Mitigation Monitoring and Reporting Program

American River Watershed Common Features, Water Resources Development Act of 2016 Project, Sacramento River Erosion Contract 2

SCH# 2022040317

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Abbreviations and Acronyms

APE	Area of Potential Effects
ARB	Air Resources Board
ARCF	American River Watershed Common Features
ARCF 2016 Project	American River Watershed Common Features Water Resources Development Act of 2016 Project
BAAQMD	Bay Area Air Quality Management District
BMP	Best Management Practice
BO	Biological Opinion
Caltrans	California Department of Transportation
CARB	California Air Resources Board
CCR	Code of California Regulations
CDFW	California Department of Fish and Wildlife
CEQA	California Environmental Quality Act
CRHR	California Register of Historic Resources
CVFPB	Central Valley Flood Protection Board
CWA	Clean Water Act
EA	Environmental Assessment
EIS	Environmental Impact Statement
EIR	Environmental Impact Report
EPA	Environmental Protection Agency
ESA	Environmental Site Assessment
GHG	Greenhouse Gas
GRR	General Reevaluation Report
HMMAMP	Habitat Mitigation, Monitoring, and Adaptive Management Plan
HPMP	Historic Properties Management Plan
HPTP	Historic Properties Treatment Plan
IWM	instream woody material
MLD	Most Likely Descendent
MMRP	Mitigation Monitoring and Reporting Program
NAHC	Native American Heritage Center

NEPA	National Environmental Policy Act
NOI	Notice of Intent
NO_x	Oxides of Nitrogen
NPDES	National Pollutant Discharge Elimination System
OHWM	Ordinary High Water Mark
PA	Programmatic Agreement
PM	Particulate matter
PM_{10}	Particulate matter 10 microns or less in diameter
PPV	Peak particle velocity
PRC	Public Resources Code
RWQCB	Regional Water Quality Control Board
SHPO	State Historic Preservation Office
SMAQMD	Sacramento Metropolitan Air Quality Management District
SPCCP	Spill Prevention Control and Countermeasures Plan
SRA	Shaded River Area
SWPPP	Stormwater Pollution Prevention Plan
SWRCB	State Water Resources Control Board
USACE	U.S. Army Corps of Engineers
USFWS	U.S. Fish and Wildlife Service
VdB	Velocity decibels

MITIGATION MONITORING AND REPORTING PROGRAM
AMERICAN RIVER WATERSHED COMMON FEATURES,
WATER RESOURCES DEVELOPMENT ACT OF 2016 PROJECT,
SACRAMENTO RIVER EROSION CONTRACT 2
SACRAMENTO, CALIFORNIA

This mitigation monitoring and reporting program (MMRP) is designed to fulfill Section 21081.6 (a) of the California Public Resources Code (PRC) and Section 15097 of the California Environmental Quality Act (CEQA) Guidelines. PRC Section 21081.6(a) and CEQA Section 15097 require that public agencies adopt a reporting or monitoring program whenever a project or program is approved that includes mitigation measures to be imposed to mitigate or avoid significant environmental impacts on the physical environment. The mitigation measures and strategies are described below.

The MMRP includes the following, organized by impact topic:

- Mitigation Number – lists the adopted mitigation measures by number as designated in the Final Supplemental Environmental Impact Statement/Environmental Assessment (Supplemental EIS/EA).
- Mitigation Measure – Provides the text of the mitigation measures, each of which has been adopted and incorporated into the Sacramento River Erosion Contract 2 Project.
- Implementation Timing – identifies the timing of implementation of the action described in the mitigation measures. *See Notes below.
- Responsible for Mitigation – identifies the agency/party responsible for implementing the actions described in the mitigation measures.
- Responsible for Monitoring/Reporting Action– identifies the agency/party responsible for monitoring and/or reporting on the implementation of the actions described in the mitigation measures.

*Notes:
D: To be implemented or included as part of project design.
P: To be implemented prior to construction being initiated (pre-construction).
C: To be implemented during project construction.

Public Utilities

UTL-1

Verify Utility Locations, Coordinate with Affected Utility Owners/Providers, Prepare and Implement a Response Plan, and Conduct Worker Training with Respect to Accidental Utility Damage: The Project Partners (USACE, CVFPB, and SAFCA) would implement the measures listed below before construction begins to avoid and minimize potential damage to utilities, infrastructure, and service disruptions during construction.

- Coordinate with applicable utility and service providers to implement orderly relocation of utilities that need to be removed or relocated.
- Provide notification of any potential interruptions in service to the appropriate agencies and affected landowners.
- Verify through field surveys and the use of the Underground Service Alert services the locations of buried utilities in the Project Area, including natural gas, petroleum, and sewer pipelines. Any buried utility lines would be clearly marked in the area of construction (e.g., in the field) and on the construction specifications in advance of any earthmoving activities.
- Before the start of construction, prepare and implement a response plan that addresses potential accidental damage to a utility line. The plan would 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 would include worker education training in response to such situations.
- Stage utility relocations during project construction to minimize interruptions in service.
- Communicate construction activities with first responders to avoid response delays due to construction detours.

Implementation Timing: Design, Pre-construction
Implementation Responsibility: USACE
Monitoring/Reporting Responsibility: CVFPB

Transportation and Circulation

TR-1

Prepare and Implement a Traffic Control and Road Maintenance Plan: Before the start of project-related construction activities, Project Partners would require the contractor to prepare a Traffic Control and Road Maintenance Plan. This plan would describe the methods of traffic control to be used during construction. All on-street

construction traffic would be required to comply with the local jurisdiction's standard construction specifications. The items listed below would be included in the plan and as terms of the construction contracts:

- Follow the standard construction specifications of affected jurisdictions and obtain the appropriate encroachment permits, if required. Incorporate the conditions of the encroachment permit into the construction contract. Encroachment permit conditions would be enforced by the agency that issues the encroachment permit.
- Provide adequate parking for construction trucks, equipment, and construction workers within the designated staging areas throughout the construction period. If inadequate space for parking is available at a given work site, the construction contractor would provide an off-site staging area and as needed, coordinate the daily transport of construction vehicles, equipment, and personnel to and from the work site.
- Proposed lane closures would be coordinated with the appropriate jurisdiction and be minimized to the extent possible during the morning and evening peak traffic periods. Construction specifications would limit lane closures during commuting hours where feasible, and lane closures would be kept as short as possible. If a road must be closed, detour routes and/or temporary roads would be made to accommodate traffic flows. Signs would be provided to direct traffic through detours.
- Post signs providing advance notice of upcoming construction activities at least 1 week in advance so that motorists are able to avoid traveling through affected areas during these times.
- Provide bicycle detours to allow for continued use by bicycle commuters. Maintain safe pedestrian and bicyclist access around the construction areas at all times. Construction areas would be secured as required by the applicable jurisdiction to prevent pedestrians and bicyclists from entering the work site, and all stationary equipment should be located as far away as possible from areas where bicyclists and pedestrians are present.
- Notify (by means such as physical signage, internet postings, letters, or telephone calls) and consult with emergency service providers to inform them of construction activities, maintain emergency access, and facilitate the passage of emergency vehicles on city streets during construction activities. Emergency vehicle access would be made available at all times.
- The construction contractor would document pre- and post- construction conditions on roadways used during construction. This information would be

used to assess damage to roadways used during construction. The contractor would repair all potholes, fractures, or other damages.
- Comply with Caltrans requirements by submitting this Traffic Control and Road Maintenance Plan to Caltrans for review to cover points of access from the State highway system (I-5) for haul trucks and other construction equipment.

Implementation Timing: Design, Pre-construction, Construction
Implementation Responsibility: USACE
Monitoring/Reporting Responsibility: CVFPB

Geological Resources

GEO-1

Acquire Appropriate Regulatory Permits and Prepare and Implement a Storm Water Pollution Prevention Plan, Spill Prevention Control and Countermeasures Plan, and Associated Best Management Practices: Prior to the start of earthmoving activities, the Project Partners will obtain coverage under the State Water Resources Control Board (SWRCB) National Pollutant Discharge Elimination System (NPDES) stormwater permit for general construction activity (Order 2009-0009-DWQ), including preparation and submittal of a project-specific SWPPP at the time the Notice of Intent (NOI) to discharge is filed. The SWPPP shall identify and specify the following:

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

- 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 Stormwater Pollution Prevention Plan (SWPPP);
- The appropriate personnel responsible for supervisory duties related to implementation of the SWPPP.
- Where applicable, BMPs identified in the SWPPP will be in place throughout all site work, construction/demolition activities, and will be used in all subsequent site development activities. BMPs may include, but are not limited to, such measures as those listed below.
- Work window- conduct earthwork during low flow periods (June 1 to October 31);
- To the extent possible, stage construction equipment and materials on the landside of the levee in areas that have already been disturbed;
- Minimize ground and vegetation disturbance during project construction by establishing designated equipment staging areas, ingress and egress corridors, spoils disposal and soil stockpile areas, and equipment exclusion zones prior to the commencement of any grading operations;
- Stockpile soil on the landside of the levee reaches, and install sediment barriers (e.g., silt fences, fiber rolls, and straw bales) around the base of stockpiles to intercept runoff and sediment during storm events. If necessary, cover stockpiles with geotextile fabric to provide further protection against wind and water erosion;
- Install sediment barriers on graded or otherwise disturbed slopes as needed to prevent sediment from leaving the project site and entering nearby surface waters;
- Install plant materials to stabilize cut and fill slopes and other disturbed areas once construction is complete. Plant materials will include an erosion control seed mixture or shrub and tree container stock. Temporary structural BMPs, such as sediment barriers, erosion control blankets, mulch, and mulch tackifier, will be installed as needed to stabilize disturbed areas until vegetation becomes established;
- Conduct water quality tests specifically for increases in turbidity and sedimentation caused by construction activities;
- A copy of the approved SWPPP shall be maintained and available at all times on the construction site; and
- Project partners will also prepare a Spill Prevention Control and Countermeasure Plan (SPCCP). A SPCCP is intended to prevent any discharge of oil into navigable water or adjoining shorelines. The contractor will develop and implement a SPCCP to minimize the potential for adverse effects from spills of hazardous, toxic, or petroleum substances during construction and operation activities. The SPCCP will be completed before any construction activities begin.

Implementation of this measure will comply with state and Federal water quality regulations. The SPCCP will describe spill sources and spill pathways in addition to the actions that would be taken in the event of a spill (e.g., an oil spill from engine refueling would be immediately cleaned up with oil absorbents). The SPCCP will outline descriptions of containments facilities and practices such as doubled-walled tanks, containment berms, emergency shut-offs, drip pans, fueling procedures, and spill response kits. It will also describe how and when employees are trained in proper handling procedures and spill prevention and response procedures.

Implementation Timing: Design, Pre-construction, Construction
Implementation Responsibility: USACE
Monitoring/Reporting Responsibility: CVFPB

Water Quality

WATERS-1

Compensate for Fill of State and Federally Protected Waters: In compliance with the Clean Water Act (CWA), the Project Partners will compensate for fill of State and Federally protected waters to ensure no net loss of functions and values. Water quality certification pursuant to Section 401 of the CWA will be obtained from the Central Valley Regional Water Quality Control Board (RWQCB) before starting project activities subject to Section 401. Any measures determined necessary during the permitting processes will be implemented, such that there is no net loss of functions and values of jurisdictional waters.

Mitigation may be accomplished through habitat replacement, enhancement of degraded habitat, off-site mitigation at an established mitigation bank, contribution of in-lieu fees, or other methods acceptable to the regulatory agencies, ensuring there is no net loss of waters of the United States. If compensation is provided through permittee-responsible mitigation with additional National Environmental Policy Act (NEPA) and California Environmental Quality Act (CEQA) documentation, a mitigation plan will be developed to detail appropriate compensation measures determined through consultation with USACE and Central Valley RWQCB. These measures will include

methods for implementation, success criteria, monitoring and reporting protocols, and contingency measures to be implemented if the initial mitigation fails.

Implementation Timing: Pre-construction, Construction, O&M
Implementation Responsibility: USACE
Monitoring/Reporting Responsibility: CVFPB

Vegetation and Wildlife

VEG-1

Retain, Protect, and Plant Trees On-Site: Project designs will be refined to reduce impacts on vegetation and wildlife to the extent practicable. Refinements implemented to reduce the loss of riparian habitat will include reducing the impact footprint, constructing bank protection rather than launchable rock trench whenever feasible, and designing planting benches. Where practicable, trees will be retained in locations where the bank protection and planting benches is constructed. Trees will be protected in place along the natural channel during rock placement. Additional plantings will be installed on the newly constructed benches to provide habitat for fish and avian species. The planting benches will be used where practicable to minimize impacts on fish and wildlife species. The on-site habitat will be created in accordance with the ARCF GRR Habitat Mitigation, Monitoring, and Adaptive Management Plan, which includes conceptual mitigation proposals, performance standards, and adaptive management tasks.

Implementation Timing: Design, Pre-construction, Construction, M
Implementation Responsibility: USACE
Monitoring/Reporting Responsibility: CVFPB

VEG-2

Compensate for Riparian Habitat Removal: The Project Proponent will implement the following measures to compensate for riparian habitat degradation:

To compensate for the removal of riparian habitat (up to 3 acres), replacement habitat will be created at a ratio of 2:1 to account for the temporal loss of habitat while newly created habitat is growing. Species selected to compensate for the riparian corridor removal will be consistent with the approved list of trees, shrubs, and herbaceous plants native to the Great Valley Mixed Riparian Forest. The replacement habitat will be created in accordance with the ARCF GRR Habitat Mitigation, Monitoring, and Adaptive

Management Plan, which includes conceptual mitigation proposals, performance standards, and adaptive management tasks.

After construction has been completed, approximately 3 acres of riparian vegetation will be planted on-site in the planting benches. The remaining compensation for the temporal loss of riparian vegetation and habitat will be off-site and occur at locations protected in perpetuity, and may include purchase of mitigation bank credits. These sites will be selected and designed in coordination with National Marine Fisheries Service (NMFS) and United State Fish and Wildlife Service (USFWS) as part of the consultation under the Endangered Species Act.

Implementation Timing: Construction, O&M
Implementation Responsibility: USACE
Monitoring/Reporting Responsibility: CVFPB

SRA-1

Implement Measures to Avoid, Minimize, and Compensate for Effects on Shaded Riverine Aquatic Habitat: USACE will implement the following avoidance, minimization, and compensation measures.

- For identified designated critical habitat of listed fish species, where feasible, all efforts will be made to compensate for impacts where they have occurred, or elsewhere in the Sacramento or American River Basins. Impacts on designated critical habitat, Shaded River Area (SRA) habitat, and instream components combined, and the compensation value of replacement habitat will be informed by a qualitative assessment of habitat value from an agency-approved model. The amount of mitigation will be assessed by calculating the area of impact below the Ordinary High Water Mark (OHWM) combined with the qualitative model assessment.
- USACE will compensate for SRA habitat losses either by constructing off-site compensation sites, purchase of credits at a NMFS-approved conservation bank where appropriate, or by implementing a combination of the two, and by funding a research grant for green sturgeon. USACE will compensate for lost habitat using NMFS-approved mitigation actions at a 1:1 ratio prior to construction, 2:1 ratio during construction, or a 3:1 ratio if mitigation actions occur after construction. SRA habitat compensation sites will be established in coordination with NMFS and USFWS as part of consultation under Section 7 of the Endangered Species Act for the ARCF GRR. On-site created SRA habitat acreage will also be counted toward offsetting lost SRA habitat.

- As described in the Habitat Mitigation, Monitoring, and Adaptive Management Plan, compensation sites will be monitored, and vegetation will be replaced as necessary based on performance standards described in the plan.
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Implementation Timing: Construction, O&M
Implementation Responsibility: USACE
Monitoring/Reporting Responsibility: CVFPB

Fisheries

FISH-1

Implement Measures to Avoid and Minimize Effects on Listed Fish Species: To avoid and minimize effects on listed fish species, the following measures will be implemented by the Project Partners:

- In-water construction activities (all activities below the OHWM including placement of rock revetment) will be limited to the work window of July 1 through October 31. The in-water work window could be extended to November 15 with NMFS approval. If USACE needs to work outside of this window, it will consult with USFWS and NMFS.
- Erosion control measures (BMPs) will be implemented, including a SWPPP and Water Pollution Control Plan, to minimize the entry of soil or sediment into the Sacramento River. BMPs will be installed, monitored for effectiveness, and maintained throughout construction operations to minimize effects on federally listed fish and their designated critical habitat. Maintenance will include daily inspections of all heavy equipment for leaks.
- USACE will stockpile construction materials, such as portable equipment, vehicles, and supplies, at designated construction staging areas and barges.
- USACE will stockpile all liquid chemicals and supplies at a designated impermeable membrane fuel and refueling station with a 110% containment system (container with 10% extra capacity).
- USACE will limit site access to the smallest area possible to minimize disturbance.
- USACE will minimize ground and vegetation disturbance during project construction, and clearly mark project limits, including the boundaries of designated equipment staging areas; ingress and egress corridors; stockpile areas for spoils disposal, soil, and materials; and equipment exclusion zones.
- USACE and construction contractors will observe a 20-mile-per-hour speed limit or less within construction areas for all project-related vehicles, except on County roads and on State and Federal highways.

- USACE will secure or remove litter and debris from the project daily. Such materials or waste will be deposited at an appropriate disposal or storage site.
- USACE will immediately (within 24 hours) clean up and report any spills of hazardous materials to the USFWS, NMFS, and California Department of Fish and Wildlife (CDFW). Any such spills, and the success of the efforts to clean them up, shall also be reported in post-construction compliance reports.
- USACE will screen any water pump intakes prior to project activities, such as irrigation or dewatering, to maintain an approach velocity of 0.2 feet per second or less when working in areas that may support Federally listed fish species.
- USACE will participate in an existing Interagency Working Group or work with other agencies to participate in a new Bank Protection Working Group to coordinate stakeholder input into future flood risk reduction actions associated with the ARCF 2016 Project, Sacramento River Erosion Contract 2.
- USACE will coordinate with NMFS during pre-construction engineering and design as future flood risk reduction actions are designed to ensure that conservation measures are incorporated to the extent practicable and feasible and projects are designed to maximize ecological benefits.
- USACE will include a Riparian Corridor Improvement Plan as part of the project, with the overall goal of maximizing the ecological function and value of the existing levee system in the Sacramento metropolitan area.
- USACE will implement a Habitat Mitigation, Monitoring, and Adaptive Management Plan (HMMAMP) with an overall goal of ensuring that the conservation measures achieve a high level of ecological function and value. The HMMAMP would include:
    - Specific goals and objectives and a clear strategy for maintaining all project conservation elements for the life of the project.
    - Measures to be monitored by USACE for 10 years after construction. USACE will update its O&M manual to ensure that the HMMAMP is adopted by the local sponsor to ensure that the goals and objectives of the conservation measures are met for the life of the project.
    - Specific goals and objectives and a clear strategy for achieving full compensation for all project-related impacts on listed fish species.
- USACE will continue to coordinate with NMFS during all phases of construction, implementation, and monitoring by hosting annual meetings and issuing annual reports throughout the construction period as described in the HMMAMP.
- USACE will seek to avoid and minimize adverse construction effects on listed species and their critical habitat to the extent feasible and will implement on-site and off-site compensation actions as necessary.

- For identified designated critical habitat, where feasible, all efforts will be made to compensate for impacts where they have occurred or in close proximity. USACE will develop and implement a compensatory mitigation accounting plan and associated monitoring and adaptive management plans for on-site mitigation efforts. Monitoring for the establishment of riparian tree and shrub species within shaded riparian aquatic habitat is expected to last approximately 5 to 8 years, not to exceed 10 years. Establishment success will be based on criteria determined on a site-by-site basis with NMFS. Once the monitoring period is complete, all vegetation maintenance and monitoring will transfer and be the responsibility of the non-Federal sponsor and local maintaining agency. USACE will continue to coordinate with NMFS during all phases of construction, implementation, and monitoring by hosting meetings and issuing annual reports throughout the construction period.
- USACE will minimize the removal of existing riparian vegetation and instream woody material (IWM) to the maximum extent practicable. Where appropriate, removed IWM will be anchored back into place, or if not feasible, new IWM will be anchored in place.
- USACE will minimize the removal of existing vegetation during project-related activities. If needed, removed or disturbed vegetation will be replaced with native riparian vegetation. USACE will also ensure that the planting of native vegetation would occur as described in the HMMAMP. All plantings must be provided with the appropriate amount of water to ensure successful establishment.
- USACE will provide a copy of the Biological Opinion (BO), or similar documentation, to the prime contractor, making the prime contractor responsible for implementing all requirements and obligations included in the documents and for educating and informing all other contractors involved in the project as to the requirements of the BOs. A notification that contractors have been supplied with this information will be provided to NMFS. A NMFS-approved Worker Environmental Awareness Training Program for construction personnel will be conducted by the NMFS-approved biologist for all construction workers before initiating construction activities. The program will provide workers with information on their responsibilities with regard to Federally listed fish, their critical habitat, an overview of the life-history of all the species, information on take prohibitions, protections afforded these animals under the Endangered Species Act (ESA), and an explanation of the relevant terms and conditions of the issued BO. Written documentation of the training will be submitted to NMFS within 30 days of the completion of training.
- USACE will designate a NMFS-approved biologist as the point-of-contact for any contractor who might incidentally take a living, or find a dead, injured, or

entrapped threatened or endangered species. This representative will be identified to the employees and contractors during all employee education programs. If lethal take is to occur on any ESA-listed species, USACE and NMFS will be contacted immediately.

- USACE will avoid adverse effects from nighttime construction activities. USACE will use the minimal amount of lighting necessary to safely and effectively illuminate the work areas. USACE will shield and focus lights on work areas and away from the water surface (e.g., Sacramento River), to the maximum extent practicable.
- USACE will conduct acoustic fish monitoring at ARCF sites pre-construction, during construction, and post-construction. For erosion prevention features along the Sacramento River, USACE will conduct telemetry monitoring of green sturgeon for 3 years post-construction. Acoustic telemetry will occur in the ARCF action area and would involve staff monitoring of the real-time telemetry data available online.
- USACE will continue to implement a benthic substrate sampling monitoring program to coincide with the need for the Green Sturgeon Habitat Mitigation and Monitoring Plan. Substrate sampling that will occur in the ARCF action area will include pre-construction, during construction, and post-construction sampling within construction-impacted areas.
- USACE will identify all habitats containing, or with a substantial possibility of containing, listed terrestrial, wetland, aquatic, and/or plant species in the potentially affected project areas. The project will minimize effects by modifying engineering design to avoid potential effects.
- USACE will install IWM on a case-by-case basis where it is compatible with erosion protection measures being installed to provide a portion of the on- site mitigation for lost SRA from the project. The purpose of IWM is to enhance the structural diversity of the shoreline, with woody material being a component of SRA, and ultimately to maximize the refugia and rearing habitats for juvenile fish.
- USACE will protect in place all riparian vegetation on the lower waterside slope of any levee, unless removal is specifically approved by NMFS, following completion of project construction.

Implementation Timing: Design, Pre-construction, Construction
Implementation Responsibility: USACE
Monitoring/Reporting Responsibility: CVFPB

Special-Status Species

VELB-1

Implement Current USFWS Avoidance, Minimization, and Compensation Measures for Valley Elderberry Longhorn Beetle: USACE would implement the following measures in accordance with the *Framework for Assessing Impacts to the Valley Elderberry Longhorn Beetle* (USFWS 2017) to reduce effects on valley elderberry longhorn beetle:

- Fencing. All areas to be avoided during construction activities would be fenced and/or flagged as close to construction limits as feasible.
- Avoidance area. To the extent feasible, activities that may damage or kill an elderberry shrub (e.g., trenching, paving, etc.) would be avoided within 20 feet from the drip-line of the shrub.
- Worker education. A qualified biologist would provide training for all contractors, work crews, and any onsite personnel on the status of valley elderberry longhorn beetle, its host plant and habitat, the need to avoid damaging elderberry shrubs, and the possible penalties for noncompliance.
- Construction monitoring. A qualified biologist would monitor the work area at appropriate intervals to assure that all avoidance and minimization measures are implemented
- Timing. To the extent feasible, activities within 165 feet of an elderberry shrub would be conducted outside of the valley elderberry longhorn beetle flight season (March - July).
- Trimming. To the extent feasible, elderberry shrub trimming would occur between November and February and avoid the removal of any branches or stems greater than or equal to 1 inch in diameter.
- Chemical Usage. Herbicides would not be used within the drip-line, and insecticides would not be used within 100 feet of an elderberry shrub. All chemicals would be applied using a backpack sprayer or similar direct application method.
- Mowing. Mechanical weed removal within the drip-line of elderberry shrubs would be limited to the season when adults are not active (August - February) and would avoid damaging the shrub.
- Transplanting. To the extent feasible, elderberry shrubs would be transplanted when the shrubs are dormant (November through the first 2 weeks in February) and after they have lost their leaves. Exit-hole surveys will be completed immediately before transplanting. A qualified biologist would be on-site for the duration of transplanting activities to assure compliance with avoidance and minimization measures and other conservation measures.

- Compensation. Effects would be compensated at ratios ranging from 1:1 to 3:1, depending on the compensation approach and circumstances of the affected shrubs. Affected area would be re- vegetated with appropriate native plants.

Implementation Timing: Design, Pre-construction, Construction, O&M
Implementation Responsibility: USACE
Monitoring/Reporting Responsibility: CVFPB

BIRD-1

Implement Measures to Protect Nesting Special-Status and Migratory Birds: The Project Partners would implement the following measures to minimize potential effects on active nests of Swainson's hawk, white-tailed kite, purple martin, and other migratory birds:

- Before on-site project activities begin, all construction personnel would participate in a worker environmental awareness program. A qualified biologist would inform all construction personnel about the life history of Swainson's hawk and the importance of nest sites.
- For Swainson's hawk, follow the survey guidelines for the Swainson's Hawk Technical Advisory Committee 2000. If active nests are found within 0.5 miles of construction activities, consult with CDFW on further action including buffer areas, mitigation, and monitoring.
- For purple martin and white-tailed kite, a survey would also be conducted for active nests within 500 feet of construction activities. For all other migratory birds, the survey would cover active nests within 100 feet of construction activities. These surveys could be conducted concurrent with Swainson's hawk surveys, so long as one survey is conducted no more than 48 hours from the initiation of project activities. If the biologist determines that the area surveyed does not contain any active nests, construction activities, including removing or pruning trees and shrubs, the project can commence.
- For any active migratory bird nest found, a protective buffer would be established and implemented until the nest is no longer active. The size of the buffer would be determined based on the species, nest stage, type, and intensity of project disturbance in the nest vicinity, presence of visual buffers, and other variables that may affect susceptibility of the nest to disturbance. A qualified biologist would monitor the nest during project activities to confirm effectiveness of the buffer and adjust the buffer as needed to ensure project activities do not adversely affect behavior of adults or young. Buffers would be marked in the field

by a qualified biologist using high visibility flagging tape or other means that are effective in clearly delineating the buffers.

- Tree and shrub removal and other clearing, grading, and construction activities that remove vegetation would not be conducted during the nesting season (generally February 15 to September 30, depending on the species and environmental conditions for any given year). If construction activities that require tree and shrub removal occur during the nesting season, the Project Partners will implement surveys as described in this measure. If active nests are encountered, protective buffers would be implemented as described.

Implementation Timing: Design, Pre-construction, Construction
Implementation Responsibility: USACE
Monitoring/Reporting Responsibility: CVFPB

TURTLE-1

Implement Measures to Protect Western Pond Turtle: The Project Partners will implement the following measures, to avoid and minimize effects on western pond turtle:

- A qualified biologist would conduct a pre-construction survey within 24 hours before the start of project activities. If no western pond turtles are observed, USACE would document that information for the file, and no additional measures would be required.
- If western pond turtles are observed on land within the construction footprint during project activities, USACE would stop work within approximately 200 feet of the turtle, and a qualified biologist would be notified immediately. If possible, the turtle would be allowed to leave on its own and the qualified biologist would remain in the area until the biologist deems his or her presence no longer necessary to ensure that the turtle is not harmed. Alternatively, with prior CDFW approval, the qualified biologist may capture and relocate the turtle unharmed to suitable habitat at least 200 feet outside the construction footprint. If a western pond turtle nest is unintentionally uncovered during project activities, work would stop in the vicinity of the nest and USACE would contact CDFW to determine the appropriate next steps.

Implementation Timing: Pre-construction, Construction
Implementation Responsibility: USACE
Monitoring/Reporting Responsibility: CVFPB

BAT-1

Implement Measures to Protect Maternity Roosts of Special-Status Bats: CVFPB will implement the following measures, to avoid and minimize effects on special-status bats:

- Wherever feasible, USACE will conduct construction activities outside of the pupping season for bats (generally April 1 to August 31).
- CVFPB or its designated environmental personnel will specify which trees slated for removal contain suitable bat roosting habitat. Trees indicated for removal that are not identified as suitable bat habitat can be removed using normal methods.
- Live trees that are indicated to contain roosting habitat shall be removed in a two-phase process. The first day, under the supervision of the biological monitor, remove limbs and branches that do not contain cavities, cracks, crevices, or deep bark fissures that can provide roosting habitat. On the second day remove the remainder of tree by gently lowering the tree to the ground, under the supervision of the biological monitor. If it is not feasible to remove a tree using the two-phased approach, limbs containing habitat features should be removed and gently lowered to the ground in a location where they are not likely to be crushed or disturbed by the felling of the tree and left undisturbed for the next 48-hours.
- Standing dead trees or snags with habitat features should be removed over a single day by gently lowering the tree or snag to the ground. The tree or snag should be left undisturbed on the site for the next 48-hours.
- For trees containing suitable bat roosting habitat that will be trimmed, trimming shall be conducted in the presence of a biological monitor. If trimming results in the removal of vegetation that contains potential bat habitat, vegetation should be gently lowered to the ground and left near the tree for 48-hours prior to removal, if feasible. If the vegetation cannot be left for 48-hours, the biological monitor shall survey the vegetation for presence of bats. If any bats are found within the vegetation, the vegetation must be left for 48-hours (or CDFW should be called for guidance regarding relocation of the bat dependent on urgency for removal).
- If removal of trees must occur during the bat pupping season, within 30 days of tree removal activities, all trees to be removed will be surveyed by a qualified biological monitor for the presence of features that may function as special-status bat maternity roosting habitat. Trees that do not contain potential special-status maternity roosting habitat may be removed. For trees that contain suitable special-status bat maternity roosting habitat, surveys for active maternity roosts shall be conducted by the designated biological monitor in trees designated for removal. The surveys shall be conducted from dusk until dark.

- If any special-status species bat maternity roost is located, appropriate buffers must be established by clearly marking the buffer area. The buffer area must be a minimum of 100 feet outside the tree containing the maternity roost. No contract activities shall commence within the buffer areas until the end of pupping season (September 1st) or the biological monitor confirms that the maternity roost is no longer active.
- If construction activities must occur within the buffer, the biological monitor must monitor activities either continuously or periodically during the work, which will be determined by the biological monitor. The biological monitor would be empowered to stop activities that, in their opinion, would cause unanticipated adverse effects on specials status bats. If construction activities are stopped, the biological monitor would inform USACE, and CDFW would be consulted to determine appropriate measures to implement to avoid adverse effects.
- The biological monitor must attend a meeting with CVFPB's designated environmental personnel prior to tree removal to discuss the intent and implementation of measures to protect special status bat species. This can be part of the preparatory meeting held prior to tree removal.
- The CVFPB or its designated environmental personnel will provide the biological monitor with data sheets that must be used to document removal of trees identified as potential roosting habitat. At minimum, the biological monitor should document the following information: weather conditions, date and time of removal for each tree, method(s) of removal for each tree and reasoning, equipment used, and any other biological observations of note. The biological monitor should also take photos pre- and post-felling of each tree identified as potential roosting habitat.
- Biological monitors for tree removal outside pupping season must have familiarity with bat ecology and habitat requirements. Biological monitors for tree removal during pupping season must have prior experience surveying and monitoring for bats and must be approved by USACE. The biological monitors must also have a degree in biology, ecology, wildlife biology, herpetology, or related fields. They must have a minimum of 3 years field experience using USFWS and CDFW techniques and experience with the wildlife species likely to be encountered on the site.

Implementation Timing: Design, Pre-construction, Construction
Implementation Responsibility: CVFPB
Monitoring/Reporting Responsibility: CVFPB

PLANT-1

Implement Measures to Protect Special-status Plants: The Project Partners will implement the following measures, to avoid and minimize effects on special-status plants:

- Preconstruction surveys will be conducted by a qualified botanist in suitable habitat to determine the presence of any special status plants. Surveys will be conducted at an appropriate time of year during which the species are likely to be detected, which would likely be during the blooming period.
- If special status plant species are found during preconstruction surveys, the habitat will be marked or fenced as an avoidance area during construction. A buffer of 25 feet will be established. If a buffer of 25 feet is not possible, the next maximum possible distance will be fenced off as a buffer.
- If special status plant species cannot be avoided during construction, the Corps will coordinate with the resource agencies to determine additional appropriate mitigation measures.

Implementation Timing: Pre-construction, Construction
Implementation Responsibility: USACE
Monitoring/Reporting Responsibility: CVFPB

Cultural and Tribal Cultural Resources

CR-1

Resolve Adverse Effects through Programmatic Agreement and Historic Properties Treatment Plan (HPTP): For Historic Properties which would be adversely affected by implementation of the project (pending concurrence of eligibility and finding of effect in the ARCF PA consultation process), USACE shall consult with the State Historic Preservation Office (SHPO) and interested Native American Tribes in accordance with the ARCF Programmatic Agreement (PA) and associated HPMP to develop a HPTP. The HPTP shall specify measures that will be implemented to resolve

the adverse effects to the Historic Properties and shall constitute mitigation for the effects to these resources. USACE shall implement the terms described in the HPTP.

Implementation Timing: Design, Pre-construction, Construction
Implementation Responsibility: USACE
Monitoring/Reporting Responsibility: CVFPB

CR-2

Prepare an Archaeological Discovery Plan and an Archaeological Monitoring Plan: In accordance with the procedures described in Section 9.2 of the ARCF HPMP, a discovery plan shall be prepared and included in the construction contractor's specifications. The discovery plan shall specify what actions are required to be taken by the contractor in the event of an archaeological discovery and describe what actions USACE may take in the event of a discovery.

In accordance with the procedures described in Section 9.3.9 of the ARCF HPMP, an archaeological monitoring plan shall be developed for the project. This plan shall identify the locations of known Historic Properties as well as sensitive areas designated for archaeological monitoring and shall include methods and procedures for monitoring and the procedures to be followed in the event of a discovery of archaeological materials.

Implementation Timing: Pre-construction, Construction
Implementation Responsibility: USACE
Monitoring/Reporting Responsibility: CVFPB

CR-3

Conduct Cultural Resources Awareness Training: In accordance with the procedures described in Section 9.1 of the ARCF HPMP, USACE shall require the contractor to provide a cultural resources and tribal cultural resources sensitivity and awareness training program for all personnel involved in project construction, including field consultants and construction workers. The training shall be developed in coordination with an archaeologist meeting the Secretary of the Interior's Professional Qualifications Standards for Archaeology (36 CFR Part 61), as well as culturally affiliated Native American tribes. USACE may invite Native American representatives from interested culturally affiliated Native American tribes to participate. The training shall be conducted before any project-related construction activities begin in the Area of Potential Effect (APE) and shall include relevant information regarding sensitive cultural

resources and Tribal Cultural Resources, including applicable regulations, protocols for avoidance, and consequences of violating Federal and State laws and regulations.

The training shall also describe appropriate avoidance and impact minimization measures for cultural resources and Tribal Cultural Resources that could be located in the APE and shall outline what to do and who to contact if any potential cultural resources or Tribal Cultural Resources are encountered. The training shall emphasize the requirement for confidentiality and culturally appropriate treatment of any discovery of significance to Native Americans and shall discuss appropriate behaviors and responsive actions, consistent with Native American tribal values.

Implementation Timing: Construction
Implementation Responsibility: USACE
Monitoring/Reporting Responsibility: CVFPB

CR-4

Implement Procedures for Inadvertent Discovery of Cultural Material: If an inadvertent discovery of cultural materials (e.g., unusual amounts of shell, animal bone, any human remains, bottle glass, ceramics, and building remains); Tribal Cultural Resources; sacred sites; or landscapes is made at any time during project-related construction activities, USACE in consultation with CVFPB and other interested parties, shall develop appropriate protection and avoidance measures where feasible. These procedures shall be developed in accordance with the ARCF PA and HPMP, which specifies procedures for post-review discoveries. Additional measures, such as development of HPTPs prepared in accordance with the PA and HPMP, may be necessary if avoidance or protection is not possible.

Implementation Timing: Pre-construction, Construction
Implementation Responsibility: USACE
Monitoring/Reporting Responsibility: CVFPB

CR-5

In the Event that Tribal Cultural Resources are Discovered Prior to or During Construction, Implement Procedures to Evaluate Tribal Cultural Resources and Implement Avoidance and Minimization Measures to Avoid Significant Adverse Effects: California Native American Tribes that are traditionally and culturally affiliated with the geographic area in which the project is located may have expertise concerning their Tribal Cultural Resources (California PRC Section 21080.3.1). As was done during Supplemental EIR preparation, culturally affiliated Tribes shall be further consulted concerning Tribal Cultural Resources that may be impacted, if these types of resources

are discovered prior to or during construction. Further consultation with culturally affiliated Tribes shall focus on identifying measures to avoid or minimize impacts on any such resources discovered during construction. If Tribal Cultural Resources are identified in the APE prior to or during construction, the following performance standards shall be met before proceeding with construction and associated activities that may result in damage to or destruction of Tribal Cultural Resources:

- Each identified Tribal Cultural Resource will be evaluated for CRHR eligibility through application of established eligibility criteria (Code of California Regulations [CCR] 15064.636), in consultation with interested Native American Tribes.
- If a Tribal Cultural Resource is determined to be eligible for listing on the CRHR, USACE, in consultation with CVFPB, will avoid damaging the Tribal Cultural Resource in accordance with California PRC Section 21084.3, if feasible. If USACE determines that the project may cause a substantial adverse change to a Tribal Cultural Resource, and measures are not otherwise identified in the consultation process, the following are examples of mitigation steps capable of avoiding or substantially lessening potential significant impacts to a Tribal Cultural Resource or alternatives that would avoid significant impacts to a Tribal Cultural Resource. These measures may be considered to avoid or minimize significant impacts and constitute the standard by which an impact specifically address inadvertent discovery of human remains may be reached:
- Avoid and preserve resources in place, including, but not limited to, planning construction to avoid the resources and protect the cultural and natural context, or planning greenspace, parks, or other open space, to incorporate the resources with culturally appropriate protection and management criteria.
- Treat the resource with culturally appropriate dignity, taking into account the Tribal cultural values and meaning of the resource, including, but not limited to, the following:
- Protect the cultural character and integrity of the resource.
- Protect the traditional use of the resource.
- Protect the confidentiality of the resource.
- Establish permanent conservation easements or other interests in real property, with culturally appropriate management criteria for the purposes of preserving or using the resources or places.
- Protect the resource.

Implementation Timing: Construction
Implementation Responsibility: CVFPB
Monitoring/Reporting Responsibility: CVFPB

CR-6

Implement Procedures for Inadvertent Discovery of Human Remains: To minimize adverse effects from encountering human remains during construction, USACE shall implement the following measures.

In accordance with the California Health and Safety Code, if human remains are uncovered during ground-disturbing activities, USACE shall consult with the CVFPB, and USACE shall immediately halt potentially damaging excavation in the area of the burial and notify the Sacramento County Coroner and a professional archaeologist 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 Native American Heritage Commission (NAHC) by phone within 24 hours of making that determination (California 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), in consultation with the landowner, shall determine the ultimate treatment and disposition of the remains.

Upon the discovery of Native American human remains, USACE, in coordination with CVFPB, 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 to the landowner 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 USACE shall employ:

- Record the site with the NAHC or the appropriate Information Center.
- Record a document with the county in which the property is located.

If agreed to by the MLD and the landowner, USACE or a USACE 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 an MLD, or if the MLD fails to make a recommendation within 48 hours after being granted access to the site. USACE or a USACE authorized representative may also reinter the remains in a location not subject to further disturbance, if USACE rejects the recommendation of the MLD and mediation by the NAHC fails to provide measures acceptable to USACE. USACE 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.

Implementation Timing: Construction
Implementation Responsibility: USACE
Monitoring/Reporting Responsibility: CVFPB

Air Quality

AIR-1

Implement the Sacramento Metropolitan Air Quality Management District's (SMAQMD) Basic Construction Emission Control Practices: SMAQMD requires that all projects, regardless of their significance, implement the following measures to minimize the generation of fugitive Particulate Material (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. USACE shall require its contractors to comply with the basic construction emission control practices listed below for all construction-related activities occurring in SMAQMD jurisdiction.

- Water all exposed surfaces two times daily or more, as needed. Exposed surfaces include, but are not limited to levee crowns, soil piles, graded areas, unpaved parking areas, staging areas, and access roads.
- 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 travel along freeways or major roadways.
- 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.
- Limit vehicle speed on unpaved roads to 15 miles per hour.
- Complete pavement of all roadways, driveways, sidewalks, and 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.

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

Implementation Timing: Construction
Implementation Responsibility: USACE
Monitoring/Reporting Responsibility: CVFPP

AIR-2

Implement the Sacramento Metropolitan Air Quality Management District's Enhanced Fugitive PM Dust Control Practices: SMAQMD recommends that construction projects that would exceed or contribute to the mass emissions threshold for particulate matter equal to or less than 10 micrometers in diameter (PM10) 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, USACE shall require its construction contractors to implement the Enhanced Fugitive PM Dust Control Practices listed below, when feasible, to help reduce potential fugitive PM dust emissions.

Soil Disturbance Areas

- Water exposed soil with adequate frequency for continued moist soil. However, do not overwater to the extent that sediment flows off the site.
- Suspend excavation, grading, and/or demolition activity when wind speeds exceed 20 miles per hour.
- Install wind breaks (e.g., plant trees, solid fencing) on windward side(s) of construction areas.
- Plant vegetative ground cover (fast germinating native grass seed) in disturbed areas as soon as possible. Water appropriately until vegetation is established.

Unpaved Roads (Entrained Road Dust)

- Install wheel washers for all exiting trucks or wash off all trucks and equipment leaving the site.

- 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.
- Post a publicly visible sign with the telephone number and person to contact at USACE 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.

Implementation Timing: Construction
Implementation Responsibility: USACE
Monitoring/Reporting Responsibility: CVFPB

AIR-3

Require Lower Exhaust Emissions for Construction Equipment: USACE shall require its contractors to use a fleet-wide average of 90 percent Tier 4 emissions vehicles for off-road construction equipment, and on-road haul trucks must be equipped with 2010 or newer engines. Tier 0 engines will not be permitted. To demonstrate compliance with this requirement:

- The construction contractor shall submit to USACE and the Sacramento Metropolitan Air Quality Management District (SMAQMD) a comprehensive inventory of all off-road construction equipment, equal to or greater than 50 horsepower, that will be used an aggregate of 8 or more hours during any portion of the construction project.
- 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 Construction Mitigation Tool 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.
- The construction contractor shall provide a plan for approval by USACE 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 of 90 percent Tier 4 emissions vehicles. 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.

- SMAQMD's Construction Mitigation Tool 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 in the project area 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 monthly to USACE and SMAQMD. 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.
- Use the Construction Mitigation Tool to track PM_{10} emissions and mileage traveled by on-road trucks, reporting results to USACE and SMAQMD on a monthly basis.

Implementation Timing: Design, Pre-construction, Construction
Implementation Responsibility: USACE
Monitoring/Reporting Responsibility: CVFPB

AIR-4

Use the Sacramento Metropolitan Air Quality Management District's (SMAQMD) Off-site Mitigation Fee to Reduce NO_x Emissions: The Project Partners shall implement the measures listed below to reduce NO_x construction-related emissions.

Pursuant to air district thresholds of significance, if the projected construction-related emissions exceed the NO_x threshold of significance, based on the equipment inventory and use, USACE shall contribute to SMAQMD's and/or Bay Area Air Quality Management District (BAAQMD) off-site mitigation fee program sufficiently to offset the amount by which the project's NO_x emissions exceed the threshold. If emissions for the ARCF 2016 Project in any given year would exceed the de minimis threshold of 25 tons per year, USACE would enter into an agreement with SMAQMD and/or BAAQMD to purchase offsets for all NO_x emissions in any year that projected emissions would exceed the threshold. The determination of the estimated mitigation fees shall be conducted in coordination with SMAQMD and/or BAAQMD before any ground disturbance occurs for any phase of project construction. (USACE anticipates purchasing offsets for NO_x emissions in 2023 and 2024 because the ARCF 2016

Project is forecast to exceed the de minimis threshold. Estimated fees for the Sacramento River Erosion Contract 2 project are $37,350 annually to BAAQMD for emissions in the San Francisco Bay Area Air Basin (SFBAAB).) All mitigation fees shall be paid prior to the start of construction activity to allow air districts to obtain emissions reductions for the proposed project. If there are changes to construction activities (e.g., equipment lists, increased equipment usage or schedules), USACE shall work with SMAQMD and BAAQMD to ensure emission calculations and fees are adjusted appropriately.

Implementation Timing: Construction
Implementation Responsibility: USACE
Monitoring/Reporting Responsibility: CVFPB

AIR-5

Implement Marine Engine Standards: The Project Partners shall encourage the use of Environmental Protection Agency (EPA) adopted Tier 3 and Tier 4 standards for newly built marine engines in 2008. The Tier 3 standards reflect the application of technologies to reduce engine PM and oxide of nitrogen (NO_x) emission rates. Tier 4 standards reflect application of high-efficiency catalytic after-treatment technology enabled by the availability of ultra-low sulfur diesel.

The Project Partners will use Tier 2 and 3 marine engines standards where available to reduce marine exhaust emissions. Due to uncertainty as to the availability of Tier 4 marine engines within the required project timeline, this mitigation measure does not require the use of Tier 4 marine engines. However, should they become available during the appropriate construction periods, the use of these engines will be required in order to further lower project emissions.

Implementation Timing: Construction
Implementation Responsibility: USACE
Monitoring/Reporting Responsibility: CVFPB

Climate Change

GHG-1

Implement GHG Reduction Measures: Measures that will be implemented to reduce the project's contribution from generation of Greenhouse Gas (GHG) are as follows:

- Encourage and provide carpools, shuttle vans, transit passes and/or secure bicycle parking for construction worker commutes.

- Recycle at least 75% of construction waste and demolition debris.
- Purchase at least 20% of the building materials and imported soil from sources within 100 miles of the project site.
- Minimize idling time either by shutting equipment off when not in use or reducing the time of idling to no more than 3 minutes (5-minute limit is required by the state airborne toxic control measure [Title 13, sections 2449(d)(3) and 2485 of the California Code of Regulations]). Provide clear signage that posts this requirement for workers at the entrances to the site.
- Maintain all construction equipment in proper working condition according to manufacturer's specifications. The equipment must be checked by a certified mechanic and determined to be running in proper condition before it is operated.
- Use equipment with nonhazardous technologies (repowered engines, electric drive trains).
- Perform on-site material hauling with trucks equipped with on-road engines (if determined to be less emissive than the off-road engines).
- Use an ARB approved low carbon fuel for construction equipment. (NOx emissions from the use of low carbon fuel must be reviewed and increases mitigated.)
- Purchase GHG offset for program-wide GHG emissions (direct emissions plus indirect emissions from on-road haul trucks plus commute vehicles) that meet the criteria of being real, quantifiable, permanent, verifiable, enforceable, and additional, consistent with the standards set forth in Health and Safety Code section 38562, subdivisions (d)(1) and (d)(2). Such credits shall be based on protocols approved by the California Air Resources Board (CARB), consistent with Section 95972 of Title 17 of the California Code of Regulations, and shall not allow the use of offset projects originating outside of California, except to the extent that the quality of the offsets, and their sufficiency under the standards set forth herein, can be verified by USACE or SMAQMD. Such credits must be purchased through one of the following: (i) a CARB-approved registry, such as the Climate Action Reserve, the American Carbon Registry, and the Verified Carbon Standard; (ii) any registry approved by CARB to act as a registry under the California Cap and Trade program; or (iii) through the California Air Pollution Control Officers Association's (CAPCOA's) GHG Rx and SMAQMD. Purchase of carbon offsets shall be sufficient to reduce the project's GHG emissions to below SMAQMD's significance thresholds applicable through a one-time purchase of credits, based on the emissions estimates in this SEIR or on an ongoing basis based on monthly emissions estimates that would be prepared in accordance with procedures established by Measure AQ-3.

Implementation Timing: Construction
Implementation Responsibility: USACE
Monitoring/Reporting Responsibility: CVFPB

Noise

NOI-1

Implement Measures to Reduce Construction Noise and Vibration Effects: The Project Partners will require construction contractors to implement measures at each work site to avoid and minimize construction noise and vibration effects on sensitive receptors. Prior to the start of construction, the construction contractor will prepare a noise control plan to identify feasible measures to reduce construction noise, when necessary. The measures in the plan would apply to construction activities within 500 feet of a sensitive receptor, including, but not limited to, residences. These measures may include, but are not limited to, the following:

- Provide written notice to residents within 1,000 feet of the construction zone, advising them of the estimated construction schedule. This written notice would be provided within 1 week to 1 month of the start of construction at that location.
- Display notices with information including, but not limited to, contractor contact telephone number(s) and proposed construction dates and times in a conspicuous manner, such as on construction site fences.
- Schedule the loudest and most intrusive construction activities during daytime hours (7:00 a.m. to 7:00 p.m.) Monday through Friday, when feasible.
- Require that construction equipment be equipped with factory-installed muffling devices, and that all equipment be operated and maintained in good working order to minimize noise generation.
- Locate stationary noise-generating equipment as far as practicable from sensitive receptors.
- Limit unnecessary engine idling (i.e., more than 5 minutes) as required by State air quality regulations.
- Employ equipment that is specifically designed for low noise emission levels, when feasible.
- Employ equipment that is powered by electric or natural gas engines, as opposed to those powered by gasoline fuel or diesel, when feasible.
- If the construction zone is within 500 feet of a sensitive receptor, place temporary barriers between stationary noise equipment and noise sensitive receptors to block noise transmission, when feasible, or take advantage of existing barrier features, such as existing terrain or structures, when feasible.

- If the construction zone is within 500 feet of a sensitive receptor, prohibit use of backup alarms and provide an alternate warning system, such as a flagman or radar-based alarm that is compliant with State and Federal worker safety regulations.
- Locate construction staging areas as far as practicable from sensitive receptors.
- Design haul routes to avoid sensitive receptors, to the extent practical.
- To the extent feasible and practicable, the primary construction contractors would 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 and Sacramento County), depending on the jurisdictional location of the affected receptor(s), and the California Department of Transportation's (Caltrans) Transportation and Construction Vibration Guidance Manual, which identifies maximum vibration levels of 0.2 to 0.5-inch per second Peak Particle Velocity (PPV) for minimizing damage to structures. Project construction specifications would require the contractor to limit vibrations to less than 0.2-inch per second PPV, and less than 72 velocity decibels (VdB) within 50 feet at any building. If construction would occur within 50 feet of any occupied building, the contractor would prepare a vibration control plan prior to construction. The plan would include measures to limit vibration, including but not limited to the following:
    - Numerical thresholds above which the contractor would be required to document vibration sources and implement measures to reduce vibration, and above which work would be required to stop for consideration of alternative construction methods.
    - Avoid vibratory rollers and packers near sensitive areas to the maximum extent practicable.
    - Route heavily loaded trucks away from residential streets, if possible. If no alternatives are available, select streets with the fewest homes.
    - A voluntary pre- and post-construction survey would be conducted to assess the existing condition of structures prior to construction and potential architectural/structural damage induced by levee construction vibration at each structure within 100 feet of construction activities, including staging areas. The survey would include visual inspection of the structures that could be affected and documentation of structures by means of photographs and video. This documentation would be reviewed with the individual owners prior to any construction activities. Post-construction surveys of structures would be performed to identify (and repair, if necessary) damage, if any, from construction activities. Any

construction-related damage would be documented with photographs and video. This documentation would be reviewed with the individual property owners.

- Place vibration monitoring equipment in lines approximately parallel to the levee alignment at intervals not to exceed 200 feet along the construction limits, including active staging areas. Vibration monitors will be operational at all times during the performance of construction activities. The contractor will monitor and record vibrations continuously.

Implementation Timing: Pre-construction, Construction
Implementation Responsibility: USACE
Monitoring/Reporting Responsibility: CVFPB

Recreation

REC-1

Implement Pedestrian Detours, Provide Construction Period Information on Facility Closures: The Project Partners will implement the following measures to reduce temporary, short-term construction effects on recreational facilities in the Project Area:

- Provide marked detours for pedestrian routes. Detours should be developed in consultation with the City of Sacramento Bicycle and Pedestrian Coordinator at least 10 days before the start of construction activities, as applicable. Post signs that clearly indicate closure routes at major entry points for trails and will provide a contact number to call for questions or concerns.
- Post signs at major entry points for trails, and boat launch ramps at the Miller Regional Park, Garcia Bend Park and the Sacramento Marina clearly indicating closures of trails and estimated duration of closures. Information signs will notify the public of alternate parks and recreation sites, including boat launch ramps, and will provide a contact number to call for questions or concerns.
- Upon completion of levee improvements, coordinate with the City of Sacramento to restore access and repair any construction-related damage to recreational facilities to pre- project conditions.

Implementation Timing: Pre-construction, Construction
Implementation Responsibility: USACE
Monitoring/Reporting Responsibility: CVFPB

REC-2

Implement Measures to Notify Boaters: The Project Partners will implement the following measures to reduce temporary, short-term construction effects on recreational facilities in the Project Area:

- Post signs at the Sacramento Marina and Garcia Bend Park to clearly indicate the estimated duration of in-water work windows and construction duration.
- Place buoys at the upstream and downstream ends of the construction site to warn boaters of the in-water work.
- Notify the Coast Guard, in accordance with the Rivers and Harbors Act, of in-water work from barges moored in the river. Notification will include in-water work windows and construction duration.

Implementation Timing: Pre-construction, Construction
Implementation Responsibility: USACE
Monitoring/Reporting Responsibility: CVFPB

Visual Resources

VIS-1

Reduce Light Pollution: The Project Partners will require construction contractors to ensure that all temporary lighting related to security of the staging areas to be shielded or directed to avoid or minimize any direct illumination onto light-sensitive receptors located outside of the Project Area.

Implementation Timing: Construction
Implementation Responsibility: USACE
Monitoring/Reporting Responsibility: CVFPB

Hazardous Wastes and Materials

HAZ-1

Conduct Phase II Investigations as Needed: The Project Partners would require that Project Areas be tested for contaminants prior to construction. Any hazardous materials found would be disposed of in accordance with all Federal, State, and local regulations at an approved disposal site. Where construction activities would occur in close

proximity to sites identified as Recognized Environmental Conditions in the Phase I ESA (HDR 2019), a Phase II site investigation should also be conducted.

Implementation Timing: Design, Pre-construction, Construction
Implementation Responsibility: USACE
Monitoring/Reporting Responsibility: CVFPB