

Mitigation Monitoring and Reporting Program for the  
North Sacramento Streams,  
Sacramento River East Levee, Lower American River,  
and Related Flood Improvements Project



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Prepared for:



**AECOM**

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Mitigation Monitoring and Reporting Program for the  
**North Sacramento Streams,  
Sacramento River East Levee, Lower American River,  
and Related Flood Improvements Project**



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## ACRONYMS AND OTHER ABBREVIATIONS

°F	degrees Fahrenheit
ARB	Air Resources Board
BMP	best management practice
Caltrans	California Department of Transportation
CCR	California Code of Regulations
CDFW	California Department of Fish and Wildlife
CESA	California Endangered Species Act
CEQA	California Environmental Quality Act
CMP	Corridor Management Plan
CWA	Clean Water Act
EIR	environmental impact report
ESA	Endangered Species Act
I-5	Interstate 5
MLD	Most Likely Descendant
MMP	mitigation and monitoring plan
mph	miles per hour
MT CO <sub>2</sub> e	metric tons CO <sub>2</sub> -equivalents
NAHC	Native American Heritage Commission
NCSC	natural communities of special concern
NEMDC	Natomas East Main Drainage Canal
NMFS	National Marine Fisheries Service
NOI	notice of intent
NO <sub>x</sub>	nitric oxide
NPDES	National Pollution Discharge Elimination System
OSHA	Occupational Safety & Health Administration
PG&E	Pacific Gas and Electric Company
PM	particulate matter
PM <sub>10</sub>	PM equal to or less than 10 micrometers in diameter
PPV	Peak Particle Velocity
PRC	Public Resources Code
proposed project	North Sacramento Streams, Sacramento River East Levee, Lower American River, and Related Flood Improvements Project
RWQCB	Regional Water Quality Control Board
SAFCA	Sacramento Area Flood Control Agency
SMAQMD	Sacramento Metropolitan Air Quality Management District

SPCP	spill prevention and control plan
SR	State Route
SRA	shaded riverine aquatic
SRCSA	Sacramento Regional County Sanitation District
SWPPP	Storm Water Pollution Prevention Plan
TNBC	The Natomas Basin Conservancy
ULDC	Urban Levee Design Criteria
U.S. 50	U.S. Highway 50
USACE	U.S. Army Corps of Engineers'
USFWS	U.S. Fish and Wildlife Service
VdB	vibration decibels

# MITIGATION MONITORING AND REPORTING PROGRAM

In accordance with the California Environmental Quality Act (CEQA), Sacramento Area Flood Control Agency (SAFCA) prepared an Environmental Impact Report (EIR) to provide the public and responsible and trustee agencies with information about the potential environmental effects associated with the construction and operation of the North Sacramento Streams, Sacramento River East Levee, Lower American River, and Related Flood Improvements Project (hereafter referred to as the “proposed project”).

The EIR concludes that implementation of the proposed project would generate significant and potentially significant adverse environmental impacts. The EIR prescribes feasible mitigation capable of reducing these impacts.

Section 21081.6 of the California Public Resources Code and California Code of Regulations (CCR) Sections 15091(d) and 15097 of the State CEQA Guidelines, require a public agency to adopt a reporting and monitoring program for changes that it has adopted and incorporated into the project, at the time of approval, to mitigate, avoid, or reduce significant effects on the physical environment. These conditions are also referred to as mitigation measures.

The Mitigation Monitoring and Reporting Program is to be used by SAFCA to ensure that adopted mitigation measures identified in the EIR are implemented and that their implementation is documented. The Mitigation Monitoring and Reporting Program is presented in tabular format.

The table columns contain the following information:

**Mitigation Number:** Lists the mitigation measures by number, as designated in the EIR.

**Mitigation Measure:** Provides the text of the mitigation measures, each of which has been adopted and incorporated into the project.

**Timing/Schedule:** Lists the time frame in which the mitigation measure is expected to take place.

**Implementation Responsibility:** Identifies the entity responsible for complying with the requirements of the mitigation measure.

**Completion of Implementation:** SAFCA is responsible for reporting on implementation of the mitigation measures. The “Action” column is to be used by SAFCA to describe the action(s) taken to complete implementation. The “Date Completed” column is to be used by SAFCA to indicate when implementation of the mitigation measure has been completed. SAFCA, at its discretion, may delegate implementation responsibility or portions thereof to qualified consultants or contractors.

<b>Mitigation Monitoring and Reporting Program for the North Sacramento Streams, Sacramento River East Levee, Lower American River, and Related Flood Improvements Project</b>					
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<b>Agriculture and Forestry Resources</b>					
AG-1	<p><b>Avoid Disruption of Existing Agricultural Operations During Construction Activities and Minimize Important Farmland Conversion to the Extent Feasible.</b></p> <p>SAFCA shall implement the measures listed below with regard to Prime Farmland to minimize construction-related impacts on these lands:</p> <ul style="list-style-type: none"> <li>• Construction activities shall be undertaken in an expedient fashion, and associated construction equipment storage and staging areas shall be located outside of the agricultural fields to the extent possible.</li> <li>• If it is necessary to locate staging areas on active farmland, the construction contractor shall coordinate with the agricultural landowners in the areas that will be temporarily disturbed to determine a location and time where construction should occur to minimize damage to agricultural operations.</li> <li>• If damage or destruction does occur to active farmland, these areas shall be returned to preconstruction conditions. This could include activities such as soil preparation, regrading, and reseeded.</li> <li>• To the extent practicable and feasible, when Conservation Strategy activities occur on agricultural land, the most productive topsoil shall be salvaged and redistributed to less-productive areas that may benefit from introduction of good-quality soil. By agreement between the implementing agencies or landowners of affected properties and the recipient(s) of the topsoil, the recipient(s) shall be required to use the topsoil for agricultural purposes. SAFCA shall implement all terms and conditions of agreements.</li> <li>• By agreement between SAFCA and Sacramento County for woodland planting sites within unincorporated Sacramento County and the TNBC for the Riego North site, acquire agricultural conservation easements at a 1:1 ratio (i.e., 1 acre on which easements are acquired to 1 acre of Important Farmland removed from agricultural use) that provide in-kind or similar resource value protection. These lands will be held by land trusts or local governments who will be responsible for maintaining these lands in agricultural use.</li> </ul>	Minimize loss of Important Farmland and reuse topsoil before the start of construction activities and acquire conservation easements after the acreage of Important Farmland permanently converted has been determined	Sacramento Area Flood Control Agency		

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<b>AG-2a</b>	<p><b>Implement Conservation Strategy Enhancements of Arcade Creek Habitats.</b></p> <p>SAFCA shall plant native shade trees along the NEMDC/Steelhead Creek channel banks to mitigate for the habitat value of the approximately 0.65 acre of Fremont cottonwood forest and approximately 1.1 acres of valley oak woodland lost. The NEMDC/Steelhead Creek CMP revegetation plan will involve planting two parallel rows of large tree species, primarily valley oaks, on both banks of the low-flow channel in locations within NEMDC/Steelhead Creek where shallow ponds and mudflats of water primrose have been drained and shrub thickets of sandbar willow and red sesbania have been removed to reduce roughness.</p>	Upon restoration of the low-flow channel in NEMDC/Steelhead Creek	SAFCA		
<b>AG-2b</b>	<p><b>Implement Conservation Strategy Enhancements of Sacramento River Riparian Habitats.</b></p> <p>SAFCA shall plant valley oaks and other native riparian trees and shrubs in close proximity to the Sacramento River in up to 10 acres of existing wild oat grassland which cause gaps in the woodland canopy on high benches between the waterside levee slope and the upper banks of the Sacramento River to mitigate for the loss of approximately 5.4 acres of Fremont cottonwood forest and valley oak woodland. SAFCA shall increase the overall patch size of existing, isolated riparian and oak woodland groves by enlarging the contiguous size of one or more groves, and by creating connecting woodland corridors across gaps between existing groves.</p>	Upon completion of levee accreditation improvements along levee reaches	SAFCA		
<b>Air Quality</b>					
<b>AIR-1a</b>	<p><b>Implement Sacramento Metropolitan Air Quality Management District's Basic Construction Emission Control Practices.</b></p> <p>SMAQMD requires that all projects, regardless of their significance, implement the following measures to minimize the generation of fugitive PM dust. The Basic Construction Emission Control Practices shall include measures to control fugitive PM dust pursuant to SMAQMD Rule 403, as well as measures to reduce construction-related exhaust emissions. SAFCA shall require its contractors to comply with the following basic construction emission control practices for all construction-related activities occurring in SMAQMD jurisdiction</p>	Ongoing during construction activities	SAFCA and Construction Contractors		

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	<ul style="list-style-type: none"> <li>• Water all exposed surfaces two times daily or more, as needed. Exposed surfaces include, but are not limited to soil piles, graded areas, unpaved parking areas, staging areas, and access roads.</li> <li>• Cover, or suitably wet soils and other materials on haul trucks transporting soil, sand, or other loose material on the site. Cover any haul trucks that will be traveling along freeways or major roadways.</li> <li>• Use wet power vacuum street sweepers to remove any visible trackout mud or dirt onto adjacent public roads at least once a day. Use of dry power sweeping is prohibited.</li> <li>• Limit vehicle speed on unpaved roads to 15 mph.</li> <li>• Complete pavement of all roadways, driveways, sidewalks, parking lots to be paved as soon as possible. In addition, lay building pads as soon as possible after grading unless seeding or soil binders are used.</li> <li>• Minimize idling time either by shutting equipment off when not in use or reducing the time of idling to 5 minutes (required by California Code of Regulations, Title 13, Sections 2449[d][3] and 2485). Provide clear signage that posts this requirement for workers at the entrances to the site.</li> <li>• Maintain all construction equipment in proper working condition according to manufacturer’s specifications. Have the equipment checked by a certified mechanic and determined to be running in proper condition before it is operated.</li> </ul>				
<b>AIR-1b</b>	<p><b>Implement Sacramento Metropolitan Air Quality Management District Enhanced Fugitive PM Dust Control Practices.</b></p> <p>SMAQMD recommends that construction projects that would exceed or contribute to the concentration-based threshold for PM<sub>10</sub> to implement the Enhanced Fugitive PM Dust Control Practices as applicable to the project. Because the construction activities would involve substantial material movement activities and would be located in proximity of residential receptors, SAFCA shall require its construction contractors to implement the following Enhanced Fugitive PM Dust Control Practices to help reduce potential fugitive PM dust emissions.</p>	Ongoing during construction activities	SAFCA and Construction Contractors		



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	<p><u>Soil Disturbance Areas:</u></p> <ul style="list-style-type: none"> <li>Water exposed soil with adequate frequency for continued moist soil. However, do not overwater to the extent that sediment flows off the site.</li> <li>Suspend excavation, grading, and/or demolition activity when wind speeds exceed 20 mph.</li> <li>Install wind breaks (e.g., plant trees, solid fencing) on windward side(s) of construction areas.</li> <li>Plant vegetative ground cover (fast germinating native grass seed) in disturbed areas as soon as possible. Water appropriately until vegetation is established.</li> </ul> <p><u>Unpaved Roads (Entrained Road Dust):</u></p> <ul style="list-style-type: none"> <li>Install wheel washers for all exiting trucks, or wash off all trucks and equipment leaving the site.</li> <li>Treat site accesses to a distance of 100 feet from the paved road with a 6- to 12-inch layer of wood chips, mulch, or gravel to reduce generation of road dust and road dust carryout onto public roads.</li> <li>Post a publicly visible sign with the telephone number and person to contact at SAFCA regarding dust complaints. This person will respond and take corrective action within 48 hours. The phone number of SMAQMD also will be visible to ensure compliance.</li> </ul>				
AIR-1c	<p><b>Use SMAQMD’s Enhanced Exhaust Control Practices for Construction Equipment.</b></p> <p>As shown above in <b>Table 4.4-4</b>, maximum daily construction-related NO<sub>x</sub> emissions would exceed SMAQMD’s construction threshold of significance. A majority of the construction-related NO<sub>x</sub> emissions are generated from off-road construction equipment. Therefore, Mitigation Measure AIR-1c requires that off-road construction equipment use SMAQMD’s Enhanced Exhaust Control Practices.</p> <ul style="list-style-type: none"> <li>The construction contractor shall submit to SAFCA and SMAQMD a comprehensive inventory of all off-road construction equipment, equal to or greater than 50 horsepower, that will be used an aggregate of 40 or more hours during any portion of the construction project.</li> </ul>	Ongoing during construction activities	SAFCA and Construction Contractors		

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	<ul style="list-style-type: none"> <li>The inventory shall include the horsepower rating, engine model year, and projected hours of use for each piece of equipment. The construction contractor shall provide the anticipated construction timeline including start date, and name and phone number of the project manager and on-site foreman. This information shall be submitted at least 4 business days prior to the use of subject heavy-duty off-road equipment. The SMAQMD Equipment List Form can be used to submit this information. The inventory shall be updated and submitted monthly throughout the duration of the project, except that an inventory shall not be required for any 30-day period in which no construction activity occurs.</li> <li>The construction contractor shall provide a plan for approval by SAFCA and SMAQMD demonstrating that the heavy-duty off-road vehicles (50 horsepower or more) to be used in the construction project, including owned, leased, and subcontractor vehicles, will achieve a project wide fleet-average 20 percent NO<sub>x</sub> reduction and 45 percent particulate reduction compared to the most recent California Air Resources Board (ARB) fleet average. This plan shall be submitted in conjunction with the equipment inventory. Acceptable options for reducing emissions may include use of late model engines, low-emission diesel products, alternative fuels, engine retrofit technology, after-treatment products, and/or other options as they become available.</li> <li>SMAQMD's Construction Mitigation Calculator can be used to identify an equipment fleet that achieves this reduction. The construction contractor shall ensure that emissions from all off-road diesel powered equipment used on the project site do not exceed 40 percent opacity for more than 3 minutes in any 1 hour. Any equipment found to exceed 40 percent opacity (or Ringelmann 2.0) shall be repaired immediately. Non-compliant equipment will be documented and a summary provided to SAFCA and SMAQMD monthly. A visual survey of all in-operation equipment shall be made at least weekly. A monthly summary of the visual survey results shall be submitted throughout the duration of the project, except that the monthly summary shall not be required for any 30-day period in which no construction activity occurs. The monthly summary shall include the quantity and type of vehicles surveyed as well as the dates of each survey.</li> </ul>				

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<b>AIR-1d</b>	<p><b>Use Sacramento Metropolitan Air Quality Management District’s Off-Site Mitigation Fee to Reduce NO<sub>x</sub> Emissions.</b></p> <p>As shown in <b>Table 4.4-4</b>, even with inclusion of Mitigation Measures AIR-1a, AIR-1b, and AIR-1c, maximum daily construction emissions would continue to exceed SMAQMD’s threshold of significance. Therefore, if the projected construction-related emissions exceed the NO<sub>x</sub> threshold of significance based on the equipment inventory, SAFCA shall contribute to SMAQMD’s off-site mitigation fee program sufficiently to offset the amount by which the proposed project’s NO<sub>x</sub> emissions exceed the threshold of 85 lb per day. The determination of the final mitigation fee shall be conducted in coordination with SMAQMD before any ground disturbance occurs for any phase of project construction. All mitigation fees shall be paid prior to allowing SMAQMD to obtain emissions reductions for the proposed project. If there are changes to construction activities (e.g., equipment lists, increased equipment usage or schedules), SAFCA shall work with SMAQMD to ensure emission calculations and fees are adjusted appropriately. Thus, as noted above, if construction activities associated with North Sacramento Streams Levee Improvement area were to extend into year 2017 and overlap with Sacramento River East Levee Improvements area construction activities, those potential changes in maximum daily emissions would be calculated and reflected in the off-site mitigation fee paid to SMAQMD.</p>	Prior to ground disturbance	SAFCA		
<b>Biological Resources – Fisheries</b>					
<b>BIO-F1</b>	<p><b>Implement Conservation Strategy to Protect Fishes and Enhance Streamside Riparian Corridors.</b></p> <p>SAFCA shall implement the following measure, as part of the Conservation Strategy, to protect fishes and enhance streamside riparian corridors that contribute to aquatic habitat during and following project construction:</p> <ul style="list-style-type: none"> <li>• <b>SSF-1: Conduct In-Water Construction Work Within In-Water Work Windows (June-October).</b> In-water construction activities shall be conducted within in-water work windows to avoid impacts to critical salmonid life stages (juvenile rearing, and juvenile and adult passage), typically from June through October.</li> </ul>	During and after construction	SAFCA		

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	<ul style="list-style-type: none"> <li>• <b>SSF-2: Avoid SRA Habitat to the Maximum Extent Practicable and Temporarily Fence and Designate SRA Habitat as Environmentally Sensitive.</b> Natural woody riparian and/or SRA habitat shall be avoided to the maximum extent practicable. Habitat to be avoided shall be temporarily fenced and designated as environmentally sensitive areas. These areas shall be avoided by all construction personnel.</li> <li>• <b>SSF-3: Install Screens on Any Construction-Related Water Pump Intakes Located on Waterways with Salmonids.</b> Screens shall be installed on any construction-related water pump intakes located on waterways with salmonids in accordance with current salmonid screening specifications of NMFS and CDFW.</li> <li>• <b>CM-10: Prepare and Implement a Storm Water Pollution Prevention Plan.</b> A SWPPP that identifies specific best management practices to avoid and minimize impacts on water quality during construction activities shall be prepared and implemented for each construction contract.</li> <li>• <b>CM-11: Install, Monitor, and Maintain Erosion Control Measures that Minimize Soil or Sediment from Entering Waterways or Wetlands.</b> Erosion control measures that minimize soil or sediment from entering waterways and wetlands shall be installed, monitored for effectiveness, and maintained throughout construction operations.</li> <li>• <b>CM-13: Avoid Use of Materials in Locations Where it Can Erode from Normal or Expected High Flows.</b> No material shall be placed in a manner or location where it can be eroded by normal or expected high flows.</li> <li>• <b>CM-14: Implement Precautionary Measures to Minimize Turbidity/Siltation during Construction.</b> Precautions to minimize turbidity/siltation shall be implemented during construction. This may require placing barriers (e.g., silt curtains) to prevent silt and/or other deleterious materials from entering downstream reaches.</li> <li>• <b>CM-15: Inspect Sediment and Turbidity Control Barriers Daily during Construction for Proper Function and Replace Immediately if Not Functioning Effectively.</b> Performance of sediment and turbidity control barriers shall be inspected at least once each day during construction to check that they are functioning properly. Should a control barrier not function effectively, it shall be immediately repaired or replaced. Additional controls shall be installed as necessary.</li> </ul>				

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	<ul style="list-style-type: none"> <li>• <b>CM-16: Remove Sediment from Sediment Controls and Dispose of Properly.</b> Sediment shall be removed from sediment controls once the sediment has reached 1/3 of the exposed height of the control. Sediment collected in these devices shall be disposed of away from the collection site at designated upland disposal sites.</li> <li>• <b>CM-17: Treat Water with Silt or Mud from Construction Activities to Prevent it from Entering Live Waterways.</b> Water containing mud or silt from construction activities shall be treated by filtration, or retention in a settling pond, adequate to prevent muddy water from entering live waterways.</li> <li>• <b>CM-18: Treat All Disturbed Soils with Appropriate Erosion Control.</b> All disturbed soils shall undergo appropriate erosion control treatment (e.g., sterile straw mulching, seeding, planting) prior to the end of the construction season, or prior to November 1, whichever comes first.</li> <li>• <b>CM-22: Use Safer Alternative Products to Protect Streams and Other Waters.</b> Every reasonable precaution shall be exercised to protect streams and other waters from pollution with fuels, oils, and other harmful materials. Safer alternative products (such as biodegradable hydraulic fluids) shall be used where feasible.</li> <li>• <b>CM-23: Prevent Any Contaminated Construction By-Products from Entering Flowing Waters; Collect and Transport Such By-Products to An Authorized Disposal Area.</b> Petroleum products, chemicals, fresh cement, and construction by-products containing, or water contaminated by, any such materials shall not be allowed to enter flowing waters and shall be collected and transported to an authorized upland disposal area.</li> <li>• <b>CM-24: Prevent Hazardous Petroleum or Other Substances Hazardous to Aquatic Life from Contaminating the Soil or Entering Waters of the State or U.S.</b> Gas, oil, other petroleum products, or any other substances that could be hazardous to aquatic life and resulting from project-related activities, shall be prevented from contaminating the soil and/or entering waters of the State and/or waters of the U.S.</li> <li>• <b>CM-25: Prepare and Implement a Spill Prevention and Control Plan.</b> A written spill prevention and control plan (SPCP) shall be prepared and implemented. The SPCP and all material necessary for its implementation shall be accessible on-site prior to initiation of project construction and</li> </ul>				

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	<p>throughout the construction period. The SPCP shall include a plan for the emergency cleanup of any spills of fuel or other material. Employees/ construction workers shall be provided the necessary information from the SPCP to prevent or reduce the discharge of pollutants from construction activities to waters and to use the appropriate measures should a spill occur. In the event of a spill, work shall stop immediately and the California Department of Fish and Wildlife (CDFW), U.S. Fish and Wildlife Service (USFWS), National Marine Fisheries Service (NMFS), Central Valley Regional Water Quality Control Board (RWQCB), and USACE shall be notified within 24 hours.</p> <ul style="list-style-type: none"> <li>• <b>CM-26: Properly Maintain All Construction Vehicles and Equipment and Inspect Daily for Leaks; Remove and Repair Equipment/Vehicles with Leaks.</b> Construction vehicles and equipment shall be properly maintained to prevent contamination of soil or water from external grease and oil or from leaking hydraulic fluid, fuel, oil, and grease. Vehicles and equipment shall be checked daily for leaks. If leaks are found, the equipment shall be removed from the site and shall not be used until the leaks are repaired.</li> <li>• <b>CM-27: Refuel and Service Equipment at Designated Refueling and Staging Areas.</b> Equipment shall be refueled and serviced at designated refueling and staging sites located on the crown or landside of the levee and at least 50 feet from active stream channels or other water bodies. All refueling, maintenance, and staging of equipment and vehicles shall be conducted in a location where a spill shall not drain directly toward aquatic habitat. Appropriate containment materials shall be installed to collect any discharge, and adequate materials for spill cleanup shall be maintained on-site throughout the construction period.</li> <li>• <b>CM-28: Store Heavy Equipment, Vehicles, and Supplies at Designated Staging Areas.</b> All heavy equipment, vehicles, and supplies shall be stored at the designated staging areas at the end of each work period.</li> <li>• <b>CM-29: Install an Impermeable Membrane Between the Ground and Any Hazardous Material in Construction Storage Areas.</b> Storage areas for construction material that contains hazardous or potentially toxic materials shall have an impermeable membrane between the ground and the hazardous material and shall be bermed as necessary to prevent the discharge of pollutants to groundwater and runoff water.</li> </ul>				

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North Sacramento Streams, Sacramento River East Levee, Lower American River, and Related Flood Improvements Project**

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	<ul style="list-style-type: none"> <li>• <b>CM-30: Use Water Trucks to Control Fugitive Dust during Construction.</b> Water (e.g., trucks, portable pumps with hoses) shall be used to control fugitive dust during temporary access road construction.</li> <li>• <b>CM-31: Use Only Nontoxic Materials and Materials with No Coatings or Treatments Deleterious to Aquatic Organisms For Placement in Any Waters.</b> All materials placed in streams, rivers, or other waters shall be nontoxic and shall not contain coatings or treatments or consist of substances deleterious to aquatic organisms that may leach into the surrounding environment in amounts harmful to aquatic organisms.</li> <li>• <b>CM-32: Clean Construction Vehicles and Equipment Used Within the Stream Channel Before Arrival at the Project Construction Areas, and Inspect Vehicles/Equipment to Ensure They Are Free of Soil, Debris, and Nonnative Aquatic Species.</b> Construction vehicles and equipment operated within the channel margins (high water line) shall be cleaned of mud and other debris with a scrub brush and dry, or pressure-washed with hot (&gt;140 degrees Fahrenheit [°F]) water, before arrival at the project construction areas and prior to transporting the equipment to another stream or watershed. All equipment operated within the channel margins shall be carefully inspected for signs of aquatic invasive species, including mussels and plant materials, with special attention paid to shaded, sheltered, and protected areas which might contain standing water and areas that form ‘edges’ or ‘right angles,’ such as tracks, feet, and/or tires. If vehicles or equipment are found to be contaminated with non-native invasive species, vehicles and equipment shall be stored in a dry location for at least one week prior to transport to a different stream or watershed, or alternatively, will be pressure-washed with hot (&gt;140°F) water after each use. All water shall be drained from watercraft, including motor cooling system and bilge, and allow to dry as thoroughly as possible prior to entering a new stream or watershed. Large vessels and barges transported via the stream channel shall be contracted from nearby locations or shall undergo similar hull-cleaning prior to use for the project. Watercraft transported from distant areas, including barges, shall not release bilge water into the project area, unless screened to prohibit fish, plant, or other animal transport.</li> </ul>				

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	<p>In addition to the specific measures, the Conservation Strategy identifies several types of habitat improvements to be implemented. SAFCA shall implement improvements from the Conservation Strategy, including:</p> <ul style="list-style-type: none"> <li>• To replace habitat loss due to tree removal required during levee improvements, native riparian trees shall be planted to fill gaps in the riparian woodland corridor in the Sacramento River East Levee area.</li> <li>• To replace habitat loss following levee improvement construction and vegetation management tree removal, riparian trees and shrubs shall be planted on recontoured middle and upper bank slopes in natural soil, and low rock-lined benches with soil-filled trenches with native riparian trees, shrubs, and herbaceous species.</li> <li>• To increase SRA habitat quality under low summer/fall river stage, tule and buttonbush would be planted along the shoreline</li> <li>• Following construction, native wetland vegetation (e.g., Santa Barbara sedge, Baltic rush) shall be planted along the banks of Arcade Creek, and two parallel rows of large riparian tree species (e.g., valley oak) shall be planted on both banks of the low-flow channel.</li> <li>• To replace habitat loss due to high-hazard tree removal, native riparian trees shall be planted to fill existing gaps in the oak and riparian woodland corridor.</li> <li>• To replace vegetation removed as part of the vegetation management element within the Beach Lake Levee, gaps within the riparian corridor shall be filled, or, in coordination with the SRCSD, an area within the nearby Upper Beach Lake Wildlife Area shall be identified where riparian vegetation could be planted to mitigate for hazard tree removal along the Beach Lake Levee (see Exhibit 3-26 in Chapter 3, "Project Description").</li> <li>• To minimize water quality impairment at and downstream of construction sites: a storm water pollution prevention plan shall be developed; construction related erosion shall be controlled; precautions shall be taken to minimize turbidity/siltation during construction and from construction equipment; precautions shall be taken to protect streams and other waters from construction pollutants, including the use of safer alternative products (such as biodegradable hydraulic fluids).</li> </ul>				



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<b>BIO-F2</b>	<p><b>Develop and Implement an Approved Fish Rescue Plan to Capture and Relocate Stranded Fish.</b></p> <p>To minimize fish mortality due to stranding, a fish rescue plan shall be prepared by SAFCA for approval by State and Federal fish agencies (i.e., CDFW, USFWS, and NMFS) and implemented during the period when borrow sites or other off-channel depressions contain water due to flooding or high-flow events. Development of the fish rescue plan shall include consideration of numerous sampling methods (i.e., seines, electrofishing, and traps) and events, as required by the fish agencies. Fish would be captured alive and transported to nearby suitable habitat for release. The fish rescue would occur under the direction of CDFW.</p>	Prepare prior to periods when borrow sites or off-channel depressions contain water	SAFCA		
<b>Biological Resources – Terrestrial</b>					
<b>BIO-1</b>	<p><b>Implement Conservation Strategy Measures to Avoid, Minimize, Compensate, and Reduce Impacts and Offset Loss of Special-status Plants.</b></p> <p>SAFCA shall implement the following measures to avoid, minimize, and, if necessary, compensate for direct impacts to and loss of special-status plants during project construction:</p> <ul style="list-style-type: none"> <li>• <b>SSP-1: Clean Construction Vehicles and Equipment Inside/Out at an Authorized Washing Facility Before Arrival at the Project Construction Areas, and Inspect Vehicles/Equipment to Ensure They Are Free of Soil and Debris and Nonnative Plant Seeds, Roots, or Rhizomes.</b> Construction vehicles and equipment shall be cleaned inside and out at an authorized washing facility before arrival at the project construction areas and shall be inspected in an attempt to ensure they are free of soil and debris that could harbor nonnative plant seeds, roots, or rhizomes. If invasive or noxious weeds are already present in portions of the project areas, vehicles shall be cleaned before moving from infested areas to areas that are weed free. Exterior cleaning shall consist of pressure washing vehicles and equipment, with close attention paid to the tracks, feet, and/or tires and on all elements of the undercarriage. Vehicle cabs shall be swept out, and refuse shall be disposed at an approved off-site location.</li> </ul>	Before, during, and after construction	SAFCA		

<b>Mitigation Monitoring and Reporting Program for the            North Sacramento Streams, Sacramento River East Levee, Lower American River, and Related Flood Improvements Project</b>					
Mitigation Number	Mitigation Measure	Timing/Schedule	Implementation Responsibility	Completion of Implementation	
				Action	Date Completed
	<ul style="list-style-type: none"> <li>• <b>SSP-2: Use Certified Weed-Free Vegetative Materials for All Imported Materials.</b> All imported straw used in project activities shall be certified weed-free.</li> <li>• <b>SSP-3: Conduct Preconstruction Special-Status Surveys during the Blooming Period within 25 Feet of Areas of Project Disturbance within 5 Years of Ground-Disturbing Activities.</b> Preconstruction special-status plant surveys shall be conducted by a qualified botanist in suitable habitat to determine the occurrence of special-status plant populations within 25 feet of areas of project disturbance. Surveys shall be conducted at an appropriate time of year during which the species are likely to be detected, generally during the blooming period. Surveys shall be conducted within 5 years prior to initial ground-disturbing activities.</li> <li>• <b>SSP-4: Mark Special-Status Plant Populations and Occupied Habitat in the Field for Avoidance during Construction Activities and Include a Habitat Buffer of a Minimum of 25 Feet.</b> If special-status plant populations are detected and if those plants can be avoided during project implementation, a qualified botanist shall clearly mark the special-status plant populations and occupied habitat in the field for avoidance during construction activities. The avoidance area shall include a habitat buffer. The buffer width shall be determined by a qualified botanist based on site-specific conditions, but shall be a minimum of 25 feet.</li> </ul> <p>If habitat occupied by special-status plants cannot be avoided during project construction, an appropriate and feasible mitigation plan to compensate for direct loss of special-status plants shall be developed and provided to CDFW for approval. The plan shall detail appropriate compensation measures determined through consultation with CDFW, methods for implementation, success criteria, monitoring and reporting protocols, and contingency measures to be implemented if the initial mitigation fails. Implementation methods may include salvaging and transplanting individual plants, collecting the seeds of affected plants, and collecting and translocating seed- and rhizome-containing mud. Compensation also may include preserving in perpetuity other known populations of these species in the project vicinity at ratios of or greater than 1 to 1. The plan shall be developed in consultation with and approved by CDFW before construction activities begin in areas containing special-status plant species.</p>				

Mitigation Monitoring and Reporting Program for the North Sacramento Streams, Sacramento River East Levee, Lower American River, and Related Flood Improvements Project					
Mitigation Number	Mitigation Measure	Timing/Schedule	Implementation Responsibility	Completion of Implementation	
				Action	Date Completed
	If it is determined that implementation of a project element would result in take of State-listed plant species, despite implementation of avoidance and minimization measures, authorization under CESA for said take shall be obtained. All measures developed through consultation with CDFW shall be implemented, to mitigate adverse effects.				
<b>BIO-2</b>	<p><b>Implement Conservation Strategy Measures to Avoid, Minimize, and Compensate for Direct and Indirect Effects to Habitat for Vernal Pool Invertebrates.</b></p> <p>SAFCA shall implement the following measures to avoid, minimize, and, if necessary, compensate for potential adverse effects on vernal pool invertebrates during project construction:</p> <ul style="list-style-type: none"> <li>• <b>VPC-1: Provide Suitable Vernal Pool Crustacean Habitat with Protective Buffers, to the Extent Feasible, and Temporarily Fence and Designate the Buffers as Environmental Sensitive Areas.</b> Suitable habitat for vernal pool crustaceans shall be provided with protective buffers, to the extent feasible. The size and shape of the buffers shall depend on the local topography and potential for project activities to affect hydrology of the habitat. All buffers shall be temporarily fenced and designated as environmentally sensitive areas. These areas shall be avoided by all construction personnel.</li> <li>• <b>VPC-2: Monitor All Construction Activities in Sensitive Biological Resources to Ensure that Avoidance and Minimization Measures Are Being Properly Implemented and Stop Construction Activities that Threaten Unauthorized Project Impacts.</b> A qualified biologist shall monitor all construction activities in sensitive biological resource areas to ensure that avoidance and minimization measures are being properly implemented and no unauthorized activities occur. The biological monitor shall be empowered to stop construction activities that threaten to cause unanticipated and/or unauthorized project impacts. Project activity shall not resume until the conflict has been resolved.</li> </ul>	Before and during construction	SAFCA		

<b>Mitigation Monitoring and Reporting Program for the North Sacramento Streams, Sacramento River East Levee, Lower American River, and Related Flood Improvements Project</b>					
Mitigation Number	Mitigation Measure	Timing/Schedule	Implementation Responsibility	Completion of Implementation	
				Action	Date Completed
	<p>If suitable habitat for vernal pool invertebrates cannot be avoided during project construction, an appropriate and feasible mitigation plan shall be developed and provided to USFWS for approval. Compensation for direct impacts may include preserving, enhancing, and/or creating vernal pool habitat at an on- or off-site location. Appropriate mitigation ratios would be determined in coordination with USFWS; ratios typically required by USFWS include 3 acres of habitat preservation and 1 acre of habitat creation for each acre of habitat loss and 2 acres of habitat preservation and 1 acre of habitat creation for each acre of habitat that is indirectly affected. If habitat creation is proposed, the mitigation plan shall include methods for implementation, success criteria, monitoring and reporting protocols, and contingency measures to be implemented if the initial mitigation fails. Alternatively, purchasing credits at a USFWS-approved mitigation bank may be identified as appropriate mitigation.</p> <p>If it is determined that implementation of a project element would result in take of Federally listed vernal pool invertebrates, despite implementation of avoidance and minimization measures, authorization for take of vernal pool invertebrates under the Federal ESA shall be obtained. All measures developed through consultation with USFWS shall be implemented, to mitigate adverse effects.</p>				
<b>BIO-3</b>	<p><b>Implement Conservation Strategy Measures to Avoid, Minimize, and Compensate for Direct and Indirect Effects to Valley Elderberry Longhorn Beetle Habitat.</b></p> <p>SAFCA shall implement the following measures to avoid, minimize, and, if necessary, compensate for potential adverse effects on valley elderberry longhorn beetle during project construction:</p> <ul style="list-style-type: none"> <li>• <b>VELB-1: Temporarily Fence All Elderberry Shrubs Adjacent to Construction Areas and Designate the Area as Environmentally Sensitive.</b> All elderberry shrubs that are located adjacent to construction areas, but can be avoided, shall be temporarily fenced and designated as environmentally sensitive areas. These areas shall be avoided by all construction personnel. Fencing shall be placed at least 20 feet from the dripline of each shrub, unless otherwise approved by USFWS.</li> </ul>	Before, during, and after construction	SAFCA		

Mitigation Monitoring and Reporting Program for the North Sacramento Streams, Sacramento River East Levee, Lower American River, and Related Flood Improvements Project					
Mitigation Number	Mitigation Measure	Timing/Schedule	Implementation Responsibility	Completion of Implementation	
				Action	Date Completed
	<ul style="list-style-type: none"> <li>• <b>VELB-2: Prohibit Use of Pesticides or Chemicals within 100 Feet of Elderberry Shrubs.</b> No insecticides, herbicides, or other chemicals that might harm the beetle or its host plant shall be used within 100 feet of the elderberry shrubs.</li> <li>• <b>VELB-3: Water At Least Twice a Day any Dirt Roadways and Disturbed Areas within 100 Feet of Elderberry Shrubs.</b> Dirt roadways and disturbed areas within 100 feet of elderberry shrubs shall be watered at least twice a day to minimize dust emissions.</li> <li>• <b>VELB-4: Transplant Elderberry Shrubs Requiring Removal to Riparian Habitat Creation Areas, or Alternative Transplant Areas.</b> Elderberry shrubs that require removal shall be transplanted to the riparian habitat creation areas. If none of the areas of suitable habitat to be created as part of the proposed project would be available before the impact would occur, alternative transplant locations shall be identified. Transplant activities shall be conducted in accordance with USFWS guidelines.</li> <li>• If impacts on elderberry shrubs cannot be avoided, develop an appropriate and feasible mitigation plan and provide to USFWS for approval. The plan would include transplanting shrubs that require removal to a conservation area and planting additional seedlings or cuttings at a ratio ranging from 1:1 to 1:6, depending on the number of stems greater than or equal to 1 inch in diameter and whether beetle exit holes are found on the shrubs on site (USFWS 1999). The mitigation plan shall specify how to manage the elderberry transplant area to ensure that the appropriate habitat conditions are provided. At a minimum, the plan shall describe requirements for transplanting shrubs; specify the number of replacement elderberry shrubs and associated native plants to be established and associated success criteria; specify remedial measures to be undertaken if survival success criteria are not met; and describe short- and long-term maintenance and management.</li> <li>• If it is determined that implementation of a project element would result in take of this Federally listed species, despite implementation of avoidance and minimization measures, consultation with USFWS shall be required and an incidental take authorization may be required. All measures developed through consultation with USFWS shall be implemented, to mitigate adverse effects.</li> </ul>				

<b>Mitigation Monitoring and Reporting Program for the North Sacramento Streams, Sacramento River East Levee, Lower American River, and Related Flood Improvements Project</b>					
Mitigation Number	Mitigation Measure	Timing/Schedule	Implementation Responsibility	Completion of Implementation	
				Action	Date Completed
<b>BIO-4</b>	<p><b>Implement Conservation Strategy Measures to Avoid, Minimize, and Compensate for Effects to Giant Garter Snake</b></p> <p>SAFCA shall implement the following measures to avoid, minimize, and, if necessary, compensate for potential adverse effects on giant garter snake during project construction.</p> <ul style="list-style-type: none"> <li>• <b>GG-1: Avoid Construction Activities within 200 Feet from the Banks of Suitable Giant Garter Snake Habitat and Confine Movement of Heavy Equipment to Existing Roadways, Where Feasible in These Areas.</b> To the extent possible, construction activities shall be avoided within 200 feet from the banks of suitable giant garter snake habitat. Movement of heavy equipment in these areas shall be confined to existing roadways, where feasible, to minimize habitat disturbance.</li> <li>• <b>GG-2: Temporarily Fence and Designate Suitable Giant Garter Snake Habitat to be Avoided as an Environmentally Sensitive Area.</b> Suitable giant garter snake habitat to be avoided within or adjacent to construction areas shall be temporarily fenced and designated as environmentally sensitive areas. These areas shall be avoided by all construction personnel.</li> <li>• <b>GG-3: Limit Ground Disturbance within 200 Feet of Suitable Giant Garter Snake Habitat and Conduct Activities Between May 1 and October 1.</b> Unless Authorized by USFWS. Unless authorized by USFWS, construction and other ground-disturbing activities within 200 feet of suitable aquatic habitat for the giant garter snake shall not commence before May 1, with initial ground disturbance expected to correspond with the snake’s active season (as feasible in combination with minimizing disturbance of nesting Swainson’s hawks). Initial ground disturbance shall be completed by October 1.</li> <li>• <b>GG-4: Ensure that Suitable Giant Garter Snake Aquatic Habitat that is Dewatered Remains Dry for 15 Consecutive Days after April 15 and if Not Possible, Potential Snake Prey is Removed.</b> Any suitable giant garter snake aquatic habitat that is dewatered shall remain dry for at least 15 consecutive days after April 15 and before excavating or filling of the dewatered habitat. If complete dewatering is not possible, potential snake prey (e.g., fish and tadpoles) shall be removed so that snakes and other wildlife are not attracted to the construction area.</li> </ul>	Before, during, and after construction	SAFCA		

<b>Mitigation Monitoring and Reporting Program for the North Sacramento Streams, Sacramento River East Levee, Lower American River, and Related Flood Improvements Project</b>					
Mitigation Number	Mitigation Measure	Timing/Schedule	Implementation Responsibility	Completion of Implementation	
				Action	Date Completed
	<ul style="list-style-type: none"> <li>• <b>GG5-5: Conduct a Preconstruction Survey within 200 Feet of Suitable Giant Garter Snake Habitat Within 24 Hours Before Commencement of Ground-Disturbing Activities.</b> Within 24 hours before the commencement of ground-disturbing activities, areas within 200 feet of suitable giant garter snake habitat shall be surveyed for giant garter snakes by a qualified biologist. The biologist shall provide USFWS with written documentation of the monitoring efforts within 48 hours after the survey is completed. The project area shall be reinspected by a qualified biologist whenever a lapse in construction activity of 2 weeks or greater has occurred.</li> <li>• <b>GG5-6: Allow Snakes to Leave the Construction Area on Their Own and Notify USFWS and CDFW Immediately if a Giant Garter Snake is Found On Site.</b> No snakes shall be harassed, harmed, or killed, and they shall be allowed to leave the construction area on their own volition. If any snake is observed retreating into an underground burrow within the project limits, a 50-foot radius nondisturbance buffer zone shall be established until a qualified biologist determines that the snake is not a giant garter snake or the snake has left the area. The biologist shall notify USFWS and CDFW immediately if a giant garter snake is found on-site, and shall submit a report, including date(s), location(s), habitat description, and any corrective measures taken to protect the snake.</li> <li>• <b>GG5-7: Restore All Suitable Giant Garter Snake Habitat Subject to Temporary Ground Disturbance to Preproject Conditions.</b> After construction activities are complete, all suitable giant garter snake habitat subject to temporary ground disturbances, including storage and staging areas and temporary roads, shall be restored to preproject conditions. These areas shall be recontoured, if appropriate, and revegetated with appropriate native plant species to promote restoration of the area to preproject conditions. Appropriate methods and plant species used to revegetate such areas shall be determined on a site-specific basis in consultation with USFWS and CDFW.</li> </ul>				

<b>Mitigation Monitoring and Reporting Program for the North Sacramento Streams, Sacramento River East Levee, Lower American River, and Related Flood Improvements Project</b>					
Mitigation Number	Mitigation Measure	Timing/Schedule	Implementation Responsibility	Completion of Implementation	
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	<ul style="list-style-type: none"> <li> <b>GG-8: Maintain and Monitor Temporarily-Disturbed Areas of Suitable Giant Garter Snake Habitat Following Completion of Construction and Restoration Activities.</b> Temporarily-disturbed areas of suitable giant garter snake habitat shall be maintained and monitored for 1 year following the completion of construction and restoration activities. Monitoring reports documenting restoration of these areas shall be submitted to USFWS and CDFW upon the completion of the restoration implementation and 1 year after the restoration implementation.           </li> </ul> <p>If potentially occupied habitat for giant garter snake cannot be avoided during project construction, an appropriate and feasible mitigation plan to compensate for potential disturbance, displacement, injury, or death individuals shall be developed and provided to USFWS and, as necessary, CDFW for approval. Compensation for direct impacts may include preserving, enhancing, and/or creating giant garter snake habitat at an on- or off-site location. Appropriate mitigation ratios would be determined in coordination with USFWS; ratios typically required by USFWS depend on the duration of the impact and may range from 1 to 3 acres of replacement habitat for every 1 acre of habitat affected. If habitat creation is proposed, the mitigation plan shall include methods for implementation, success criteria, monitoring and reporting protocols, and contingency measures to be implemented if the initial mitigation fails. Alternatively, purchasing credits at a mitigation bank approved by both USFWS and CDFW may be identified as appropriate mitigation.</p> <p>If it is determined that implementation of a project element would result in take of giant garter snake, despite implementation of avoidance and minimization measures, authorization for take of giant garter snake under the Federal ESA and possibly CESA shall be obtained if it is determined that implementation of a project element is likely to result in take under either regulation. All measures developed through consultation with USFWS and CDFW shall be implemented to mitigate adverse effects.</p>				
<b>BIO-5</b>	<p><b>Implement Conservation Strategy Measures to Avoid and Minimize Effects to Northwestern Pond Turtle.</b></p> <p>SAFCA shall implement the following measures to avoid and minimize potential adverse effects on northwestern pond turtle during project construction.</p>	Before and during construction	SAFCA		



**Mitigation Monitoring and Reporting Program for the  
North Sacramento Streams, Sacramento River East Levee, Lower American River, and Related Flood Improvements Project**

Mitigation Number	Mitigation Measure	Timing/Schedule	Implementation Responsibility	Completion of Implementation	
				Action	Date Completed
	<ul style="list-style-type: none"> <li>• <b>TURT-1: Avoid Potential Northwestern Pond Turtle Nesting Habitat during the Nesting Season (April–August), to the Extent Feasible.</b> Ground-disturbing activities in areas of potential pond turtle nesting habitat shall be avoided during the nesting season (April–August), to the extent feasible.</li> <li>• <b>TURT-2: Conduct A Preconstruction Survey for Northwestern Pond Turtles with Aquatic Habitats and Adjacent Suitable Uplands within 24 Hours of Project Disturbance and Immediately After Dewatering.</b> A preconstruction survey for northwestern pond turtles within aquatic habitats and adjacent suitable uplands to be disturbed by project activities shall be conducted by a qualified biologist. In aquatic habitats to be dewatered during project construction, surveys shall be conducted immediately after dewatering and before any subsequent disturbance. Elsewhere, surveys shall be conducted within 24 hours before project disturbance.</li> <li>• <b>TURT-3: Move Northwestern Pond Turtles to the Nearest Suitable Habitat Outside the Area if Found On-Site, with CDFW Approval.</b> If pond turtles are found during preconstruction surveys, a qualified biologist, with approval from CDFW, shall move the turtles to the nearest suitable habitat outside the area subject to project disturbance. The construction area shall be reinspected whenever a lapse in construction activity of 2 weeks or more has occurred.</li> </ul>				
<b>BIO-6</b>	<p><b>Implement Conservation Strategy Measures to Avoid and Minimize Effects to Burrowing Owl.</b></p> <p>SAFCA shall implement the following measures to avoid and minimize potential adverse effects on burrowing owl during project construction.</p> <ul style="list-style-type: none"> <li>• <b>OWL-1: Conduct an Assessment of Burrowing Owl Habitat Suitability in Areas Subject to Project-Related Disturbance and if Burrowing Owl Presence is Observed, Conduct a Focused Survey for Burrowing Owl.</b> A qualified biologist shall conduct an assessment of burrowing owl habitat suitability in areas subject to project-related disturbance. The assessment would evaluate the area subject to direct impact, as well as adjacent areas within up to 1,500 feet, depending on the potential extent of indirect impact. If suitable burrows or sign of burrowing owl presence are observed, a focused survey for burrowing owls would be conducted in areas of suitable habitat within the area of potential direct and indirect impact. The survey</li> </ul>	Before and during construction	SAFCA		

Mitigation Monitoring and Reporting Program for the North Sacramento Streams, Sacramento River East Levee, Lower American River, and Related Flood Improvements Project					
Mitigation Number	Mitigation Measure	Timing/Schedule	Implementation Responsibility	Completion of Implementation	
				Action	Date Completed
	<p>shall be conducted in accordance with Appendix D of the California Department of Fish and Game’s (CDFG [now CDFW]) <i>Staff Report on Burrowing Owl Mitigation</i> (CDFG 2012). A letter report documenting the survey methods and results shall be prepared and submitted to CDFW.</p> <ul style="list-style-type: none"> <li> <b>OWL-2: Consult with CDFW Regarding Best Approach to Avoid and Minimize Potential Impacts to Burrowing Owl if Active Burrows Are Observed and Implement Measures.</b> If any active burrows are observed, CDFW shall be consulted regarding the best approach to avoid and minimize potential impacts. Such measures may include implementation of protective buffers or passive relocation of owls during the non-breeding season, if it is infeasible to implement an adequate buffer. Passive relocation of owls shall be conducted in accordance with an exclusion and relocation plan developed in coordination with and approved by CDFW. The relocation plan shall describe methods for passive relocation of the owls, destruction of suitable burrows, and how the site shall be maintained to prevent owl reoccupation.           </li> <li> <b>OWL-3: Provide a Protective Buffer for Occupied Burrows during the Breeding Seasons and Monitor Burrows to Ensure that Project Activities do Not Result in Adverse Effects on Nesting Burrowing Owls.</b> Burrows occupied during the breeding season (February 1 through August 31) shall be provided a protective buffer until a qualified biologist verifies through noninvasive means that either (1) the birds have not begun egg-laying or (2) juveniles from the occupied burrows are foraging independently and are capable of independent survival. The size of the buffer shall depend on distance from the nest to area of project disturbance, type and intensity of disturbance, presence of visual buffers, and other variables that could affect susceptibility of the owls to disturbance. Monitoring shall be conducted to confirm that project activity is not resulting in detectable adverse effects on nesting burrowing owls.           </li> <li> <b>OWL-4: Instruct Construction Personnel of Potential Presence of Western Burrowing Owls and the Importance of Minimizing Impacts on Burrowing Owls and Their Habitat.</b> Before ground disturbance, all on-site construction personnel shall be instructed regarding the potential presence of western burrowing owls, identification of these owls and their habitat, and the importance of minimizing impacts on burrowing owls and their habitat.           </li> </ul>				

<b>Mitigation Monitoring and Reporting Program for the North Sacramento Streams, Sacramento River East Levee, Lower American River, and Related Flood Improvements Project</b>					
Mitigation Number	Mitigation Measure	Timing/Schedule	Implementation Responsibility	Completion of Implementation	
				Action	Date Completed
<b>BIO-7a</b>	<p><b>Implement Conservation Strategy Measures to Avoid and Minimize Effects to Nesting Swainson’s Hawks.</b></p> <p>SAFCA shall implement the following measures to avoid and minimize potential adverse effects on nesting Swainson’s hawks during project construction.</p> <ul style="list-style-type: none"> <li>• <b>SWH-1: Conduct Swainson’s Hawk Preconstruction Surveys in Suitable Nesting Habitat within 0.25-Mile of Project Disturbance within 14 Days of Project Activities.</b> Preconstruction surveys for active Swainson’s hawk nests shall be conducted by a qualified biologist in all areas of suitable nesting habitat within 0.25-mile of project disturbance. To the extent feasible, guidelines provided in <i>Recommended Timing and Methodology for Swainson’s Hawk Nesting Surveys in the Central Valley</i> (Swainson’s Hawk Technical Advisory Committee 2000) will be followed. A minimum of one survey shall be conducted no more than 14 days before project activities commence. A letter report documenting the survey methods and results shall be prepared and submitted to CDFW.</li> <li>• <b>SWH-2: Establish and Maintain Appropriate Buffers Around Active Swainson’s Hawk Nest Sites and Monitor Nest Site to Ensure that Project Activities are Not Adversely Affecting Nesting Birds or Their Young.</b> Appropriate buffers shall be established and maintained around active nest sites to avoid nest failure as a result of project activities. The appropriate size and shape of the buffers shall be determined by a qualified biologist, in coordination with CDFW, and may vary depending on the nest location, nest stage, and construction activity. The buffers may be adjusted if a qualified biologist determines it would not be likely to adversely affect the nest. Monitoring shall be conducted to confirm that project activity is not resulting in detectable adverse effects on nesting birds or their young. No project activity shall commence within the buffer areas until a qualified biologist has determined that the young have fledged or the nest site is otherwise no longer in use.</li> <li>• <b>SBR-4: Conduct Vegetation Removal Between September 16 and January 31 to the Extent Feasible.</b> Vegetation removal, particularly tree removal, shall be conducted between September 16 and January 31, to the extent feasible, to minimize potential loss of active bird nests.</li> </ul>	Before and during construction	SAFCA		

<b>Mitigation Monitoring and Reporting Program for the North Sacramento Streams, Sacramento River East Levee, Lower American River, and Related Flood Improvements Project</b>					
Mitigation Number	Mitigation Measure	Timing/Schedule	Implementation Responsibility	Completion of Implementation	
				Action	Date Completed
<b>BIO-7b</b>	<p><b>Minimize Adverse Impact of Swainson’s Hawk Foraging Habitat Loss and Compensate for Substantial Loss.</b></p> <p>SAFCA shall implement the following measures to minimize and compensate for potential substantial adverse effects from loss of Swainson’s hawk foraging habitat.</p> <ul style="list-style-type: none"> <li>• If the potential woodland mitigation site north of Stone Lakes National Wildlife Refuge is used, design of the woodland creation area shall include ways to minimize effects on foraging habitat, such as focusing the planting area on the southern portion of the site, which is already surrounded by woodland on three sides, and on the western side in the northern portion of the area.</li> <li>• Activities associated with the woodland planting shall be implemented between September 1 and April 1, when adverse effects of foraging habitat conversion would be minimized.</li> <li>• CDFW shall be consulted regarding the woodland mitigation and potential adverse effects on Swainson’s hawk foraging opportunities. Through consultation, it may be determined that compensation is required to offset adverse effects of foraging habitat loss. If so, an appropriate and feasible mitigation plan will be developed and provided to CDFW, for approval. Compensation may include preserving and/or enhancing Swainson’s hawk foraging habitat at an on- or off-site location. Appropriate mitigation ratios would be determined in coordination with CDFW; ratios may vary depending on the proximity of lost habitat to active nests and the habitat protection and management mechanisms. If habitat creation is proposed, the mitigation plan shall include methods for implementation, success criteria, monitoring and reporting protocols, and contingency measures to be implemented if the initial mitigation fails. Alternatively, participating in the Sacramento County Swainson’s Hawk Mitigation Program or purchasing credits at a CDFW-approved mitigation bank may be identified as appropriate mitigation.</li> </ul>	Before and during construction	SAFCA		

Mitigation Monitoring and Reporting Program for the North Sacramento Streams, Sacramento River East Levee, Lower American River, and Related Flood Improvements Project					
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<b>BIO-8</b>	<p><b>Implement Conservation Strategy Measures to Avoid and Minimize Effects to Nesting Special-status Birds, Common Raptor Species, and Colonial-nesting Egrets and Herons.</b></p> <p>SAFCA shall implement the following measures to avoid and minimize potential adverse effects on nesting special-status birds, common raptors, and colonial-nesting egrets and herons during project construction.</p> <ul style="list-style-type: none"> <li>• <b>SBR-4: Conduct Vegetation Removal Between September 16 and January 31 to the Extent Feasible.</b> Vegetation removal, particularly tree removal, shall be conducted between September 16 and January 31, to the extent feasible, to minimize potential loss of active bird nests.</li> <li>• <b>NBRD-1: Conduct Surveys for Active Bird Nests in Areas of Suitable Nest Vegetation Designated for Removal.</b> If vegetation removal must occur during the nesting season for common birds (March 1 through August 31), surveys for active bird nests shall be conducted by a qualified biologist in areas of suitable nesting vegetation designated for removal.</li> <li>• <b>SSB-1: Conduct Preconstruction Surveys for Active Nests of Special-Status Birds, Common Raptor Species, and Colonial-nest Egrets and Herons in Areas of Suitable Habitat up to 1,000 Feet of Areas Subject to Project Disturbance Within 14 Days before Commencement of Construction.</b> Preconstruction surveys for active nests of special-status birds, common raptor species, and colonial-nesting egrets and herons shall be conducted by a qualified biologist in all areas of suitable habitat. Surveys for raptor nests and colonies of special status-status birds (i.e., tricolored blackbird) and egrets/herons would include suitable habitat within up to 1,000 feet of areas subject to project disturbance, depending on the potential extent of indirect impact. Surveys for nests of solitary-nesting special-status birds would include suitable habitat within up to 200 feet of the disturbance areas. Surveys shall be conducted within 14 days before commencement of any construction activities that occur during the nesting season (February 1 to August 31) in a given area.</li> </ul>	Before and during construction	SAFCA		

Mitigation Monitoring and Reporting Program for the North Sacramento Streams, Sacramento River East Levee, Lower American River, and Related Flood Improvements Project					
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	<ul style="list-style-type: none"> <li><b>SSB-2 and NBRD-2: Establish Buffers Around Active Nest Sites to Avoid Nest Failure and Monitor Nest Sites to Confirm that Project Activities Are Not Adversely Affecting the Nesting Birds or Their Young.</b> If any active nests, or behaviors indicating active nests are present, are observed, appropriate buffers around the nest sites shall be determined by a qualified biologist to avoid nest failure resulting from project activities. The size of the buffer shall depend on the species, nest location, nest stage, and specific construction activities to be performed while the nest is active. The buffers may be adjusted if a qualified biologist determines it would not be likely to adversely affect the nest. If buffers are adjusted, monitoring shall be conducted to confirm that project activity is not resulting in detectable adverse effects on nesting birds or their young. No project activity shall commence within the buffer areas until a qualified biologist has determined that the young have fledged or the nest site is otherwise no longer in use.</li> </ul>				
<b>BIO-9</b>	<p><b>Avoid and Minimize Disturbance and Loss of Roosting Special-Status Bats.</b></p> <p>SAFCA shall implement the following measures to avoid and minimize potential disturbance or loss of roosting special-status bats.</p> <ul style="list-style-type: none"> <li><b>BAT-1: Conduct Bat Surveys for Active Maternity Roosts for Trees With Suitable Roost Cavities or Dense Cover Designated for Removal.</b> If removal of trees with suitable roost cavities and/or dense cover must occur during the bat pupping season (April 1 through July 31), surveys for active maternity roosts shall be conducted by a qualified biologist in trees designated for removal. A habitat assessment and daylight survey of suitable trees and structures shall be conducted to determine if there is evidence of suitable roost cavities. These surveys shall be followed up with nighttime emergence surveys, conducted from dusk until dawn, to detect presence.</li> </ul>	Before and during construction	SAFCA		

Mitigation Monitoring and Reporting Program for the North Sacramento Streams, Sacramento River East Levee, Lower American River, and Related Flood Improvements Project					
Mitigation Number	Mitigation Measure	Timing/Schedule	Implementation Responsibility	Completion of Implementation	
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	<ul style="list-style-type: none"> <li>• <b>BAT-2: Establish Appropriate Buffers Around Roosts Sites to Avoid Destruction or Abandonment and Prohibit all Construction Activity Until the End of the Popping Season.</b> If a special-status bat maternity roost is located, appropriate buffers around the roost sites shall be determined by a qualified biologist and implemented to avoid destruction or abandonment of the roost resulting from tree removal or other project activities. The size of the buffer shall depend on the species, roost location, and specific construction activities to be performed in the vicinity. No project activity shall commence within the buffer areas until the end of the pupping season (August 1) or until a qualified biologist confirms the maternity roost is no longer active.</li> <li>• <b>SBR-4: Conduct Vegetation Removal Between September 16 and January 31 to the Extent Feasible.</b> Vegetation removal, particularly tree removal, shall be conducted between September 16 and January 31, to the extent feasible, to minimize potential loss of bat maternity roosts.</li> </ul>				
<b>BIO-10</b>	<p><b>Implement Conservation Strategy Measures to Avoid, Minimize, and Mitigate for Unavoidable Impacts on Sensitive Habitats on a No-Net-Loss Basis.</b></p> <p>SAFCA shall implement the following measures to avoid, minimize, and, if necessary, compensate for the direct fill of Waters of the U.S. and waters of the State and loss of riparian habitat and NCSC.</p> <ul style="list-style-type: none"> <li>• <b>CM-1: Limit Ground Disturbance to Construction Areas and Avoid and Limit Disturbance to River and Creek Banks and Habitats when Feasible.</b> Ground disturbance shall be limited to construction areas, including necessary access routes and staging areas. The number of access routes, size of staging areas, and total area of the project activity shall be limited to the minimum necessary. When possible, existing access routes and points shall be used. All roads, staging areas, and other facilities shall be placed to avoid and limit disturbance to river and creek banks and habitat when feasible.</li> <li>• <b>CM-10: Prepare and Implement a Storm Water Pollution Prevention Plan.</b> A Storm Water Pollution Prevention Plan that identifies specific best management practices to avoid and minimize impacts on water quality during construction activities shall be prepared and implemented. Best management practices may include:</li> </ul>	Before, during, and after construction activities	SAFCA		

<b>Mitigation Monitoring and Reporting Program for the            North Sacramento Streams, Sacramento River East Levee, Lower American River, and Related Flood Improvements Project</b>					
Mitigation Number	Mitigation Measure	Timing/Schedule	Implementation Responsibility	Completion of Implementation	
				Action	Date Completed
	<ul style="list-style-type: none"> <li>- <b>CM-11: Install, Monitor, and Maintain Erosion Control Measures that Minimize Soil or Sediment from Entering Waterways or Wetlands.</b> Erosion control measures that minimize soil or sediment from entering waterways and wetlands shall be installed, monitored for effectiveness, and maintained throughout construction operations.</li> <li>- <b>CM-14: Implement Precautionary Measures to Minimize Turbidity/Siltation during Construction.</b> Precautions to minimize turbidity/siltation shall be implemented during construction. This may require placing barriers (e.g., silt curtains) to prevent silt and/or other deleterious materials from entering downstream reaches.</li> <li>- <b>CM-23: Prevent Any Contaminated Construction By-Products from Entering Flowing Waters; Collect and Transport Such By-Products to An Authorized Disposal Area.</b> Petroleum products, chemicals, fresh cement, and construction by-products containing, or water contaminated by, any such materials shall not be allowed to enter flowing waters and shall be collected and transported to an authorized upland disposal area.</li> <li>• <b>CM-25: Prepare and Implement a Spill Prevention and Control Plan.</b> A written spill prevention and control plan (SPCP) shall be prepared and implemented. The SPCP and all material necessary for its implementation shall be accessible on-site prior to initiation of project construction and throughout the construction period. The SPCP shall include a plan for the emergency cleanup of any spills of fuel or other material. Employees/construction workers shall be provided the necessary information from the SPCP to prevent or reduce the discharge of pollutants from construction activities to waters and to use the appropriate measures should a spill occur. In the event of a spill, work shall stop immediately and CDFW, USFWS, National Marine Fisheries Service (NMFS), Central Valley RWQCB, and USACE shall be notified within 24 hours.</li> </ul>				



Mitigation Monitoring and Reporting Program for the North Sacramento Streams, Sacramento River East Levee, Lower American River, and Related Flood Improvements Project					
Mitigation Number	Mitigation Measure	Timing/Schedule	Implementation Responsibility	Completion of Implementation	
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	<ul style="list-style-type: none"> <li> <b>SBR-2: Erect High-Visibility Fencing to Protect Sensitive Biological Resource Areas, Inspect Fencing Daily, and Incorporate Sensitive Habitat Information into Bid Specifications.</b> Before the commencement of construction activities, high-visibility fencing shall be erected to protect areas of sensitive biological resources that are located adjacent to construction areas, but can be avoided, from encroachment of personnel and equipment. The fencing shall be inspected before the start of each work day and shall be removed only when the construction within a given area is completed. Sensitive habitat information shall be incorporated into project bid specifications, along with a requirement for contractors to avoid these areas.           </li> <li> <b>SBR-3: Monitor Construction Activities in Sensitive Biological Resource Areas and Stop Work if Unauthorized Project Impacts Occur.</b> A qualified biologist shall monitor all construction activities in sensitive biological resource areas to ensure that avoidance and minimization measures are being properly implemented and no unauthorized activities occur. The biological monitor shall be empowered to stop construction activities that threaten to cause unanticipated and/or unauthorized project impacts. Project activity shall not resume until the conflict has been resolved.           </li> </ul> <p>If sensitive habitats cannot be avoided during project construction, an appropriate and feasible mitigation plan to compensate for loss of these habitats shall be developed and provided to the appropriate regulatory agencies for approval. The plan shall detail appropriate compensation measures determined through consultation with the respective regulatory agencies, methods for implementation, success criteria, monitoring and reporting protocols, and contingency measures to be implemented if the initial mitigation fails. The plan shall be developed in consultation with and approved by the appropriate regulatory agencies before construction activities begin in areas containing sensitive habitats.</p> <p>If it is determined that implementation of a project element would result in direct impacts to sensitive habitats, despite implementation of avoidance and minimization measures, compliance with the following regulatory permitting processes shall be obtained. All measures developed through consultation with the respective regulatory agencies shall be implemented, to mitigate adverse effects.</p>				

<b>Mitigation Monitoring and Reporting Program for the North Sacramento Streams, Sacramento River East Levee, Lower American River, and Related Flood Improvements Project</b>					
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	<ul style="list-style-type: none"> <li> <b>Section 404:</b> Before any ground-disturbing project activities begin in areas containing wetlands or waters, a qualified biologist shall conduct a formal delineation of Waters of the U.S. for CWA Section 404 permitting. The findings shall be documented in a detailed report and submitted to the USACE for verification as part of the formal Section 404 wetland delineation process.             For those Waters of the U.S. that cannot be avoided during project construction, the acreage and function of all wetlands and other waters that would be removed as a result of project implementation shall be replaced or restored on a “no-net-loss” basis. Authorization for fill of jurisdictional Waters of the U.S. shall be secured from USACE via the Section 404 permitting process before project implementation. Any mitigation measures determined necessary during the 404 permitting process shall be implemented during project construction.         </li> <li> <b>Section 401:</b> Water quality certification pursuant to Section 401 of the CWA shall be obtained from the Central Valley RWQCB before starting project construction in any areas that may contain waters of the State. Any measures required as part of the issuance of water quality certification shall be implemented. A report of waste discharge shall be filed with the Central Valley RWQCB and all waste discharge requirements prescribed by the Central Valley RWQCB pursuant to the Porter-Cologne Act shall be complied with before starting construction in any areas containing waters of the State that are not also waters of United States.             A qualified wetland biologist shall develop and implement a conceptual wetland mitigation and monitoring plan (MMP) describing compensation for the loss of jurisdictional wetlands, including appropriate wetland replacement ratios to replace the loss of aquatic functions as determined by USACE, as well as loss of waters of the State disclaimed by USACE and as determined by Central Valley RWQCB. At a minimum, wetlands and other waters lost through implementation of the proposed project shall be replaced at a 1:1 ratio and implementing the plan shall be required to provide compensation resulting in no-net-loss of wetlands functions and values of waters of the State. The MMP shall quantify the total jurisdictional acreage lost and describe creation/replacement ratios for acres filled, annual success criteria, mitigation sites, and monitoring and maintenance requirements. Compensatory wetland mitigation for the         </li> </ul>				

**Mitigation Monitoring and Reporting Program for the  
North Sacramento Streams, Sacramento River East Levee, Lower American River, and Related Flood Improvements Project**

Mitigation Number	Mitigation Measure	Timing/Schedule	Implementation Responsibility	Completion of Implementation	
				Action	Date Completed
	<p>proposed project could be provided within the project study area and/or another location, as a component of the proposed project’s Conservation Strategy element, pending approval from USACE and Central Valley RWQCB.</p> <ul style="list-style-type: none"> <li> <b>Section 1602:</b> A CDFW streambed alteration agreement shall be obtained under Section 1602 of the California Fish and Game Code for all work on the waterside of the levees. A riparian habitat mitigation plan resulting in no net loss of riparian functions and values shall be prepared to compensate for loss of riparian vegetation along the rivers and creeks in the project study area. In addition, the habitat mitigation plan shall include methods to compensate for loss of valley oak woodland that may not be covered under the streambed alteration agreement. Valley oak woodland removed as a result of project actions shall be replaced on a no-net-loss basis in the same manner as riparian habitats covered under Section 1602 of the California Fish and Game Code. Mitigation may be accomplished through replacement, enhancement of degraded habitat, or off-site mitigation at an established mitigation bank. The wetland mitigation plan developed for impacts on wetlands and other Waters of the U.S. may be suitable if it adequately covers project construction activities within CDFW-designated sensitive habitats or waterways under CDFW jurisdiction. Any conditions of issuance of the streambed alteration agreement, including minimization and compensation measure, shall be implemented as part of project implementation.                 </li> </ul>				
<b>BIO-12</b>	<p><b>Implement Conservation Strategy Measures to Avoid and Mitigate for Adverse Effects on Protected Trees.</b></p> <p>SAFCA shall implement the following measure to avoid and, if necessary, mitigate for adverse impacts associated with the removal of protected trees because of implementation of project elements:</p> <ul style="list-style-type: none"> <li> <b>TREE-1: Avoid Trees Protected Under Local Policies and Ordinances, to the Extent Feasible.</b> Trees that qualify for protection under local policies and ordinances shall be avoided during construction, to the extent feasible. A qualified botanist shall clearly mark tree(s) to be avoided if such trees are located outside of areas of sensitive biological resources that have been temporarily fenced for avoidance.                 </li> </ul>	Before and during construction	SAFCA		

<b>Mitigation Monitoring and Reporting Program for the North Sacramento Streams, Sacramento River East Levee, Lower American River, and Related Flood Improvements Project</b>					
Mitigation Number	Mitigation Measure	Timing/Schedule	Implementation Responsibility	Completion of Implementation	
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	If protected trees cannot be avoided during project construction, an appropriate and feasible mitigation plan to compensate for loss of these trees shall be developed and provided to the City and County for approval. The mitigation plan may include replacement with in-kind species in accordance with established tree planting specifications, the combined diameter of which shall equal the combined diameter of the trees removed; this would likely be achieved through implementation of the Conservation Strategy. This effort may require consultation with Sacramento County and the City of Sacramento to determine what type of approval or permit may be required for tree removal. If further mitigation is required, off-site mitigation may be considered that preserves, enhances, and maintains a natural woodland habitat in perpetuity, preferably by transfer of title to an appropriate public entity.				
<b>Cultural Resources</b>					
<b>CR-1</b>	<b>Conduct Landscape Inventory, Prepare Cultural Landscape Report, and Implement Treatment Measures.</b>  Prior to the removal of any Victory Trees along SR 160, SAFCA shall conduct a cultural landscape inventory, prepare a cultural landscape report, and implement the recommended treatment measures. The inventory and report shall be prepared by an historical landscape architect to identify which of the trees along the tree row are original and to recommend treatment measures for the retention and for mitigating the effects of the historic landscape features.	Before removal of trees along State Route 160	SAFCA		
<b>CR-2a</b>	<b>Conduct Archaeological Monitoring during Ground Disturbance within 100 feet of Known Archaeological Resources and Prepare and Implement a Monitoring Plan.</b> <ul style="list-style-type: none"> <li>• SAFCA shall retain the services of a professional archaeologist to prepare and implement a monitoring plan. The archaeologist and SAFCA shall seek the input of Native American tribes that are traditionally and culturally affiliated with the geographic area. The plan shall contain, at a minimum, the following elements:               <ul style="list-style-type: none"> <li>- background context;</li> <li>- relevant project components that may impact anticipated archaeological resources;</li> </ul> </li> </ul>	Before and during construction activities	SAFCA		

<b>Mitigation Monitoring and Reporting Program for the North Sacramento Streams, Sacramento River East Levee, Lower American River, and Related Flood Improvements Project</b>					
Mitigation Number	Mitigation Measure	Timing/Schedule	Implementation Responsibility	Completion of Implementation	
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	<ul style="list-style-type: none"> <li>- definition of the construction footprint, including the use of a buffer around the construction footprint;</li> <li>- archaeological sensitivity of the construction footprint;</li> <li>- archaeological monitor qualifications;</li> <li>- monitoring procedures;</li> <li>- the activities to be monitored;</li> <li>- chain of command;</li> <li>- procedures for discoveries during construction;</li> <li>- procedures for discovery of human remains;</li> <li>- laboratory and analysis methodologies;</li> <li>- daily monitoring documentation requirements; and</li> <li>- final monitoring report requirements.</li> </ul> <ul style="list-style-type: none"> <li>• SAFCA shall retain the services of a professional prehistoric archaeologist and a Native American monitor during on-site earthwork within 100 feet of the recorded site boundaries of P-34-219/CA-SAC-192, P-34-66/CA-SAC-39, 34-000069/CA-SAC-42, 34-000057/CA-SAC-30, and 34-000070/CA-SAC-43. In addition, a professional historical archaeologist shall monitor ground-disturbing activities adjacent to and within the site boundary of P-34-749/SAC-574H and P-34-858/SAC-657H.</li> </ul> <p>If cultural materials (e.g., unusual amounts of shell, animal bone, historic-era glass, metal, or ceramics, human remains) are encountered during project-related construction activities, SAFCA, in consultation with the qualified archaeologist, shall develop additional appropriate protection measures. If the cultural material is Native American in origin, SAFCA shall seek the input of Native American tribes that are traditionally and culturally affiliated with the geographic area. Measures shall comply with State CEQA Guidelines CCR Section 15126.4 if the resource is an historic resource of an archaeological nature and/or with CEQA Section 21083.2 if the resource is a unique archaeological resource. Additional protection measures may include, but are not necessarily limited to, additional documentary research, subsurface testing, excavation, and preservation in-place.</p>				

<b>Mitigation Monitoring and Reporting Program for the North Sacramento Streams, Sacramento River East Levee, Lower American River, and Related Flood Improvements Project</b>					
Mitigation Number	Mitigation Measure	Timing/Schedule	Implementation Responsibility	Completion of Implementation	
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	<p>If the discovery could potentially be human remains, work shall stop and the appropriate procedures described in California Health and Safety Code Section 7050 et seq. and California Public Resources Code Section 5097.9 et seq. shall be implemented. Protection measures may include, but are not necessarily limited to, redesign of the project to avoid archaeological resources, capping the site with a layer of fill, excavation and removal of the burial under the direction of a qualified archaeologist, reburial of the discovery according to the wishes of the designated Most Likely Descendant (MLD), preservation in place, or other protection measures that are mutually acceptable to the SAFCA and to the Native American representative/s.</p> <p>Project personnel shall not collect archaeological/cultural resource material found on the project site.</p> <p>Native American representative/s shall be provided with hard copies and digital copies of any reports documenting inadvertent discovery of cultural resources on site and shall be consulted regarding the need for additional excavation and further laboratory analysis.</p>				
<b>CR-2b</b>	<p><b>Avoid Archaeological Sites P-34-66/CA-SAC-39 and P-34-858/CA-SAC-657H.</b></p> <ul style="list-style-type: none"> <li>SAFCA shall locate the approximately 5-acre Woodlake planting site and all associated staging areas in a location that is at least 100 feet away from the recorded boundaries of sites P-34-66/CA-SAC-39 and P-34-858/CA-SAC-657H.</li> <li>SAFCA shall use temporary fencing around the recorded boundaries of sites P-34-66/CA-SAC-39 and P-34-858/CA-SAC-657H to avoid encroaching on the archaeological sites during project-related activities.</li> </ul>	Before and during construction activities	SAFCA		
<b>CR-3</b>	<p><b>Implement Procedures for Inadvertent Discovery of Cultural Resources.</b></p> <p>SAFCA shall retain the services of a professional archaeologist to perform monitoring during on-site earthwork, with appropriate actions if potential cultural resources are discovered, as described below.</p>	During construction activities	SAFCA		

<b>Mitigation Monitoring and Reporting Program for the North Sacramento Streams, Sacramento River East Levee, Lower American River, and Related Flood Improvements Project</b>					
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	<ul style="list-style-type: none"> <li>If an inadvertent discovery of cultural materials (e.g., unusual amounts of shell, animal bone, human remains, bottle glass, ceramics, building remains) is made at any other time during project-related construction activities, SAFCA, in consultation with the qualified archaeologist, shall develop additional appropriate protection measures. If the cultural material is Native American in origin, SAFCA shall seek the input of Native American tribes that are traditionally and culturally affiliated with the geographic area. Measures shall comply with State CEQA Guidelines CCR Section 15126.4 if the resource is an historic resource of an archaeological nature and/or with CEQA Section 21083.2 if the resource is a unique archaeological resource. Additional protection measures may include, but are not necessarily limited to, additional documentary research, subsurface testing, excavation, and preservation in place.</li> <li>If the discovery could potentially be human remains, work shall stop and the appropriate procedures described in California Health and Safety Code Section 7050 et seq. and California Public Resources Code Section 5097.9 et seq. shall be implemented. Protection measures may include, but are not necessarily limited to, redesign of the project to avoid archaeological resources, capping the site with a layer of fill, excavation, removal of the burial under the direction of a qualified archaeologist, reburial of the discovery according to the wishes of the designated MLD, preservation in place, or other protection measures that are mutually acceptable to SAFCA and to the Native American representative(s).</li> <li>Project personnel shall not collect archaeological material found on the project site.</li> <li>Native American representative/s shall be provided with hard copies and digital copies of any reports documenting inadvertent discovery of cultural resources on site and shall be consulted regarding the need for additional excavation and further laboratory analysis.</li> </ul>				
<b>CR-4</b>	<p><b>Implement Procedures for Inadvertent Discovery of Human Remains.</b></p> <ul style="list-style-type: none"> <li>In accordance with the California Health and Safety Code, if human remains are uncovered during ground-disturbing activities, SAFCA shall immediately halt potentially damaging excavation in the area of the burial and notify the Sacramento County Coroner and a professional archaeologist</li> </ul>	During construction activities	SAFCA		

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Mitigation Number	Mitigation Measure	Timing/Schedule	Implementation Responsibility	Completion of Implementation	
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	<p>to determine the nature of the remains. The coroner is required to examine all discoveries of human remains within 48 hours of receiving notice of a discovery on private or State lands (California Health and Safety Code Section 7050.5[b]). If the coroner determines that the remains are those of a Native American, he or she must contact the NAHC by phone within 24 hours of making that determination (Health and Safety Code Section 7050[c]). After the coroner’s findings have been made, the archaeologist and the NAHC-designated Most Likely Descendant (MLD) shall determine the ultimate treatment and disposition of the remains. The responsibilities of SAFCA for acting upon notification of a discovery of Native American human remains are identified in California PRC Section 5097.9 et seq.</p> <ul style="list-style-type: none"> <li>• Upon the discovery of Native American remains, SAFCA shall require that all construction work must stop within 100 feet of the discovery until consultation with the MLD has taken place. The MLD shall have 48 hours to complete a site inspection and make recommendations after being granted access to the site. A range of possible treatments for the remains, including nondestructive removal and analysis, preservation in place, relinquishment of the remains and associated items to the descendants, or other culturally appropriate treatment may be discussed. California PRC Section 5097.98(b)(2) suggests that the concerned parties may mutually agree to extend discussions beyond the initial 48 hours to allow for the discovery of additional remains. The following is a list of site protection measures that SAFCA shall employ:               <ol style="list-style-type: none"> <li>(1) Record the site with the NAHC or the appropriate Information Center.</li> <li>(2) Record a document with the county in which the property is located.</li> </ol> </li> <li>• SAFCA or SAFCA’s authorized representative shall rebury the Native American human remains and associated grave goods with appropriate dignity on the property in a location not subject to further subsurface disturbance if the NAHC is unable to identify a MLD, or if the MLD fails to make a recommendation within 48 hours after being granted access to the site. SAFCA or SAFCA’s authorized representative may also reinter the remains in a location not subject to further disturbance if he or she rejects the recommendation of the MLD and mediation by the NAHC fails to provide measures acceptable to SAFCA. SAFCA shall implement mitigation for the protection of the burial remains. Construction work in the vicinity of the burials shall not resume until the mitigation is completed.</li> </ul>				



Mitigation Monitoring and Reporting Program for the North Sacramento Streams, Sacramento River East Levee, Lower American River, and Related Flood Improvements Project					
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				Action	Date Completed
<b>Geology, Soils and Paleontological Resources</b>					
GEO-1	<p><b>Acquire Appropriate Regulatory Permits and Prepare and Implement a Storm Water Pollution Prevention Plan and Associated Best Management Practices.</b></p> <p>Prior to the start of earthmoving activities, SAFCA shall obtain coverage under the SWRCB's NPDES stormwater permit for general construction activity (Order 2009-0009-DWQ), including preparation and submittal of a project-specific SWPPP at the time the NOI to discharge is filed. The SWPPP shall identify and specify:</p> <ul style="list-style-type: none"> <li>the use of an effective combination of robust erosion and sediment control BMPs and construction techniques for use in the project area at the time of construction, that shall reduce the potential for runoff and the release, mobilization, and exposure of pollutants, including legacy sources of mercury from project-related construction sites. These may include but would not be limited to temporary erosion control and soil stabilization measures, sedimentation ponds, inlet protection, perforated riser pipes, check dams, and silt fences;</li> <li>the implementation of approved local plans, nonstormwater management controls, permanent post-construction BMPs, and inspection and maintenance responsibilities;</li> <li>the pollutants that are likely to be used during construction that could be present in stormwater drainage and nonstormwater discharges, including fuels, lubricants, and other types of materials used for equipment operation;</li> <li>the means of waste disposal;</li> <li>spill prevention and contingency measures, including measures to prevent or clean up spills of hazardous waste and of hazardous materials used for equipment operation, and emergency procedures for responding to spills;</li> <li>personnel training requirements and procedures that shall be used to ensure that workers are aware of permit requirements and proper installation methods for BMPs specified in the SWPPP; and</li> <li>the appropriate personnel responsible for supervisory duties related to implementation of the SWPPP.</li> </ul>	Submittal of the State Construction General Permit NOI and SWPPP before the start of earthmoving activities, and implementation of BMPs throughout project construction	SAFCA		

<b>Mitigation Monitoring and Reporting Program for the North Sacramento Streams, Sacramento River East Levee, Lower American River, and Related Flood Improvements Project</b>					
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	<p>Where applicable, BMPs identified in the SWPPP shall be in place throughout all site work and construction/demolition activities and shall be used in all subsequent site development activities. BMPs may include, but are not limited to, such measures as those listed below.</p> <ul style="list-style-type: none"> <li>Implementing temporary erosion and sediment control measures in disturbed areas to minimize discharge of sediment into nearby drainage conveyances, in compliance with State and local standards in effect at the time of construction. These measures may include silt fences, staked straw bales or wattles, sediment/silt basins and traps, geofabric, sandbag dikes, and temporary vegetation.</li> <li>Establishing permanent vegetative cover to reduce erosion in areas disturbed by construction by slowing runoff velocities, trapping sediment, and enhancing filtration and transpiration.</li> <li>Using drainage swales, ditches, and earth dikes to control erosion and runoff by conveying surface runoff down sloping land, intercepting and diverting runoff to a watercourse or channel, preventing sheet flow over sloped surfaces, preventing runoff accumulation at the base of a grade, and avoiding flood damage along roadways and facility infrastructure.</li> </ul> <p>A copy of the approved SWPPP shall be maintained and available at all times on the construction site.</p>				
<b>GEO-2</b>	<p><b>Conduct Construction Personnel Education, Stop Work if Paleontological Resources are Discovered, Assess the Significance of the Find, and Prepare and Implement a Recovery Plan, as Required.</b></p> <p>To minimize the potential for destruction of or damage to potentially unique, scientifically important paleontological resources during project-related earthmoving activities, SAFCA shall require the following measures to be implemented to minimize accidental damage to or destruction of unique paleontological resources:</p> <ul style="list-style-type: none"> <li>Before the start of any earthmoving activities in the North Sacramento Streams Levee Improvements area and Sacramento River East Levee Improvements area, the SAFCA shall retain a qualified paleontologist to train all construction personnel involved with earthmoving activities, including the site superintendent, regarding the possibility of encountering fossils, the appearance and types of fossils likely to be seen during construction, and proper notification procedures should fossils be encountered.</li> </ul>	Submittal of the State Construction General Permit NOI and SWPPP before the start of earthmoving activities, and implementation of BMPs throughout project construction	SAFCA		

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	<ul style="list-style-type: none"> <li>If paleontological resources are discovered during earthmoving activities, the construction crew shall notify SAFCA and shall immediately cease work in the vicinity of the find. SAFCA shall retain a qualified paleontologist to evaluate the resource and prepare a recovery plan in accordance with Society of Vertebrate Paleontology guidelines (1996). The recovery plan may include, but is not limited to, a field survey, construction monitoring, sampling and data recovery procedures, museum storage coordination for any specimen recovered, and a report of findings. Recommendations in the recovery plan that are determined by the SAFCA to be necessary and feasible shall be implemented before construction activities can resume at the site where the paleontological resources were discovered.</li> </ul>				
<b>Geomorphology</b>					
GM-1	<p><b>GM-1: Implement Conservation Strategy Measures to Reduce Erosion and Sediment Transport.</b></p> <p>SAFCA shall implement the following measures as part of the Conservation Strategy to reduce erosion and sediment transport:</p> <ul style="list-style-type: none"> <li><b>CM-1: Limit Ground Disturbance to Construction Areas and Avoid and Limit Disturbance to River and Creek Banks and Habitats when Feasible.</b> Ground disturbance shall be limited to construction areas, including necessary access routes and staging areas. The number of access routes, size of staging areas, and total area of the project activity shall be limited to the minimum necessary. When possible, existing access routes and points shall be used. All roads, staging areas, and other facilities shall be placed to avoid and limit disturbance to river and creek banks and habitat when feasible.</li> <li><b>CM-2: Clearly Mark Project Construction Limits.</b> To minimize ground and vegetation disturbance during project construction, project limits shall be clearly marked, including the boundaries of designated equipment staging areas; ingress and egress corridors; stockpile areas for spoils disposal, soil, and materials; and equipment exclusion zones.</li> </ul>	During and after project construction	SAFCA		

<b>Mitigation Monitoring and Reporting Program for the North Sacramento Streams, Sacramento River East Levee, Lower American River, and Related Flood Improvements Project</b>					
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	<ul style="list-style-type: none"> <li>• <b>CM-4: Avoid Disturbing or Exceeding the Minimum Vegetation Removal Necessary.</b> Disturbance or removal of vegetation by machinery shall not exceed the minimum necessary to complete project construction and operations.</li> <li>• <b>CM-5: Replant or Reseed with Native Species and Monitor and Maintain Growth to Ensure Success for Areas Requiring Vegetation Removal.</b> When vegetation removal is required, the disturbed areas shall be replanted or reseeded with native species and monitored and maintained to ensure the revegetation effort is successful. If erosion control fabrics are used in revegetated areas, they shall be slit in appropriate locations as necessary to allow for plant root growth.</li> <li>• <b>CM-6: Limit Rock Riprap for Erosion Protection.</b> The amount of rock rip rap and other materials used for bank protection shall be commensurate to the amount needed for erosion protection and establishment of planting benches.</li> <li>• <b>CM-11: Install, Monitor, and Maintain Erosion Control Measures that Minimize Soil or Sediment from Entering Waterways or Wetlands.</b> Erosion control measures that minimize soil or sediment from entering waterways and wetlands shall be installed, monitored for effectiveness, and maintained throughout construction operations.</li> <li>• <b>CM-13: Avoid Use of Materials in Locations Where it Can Erode from Normal or Expected High Flows.</b> No material shall be placed in a manner or location where it can be eroded by normal or expected high flows. Jute netting or another non-monofilament erosion control fabric shall be used to cover soil that is placed over or mixed into riprap or other revetment materials.</li> <li>• <b>CM-14: Implement Precautionary Measures to Minimize Turbidity/Siltation during Construction.</b> Precautions to minimize turbidity/siltation shall be implemented during construction. This may require placing barriers (e.g., silt curtains) to prevent silt and/or other deleterious materials from entering downstream reaches.</li> </ul>				

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Mitigation Number	Mitigation Measure	Timing/Schedule	Implementation Responsibility	Completion of Implementation	
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	<ul style="list-style-type: none"> <li>• <b>CM-15: Inspect Sediment and Turbidity Control Barriers Daily during Construction for Proper Function and Replace Immediately if Not Functioning Effectively.</b> Performance of sediment and turbidity control barriers shall be inspected at least once each day during construction to they are functioning properly. Should a control barrier not function effectively, it shall be immediately repaired or replaced. Additional controls shall be installed as necessary.</li> <li>• <b>CM-16: Remove Sediment from Sediments Controls and Dispose of Properly.</b> Sediment shall be removed from sediment controls once the sediment has reached 1/3 of the exposed height of the control. Sediment collected in these devices shall be disposed of away from the collection site at designated upland disposal sites.</li> <li>• <b>CM-17: Treat Water with Silt or Mud from Construction Activities to Prevent it from Entering Live Waterways.</b> Water containing mud or silt from construction activities shall be treated by filtration, or retention in a settling pond, adequate to prevent muddy water from entering live waterways.</li> <li>• <b>CM-18: Treat All Disturbed Soils with Appropriate Erosion Control.</b> All disturbed soils shall undergo appropriate erosion control treatment (e.g., sterile straw mulching, seeding, planting) prior to the end of the construction season, or prior to October 15, whichever comes first.</li> </ul>				
<b>Greenhouse Gas Emissions</b>					
<b>GHG-1</b>	<p><b>GHG-1: Purchase Carbon Offset Credits (If Required).</b></p> <p>SAFCA shall purchase carbon offset credits to offset the proposed project's emissions. As determined in <b>Table 4.10-1</b>, the North Sacramento Streams Levee Improvements area would need to offset approximately 856 MT CO<sub>2</sub>e, which would be verified by SMAQMD before carbon offsets are purchased. Thus, as noted above, if construction activities associated with the North Sacramento Streams Levee Improvement area were to extend into year 2017 and overlap with Sacramento River East Levee Improvements area construction activities, or any changes were to occur during the construction of the proposed project, those potential changes in annual emissions would be calculated and reflected in the amount of carbon offsets required. Carbon offset credits shall be purchased from</p>	Prior to the start of construction activities	SAFCA		

Mitigation Monitoring and Reporting Program for the North Sacramento Streams, Sacramento River East Levee, Lower American River, and Related Flood Improvements Project					
Mitigation Number	Mitigation Measure	Timing/Schedule	Implementation Responsibility	Completion of Implementation	
				Action	Date Completed
	programs that have been approved by ARB and/or SMAQMD. Carbon offset credits should be purchased to reduce annual construction emissions to 1,100 MT CO <sub>2</sub> e/year or that would achieve a 21.7 percent reduction from business-as-usual emissions (i.e., unmitigated emissions without Mitigation Measure AIR-1).				
<b>Hazards and Hazardous Materials</b>					
<b>HAZ-1</b>	<p><b>Implement Conservation Strategy Measures such as a Spill Prevention and Control Plan to Reduce the Potential for Environmental Contamination during Construction Activities.</b></p> <p>In addition to compliance with all applicable Federal, State, and local regulations, SAFCA shall implement the following measures as part of the Conservation Strategy to further reduce the risk of accidental spills and protect the environment:</p> <ul style="list-style-type: none"> <li>• <b>Prepare and Implement a Spill Prevention and Control Plan.</b> A written spill prevention and control plan (SPCP) shall be prepared and implemented. The SPCP and all material necessary for its implementation shall be accessible on site prior to initiation of project construction and throughout the construction period. The SPCP shall include a plan for the emergency cleanup of any spills of fuel or other material. Employees/ construction workers shall be provided the necessary information from the SPCP to prevent or reduce the discharge of pollutants from construction activities to waters and to use the appropriate measures should a spill occur. In the event of a spill, work shall stop immediately and the California Department of Fish and Wildlife, U.S. Fish and Wildlife Service, National Marine Fisheries Service, Central Valley Regional Water Quality Control Board, and U.S. Army Corps of Engineers shall be notified within 24 hours.</li> <li>• <b>Dispose Daily all Construction-related Materials and Equipment that Cannot be Secured at an Appropriate Disposal/Storage Site.</b> All litter, debris, unused materials, equipment, and supplies that cannot reasonably be secured shall be removed daily from the project work area and deposited at an appropriate disposal or storage site.</li> <li>• <b>Remove Immediately All Construction-Related Pads/Debris from Work Sites Upon Completion.</b> All work pads and construction debris shall be removed from work sites immediately when work is completed at each site.</li> </ul>	During construction activities	SAFCA		

**Mitigation Monitoring and Reporting Program for the  
North Sacramento Streams, Sacramento River East Levee, Lower American River, and Related Flood Improvements Project**

Mitigation Number	Mitigation Measure	Timing/Schedule	Implementation Responsibility	Completion of Implementation	
				Action	Date Completed
	<ul style="list-style-type: none"> <li>• <b>Use Safer Alternative Products to Protect Streams and Other Waters.</b> Every reasonable precaution shall be exercised to protect streams and other waters from pollution with fuels, oils, and other harmful materials. Safer alternative products (such as biodegradable hydraulic fluids) shall be used where feasible.</li> <li>• <b>Prevent Any Contaminated Construction By-Products from Entering Flowing Waters; Collect and Transport Such By-Products to An Authorized Disposal Area.</b> Petroleum products, chemicals, fresh cement, and construction by-products containing, or water contaminated by, any such materials shall not be allowed to enter flowing waters and shall be collected and transported to an authorized upland disposal area.</li> <li>• <b>Prevent Hazardous Petroleum or Other Hazardous Substances to Aquatic Life from Contaminating the Soil or Entering Waters of the State or U.S.</b> Gas, oil, other petroleum products, or any other substances that could be hazardous to aquatic life and resulting from project-related activities, shall be prevented from contaminating the soil and/or entering waters of the State and/or waters of the U.S.</li> <li>• <b>Properly Maintain All Construction Vehicles and Equipment and Inspect Daily for Leaks; Remove and Repair Equipment/Vehicles with Leaks.</b> Construction vehicles and equipment shall be properly maintained to prevent contamination of soil or water from external grease and oil or from leaking hydraulic fluid, fuel, oil, and grease. Vehicles and equipment shall be checked daily for leaks. If leaks are found, the equipment shall be removed from the site and shall not be used until the leaks are repaired.</li> <li>• <b>Refuel and Service Equipment at Designated Refueling and Staging Areas.</b> Equipment shall be refueled and serviced at designated refueling and staging sites located on the crown or landside of the levee and at least 50 feet from active stream channels or other water bodies. All refueling, maintenance, and staging of equipment and vehicles shall be conducted in a location where a spill shall not drain directly toward aquatic habitat. Appropriate containment materials shall be installed to collect any discharge, and adequate materials for spill cleanup shall be maintained on-site throughout the construction period.</li> </ul>				

<b>Mitigation Monitoring and Reporting Program for the North Sacramento Streams, Sacramento River East Levee, Lower American River, and Related Flood Improvements Project</b>					
Mitigation Number	Mitigation Measure	Timing/Schedule	Implementation Responsibility	Completion of Implementation	
				Action	Date Completed
	<ul style="list-style-type: none"> <li>• <b>Store Heavy Equipment, Vehicles, and Supplies at Designated Staging Areas.</b> All heavy equipment, vehicles, and supplies shall be stored at the designated staging areas at the end of each work period.</li> <li>• <b>Install an Impermeable Membrane Between the Ground and Any Hazardous Material in Construction Storage Areas.</b> Storage areas for construction material that contains hazardous or potentially toxic materials shall have an impermeable membrane between the ground and the hazardous material and shall be bermed as necessary to prevent the discharge of pollutants to groundwater and runoff water.</li> <li>• <b>Use Water Trucks to Control Fugitive Dust during Construction.</b> Water (e.g., trucks, portable pumps with hoses) shall be used to control fugitive dust during temporary access road construction.</li> <li>• <b>Use Only Nontoxic Materials and Materials Placed in Any Waters with No Coatings or Treatments Deleterious to Aquatic Organisms.</b> All materials placed in streams, rivers, or other waters shall be nontoxic and shall not contain coatings or treatments or consist of substances deleterious to aquatic organisms that may leach into the surrounding environment in amounts harmful to aquatic organisms.</li> </ul>				
<b>HAZ-3</b>	<p><b>Prepare a Worker Health and Safety Plan, and Implement Appropriate Measures to Minimize Potential Exposure to Hazardous Materials.</b></p> <ul style="list-style-type: none"> <li>• SAFCA shall implement the following measures before and during construction to reduce potentially significant impacts associated with exposure to hazardous materials. Coordinate with PG&amp;E regarding site cleanup activities to avoid construction worker exposure from potential mercury contamination, if Staging Area 1 is used.</li> <li>• Prepare and implement a worker health and safety plan before the start of construction activities that identifies, at a minimum, the potential types of contaminants that could be encountered during construction activity; all appropriate worker, public health, and environmental protection equipment and procedures to be used during project activities; emergency response procedures; the most direct route to the nearest hospitals; and a Site Safety Officer. The plan shall describe actions to be taken should hazardous materials be encountered on-site, including the telephone numbers of local and state emergency hazmat response agencies.</li> </ul>	Before and during construction activities	SAFCA		



<b>Mitigation Monitoring and Reporting Program for the North Sacramento Streams, Sacramento River East Levee, Lower American River, and Related Flood Improvements Project</b>					
Mitigation Number	Mitigation Measure	Timing/Schedule	Implementation Responsibility	Completion of Implementation	
				Action	Date Completed
	<p>If, during site preparation and construction activities, evidence of hazardous materials contamination is observed or suspected (e.g., stained or odorous soil or groundwater) cease immediately construction activities in the areas of the find. If contamination is observed or suspected, SAFCA shall retain a qualified hazardous materials specialist to assess the site and collect and analyze soil and/or water samples, as necessary. If contaminants are identified in the samples, SAFCA shall notify and consult with the appropriate Federal, State, and/or local agencies. Measures to remediate contamination and protect worker health and the environment shall be implemented in accordance with Federal, State, and local regulations before construction activities may resume at the site where contamination is encountered. Such measures could include, but are not limited to, preparation of a Phase I and/or Phase II Environmental Site Assessment, removal of contaminated soil, and pumping of groundwater into containment tanks. SAFCA may elect to implement cleanup measures, or to coordinate with the owner of the affected parcel to perform cleanup activities.</p>				
<b>HAZ-4</b>	<p><b>HAZ-4: Avoid Construction of Wetlands at Borrow Site 3, or Design Wetlands that Discourage Waterfowl.</b></p> <p>To prevent an increase in birdstrike hazards at Rio Linda Airport, avoidance of created wetlands at Borrow Site 3 shall be considered by SAFCA.</p> <p>If wetlands are created at this location as part of project-related reclamation plans, reclamation of Borrow Site 3 shall be implemented in a manner that does not increase, in comparison to existing conditions, attraction of birds that pose a moderate- to high-strike hazard (e.g., ducks, herons, and hawks) to aircraft that use Rio Linda Airport. A reclamation/restoration plan shall be developed and implemented by SAFCA that includes measures to minimize increase in attraction of hazardous wildlife, particularly waterfowl, in the site design. Such measures may include grading to create aquatic conditions that are not favored by waterfowl (e.g., relatively deep, steep-sided open water areas), minimizing the amount of open water habitat, and/or grading of the site to facilitate drainage after rain events.</p>	During borrow site reclamation design	SAFCA		

<b>Mitigation Monitoring and Reporting Program for the North Sacramento Streams, Sacramento River East Levee, Lower American River, and Related Flood Improvements Project</b>					
Mitigation Number	Mitigation Measure	Timing/Schedule	Implementation Responsibility	Completion of Implementation	
				Action	Date Completed
<b>HAZ-5</b>	<p><b>HAZ-5: Prepare and Implement a Fire Prevention Plan.</b></p> <p>A fire prevention plan shall be prepared and implemented by SAFCA in coordination with the appropriate emergency service and/or fire suppression agencies of the applicable local or State jurisdictions before the start of any construction activities. The plan shall describe fire prevention and response methods, including fire precaution, requirements for spark arrestors on equipment, and suppression measures that are consistent with the policies and standards of the affected jurisdictions. When heavy equipment is used for construction during the dry season, a water truck shall be maintained on the construction site. Materials and equipment required for implementation of the plan shall be available on the construction site. Training shall be provided to all construction personnel regarding fire safety, and all personnel shall be made familiar with the contents of the plan before the start of construction activities.</p>				
<b>Hydrologic and Hydraulic Resources</b>					
<b>HH-3</b>	<p><b>Prepare and Implement a Contingency Plan and Monitor Levee Stability during Construction.</b></p> <p>SAFCA shall prepare and implement a contingency plan prior to the start of levee reconstruction activities to address the potential for levee destabilization during construction. The contingency plan shall conform to ULDC requirements and contain a summary of construction activities and environmental conditions. The contingency plan shall identify interim repairs needed to restore 10-year grade and dimensions to avoid prolonged exposure of the community during flood season, and shall identify how to inform the public of system damages and the level of interim protection to be provided.</p> <p>A certified civil or geotechnical engineer shall monitor slope stability, water levels and their duration, and other adverse geotechnical conditions that could be exacerbated during construction.</p>	Prior to and during levee reconstruction	SAFCA		

<b>Mitigation Monitoring and Reporting Program for the North Sacramento Streams, Sacramento River East Levee, Lower American River, and Related Flood Improvements Project</b>					
Mitigation Number	Mitigation Measure	Timing/Schedule	Implementation Responsibility	Completion of Implementation	
				Action	Date Completed
<b>HH-4</b>	<p><b>HH-4: Limit Construction to the Dry Season and Low Water Periods, Work with Agencies to Reestablish Drainage Following Construction, Prepare Drainage Studies as Needed, and Address Pre- and Postproject Drainage Needs through Project Design.</b></p> <p>SAFCA shall implement the following measures to avoid adverse effects associated with disruption of local drainage systems within levee footprint areas during construction, such as damage to outfall flap gates, temporary blockage of outfalls, and damage to buried drainage culverts or pipes.</p> <ul style="list-style-type: none"> <li>• Construction shall occur during the dry season and low water periods of receiving streams to minimize the potential for adverse effects to occur to drainage infrastructure during heavy precipitation events, when discharges through drainage outfalls would be most prevalent, and during flood events, when high water in a receiving stream may impose a backwater effect on these drainage facilities.</li> <li>• During final project design, project engineers shall coordinate with the owners and operators of local drainage systems and landowners served by the systems to evaluate pre- and postproject drainage needs and to design project features that would minimize the potential for substantial drainage disruption, thereby minimizing the potential for flooding.</li> <li>• If it is determined that substantial disruption of a local drainage system could result from project construction, a drainage study shall be prepared and implemented as part of the final project design. The study shall consider the design flows of any existing drainage facilities that would be affected by construction and develop appropriate plans for relocation or other modification of these facilities, and/or construction of new facilities as needed, to ensure equivalent functioning of the drainage system during and after construction.</li> <li>• Features needed to reduce project-related drainage problems shall be installed as part of the project, depending on site-specific conditions.</li> </ul>	During project design and construction	SAFCA		

Mitigation Monitoring and Reporting Program for the North Sacramento Streams, Sacramento River East Levee, Lower American River, and Related Flood Improvements Project					
Mitigation Number	Mitigation Measure	Timing/Schedule	Implementation Responsibility	Completion of Implementation	
				Action	Date Completed
<b>Noise</b>					
<b>NOI-1</b>	<p><b>NOI-1: Implement Measures to Reduce Construction Noise Effects.</b></p> <p>SAFCA shall require that its primary contractors for engineering design and construction implement the following measures at each work site in any year of project construction to avoid and minimize construction traffic noise effects on sensitive receptors. These measures are consistent with SAFCA’s standard contract specifications for noise control.</p> <p>To the extent feasible and practicable, the primary construction contractors shall employ noise-reducing construction practices such that noise from construction complies with applicable noise-level rules, regulations, and ordinances that apply to the work, including the noise standards established for transportation noise sources by the applicable agencies (Sacramento County, and the City of Sacramento), depending on the jurisdictional location of the affected receptor(s). Measures that shall be used to limit noise shall include the following:</p> <ul style="list-style-type: none"> <li>• Prohibit the start-up of machines or equipment up prior to 7 a.m. and after 6 p.m., Monday through Saturday; and prior to 9 a.m. and after 6 p.m., on Sunday;</li> <li>• Prohibit use of materials and equipment deliveries prior to 7 a.m. and after 6 p.m., Monday through Saturday; and prior to 9 a.m. and after 6 p.m., on Sunday;</li> <li>• Locate stationary construction equipment, such as compressors, away from nearby residential areas and provide acoustical shielding.</li> <li>• Minimize idling times of equipment either by shutting equipment off when not in use or by reducing the maximum idling time to 5 minutes.</li> <li>• Locate and use equipment as far away as practical from noise-sensitive uses.</li> <li>• Use electrically powered equipment instead of internal combustion equipment where practicable and feasible.</li> <li>• Establish and enforce construction site and haul road speed limits.</li> <li>• Restrict the use of bells, whistles, alarms, and horns to safety-warning purposes.</li> <li>• Equip all construction equipment with noise-reduction devices such as mufflers to minimize construction noise and operate all internal combustion engines with exhaust and intake silencers.</li> </ul>	Before and during construction	SAFCA		

<b>Mitigation Monitoring and Reporting Program for the North Sacramento Streams, Sacramento River East Levee, Lower American River, and Related Flood Improvements Project</b>					
Mitigation Number	Mitigation Measure	Timing/Schedule	Implementation Responsibility	Completion of Implementation	
				Action	Date Completed
	<ul style="list-style-type: none"> <li>• Provide written notification to the potentially affected residents, identifying the type, duration, and frequency of construction activities within 1,000 feet of residences prior to construction. Notification materials shall also identify a mechanism for residents to register complaints with the appropriate jurisdiction if construction noise levels are overly intrusive or construction occurs outside the permitted hours.</li> <li>• Locate fixed construction equipment (e.g., compressors and generators), construction staging and stockpiling areas, and construction vehicle routes as far as feasible from noise-sensitive receptors.</li> <li>• Use noise-attenuating buffers such as structures, truck trailers, or soil piles between noise generation sources and sensitive receptors, where feasible and particularly in locations subject to prolonged construction.</li> <li>• Designate a disturbance coordinator and conspicuously post this person's number around the project sites, in adjacent public spaces, and in construction notifications. The disturbance coordinator shall be responsible for responding to any complaints about construction activities. The disturbance coordinator shall receive all public complaints about construction disturbances and be responsible for determining the cause of the complaint and implementation of feasible measures to be taken to alleviate the problem.</li> </ul>				
<b>NOI-2</b>	<p><b>NOI-2: Implement Measures to Reduce Construction Vibration Effects.</b></p> <p>SAFCA shall require that its primary contractors for engineering design and construction implement the following measures at each work site in any year of project construction to avoid and minimize construction-vibration effects on sensitive receptors. These measures are consistent with SAFCA's standard contract specifications for vibration control.</p> <p>To the extent feasible and practicable, the primary construction contractors shall employ vibration-reducing construction practices such that vibration from construction complies with applicable noise-level rules and regulations that apply to the work, including the vibration standards established for construction vibration-sources by the applicable agencies (City of Sacramento), depending on the jurisdictional location of the affected receptor(s). Measures that shall be used to limit vibration shall include the following:</p>	Before and during construction	SAFCA		

<b>Mitigation Monitoring and Reporting Program for the North Sacramento Streams, Sacramento River East Levee, Lower American River, and Related Flood Improvements Project</b>					
Mitigation Number	Mitigation Measure	Timing/Schedule	Implementation Responsibility	Completion of Implementation	
				Action	Date Completed
	<ul style="list-style-type: none"> <li>• Require project construction specifications to require the contractor to limit vibrations to less than 0.2-inch per second PPV, and less than 72 VdB within 50 feet at any building.</li> <li>• Prohibit the start-up of machines or equipment up prior to 7 a.m. and after 6 p.m., Monday through Saturday; and prior to 9 a.m. and after 6 p.m., on Sunday.</li> <li>• Prohibit use of materials and equipment deliveries prior to 7 a.m. and after 6 p.m., Monday through Saturday; and prior to 9 a.m. and after 6 p.m., on Sunday.</li> <li>• Place stationary construction equipment, such as compressors, away from nearby residential areas.</li> <li>• Operate earthmoving equipment on the construction lot as far away from vibration-sensitive sites as possible.</li> <li>• Phase the demolition, earthmoving, and other project activities that entail ground disturbance so they do not occur in the same time period. Unlike noise, the total vibration level produced could be substantially less when each vibration source operates separately.</li> <li>• Select demolition methods that involve minimal impact, where possible. For example, sawing bridge decks into sections that can be loaded onto trucks results in lower vibration levels than impact demolition by pavement breakers, and milling generates lower vibration levels than excavation using clam shell or chisel drops.</li> <li>• Avoid vibratory rollers and packers near sensitive areas.</li> <li>• Route heavily loaded trucks away from residential streets, if possible. Streets with the fewest homes if no alternatives are available shall be selected. Record measurements daily.</li> <li>• A voluntary pre- and post-construction survey shall be conducted to assess potential architectural damage from levee construction vibration at each residence within 75 feet of construction. The survey shall include visual inspection of the structures that could be affected, documentation of structures by means of photographs and video. This documentation shall be reviewed with the individual owners prior to any construction activities. Postconstruction monitoring of structures shall be performed to identify (and repair, if necessary) damage, if any, from construction vibrations. Any damage shall be documented with photographs and video. This documentation shall be reviewed with the individual property owners.</li> </ul>				

<b>Mitigation Monitoring and Reporting Program for the North Sacramento Streams, Sacramento River East Levee, Lower American River, and Related Flood Improvements Project</b>					
Mitigation Number	Mitigation Measure	Timing/Schedule	Implementation Responsibility	Completion of Implementation	
				Action	Date Completed
	<ul style="list-style-type: none"> <li>Place vibration monitoring equipment at the property line adjacent to large equipment and, with owner approval, at the back of the residential structures adjacent to the large equipment.</li> <li>Designate a disturbance coordinator and conspicuously post this person's number around the project site, in adjacent public spaces, and in construction notifications. The disturbance coordinator shall be responsible for responding to any complaints about construction activities. The disturbance coordinator shall receive all public complaints about construction disturbances and be responsible for determining the cause of the complaint and implementation of feasible measures to be taken to alleviate the problem. The disturbance coordinator shall have the authority to halt vibration-generating activity if necessary to protect public health and safety.</li> </ul>				
<b>NOI-4</b>	<p><b>NOI-4: Implement Measures to Reduce Noise Effects.</b></p> <p>SAFCA shall require that its primary contractors for engineering design and construction implement the following measures at each work site, as part of its overall safety program in any year of project construction to avoid and minimize aircraft noise effects on construction workers. These measures are consistent with SAFCA's standard contract specifications for noise control for construction projects.</p> <p>To the extent feasible and practicable, the primary construction contractors shall employ noise-reducing construction practices such that noise from construction complies with applicable noise rules, and regulations that apply to the work, including the rules established through Occupational Safety and Health Administration (OSHA). Measures that shall be used to limit noise shall include the following:</p> <ul style="list-style-type: none"> <li>Plan for potential exposure before activities start.</li> <li>Hold daily safety meetings to discuss ways to limit high noise levels.</li> <li>Use hearing protection to supplement noise reduction.</li> </ul>	Before and during construction	SAFCA		

<b>Mitigation Monitoring and Reporting Program for the North Sacramento Streams, Sacramento River East Levee, Lower American River, and Related Flood Improvements Project</b>					
Mitigation Number	Mitigation Measure	Timing/Schedule	Implementation Responsibility	Completion of Implementation	
				Action	Date Completed
<b>Recreation Resources</b>					
<b>REC-1a</b>	<p><b>REC-1a: Prepare and Implement a Bicycle Detour Plan for all Bike Trails and On-Street Bicycle Routes, Provide Construction Period Information on Bicycle Facility Closures, and Coordinate with the City of Sacramento and/or Sacramento County Department of Parks and Recreation to Allow Repair of Damage to Bicycle Facilities.</b></p> <p>SAFCA shall implement the following measures to reduce temporary, short-term construction impacts on bicycle facilities in the project study area:</p> <ul style="list-style-type: none"> <li>• Prepare a bicycle detour plan for all bike trails, including the Ueda Parkway and Sacramento Northern Bike Trail, and on-street bicycle routes in consultation with the City of Sacramento and/or Sacramento County Bicycle and Pedestrian Coordinator at least 10 days before the start of construction activities, as applicable. The detour plan shall include posted signs at major entry points for bicycle trails clearly indicating closure routes, roadway markings to designate temporary bike lanes, information signs to notify motorists to share the road with bicyclists, and a contact number to call for questions or concerns. SAFCA shall maintain and implement the detour plan throughout the construction period and during all construction seasons. Provide public information through the media and on the SAFCA’s website regarding detours and alternative access routes to bicycle facilities affected by project construction. SAFCA shall coordinate with the City of Sacramento and/or Sacramento County Department of Parks and Recreation to make available information to the public regarding closure of bicycle facilities and detours at least 10 days before the start of construction activities. SAFCA shall continue to provide public information regarding closure of bicycle facilities and detours throughout the construction period.</li> <li>• Upon completion of levee improvements, coordinate with the City of Sacramento and/or Sacramento County Department of Parks and Recreation for these agencies to restore access and repair any construction-related damage to bicycle facilities to preproject conditions.</li> </ul>	Prepare bicycle detour plan before the start of construction activities; implement the plan and provide construction period information of bicycle facility closures during construction; and coordinate with the City of Sacramento and/or Sacramento County Department of Parks and Recreations after construction of the levee improvements for these agencies to restore access and repair any construction-related damage	SAFCA		



<b>Mitigation Monitoring and Reporting Program for the North Sacramento Streams, Sacramento River East Levee, Lower American River, and Related Flood Improvements Project</b>					
Mitigation Number	Mitigation Measure	Timing/Schedule	Implementation Responsibility	Completion of Implementation	
				Action	Date Completed
<b>REC-1b</b>	<p><b>REC-1b: Prepare and Implement a Recreation Plan for all Recreation Facilities, Provide Construction Period Information on Recreation Facility Closures, and Coordinate with the City of Sacramento Department of Parks and Recreation and California Department of Parks and Recreation to Repair Damage to Recreational Facilities.</b></p> <p>SAFCA shall implement the following measures to reduce temporary, short-term construction impacts on recreation facilities in the project study area:</p> <ul style="list-style-type: none"> <li>• Prepare a recreation plan for all recreation facilities in consultation with the City of Sacramento Department of Parks and Recreation. The recreation plan shall include posted signs at major entry points for parks and recreation facilities, boat launch ramps at Miller Park and Garcia Bend Park, and the Sacramento Marina clearly indicating closures and estimated duration of closures; information signs to notify the public of alternate parks and recreation sites, boat launch ramps at Miller Park and Garcia Bend Park, and the Sacramento Marina; and a contact number to call for questions or concerns. SAFCA shall maintain and implement the recreation plan throughout the construction period and during all construction seasons.</li> <li>• Coordinate with the City of Sacramento Department of Parks and Recreation at least 30 days before the start of construction activities to allow for the City to relocate activities that occur in affected parks and provide alternate access points to the Sacramento River. Upon completion of levee improvements, coordinate with the City of Sacramento Department of Parks and Recreation to restore access and repair any construction-related damage to parks and recreation facilities to preproject conditions.</li> <li>• SAFCA shall notify and coordinate with the California Department of Parks and Recreation at least 30 days before the start of construction activities to allow for possible rerouting or rescheduling of the Excursion Train. Upon completion of levee improvements, coordinate with the California Department of Parks and Recreation to repair any construction-related damage to preproject conditions.</li> <li>• Provide public information through the media and on the SAFCA’s website regarding parks and recreation facilities and boat launch ramps affected by project construction at least 30 days before the start of construction activities. SAFCA shall coordinate with the City of Sacramento Department of Parks and Recreation to make available information to the public</li> </ul>	Before, during and after construction	SAFCA		

<b>Mitigation Monitoring and Reporting Program for the North Sacramento Streams, Sacramento River East Levee, Lower American River, and Related Flood Improvements Project</b>					
Mitigation Number	Mitigation Measure	Timing/Schedule	Implementation Responsibility	Completion of Implementation	
				Action	Date Completed
	regarding closure of parks and recreation facilities, boat launch ramps at Miller Park and Garcia Bend Park, and the Sacramento Marina and coordinate with the California Department of Parks and Recreation for closure of the Excursion Train. SAFCA shall continue to provide public information regarding closure of parks and recreation facilities, boat launch ramps, and the Excursion Train throughout the construction period.				
<b>REC-1c</b>	<p><b>Coordinate with Primary Construction Contractor(s) to Avoid Simultaneous Closure of Parks and Locate Construction Staging Areas to Avoid Recreation Facilities where Feasible.</b></p> <p>SAFCA shall implement the following measures to reduce temporary, short-term construction impacts on recreation facilities in the project study area:</p> <ul style="list-style-type: none"> <li>• Coordinate with its primary construction contractor(s) to conduct construction activities at intervals throughout the construction seasons to minimize the potential for simultaneous closure of parks and recreation facilities, including soccer fields, boat launch ramps, and marinas, to the extent feasible.</li> <li>• Coordinate with its primary construction contractor(s) to require that staging areas in parks be located to avoid existing recreation facilities, to the extent feasible.</li> </ul>	Before, during and after construction	SAFCA		
<b>Transportation and Traffic</b>					
<b>TR-1</b>	<p><b>TR-1: Prepare and Implement a Traffic Control and Road Maintenance Plan.</b></p> <p>Before the start of project-related construction activities, SAFCA shall prepare and implement a plan to manage expected construction-related traffic to the extent feasible, and to avoid and minimize potential traffic congestion on local roadways during project-related construction. The traffic control plan shall outline the phasing of activities and the use of specific routes to and from the work site, staging area, and borrow site locations to minimize the daily amount of traffic on individual roadways. The items listed below shall be included as terms of the construction contracts.</p>	Before and during construction	SAFCA		

<b>Mitigation Monitoring and Reporting Program for the North Sacramento Streams, Sacramento River East Levee, Lower American River, and Related Flood Improvements Project</b>					
Mitigation Number	Mitigation Measure	Timing/Schedule	Implementation Responsibility	Completion of Implementation	
				Action	Date Completed
	<ul style="list-style-type: none"> <li>• Provide a site-specific access plan specifying the roadways on which construction workers are allowed travel to access the staging areas, work sites, and borrow areas. Access to the staging areas, work sites, and borrow areas shall be obtained from the levee roadways rather than from surface streets, to the maximum extent feasible.</li> <li>• Prohibit construction workers from accessing work sites, staging areas, or borrow sites from any locations other than those specified in the plan.</li> <li>• Maintain two-way traffic flow on arterial roadways accessing active work areas to accommodate construction of project facilities, or unless otherwise allowed by the appropriate jurisdiction.</li> <li>• Provide 72-hour advance notification if access to driveways or private roads would be affected. Limit effects on driveway and private roadway access to working hours and provide uninterrupted access to driveways and private roads during non-work hours. If necessary, use steel plates, temporary backfill, or another accepted measure to provide access.</li> <li>• Provide clearly marked pedestrian detours to address any sidewalk or pedestrian walkway closures.</li> <li>• Provide clearly marked bicycle detours to address bicycle route closures or if bicyclist safety would be otherwise compromised.</li> <li>• Provide crossing guards and/or flag persons as needed to avoid traffic conflicts and ensure pedestrian and bicyclist safety, particularly in the vicinity of schools.</li> <li>• Queue trucks only in areas and at times allowed by the appropriate jurisdiction.</li> <li>• Post warnings about the potential presence of slow-moving vehicles.</li> <li>• Use traffic control personnel when appropriate.</li> <li>• Comply with Caltrans requirements by submitting this plan to Caltrans for review to cover points of access from the State highway system (I-5 and U.S. 50) for haul trucks and other construction equipment.</li> <li>• Assess and repair any damage to roadways that are used during construction, and repair all project-related potholes, fractures, or other damages.</li> </ul>				

<b>Mitigation Monitoring and Reporting Program for the North Sacramento Streams, Sacramento River East Levee, Lower American River, and Related Flood Improvements Project</b>					
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				Action	Date Completed
<b>TR-2</b>	<p><b>TR-2: Provide Pre-Notification of Road Closures and Detours to Emergency Service Providers, and Maintain Emergency Access.</b></p> <p>SAFCA shall provide public notice by appropriate means, such as physical signage, Internet postings, letters, or telephone calls, to emergency service providers in the project study area at least 72 hours prior to road closures and detours. SAFCA shall provide clear emergency access to all existing buildings and facilities at all times.</p>	Before and during construction	SAFCA		
<b>TR-3a</b>	<p><b>TR-3a: Provide Advance Notice of Bicycle and Pedestrian Facility Closures and Detour Routes.</b></p> <p>SAFCA shall implement the following measures to improve access to and provide for the safety of pedestrian and bicycle facilities during construction.</p> <ul style="list-style-type: none"> <li>• Coordinate with and provide notice to the appropriate City and/or County departments at least 10 days before the start of construction activities that would require closure and/or detours of pedestrian and bicycle routes.</li> <li>• Provide clearly marked pedestrian detours to address any sidewalk or pedestrian walkway closures or if pedestrian safety would be otherwise compromised.</li> <li>• Provide clearly marked bicycle detours to address bicycle route closure or if bicyclist safety would be otherwise compromised.</li> <li>• Provide crossing guards and/or flag persons as needed to avoid traffic conflicts and ensure pedestrian and bicyclist safety.</li> <li>• Locate all stationary equipment as far away as possible from areas used by vehicles, bicyclists, and pedestrians.</li> <li>• Post alternative bicycle or pedestrian routes and facilities that can be used during construction activities showing when detours or route closures are required at least 10 days before the start of construction activities.</li> <li>• Reconstruct pedestrian/bicycle trails and paths to preproject conditions at the completion of project-related construction activities.</li> </ul>	Before and during construction	SAFCA		

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<b>TR-3b</b>	<p><b>Post Warning Signs and Buoys during In-Water Construction Work.</b></p> <p>SAFCA shall post warning signs and buoys upstream of, and downstream of all construction equipment, sites, and activities to reduce the effect of project activities on the navigability in the Sacramento River.</p>	Before and during construction	SAFCA		
<b>Utilities and Service Systems</b>					
<b>UTIL-1</b>	<p><b>Verify Utility Locations, Coordinate with Affected Utility Providers, Prepare and Implement a Response Plan, and Conduct Worker Training with Respect to Accidental Utility Damage.</b></p> <p>SAFCA shall require the following measures are implemented before construction begins to avoid and minimize potential damage to utilities, infrastructure, and service disruptions during construction:</p> <ul style="list-style-type: none"> <li>• Coordinate with CVFPB and applicable utility and service providers to implement orderly relocation of utilities that need to be removed or relocated.</li> <li>• Provide notification of any potential interruptions in service to the appropriate agencies and affected landowners.</li> <li>• Verify through field surveys and the use of the Underground Service Alert services the locations of buried utilities in the project study area, including natural gas, petroleum, and sewer pipelines. Any buried utility lines shall be clearly marked in the area of construction (e.g., in the field) and on the construction specifications in advance of any earthmoving activities.</li> <li>• Prepare and implement a response plan that addresses potential accidental damage to a utility line. The plan shall identify chain-of-command rules for notification of authorities and appropriate actions and responsibilities regarding the safety of the public and workers. A component of the response plan will include worker education training in response to such situations.</li> <li>• Stage utility relocations during construction to minimize interruptions in service.</li> </ul>	Before the start of and during construction	SAFCA		

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<b>Water Quality and Groundwater Resources</b>					
<b>WQ-3</b>	<p><b>Obtain Appropriate Discharge and Dewatering Permit and Implement Provisions for Dewatering.</b></p> <p>Before discharging any dewatered effluent to surface water, SAFCA shall obtain a Low Threat Discharge and Dewatering NPDES permit, or an Individual Permit from the Central Valley RWQCB if the dewatering is not covered under the RWQCB's NPDES Construction General Permit. The dewatering permit includes extensive water quality monitoring to adhere to the strict effluent and receiving water quality criteria outlined in the permit. As part of the permit, the permittee shall design and implement measures as necessary to meet the discharge limits identified in the relevant permit. For example, if dewatering is needed during the construction of a cutoff wall, the dewatering permit would require treatment or proper disposal of the water prior to discharge if it is contaminated. These measures shall be selected to achieve maximum sediment removal and represent the best available technology that is economically achievable.</p> <p>Implemented measures could include the retention of dewatering effluent until particulate matter has settled before it is discharged, use of infiltration areas, and other BMPs. Final selection of water quality control measures would be subject to approval by the Central Valley RWQCB. SAFCA shall verify that coverage under the appropriate NPDES permit has been obtained before allowing dewatering activities to begin. SAFCA or its authorized agent shall perform routine inspections of the construction area to verify that the water quality control measures are properly implemented and maintained. SAFCA shall notify its contractors immediately if there is a non-compliance issue and shall require compliance.</p>	Before the start of earthmoving activities	SAFCA		