside or Within ¼-Mile of the APE

Report#	Date	Author	Report Title
02031	1990	Syda, Keith	Cultural Resources Inventory and Evaluation for Natomas West Assessment District, Sacramento, Sacramento County, California
03469	1997	Peak, Melinda A.	Historic American Engineering Record Reclamation District 1000 HAER NO. CA-187
04206	1990	Bouey, Paul	Intensive Cultural Resources Survey and National Register Evaluation: Sacramento Urban Area Flood Control Project
04411	1992	Beard, Vicki	Archaeological Surface Reconnaissance and Backhoe Testing for the South Natomas Projects, Sacramento County, California
04450	1988	Dowling, Dan	Draft: Environmental Impact Report for Dan Dowling, Et Al Land Division
04452	1972	Cuilla-Mariante, Paulette	Excavation of Site CA-SAC-164
09423	2008	Grant, Joanne S.	Cultural Resources Baseline Literature Review for the Urban Levee Project

3.8.3.2 Shipwrecks Database

In 2009, as part of the cultural resources study for the West Sacramento Levee Improvements Program CHP Academy and The Rivers EIPs 408 Permission (WSLIP EIP) EIS/EIR, ICF consulted the

California State Lands Commission's Shipwrecks Database (2009). The WSLIP EIP project area is located adjacent to the current project area. The purpose of the database consultation was to determine whether historic shipwrecks were present in the vicinity of the WSLIP EIP project area. Because the WSLIP EIP project area is adjacent to the current project area, the results from the database consultation also apply to the current project area. The database was searched by selecting Yolo County in the search field, which generated a list of 12 shipwrecks. The database search yielded latitude and longitude coordinates for 11 of the shipwrecks, which were plotted using an online mapping program to determine whether any of the shipwrecks were in the area. These were found to be far from the WSLIP EIP project area. The wreck of the side-wheel steamer *Alviso*, burned at Brytes Bend on December 15, 1920, may be present in the WSLIP EIP project vicinity (California State Lands Commission 1988:109).

3.8.3.3 Field Survey

On March 25, 2014 an intensive pedestrian survey for the project area was conducted by ICF archaeologists Robin D. Hoffman, MA, RPA, and Johni N. Etheridge, BA. Parallel, 5-meter transects were used to examine the project area. The ground surface was examined for evidence of cultural deposits, and the ground surface was inspected for indications of subsurface deposits. All cultural resources encountered during the survey were recorded, photographed, and mapped using a handheld, survey-grade global positioning system (GPS) receiver.

Virtually all of the project area has been previously disturbed, evidenced by the presence of paved walkways, gravel, and a concrete pad and sitting area. The cutbanks in the project area were examined intensively. Blackberries and poison oak created poor visibility (~10%) in the northeast portion of the project area. A 0.5-meter east-west path was traversed on the south end of the thick vegetation, permitting inspection of voids in the thicket. An existing gravel path runs north-south through the middle of the project area—ground visibility was 100% in this area. To the east and west of the gravel path were areas of moderately dense, low, invasive grasses, which allowed for only 25% visibility. No cultural resources were observed during the survey.

3.8.3.4 Native American Consultation

Native American consultation for this project is ongoing. Native American consultation was initiated on March 25, 2014. An email was sent to the Native American Heritage Commission with a request for a search of its Sacred Lands File and a list of local Native Americans that may have information regarding cultural resources within the project area. No reply was received and a second request was sent on April 22, 2014. A response from NAHC was received on May 7, 2014, which stated that a record search of the sacred land file failed to indicate the present of Native American cultural resources in the immediate project area.

On May 12, 2014, ICF staff sent letters to the Native American contacts on the lists provided by NAHC. Letters were sent to five Native American representatives. The correspondence included a map depicting the project area, a brief description of the proposed project, and a request for the contacts to share any knowledge or concerns they may have regarding cultural resources in or adjacent to the study area. As of the time of this report the Native American representatives have yet to respond to the letters.

3.8.3.5 Summary of Known Cultural Resources

As described above, the NCIC and NWIC records searches, literature review, and the pedestrian survey did not identify any cultural resources within the project area.

Although the project area is not considered sensitive for archaeological resources, there is always the possibility that unrecorded resources could be encountered during ground-disturbing activities

3.8.4 Environmental Effects

This section includes a discussion of each impact as it corresponds to the significance criteria. In accordance with Appendix G of the State CEQA Guidelines, the proposed project would be considered to have a significant effect if it would result in any of the conditions listed below.

- Cause a substantial adverse change in the significance of a historical resource as defined in Section 15064.5.
- Cause a substantial adverse change in the significance of a unique archaeological resource pursuant to Section 21083.2.
- Disturb any human remains, including those interred outside of formal cemeteries.

Impact CUL-1: Cause a substantial adverse change in the significance of a historical resource as defined in Section 15064.5

There are no known cultural resources within the project area and therefore the proposed project would not result in a substantial adverse change in the significance of a historical resource.

Nonetheless, there is always the possibility that buried cultural resources with no surface components are located within the project area. In this case, ground-disturbing activities such as excavation during construction of the VMSE benches may result in inadvertent disturbance to or destruction of buried cultural resources that may qualify as historical resources as defined in CEQA Guidelines Section 15064.5. Although the potential for this impact is low, such an occurrence likely would result in the removal of archaeological features and sites from their context, resulting in damage or destruction of the resource. This loss of information would constitute a substantial adverse change in the significance of the resource under Criterion 4 (or D under Section 106), the resource's capacity to yield information bearing on important research questions. Implementation of Mitigation Measure CUL-1 would reduce this impact to a less-than-significant level.

Mitigation Measure CUL-1: Stop work if cultural resources are encountered during ground-disturbing activities

If buried cultural resources, such as chipped or ground stone, historic debris, or building foundations, are inadvertently discovered during ground-disturbing activities, work will stop in that area and within a 100-foot radius of the find until a qualified archaeologist can assess the significance of the find and, if necessary, develop a response plan with appropriate treatment measures, in consultation with WSAFCA, USACE, SHPO, and other appropriate agencies. Preservation in place shall be the preferred treatment method per State CEQA Guidelines Section 15126.4(b) (avoidance, open space, capping, and easement). Data recovery of important information about the resource, research, or other actions determined during consultation, is

allowed if it is the only feasible treatment method. If the buried cultural resources are within the tide and submerged lands of California, WSAFCA will also consult with CSLC staff.

Impact CUL-2: Cause a substantial adverse change in the significance of a unique archaeological resource pursuant to Section 21083.2

There are no known cultural resources within the project area and therefore the proposed project would not result in a substantial adverse change in the significance of a unique archaeological resource, as defined under Section 21083.2.

Nonetheless, there is always the possibility that buried cultural resources with no surface components are located within the project area. Should that resource meet the criteria for a unique archaeological resource, the disturbance or destruction of that resource would constitute a significant impact. Implementation of Mitigation Measure CUL-1 would reduce this impact to a less-than-significant level.

Impact CUL-3: Disturb any human remains, including those interred outside of formal cemeteries

No human remains are known to be located in or near the project area. However, the possibility always exists that unmarked burials may be unearthed during project construction. This impact is considered potentially significant, but would be reduced to a less-than-significant level by implementing Mitigation Measure CUL-2.

Mitigation Measure CUL-2: Stop work if human remains are encountered during ground-disturbing activities and treat remains in accordance with State Law

If human skeletal remains are encountered, ground-disturbing activities will be stopped within a 100-foot radius of the discovery. The area will be protected with flagging or by posting a monitor or construction worker to ensure that no additional disturbance occurs. If the discovery occurs at the end of the work day, the area must be secured by posting a guard, covering with heavy metal plates (if the human remains are found below grade), covering with other impervious material, or making other provisions to prevent damage to the remains. Upon discovery of any human remains, WSAFCA or its authorized representative must immediately contact the Yolo County (County) coroner (Coroner), who is required to examine the discovery within 48 hours. If the Coroner determines that the remains are Native American, the Coroner is required to contact the NAHC within 24 hours. If the human remains are within the tide and submerged lands of California, WSAFCA will also contact the CSLC. A qualified archaeologist (QA) should also be contacted immediately. The Coroner is required to notify and seek out a treatment recommendation of the NAHC-designated Most Likely Descendant (MLD).

- If NAHC identifies an MLD, the MLD makes a recommendation, and the landowner accepts the recommendation, then ground-disturbing activities may resume after the QA verifies and notifies the County that the recommendations have been completed.
- If NAHC is unable to identify the MLD, or the MLD makes no recommendation, or the landowner rejects the recommendation, and mediation per PRC 5094.98(k) fails, then ground-disturbing activities may resume, but only after the QA verifies and notifies the County that the landowner has completely reinterred the human remains and items associated with Native American burials with appropriate dignity on the property, and

ensures no further disturbance of the site per PRC 5097.98(e) by county recording, open space designation, or a conservation easement.

If the Coroner determines that no investigation of the cause of death is required and that the human remains are not Native American, then ground-disturbing activities may resume, after the Coroner informs the County of such determination. According to State Law, six or more human burials at one location constitute a cemetery and disturbance of Native American cemeteries is a felony (PRC Sections 21083.2, 5094.98, 5097.5, 5097.9; Health and Safety Code Sections. 7050.5, 7052).

3.9 Hydrology and Water Quality

3.9.1 Existing Conditions

3.9.1.1 Surface Water

The water quality of the Sacramento River is good to excellent, with relatively cool water temperatures, low biochemical oxygen demand, medium to high dissolved oxygen, and low mineral and nutrient content. In general, the surface water quality of the Sacramento River is representative of agricultural return flows, urban runoff, and natural sedimentation from scouring.

Clean Water Act (CWA) Section 303(d) establishes the total maximum daily load (TMDL) process to assist in guiding the application of state water quality standards. Section 303(d) requires the states to identify streams in which water quality is impaired (i.e., affected by the presence of pollutants or contaminants) and to establish the TMDL—the maximum quantity of a particular contaminant that a water body can assimilate without experiencing adverse effects. All sections of the Sacramento River are listed on the 303(d) list for unknown toxicity, and the Knights Landing to the Delta section is listed for mercury.

3.9.1.2 Groundwater

The California Department of Water Resources (DWR) delineates groundwater basins throughout California under the state's Groundwater Bulletin 118. The proposed project is located in the Sacramento Valley Groundwater Basin, Yolo Subbasin (Basin No. 5-21.67). Groundwater levels in the Yolo Subbasin are affected by drought, pumping, and reduced surface water discharge. Groundwater quality in the subbasin is characterized as a sodium magnesium, calcium magnesium, or magnesium bicarbonate type (California Department of Water Resources 2004). The quality is considered good for both agricultural and municipal uses, despite the elevated hardness in the basin. The hardness is generally above 180 milligrams per liter calcium carbonate. Selenium and boron are found in high concentrations locally (California Department of Water Resources 2004). Total dissolved solids range from 107 parts per million (ppm) to 1,300 ppm and average 574 ppm based on Title 22 data obtained from public supply wells (California Department of Water Resources 2004).

As described in Section 3.6, *Hazards and Hazardous Materials*, a methyl tertiary butyl ether-impacted groundwater plume has been mapped in the project vicinity. However, an analysis of monitoring well data shows that the plume is located south of the project footprint and would be avoided by the proposed project.

3.9.2 Regulatory Setting

3.9.2.1 Federal

The following federal regulations related to hydrology and water quality may apply to implementation of the proposed project.

Clean Water Act Sections 404, 401, and 303

Section 404

CWA Section 404 regulates the discharge of dredged and fill materials into "waters of the United States," which include oceans, bays, rivers, streams, lakes, ponds, and wetlands. Project proponents must obtain a permit from the U.S. Army Corps of Engineers (USACE) for all discharges of dredged or fill material into waters of the United States before proceeding with a proposed activity. Before any actions that may affect surface waters are implemented, a delineation of jurisdictional waters of the United States must be completed, following USACE protocols, to determine whether the project area contains wetlands or other waters of the United States that qualify for CWA protection.

Section 401

Under federal CWA Section 401, applicants for a federal license or permit to conduct activities that may result in the discharge of a pollutant into waters of the United States must obtain certification 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. Therefore, all projects that have a federal component and may affect state water quality (including projects that require federal agency approval [such as issuance of a Section 404 permit]) also must comply with CWA Section 401. In California, the authority to grant water quality certification has been delegated to the State Water Board, and applications for water quality certification under CWA Section 401 typically are processed by the Regional Water Boards with local jurisdiction. Water quality certification requires evaluation of potential impacts in light of water quality standards and CWA Section 404 criteria governing discharge of dredged and fill materials into waters of the United States.

Section 303

In California, the State Water Board develops the list of water quality–limited segments; the U.S. Environmental Protection Agency approves each state's list. Waters on the list do not meet water quality standards, even after point sources of pollution have installed required pollution control technology. Section 303(d) also establishes the TMDL process to improve water quality in listed waterways.

Rivers and Harbors Appropriation Act of 1899

The River and Harbors Appropriation Act of 1899 addresses activities that involve the construction of dams, bridges, dikes, and other structures across any navigable water, or that place obstructions to navigation outside established federal lines and excavate from or deposit material in such waters. Such activities require permits from USACE.

Section 10

Section 10 (33 U.S. Code U.S.C. 403) prohibits the unauthorized obstruction or alteration of any navigable water of the United States. This section provides that the construction of any structure in or over any navigable water of the United States, or the accomplishment of any other work affecting the course, location, condition, or physical capacity of such waters, is unlawful unless the work has been authorized by the USACE Chief of Engineers.

3.9.2.2 State

The following state regulations related to hydrology and water quality may apply to implementation of the proposed project.

Porter-Cologne Water Quality Control Act of 1969

In 1967, the Porter-Cologne Water Quality Control Act established the State Water Board and nine Regional Water Boards as the primary state agencies with regulatory authority over California water quality and appropriative surface water rights allocations. Under this act (and the CWA), the state is required to adopt a water quality control policy and waste discharge requirements to be implemented by the State Water Board and nine Regional Water Boards. The State Water Board also establishes Water Quality Control Plans (Basin Plans) and statewide plans. The Regional Water Boards carry out State Water Board policies and procedures throughout the state. Basin Plans designate beneficial uses for specific surface water and groundwater resources and establish water quality objectives to protect those uses.

Central Valley Regional Water Quality Control Board

The Regional Water Board is responsible for implementing its Basin Plan (2011) for the Sacramento River and its tributaries. The Basin Plan identifies beneficial uses of the river and its tributaries and water quality objectives to protect those uses. Numerical and narrative criteria are contained in the Basin Plan for several key water quality constituents, including dissolved oxygen, water temperature, trace metals, turbidity, suspended material, pesticides, salinity, radioactivity, and other related constituents.

3.9.2.3 Local

The following local regulations related to hydrology and water quality may apply to implementation of the proposed project.

City of West Sacramento General Plan

The City is in the process of updating the *City of West Sacramento General Plan*, adopted in 1990 and amended in 2004 (City of West Sacramento 2004). The Natural Resources section of the general plan contains a number of goals and policies related to water quality. The following goal from the general plan could apply to the proposed project.

- **Goal A:** To protect water quality in the Sacramento River, Sacramento Deep Water Ship Channel, Lake Washington, and the area's groundwater basin.

City of Sacramento Grading, Erosion, and Sediment Control Ordinance

The City of Sacramento Grading Ordinance sets forth rules and regulations to control land disturbances, landfill, soil storage, pollution, and erosion and sedimentation resulting from construction activities. The ordinance requires that the proponents of projects that involve land grading prepare and implement an erosion and sediment control plan to control accelerated erosion and sedimentation during preconstruction- and construction-related grading, and a postconstruction erosion and sediment control plan to address similar issues once grading is complete.

3.9.3 Environmental Effects

Potential impacts of the proposed project on hydrology and water quality are discussed in the context of State CEQA Guidelines Appendix G checklist items.

a. Violate any water quality standards or waste discharge requirements?

Excavation and equipment staging that would occur during construction of the proposed project would result in substantial ground disturbance in the project area, and heavy machinery would be used within the confines of the Sacramento River. Contamination of riverbank soils could result from construction activities since heavy machinery would be used within the ordinary high water mark (OHWM) of the Sacramento River. Spills of petroleum products and other pollutants related to machinery could occur during vehicle operation, refueling, parking, and maintenance. Improper handling, storage, or disposal of these materials in the vicinity of the Sacramento River could cause degradation of surface water quality if they are eventually washed into the river. Placement of riprap below the waterline would stir up sediment and contribute to downstream sedimentation and would increase turbidity.

In addition to the potential for construction-related pollutants to enter the waterway, soil that is left loosely stockpiled after the completion of construction activities could be washed away and introduced to surface waters if a rain event occurs during construction. Local hydrology could direct soil to the Sacramento River via the concrete swale. However, silt fencing would be set up around the extent of the inwater work to prevent any sediment that may be stirred up during construction from increasing turbidity in the Sacramento River, which would also prevent downstream sedimentation. The toe of the silt fencing would be trenched so that the downslope face of the trench is flat and perpendicular to the line of flow. The fencing would be inspected weekly and repaired as needed, and accumulated silt would be removed when it reaches a depth of 6 inches.

In addition to the silt fencing, WSAFCA or its contractor would monitor turbidity in the Sacramento River during construction, as described in Section 2.2.7.3, *Turbidity Monitoring*. WSAFCA would also require the construction contractor to implement appropriate best management practices (BMPs) that would be used to avoid or minimize impacts on water quality, as described in Section 2.2.7.7, *Construction Best Management Practices*. Implementation of these Environmental Commitments would prevent violations of water quality standards related to sediment and turbidity.

WSAFCA or its contractor would also develop and implement a spill prevention, control, and countermeasure plan (SPCCP), as described in Section 2.2.7.2., *Spill Prevention, Control, and Countermeasure Plan*. Implementation of the SPCCP would minimize or prevent the potential for and effects from spills of hazardous, toxic, or petroleum substances during construction and operation activities. Therefore, there would be no impact related to a violation of any water quality standards or waste discharge requirements.

b. Substantially deplete groundwater supplies or interfere substantially with groundwater recharge, resulting in a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of pre-existing nearby wells would drop to a level that would not support existing land uses or planned uses for which permits have been granted)?

Minimal excavation would be required to repair the erosion site; the groundwater table would not be exposed and no dewatering would be necessary. The proposed project activities would not

involve groundwater extraction or the lowering of the local groundwater table. In addition, construction activities are not likely to interfere substantially with groundwater recharge because construction would occur during the dry season. Therefore, there would be no impact.

c. Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner that would result in substantial erosion or siltation onsite or offsite?

d. Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner that would result in flooding on site or off site?

Ground-disturbing activities that would occur during construction of the proposed project would result in minor alterations to the bank of the Sacramento River. However, these changes are designed to repair an erosion site and prevent future erosion by protecting the bank. The contours of the site would be restored to match upstream and downstream bank contours, which would diffuse the erosive power of sheet flows running off the upland slope and further reduce the potential for erosion.

The instream woody material and willow pole plantings could cause an increase in sediment accumulation or siltation. However, sediment deposition in a live siltation zone would be minimal. Also, the purpose of maintaining the bank material and promoting health of the installed vegetation is to stabilize the bank, which would prevent further erosion from causing downstream siltation. There would be a beneficial effect related to erosion or siltation onsite or offsite, and there would be no increase in the rate or amount of surface runoff in a manner that would result in flooding onsite or offsite.

e. Create or contribute runoff water that would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff?

The proposed project would not alter the capacity of existing or planned stormwater drainage systems. In addition, the proposed project would not provide substantial additional sources of polluted runoff, and all disturbed areas would be revegetated to prevent soil erosion. There would be no impact.

f. Otherwise substantially degrade water quality?

As discussed under checklist item *a*, implementation of the *Turbidity Monitoring*, the *Spill Prevention, Control, and Countermeasure Plan,* and the *Construction Best Management Practices* Environmental Commitments would prevent impacts on water quality. In addition, WSAFCA would follow the terms and conditions of a Section 401 Water Quality Certification, which would substantially reduce the potential for construction-related erosion and sedimentation to adversely affect water quality in Sacramento River. There would be no impact.

g. Place housing within a 100-year flood hazard area, as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map?

The proposed project would not involve the construction of houses. There would be no impact.

h. Place within a 100-year flood hazard area structures that would impede or redirect floodflows?

While the proposed project would not involve the placement of structures within the 100-year flood hazard area, it would place riprap, willow pole plantings, and instream woody material within the 100-year flood hazard area. Potential downstream impacts, such as induced scouring from placement of woody debris structures at the site, would be minimal because the project site is located on the inside of a meander bend where erosion rates are generally lower than on the outside of a meander bend. Risk of scour would be further reduced because the downstream levees have recently been upgraded to current design and engineering standards, increasing their erosion resistance.

The addition of the instream woody material and willow pole plantings, once matured, could increase water surface elevations during floodflows by increasing roughness. However, the erosion site is a barren slope that is recessed from the banks adjacent to it and is in need of repair. Adjacent banks are heavily wooded and contain notable amounts of woody debris. The addition of woody material and willows would result in a site condition that would be no rougher than existing adjacent roughness conditions. At full maturity, the willow stand should present less roughness than the adjacent mature trees due to the pliable nature of the willows. The project site represents 65 feet of bank length, insufficient in length to have an impact on the overall roughness or conveyance of the reach. Also, during flood events, the flow in this reach of the Sacramento River is affected by operation of the Sacramento Weir and discharge from the American River, and flows are significantly less than the flows upstream of the weir and downstream of the American River. Therefore, the proposed project would have no impact related to impeding floodflows or redirecting floodflows.

i. Expose people or structures to a significant risk of loss, injury, or death involving flooding, including flooding as a result of the failure of a levee or dam?

The proposed project would not be located near a levee or dam and would not result in the failure of any levee or dam. No people or structures would be exposed to a significant risk of loss, injury, or death involving flooding. Therefore, there would be no impact.

j. Contribute to inundation by seiche, tsunami, or mudflow?

The proposed project would slightly alter the contours of the riverbank at the project site, but would not involve alterations that would increase susceptibility of surrounding communities to inundation by seiches, tsunamis, or mudflows. Therefore, there would be no impact.

3.10 Mandatory Findings of Significance

State CEQA Guidelines Section 15065 requires a lead agency reach a mandatory finding of significance, and prepare an EIR, where substantial evidence supports a determination that any of the following conditions may occur.

1. The project has the potential to substantially degrade the quality of the environment; substantially reduce the habitat of a fish or wildlife species; cause a fish or wildlife population to drop below self-sustaining levels; threaten to eliminate a plant or animal community; substantially reduce the number or restrict the range of an endangered, rare or threatened species; or eliminate important examples of the major periods of California history or prehistory.
2. The project has the potential to achieve short-term environmental goals to the disadvantage of long-term environmental goals.
3. The project has possible environmental effects that are individually limited but cumulatively considerable.
4. The environmental effects of a project will cause substantial adverse effects on human beings, either directly or indirectly.

Implementation of the proposed project would not result in any mandatory findings of significance. With the mitigation measures described in Chapter 3, *Environmental Setting and Impacts*, all environmental impacts would be reduced to a less-than-significant level. Please refer to individual resource sections in Chapter 3 for a complete discussion of the environmental impacts and associated mitigation.

Chapter 4
Cumulative Impacts

The State CEQA guidelines, Section 15355, define cumulative impacts as "two or more individual effects which, when considered together, are considerable or which compound or increase other environmental impacts." The Rivers Erosion Site project would cause only temporary, short-term construction-related effects on affected resources, as discussed in Chapter 3, *Environmental Setting and Impacts*. Because there are no other known projects in the area planned for construction at the same time as the proposed project, and the project's effects are too transitory to contribute incrementally to the impacts of past and future projects, there would be no potential for the proposed project to cumulatively contribute to any significant cumulative impacts.

Chapter 5
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5.3.10 Section 3.10, Mandatory Findings of Significance

No references cited.

5.4 Chapter 4, Cumulative Impacts

No references cited.

Chapter 6
List of Preparers

This chapter lists the individuals who contributed to the preparation of the initial study. This list is consistent with the requirements set forth in CEQA (Public Resources Code §15129).

6.1 West Sacramento Area Flood Control Agency

Name, Title	Education/Experience	Project Role
Paul Dirksen, Jr.	B.A., Latin American Studies M.S., Planning and Development	Flood Protection Planner, City of West Sacramento
Kenric Jameson, P.G. QSD	B.A., Anthropology/Geology, Licensed Professional Geologist; 12 years' experience	Engineering Geologist, City of West Sacramento
John Powderly	B.S., Electrical Engineering; 7 years' experience	Environmental Project Manager/City of West Sacramento Associate Planner

6.2 ICF International

Name	Education/Experience	Project Role
Chris Elliott	B.S., Landscape Architecture, California Licensed Landscape Architect, Certified Arborist; 18 years' experience	Project Director
Megan Smith	B.A., English, J.D.; 17 years' experience	Project Manager
Andrew Humphrey	B.A., History; 6 years' experience	Hydrology and Water Quality, Public Services, Transportation and Traffic, Hazards and Hazardous Materials
Angela Alcala	B.S., Wildlife, Fisheries, Conservation Biology; 15 years' experience	Biological Resources
Rob Preston	Ph.D., Botany; 23 years' experience	Biological Resources
Bill Mitchell	B.A., Biology; M.S. Fisheries Biology; 26 years' experience	Biological Resources
Dave Buehler	B.S., Civil Engineering; 31 years' experience	Noise
Laura Yoon	M.S., Environmental Management, B.A. Environmental Studies; 6 years' experience	Air Quality and Greenhouse Gas Emissions
Carol-Anne Hicks Castellano	B.S., Environmental and Resource Sciences; 11 years' experience	Publications Specialist
Kristen Lundstrom	B.A., English Literature and Expository Writing; 10 years' experience	Editor

Name	Education/Experience	Project Role
Deb Bartley	B.A., Political Science and International Relations; 14 years' experience	Editor
Senh Saelee	B.S., Visual Communications Design; 13 years' experience	Graphic Designer
Alex Angier	A.A., Computer-Aided Drafting and Design; 7 years' experience	GIS Technician
Jeff Peters	B.A., Geology, M.S. Geography; 15 years' experience	Geology and Soils, Hydrology and Water Quality
Shannon Hatcher	B.S., Environmental Science, B.S., Environmental Health and Safety; 12 years' experience	Air Quality and Greenhouse Gas Emissions

6.3 Other Contributors

Name, Title	Education/Experience	Project Role
Michael Vecchio, P.E.	M.S., Civil Engineering, B.S., Geological Sciences, B.A., English; 13 years' experience	Engineering Lead Designer, HDR (consultant to WSAFCA)
Daniel Teak, P.E.	B.S., Civil Engineering; 4 years' experience	Project Engineer

Appendix A

Environmental Checklist

Appendix A
Environmental Checklist

1. **Project Title:** The Rivers Erosion Site Project
2. **Lead Agency Name and Address:** West Sacramento Area Flood Control Agency
3. **Contact Person and Phone Number:** John Powderly (916/617-4674)
4. **Project Location:** West Sacramento, CA
5. **Project Sponsor's Name and Address:** West Sacramento Area Flood Control Agency
6. **General Plan Designation:** Open Space
7. **Zoning:** Public Open Space
8. **Description of Project:** The project consists of constructing repairs to an erosion site along the right bank of the Sacramento River, on the waterside of the Sacramento River North Levee. The active erosion site is approximately 65 feet long and extends approximately from an elevation of +13 feet North American Vertical Datum of 1988 (NAVD 88) at its base to an elevation of +23 feet NAVD 88 at the top of the erosion site. Proposed repairs include the installation of a scourstop channel at the top of the scarp, placing vegetated mechanically stabilized earth (VMSE) along the erosion site, and constructing a longitudinal stone toe at the base of the site. VMSE is a composite of 12-inch diameter compost socks placed parallel to river flows and stacked in a terraced fashion up the riverbank. The scourstop channel would be placed above the top of the erosion site and down the face of the VMSE to the top of the stone toe to control the discharge point of the concrete swale. Placement of the VMSE would restore the slope of the bank to match the slope upstream and downstream of the erosion site, as well as help to retain soil placed as part of the project. The longitudinal stone toe would retard erosion from fluvial forces, boat wake, and discharged flows from the scourstop channel, and provide a platform to anchor instream woody material. These repairs would address the existing erosion problems, enhance fish habitat values, and prevent future erosion from encroaching on the levee, the levee maintenance road, and the adjacent recreation features.
9. **Surrounding Land Uses and Setting:**

   The project area is bounded to the north by the Sacramento River, and a public park is located to the south. The areas to the east and west are designated as open space.
10. **Other Public Agencies Whose Approval is Required:**

    U.S. Army Corps of Engineers
    U.S. Fish and Wildlife Service
    Central Valley Regional Water Quality Control Board
    California Department of Fish and Wildlife
    Central Valley Flood Protection Board
    California State Historic Preservation Officer
    City of West Sacramento

A.1 Environmental Factors Potentially Affected

The environmental factors checked below would potentially be affected by this project (i.e., the project would involve at least one impact that is a "Potentially Significant Impact"), as indicated by the checklist on the following pages.

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

A.1 Aesthetics

I. Aesthetics	Potentially Significant Impact	Less-than-Significant with Mitigation Incorporated	Less-than-Significant Impact	No Impact
Would the project:				
a. Have a substantial adverse effect on a scenic vista?	☐	☐	☐	☒
b. Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings along a scenic highway?	☐	☐	☐	☒
c. Substantially degrade the existing visual character or quality of the site and its surroundings?	☐	☐	☐	☒
d. Create a new source of substantial light or glare that would adversely affect daytime or nighttime views in the area?	☐	☐	☐	☒

Please refer to Chapter 3 for a complete discussion of the environmental impacts.

A.2 Agricultural and Forestry Resources

II. Agricultural and Forestry Resources	Potentially Significant Impact	Less-than-Significant with Mitigation Incorporated	Less-than-Significant Impact	No Impact
In determining whether impacts on agricultural resources are significant environmental effects, lead agencies may refer to the California Agricultural Land Evaluation and Site Assessment Model (1997) prepared by the California Department of Conservation as an optional model to use in assessing impacts on agriculture and farmland. In determining whether impacts on forest resources, including timberland, are significant environmental effects, lead agencies may refer to information compiled by the California Department of Forestry and Fire Protection regarding the state's inventory of forest land, including the Forest and Range Assessment Project and the Forest Legacy Assessment Project, and forest carbon measurement methodology provided in the Forest Protocols adopted by the California Air Resources Board. Would the project:				
a. Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?	☐	☐	☐	☒
b. Conflict with existing zoning for agricultural use or conflict with a Williamson Act contract?	☐	☐	☐	☒
c. Conflict with existing zoning for, or cause rezoning of forest land (as defined in Public Resources Code Section 12220(g)), timberland (as defined by Public Resources Code Section 4526), or timberland zoned Timberland Production (as defined by Government Code Section 51104(g))?	☐	☐	☐	☒
d. Result in the loss of forest land or conversion of forest land to non-forest use?	☐	☐	☐	☒
e. Involve other changes in the existing environment that, due to their location or nature, could result in conversion of Farmland to non-agricultural use or conversion of forest land to non-forest use?	☐	☐	☐	☒

Please refer to Chapter 3 for a complete discussion of the environmental impacts.

A.3 Air Quality

III. Air Quality	Potentially Significant Impact	Less-than-Significant with Mitigation Incorporated	Less-than-Significant Impact	No Impact
When available, the significance criteria established by the applicable air quality management or air pollution control district may be relied upon to make the following determinations. Would the project:				
a. Conflict with or obstruct implementation of the applicable air quality plan?	☐	☐	☐	☒
b. Violate any air quality standard or contribute substantially to an existing or projected air quality violation?	☐	☐	☒	☐
c. Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is a nonattainment area for an applicable federal or state ambient air quality standard (including releasing emissions that exceed quantitative thresholds for ozone precursors)?	☐	☐	☒	☐
d. Expose sensitive receptors to substantial pollutant concentrations?	☐	☐	☒	☐
e. Create objectionable odors affecting a substantial number of people?	☐	☐	☒	☐

Please refer to Chapter 3 for a complete discussion of the environmental impacts.

A.4 Biological Resources

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

Please refer to Chapter 3 for a complete discussion of the environmental impacts.

A.5 Cultural Resources

V. Cultural Resources	Potentially Significant Impact	Less-than-Significant with Mitigation Incorporated	Less-than-Significant Impact	No Impact
Would the project:				
a. Cause a substantial adverse change in the significance of a historical resource as defined in Section 15064.5?	☐	☒	☐	☐
b. Cause a substantial adverse change in the significance of a unique archaeological resource pursuant to Section 15064.5?	☐	☒	☐	☐
c. Disturb any human remains, including those interred outside of formal cemeteries?	☐	☒	☐	☐

Please refer to Chapter 3 for a complete discussion of the environmental impacts.

A.6 Geology and Soils

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

Please refer to Chapter 3 for a complete discussion of the environmental impacts.

A.7 Greenhouse Gas Emissions

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

Please refer to Chapter 3 for a complete discussion of the environmental impacts.

A.8 Hazards and Hazardous Materials

VIII. Hazards and Hazardous Materials	Potentially Significant Impact	Less-than-Significant with Mitigation Incorporated	Less-than-Significant Impact	No Impact
Would the project:				
a. Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?	☐	☐	☒	☐
b. Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?	☐	☐	☒	☐
c. Emit hazardous emissions or involve handling hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?	☐	☐	☒	☐
d. Be located on a site that is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?	☐	☐	☐	☒
e. Be located within an airport land use plan area or, where such a plan has not been adopted, be within two miles of a public airport or public use airport, and result in a safety hazard for people residing or working in the project area?	☐	☐	☐	☒
f. Be located within the vicinity of a private airstrip and result in a safety hazard for people residing or working in the project area?	☐	☐	☐	☒
g. Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?	☐	☐	☐	☒
h. Expose people or structures to a significant risk of loss, injury, or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands?	☐	☐	☐	☒

Please refer to Chapter 3 for a complete discussion of the environmental impacts.

A.9 Hydrology and Water Quality

IX. Hydrology and Water Quality	Potentially Significant Impact	Less-than-Significant with Mitigation Incorporated	Less-than-Significant Impact	No Impact
Would the project:				
a. Violate any water quality standards or waste discharge requirements?	☐	☐	☒	☐
b. Substantially deplete groundwater supplies or interfere substantially with groundwater recharge, resulting in a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of pre-existing nearby wells would drop to a level that would not support existing land uses or planned uses for which permits have been granted)?	☐	☐	☐	☒
c. Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner that would result in substantial erosion or siltation onsite or offsite?	☐	☐	☐	☒
d. Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner that would result in flooding onsite or offsite?	☐	☐	☐	☒
e. Create or contribute runoff water that would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff?	☐	☐	☐	☒
f. Otherwise substantially degrade water quality?	☐	☐	☒	☐
g. Place housing within a 100-year flood hazard area, as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map?	☐	☐	☐	☒
h. Place within a 100-year flood hazard area structures that would impede or redirect floodflows?	☐	☐	☐	☒
i. Expose people or structures to a significant risk of loss, injury, or death involving flooding, including flooding as a result of the failure of a levee or dam?	☐	☐	☐	☒
j. Contribute to inundation by seiche, tsunami, or mudflow?	☐	☐	☐	☒

Please refer to Chapter 3 for a complete discussion of the environmental impacts.

A.10 Land Use and Planning

X. Land Use and Planning		Potentially Significant Impact	Less-than-Significant with Mitigation Incorporated	Less-than-Significant Impact	No Impact
Would the project:					
a.	Physically divide an established community?	☐	☐	☐	☒
b.	Conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project (including, but not limited to, a general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect?	☐	☐	☐	☒
c.	Conflict with any applicable habitat conservation plan or natural community conservation plan?	☐	☐	☐	☒

Please refer to Chapter 3 for a complete discussion of the environmental impacts.

A.11 Mineral Resources

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

Please refer to Chapter 3 for a complete discussion of the environmental impacts.

A.12 Noise

XII. Noise		Potentially Significant Impact	Less-than-Significant with Mitigation Incorporated	Less-than-Significant Impact	No Impact
Would the project:					
a.	Expose persons to or generate noise levels in excess of standards established in a local general plan or noise ordinance or applicable standards of other agencies?	☐	☒	☐	☐
b.	Expose persons to or generate excessive groundborne vibration or groundborne noise levels?	☐	☐	☒	☐
c.	Result in a substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project?	☐	☐	☐	☒
d.	Result in a substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project?	☐	☒	☐	☐
e.	Be located within an airport land use plan area, or, where such a plan has not been adopted, within two miles of a public airport or public use airport and expose people residing or working in the project area to excessive noise levels?	☐	☐	☐	☒
f.	Be located in the vicinity of a private airstrip and expose people residing or working in the project area to excessive noise levels?	☐	☐	☐	☒

Please refer to Chapter 3 for a complete discussion of the environmental impacts.

A.13 Population and Housing

XIII. Population and Housing	Potentially Significant Impact	Less-than-Significant with Mitigation Incorporated	Less-than-Significant Impact	No Impact
Would the project:				
a. Induce substantial population growth in an area, either directly (e.g., by proposing new homes and businesses) or indirectly (e.g., through extension of roads or other infrastructure)?	☐	☐	☐	☒
b. Displace a substantial number of existing housing units, necessitating the construction of replacement housing elsewhere?	☐	☐	☐	☒
c. Displace a substantial number of people, necessitating the construction of replacement housing elsewhere?	☐	☐	☐	☒

Please refer to Chapter 3 for a complete discussion of the environmental impacts.

A.14 Public Services

XIV. Public Services	Potentially Significant Impact	Less-than-Significant with Mitigation Incorporated	Less-than-Significant Impact	No Impact
Would the project:				
a. Result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities or a 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 following public services:				
Fire protection?	☐	☐	☐	☒
Police protection?	☐	☐	☐	☒
Schools?	☐	☐	☒	☐
Parks?	☐	☐	☐	☒
Other public facilities?	☐	☐	☐	☒

Please refer to Chapter 3 for a complete discussion of the environmental impacts.

A.15 Recreation

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

Please refer to Chapter 3 for a complete discussion of the environmental impacts.

A.16 Transportation/Traffic

XVI. Transportation/Traffic	Potentially Significant Impact	Less-than-Significant with Mitigation Incorporated	Less-than-Significant Impact	No Impact
Would the project:				
a. Conflict with an applicable plan, ordinance, or policy establishing measures of effectiveness for the performance of the circulation system, taking into account all modes of transportation, including mass transit and non-motorized travel and relevant components of the circulation system, including, but not limited to, intersections, streets, highways and freeways, pedestrian and bicycle paths, and mass transit?	☐	☐	☐	☒
b. Conflict with an applicable congestion management program, including, but not limited to, level-of-service standards and travel demand measures or other standards established by the county congestion management agency for designated roads or highways?	☐	☐	☒	☐
c. Result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks?	☐	☐	☐	☒
d. Substantially increase hazards because of a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?	☐	☐	☐	☒
e. Result in inadequate emergency access?	☐	☐	☒	☐
f. Conflict with adopted policies, plans, or programs regarding public transit, bicycle or pedestrian facilities, or otherwise decrease the performance or safety of such facilities?	☐	☐	☐	☒

Please refer to Chapter 3 for a complete discussion of the environmental impacts.

A.17 Utilities and Service Systems

XVII. Utilities and Service Systems	Potentially Significant Impact	Less-than-Significant with Mitigation Incorporated	Less-than-Significant Impact	No Impact
Would the project:				
a. Exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board?	☐	☐	☐	☒
b. Require or result in the construction of new water or wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?	☐	☐	☐	☒
c. Require or result in the construction of new stormwater drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?	☐	☐	☐	☒
d. Have sufficient water supplies available to serve the project from existing entitlements and resources, or would new or expanded entitlements be needed?	☐	☐	☐	☒
e. Result in a determination by the wastewater treatment provider that 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?	☐	☐	☐	☒
f. Be served by a landfill with sufficient permitted capacity to accommodate the project's solid waste disposal needs?	☐	☐	☒	☐
g. Comply with federal, state, and local statutes and regulations related to solid waste?	☐	☐	☐	☒

Please refer to Chapter 3 for a complete discussion of the environmental impacts.

A.18 Mandatory Findings

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

Please refer to Chapter 3 for a complete discussion of the environmental impacts.

Appendix B

California Natural Diversity Database (CNDDB) Results

Selected Elements by Scientific Name

California Department of Fish and Wildlife

California Natural Diversity Database

Query Criteria: Quad is (Sacramento West (3812155) or Davis (3812156) or Grays Bend (3812166) or Sacramento East (3812154) or Rio Linda (3812164) or Taylor Monument (3812165) or Florin (3812144) or Clarksburg (3812145) or Saxon (3812146))

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Accipiter cooperii Cooper's hawk	ABNKC12040	None	None	G5	S3	WL
Agelaius tricolor tricolored blackbird	ABPBXB0020	None	None	G2G3	S2	SSC
Ammodramus savannarum grasshopper sparrow	ABPBXA0020	None	None	G5	S2	SSC
Antrozous pallidus pallid bat	AMACC10010	None	None	G5	S3	SSC
Archoplites interruptus Sacramento perch	AFCQB07010	None	None	G2G3	S1	SSC
Ardea alba great egret	ABNGA04040	None	None	G5	S4	
Ardea herodias great blue heron	ABNGA04010	None	None	G5	S4	
Astragalus tener var. ferrisiae Ferris' milk-vetch	PDFAB0F8R3	None	None	G2T1	S1	1B.1
Astragalus tener var. tener alkali milk-vetch	PDFAB0F8R1	None	None	G2T2	S2	1B.2
Athene cunicularia burrowing owl	ABNSB10010	None	None	G4	S2	SSC
Atriplex cordulata var. cordulata heartscale	PDCHE040B0	None	None	G3T2	S2	1B.2
Atriplex depressa brittlescale	PDCHE042L0	None	None	G2	S2	1B.2
Atriplex joaquinana San Joaquin spearscale	PDCHE041F3	None	None	G2	S2	1B.2
Branchinecta conservatio Conservancy fairy shrimp	ICBRA03010	Endangered	None	G1	S1	
Branchinecta lynchi vernal pool fairy shrimp	ICBRA03030	Threatened	None	G3	S2S3	
Branchinecta mesovallensis midvalley fairy shrimp	ICBRA03150	None	None	G2	S2	
Buteo regalis ferruginous hawk	ABNKC19120	None	None	G4	S3S4	WL
Buteo swainsoni Swainson's hawk	ABNKC19070	None	Threatened	G5	S2	
Carex comosa bristly sedge	PMCYP032Y0	None	None	G5	S2	2B.1

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Charadrius alexandrinus nivosus western snowy plover	ABNNB03031	Threatened	None	G3T3	S2	SSC
Charadrius montanus mountain plover	ABNNB03100	None	None	G3	S2?	SSC
Chloropyron palmatum palmate-bracted salty bird's-beak	PDSCR0J0J0	Endangered	Endangered	G1	S1	1B.1
Cicindela hirticollis abrupta Sacramento Valley tiger beetle	IICOL02106	None	None	G5TH	SH	
Coccyzus americanus occidentalis western yellow-billed cuckoo	ABNRB02022	Proposed Threatened	Endangered	G5T3Q	S1	
Cuscuta obtusiflora var. glandulosa Peruvian dodder	PDCUS01111	None	None	G5T4T5	SH	2B.2
Desmocerus californicus dimorphus valley elderberry longhorn beetle	IICOL48011	Threatened	None	G3T2	S2	
Downingia pusilla dwarf downingia	PDCAM060C0	None	None	GU	S2	2B.2
Egretta thula snowy egret	ABNGA06030	None	None	G5	S4	
Elanus leucurus white-tailed kite	ABNKC06010	None	None	G5	S3	FP
Elderberry Savanna Elderberry Savanna	CTT63440CA	None	None	G2	S2.1	
Emys marmorata western pond turtle	ARAAD02030	None	None	G3G4	S3	SSC
Falco columbarius merlin	ABNKD06030	None	None	G5	S3	WL
Fritillaria agrestis stinkbells	PMLIL0V010	None	None	G3	S3.2	4.2
Gratiola heterosepala Boggs Lake hedge-hyssop	PDSCR0R060	None	Endangered	G2	S2	1B.2
Great Valley Cottonwood Riparian Forest Great Valley Cottonwood Riparian Forest	CTT61410CA	None	None	G2	S2.1	
Hibiscus lasiocarpos var. occidentalis woolly rose-mallow	PDMAL0H0R3	None	None	G5T2	S2	1B.2
Juglans hindsii Northern California black walnut	PDJUG02040	None	None	G1	S1	1B.1
Lasionycteris noctivagans silver-haired bat	AMACC02010	None	None	G5	S3S4	
Lasiurus cinereus hoary bat	AMACC05030	None	None	G5	S4?	
Legenere limosa legenere	PDCAM0C010	None	None	G2	S2.2	1B.1

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Lepidium latipes var. heckardii Heckard's pepper-grass	PDBRA1M0K1	None	None	G4T2	S2	1B.2
Lepidurus packardi vernal pool tadpole shrimp	ICBRA10010	Endangered	None	G3	S2S3	
Lilaeopsis masonii Mason's lilaeopsis	PDAPI19030	None	Rare	G2	S2	1B.1
Linderiella occidentalis California linderiella	ICBRA06010	None	None	G3	S2S3	
Melospiza melodia song sparrow ("Modesto" population)	ABPBXA3010	None	None	G5	S3?	SSC
Myrmosula pacifica Antioch multilid wasp	IIHYM15010	None	None	GH	SH	
Navarretia leucocephala ssp. bakeri Baker's navarretia	PDPLM0C0E1	None	None	G4T2	S2	1B.1
Neostapfia colusana Colusa grass	PMPOA4C010	Threatened	Endangered	G2	S2	1B.1
Northern Claypan Vernal Pool Northern Claypan Vernal Pool	CTT44120CA	None	None	G1	S1.1	
Northern Hardpan Vernal Pool Northern Hardpan Vernal Pool	CTT44110CA	None	None	G3	S3.1	
Nycticorax nycticorax black-crowned night heron	ABNGA11010	None	None	G5	S3	
Oncorhynchus tshawytscha chinook salmon - Central Valley spring-run ESU	AFCHA0205A	Threatened	Threatened	G5	S1	
Oncorhynchus tshawytscha chinook salmon - Sacramento River winter-run ESU	AFCHA0205B	Endangered	Endangered	G5	S1	
Phalacrocorax auritus double-crested cormorant	ABNFD01020	None	None	G5	S3	WL
Plagiobothrys hystriculus bearded popcornflower	PDBOR0V0H0	None	None	G2	S2	1B.1
Plegadis chihi white-faced ibis	ABNGE02020	None	None	G5	S1	WL
Pogonichthys macrolepidotus Sacramento splittail	AFCJB34020	None	None	G2	S2	SSC
Progne subis purple martin	ABPAU01010	None	None	G5	S3	SSC
Riparia riparia bank swallow	ABPAU08010	None	Threatened	G5	S2S3	
Sagittaria sanfordii Sanford's arrowhead	PMALI040Q0	None	None	G3	S3	1B.2
Spirinchus thaleichthys longfin smelt	AFCHB03010	Candidate	Threatened	G5	S1	SSC

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Symphyotrichum lentum Suisun Marsh aster	PDASTE8470	None	None	G2	S2	1B.2
Taxidea taxus American badger	AMAJF04010	None	None	G5	S4	SSC
Thamnophis gigas giant garter snake	ARADB36150	Threatened	Threatened	G2G3	S2S3	
Trifolium hydrophilum saline clover	PDFAB400R5	None	None	G2	S2	1B.2
Tuctoria mucronata Crampton's tuctoria or Solano grass	PMPOA6N020	Endangered	Endangered	G1	S1	1B.1
Vireo bellii pusillus least Bell's vireo	ABPBW01114	Endangered	Endangered	G5T2	S2	
Xanthocephalus xanthocephalus yellow-headed blackbird	ABPBXB3010	None	None	G5	S3S4	SSC

Record Count: 68

Appendix C

U.S. Fish and Wildlife (USFWS) Species

U.S. Fish & Wildlife Service
Sacramento Fish & Wildlife Office

Federal Endangered and Threatened Species that Occur in or may be Affected by Projects in the SACRAMENTO WEST (513D) U.S.G.S. 7 1/2 Minute Quad

Database last updated: September 18, 2011
Report Date: March 6, 2014

Listed Species

Invertebrates

Branchinecta lynchi
vernal pool fairy shrimp (T)

Desmocerus californicus dimorphus
valley elderberry longhorn beetle (T)

Lepidurus packardi
vernal pool tadpole shrimp (E)

Fish

Acipenser medirostris
green sturgeon (T) (NMFS)

Hypomesus transpacificus
Critical habitat, delta smelt (X)
delta smelt (T)

Oncorhynchus mykiss
Central Valley steelhead (T) (NMFS)
Critical habitat, Central Valley steelhead (X) (NMFS)

Oncorhynchus tshawytscha
Central Valley spring-run chinook salmon (T) (NMFS)
Critical Habitat, Central Valley spring-run chinook (X) (NMFS)
Critical habitat, winter-run chinook salmon (X) (NMFS)
winter-run chinook salmon, Sacramento River (E) (NMFS)

Amphibians

Ambystoma californiense
California tiger salamander, central population (T)

Rana draytonii

Rana draytonii
California red-legged frog (T)

Reptiles
Thamnophis gigas
giant garter snake (T)

Birds
Vireo bellii pusillus
Least Bell's vireo (E)

Key:

- (E) Endangered - Listed as being in danger of extinction.
- (T) Threatened - Listed as likely to become endangered within the foreseeable future.
- (P) Proposed - Officially proposed in the Federal Register for listing as endangered or threatened.
- (NMFS) Species under the Jurisdiction of the National Oceanic & Atmospheric Administration Fisheries Service. Consult with them directly about these species.
- Critical Habitat - Area essential to the conservation of a species.
- (PX) Proposed Critical Habitat - The species is already listed. Critical habitat is being proposed for it.
- (C) Candidate - Candidate to become a proposed species.
- (V) Vacated by a court order. Not currently in effect. Being reviewed by the Service.
- (X) Critical Habitat designated for this species

Appendix D

California Native Plant Society's (CNPS) Inventory Search

CNPS California Native Plant So Rare and Endangered Plant Inventory

Plant List

27 matches found. *Click on scientific name for details*

Search Criteria

Found in 9 Quads around 38121E5

Scientific Name	Common Name	Family	Lifeform	Rare Plant Rank	State Rank	Global Rank
Astragalus pauperculus	depauperate milk-vetch	Fabaceae	annual herb	4.3	S3.3	G3
Astragalus tener var. ferrisiae	Ferris' milk-vetch	Fabaceae	annual herb	1B.1	S1	G2T1
Astragalus tener var. tener	alkali milk-vetch	Fabaceae	annual herb	1B.2	S2	G2T2
Atriplex cordulata var. cordulata	heartscale	Chenopodiaceae	annual herb	1B.2	S2	G3T2
Atriplex depressa	brittlescale	Chenopodiaceae	annual herb	1B.2	S2	G2
Atriplex joaquinana	San Joaquin spearscale	Chenopodiaceae	annual herb	1B.2	S2	G2
Carex comosa	bristly sedge	Cyperaceae	perennial rhizomatous herb	2B.1	S2	G5
Centromadia parryi ssp. rudis	Parry's rough tarplant	Asteraceae	annual herb	4.2	S3.2	G3T3
Chloropyron palmatum	palmate-bracted bird's-beak	Orobanchaceae	annual herb (hemiparasitic)	1B.1	S1	G1
Cuscuta obtusiflora var. glandulosa	Peruvian dodder	Convolvulaceae	annual vine (parasitic)	2B.2	SH	G5T4T5
Downingia pusilla	dwarf downingia	Campanulaceae	annual herb	2B.2	S2	GU
Fritillaria agrestis	stinkbells	Liliaceae	perennial bulbiferous herb	4.2	S3.2	G3
Gratiola heterosepala	Boggs Lake hedge-hyssop	Plantaginaceae	annual herb	1B.2	S2	G2
Hesperevax caulescens	hogwallow starfish	Asteraceae	annual herb	4.2	S3.2	G3
Hibiscus lasiocarpos var. occidentalis	woolly rose-mallow	Malvaceae	perennial rhizomatous herb	1B.2	S2	G5T2
Juglans hindsii	Northern California black walnut	Juglandaceae	perennial deciduous tree	1B.1	S1	G1
Legenere limosa	legenere	Campanulaceae	annual herb	1B.1	S2.2	G2
Lepidium latipes var. heckardii	Heckard's pepper-grass	Brassicaceae	annual herb	1B.2	S2	G4T2
Lilaeopsis masonii	Mason's lilaeopsis	Apiaceae	perennial rhizomatous herb	1B.1	S2	G2
Myosurus minimus ssp.	little mousetail	Ranunculaceae	annual herb	3.1	S2.2	G5T2Q

apus						
Navarretia leucocephala ssp. bakeri	Baker's navarretia	Polemoniaceae	annual herb	1B.1	S2	G4T2
Neostapfia colusana	Colusa grass	Poaceae	annual herb	1B.1	S2	G2
Plagiobothrys hystriculus	bearded popcorn-flower	Boraginaceae	annual herb	1B.1	S2	G2
Sagittaria sanfordii	Sanford's arrowhead	Alismataceae	perennial rhizomatous herb	1B.2	S3	G3
Symphyotrichum lentum	Suisun Marsh aster	Asteraceae	perennial rhizomatous herb	1B.2	S2	G2
Trifolium hydrophilum	saline clover	Fabaceae	annual herb	1B.2	S2	G2
Tuctoria mucronata	Crampton's tuctoria or Solano grass	Poaceae	annual herb	1B.1	S1	G1

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Appendix E

Modeling Assumptions and Calculations

Table 1. Offroad assumptions

Equipment	# Day	Hrs/Day	Days	HP	LF	pounds per day						Tons per year						MT/Year			
						ROG	NOX	CO	PM10	PM2.5	SO2	ROG	NOX	CO	PM10	PM2.5	SO2	CO2	CH4	N2O	CO2e
Excavator	1	8	12	163	0.38	0.43	5.09	3.45	0.25	0.23	0.01	0.003	0.03	0.02	0.00	0.00	0.00	3.07	0.00	0.00	3
Rubber Tired Loader	1	8	12	200	0.36	2.69	7.75	9.87	0.86	0.79	0.01	0.016	0.05	0.06	0.01	0.00	0.00	3.96	0.00	0.00	4
Rubber Tired Dozer	1	8	12	255	0.4	1.30	14.34	4.88	0.71	0.65	0.01	0.008	0.09	0.03	0.00	0.00	0.00	5.09	0.00	0.00	5
Plate Compactor	1	8	12	8	0.42	0.04	0.25	0.21	0.01	0.01	0.00	0.000	0.00	0.00	0.00	0.00	0.00	0.18	0.00	0.00	0

Table 2. Onroad assumptions

Vehicle Type	RT/Day	Mi/trip	pounds per day						tons per year						metric tons per year				
			ROG	NOX	CO	PM10	PM2.5	SO2	ROG	NOX	CO	PM10	PM2.5	SO2	CO2	CH4	N2O	Other	CO2e
Employee Vehicle	5	24.8	0.01	0.04	0.52	0.00	0.00	0.00	0.0	0.0	0.0	0.0	0.0	0.0	0.50			0.03	0.53
Haul Truck (Excavation)	18	26	0.29	10.14	1.30	0.16	0.15	0.02	0.0	0.0	0.0	0.0	0.0	0.0	0.80	0.00	0.00		0.81
Haul Truck (Demolition)	1	26	0.02	0.56	0.07	0.01	0.01	0.00	0.0	0.0	0.0	0.0	0.0	0.0	0.04	0.00	0.00		0.04

Excavation Assumptions

Excavation hours/day	8
PM10 (lbs/day)	3.80
PM2.5 (lbs/day)	0.95
PM10 (tons/year)	0.023
PM2.5 (tons/year)	0.006

Demolition Assumptions

Tons concrete	5.6
PM10 (lbs/day)	0.13
PM2.5 (lbs/day)	0.02
PM10 (tons/year)	0.001
PM2.5 (tons/year)	0.000

Road Dust Assumptions

Pollutant	Variables					EF (lbs per VMT)
	k	sL	W	P	N	
PM_{10}	0.0022	0.1	2.4	54	365	0.00064
$PM_{2.5}$	0.00054	0.1	2.4	54	365	0.00016

E = particulate emission factor (grams of particulate matter/VMT)
k = particle size multiplier (lb/VMT) *default from AP-42*
sL = roadway silt loading (g/m2) *Caleemod Default*
W = average weight of vehicles on the road (tons) *Caleemod Default*
P = number of wet days with at least 0.254mm of precipitation *Caleemod Default for Yolo County*
N = number of days in the averaging period *annual days (365)*

Vehicle Type	VMT	PM10	PM2.5 (pounds per day)
Employee Vehicle	124	0.08	0.02
Haul Truck	494	0.31	0.08

Vehicle Type	VMT	PM10	PM2.5 (tons per year)
Employee Vehicle	1,488	0.00	0.00
Haul Truck	494	0.00	0.00

Appendix F

Mitigation, Monitoring, and Reporting Plan for The Rivers Erosion Site Project

Appendix F

Mitigation, Monitoring, and Reporting Plan for The Rivers Erosion Site Project

Description of Measure	Implementation Schedule	Responsible Party
Aesthetics		
No mitigation required.		
Agriculture and Forestry Resources		
No mitigation required.		
Air Quality		
No mitigation required.		
Biological Resources		
BIO-MM-1: Establish Buffers around Elderberry Shrubs	Prior to and during construction	WSAFCA
BIO-MM-2: Conduct Mandatory Contractor/Worker Awareness Training for Construction Personnel	Prior to construction	WSAFCA
BIO-MM-3: Conduct Preconstruction Surveys for Western and Pacific Pond Turtles and Exclude Turtles from the Work Area	1 week and 48 hours prior to construction	WSAFCA
BIO-MM-4: Conduct Preconstruction Nesting Bird Surveys	Between June 10 and July 30, and within 48 hours prior to construction	WSAFCA
Cultural Resources		
CUL-MM-1: Stop Work, Assess Resource Significance, and Mitigate If Needed	During construction	WSAFCA
CUL-MM-2: Stop Work and Treat Remains in Accordance with State Laws	During construction	WSAFCA
Geology and Soils		
No mitigation required.		
Greenhouse Gas Emissions		
No mitigation required.		
Hazards		
No mitigation required.		
Hydrology and Water Quality		
No mitigation required.		
Land Use and Planning		
No mitigation required.		
Mineral Resources		
No mitigation required.		
Noise		
No mitigation required.		

Description of Measure	Implementation Schedule	Responsible Party
Population and Housing		
No mitigation required.		
Public Services		
No mitigation required.		
Recreation		
No mitigation required.		
Transportation and Traffic		
No mitigation required.		
Utilities and Service Systems		
No mitigation required		
Growth-Inducement		
No mitigation required.		
Cumulative		
No mitigation required.		