FINAL
ENVIRONMENTAL ASSESSMENT/INITIAL STUDY
SACRAMENTO RIVER FLOOD CONTROL SYSTEM EVALUATION
PHASE III, MID-VALLEY, CONTRACT AREA 3

YOLO COUNTY, CALIFORNIA

April 2013

US Army Corps
of Engineers ®
Sacramento District

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FINDING OF NO SIGNIFICANT IMPACT

Sacramento River Flood Control System Evaluation

Phase III, Mid-Valley, Contract Area 3, Yolo County, California

I have reviewed and evaluated the information in the Environmental Assessment/Initial Study (EA/IS) for the Sacramento River Flood Control System Evaluation, Phase III, Mid-Valley, Contract Area 3, in Yolo County, California. This EA/IS tiers off the Programmatic Environmental Impact Statement/ Environmental Impact Report for the System Evaluation completed by the Corps in May of 1992.

The proposed project includes the following features: (1) installing slurry cutoff walls on the existing levee at three sites along the west side of the Sacramento River, between river mile 70 and 118 (2) remediating the existing levee at three sites along the east side of the Knights Landing Ridge Cut (KLRC). These levees are features of the Sacramento River Flood Control Project (SRFCP). The work would help to maintain the integrity of the SRFCP by reducing the potential for erosion and failure due to seepage under or through the levees at sites 9, 10, and 11 as well as levee instability at sites 12, 12A, and 13.

The possible consequences of the work described in the EA/IS have been evaluated with consideration given to environmental, social, economic, and cultural resources. Potential adverse effects would be avoided, minimized, or reduced to less than significant effects to vegetation and wildlife, special status species, water quality and wetlands, and traffic by implementing best management practices and mitigation measures as discussed in the EA/IS. The loss of riparian vegetation would be compensated onsite by planting similar vegetation, and potential take of the Federally-listed valley elderberry longhorn beetle and giant garter snake would be avoided by complying with all Terms and Conditions in the U.S. Fish and Wildlife Service's reinitiated Biological Opinion issued on October 5, 2012, and further amended on March 25, 2013.

Based on my review of the EA/IS and my knowledge of the project area, I am convinced that the proposed project is a logical and desirable alternative. Furthermore, I have determined that the project would have no significant effects on the environment. All construction will be implemented in compliance with applicable Federal, State, and local laws and regulations. Based on the results of the environmental evaluation and completion of interagency coordination, I have determined that the EA/IS and Finding of No Significant Impact provide adequate documentation and that no further environmental document is required.

18 APR 13

Date

William J. Leady, P.E.
Colonel, U.S. Army
District Commander

for KAREN LEMASTER
LTC EN
DPTY COM

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Mitigated Negative Declaration
Sacramento River Flood Control System Evaluation-Phase III
Mid-Valley Contract Area 3
Yolo County, California

The Central Valley Flood Protection Board (Board) is the State of California non-Federal sponsor and is acting as lead agency under the California Environmental Quality Act, (CEQA) pursuant to Public Resources Code sections 21000 *et seq.*, for the Sacramento River Flood Control System Evaluation – Phase III – Mid-Valley Contract Area 3 Project. The Board and the U.S. Army Corps of Engineers (USACE), the Federal sponsor, have jointly prepared an Environmental Assessment/Initial Study (EA/IS) for the Project pursuant to CEQA guidelines Sections 15070-15075. The USACE proposes to issue a Finding of No Significant Impact in accordance with the National Environmental Policy Act.

Project Background

After flooding and levee failures during the winter of 1986, USACE was directed by Congress to conduct a system-wide evaluation of the Sacramento River and its tributaries to determine if the structures met original USACE design in the features and functioning of the Sacramento River Flood Control Project (SRFCP). Because of the size and complexity of the SRFCP area, the evaluation and subsequent proposed remediation work were divided into five phases to be completed based on available funding and local support.

Phase I, Sacramento Urban Area, and Phase II, Marysville/Yuba City, were completed first because of the higher risk of property damage and potential loss of life in these highly populated areas. Phase III is Mid-Valley, which is the focus of this EA/IS. The remaining phases are Phase IV, Lower Sacramento River, and Phase V, Upper Sacramento River north of Knights Landing. Work on Phase III began with the Initial Appraisal Report – Mid-Valley Area completed by the USACE in 1991.

In June 1996, USACE completed the *Sacramento Flood Control Project, California, Mid-Valley Area, Phase III, Design Memorandum* (DM) (USACE1996a), which proposed remediation work along various levee locations in the Phase III area. These locations included portions of the Sacramento River (RM 70 to 118), Feather River (RM 0 to 3), Knights Landing Ridge Cut (KLRC), Sutter Bypass (Tisdale Bypass to the Feather River), and Yolo Bypass (Fremont Weir to the Sacramento Bypass).

The 1996 DM separated the designs for the Phase III remediation work into four construction contract areas. Contract Area 1 (Reclamation District 1500) on the Sutter Bypass and Sacramento River from RM 85.2 to 117.2 was completed in 1998. Contract Area 2 (Reclamation District 1001) is on the Feather River and Sacramento River from RM 79 to 79.5. Contract Area 3 (Knights Landing) is the subject of this Environmental Assessment/Initial Study (EA/IS). Contract Area 4 (Elkhorn) is on the Yolo Bypass and Sacramento River from RM 80.8 to 81.5.

Because of local soil conditions, the six remediation sites in the Contract 3 area are at risk of erosion and failure during flooding or even normal flow conditions. Due to hydraulic pressure, high water in the Sacramento River and KLRC can cause water to slowly flow (seep) through pervious sandy soils, as well as under areas of impervious soils. This seepage weakens the levees, increasing the risk of erosion, levee failure, and flooding into adjacent and downstream areas.

These levees in the Contract 3 area are integral to the system-wide performance of the SRFCP. They provide direct flood protection to the towns of Knights Landing, Verona, and Nicholas, as well as indirect flood protection to the cities of Sacramento and West Sacramento. In addition, these levees allow 93,000

acres of farmland and associated infrastructure to remain in production year-round. These six sites must be remediated before their condition degrades further and emergency repair is required to avoid or minimize property damage and potential loss of life.

Previous Environmental Documents

The following previous documents are relevant to the proposed Phase III work. This EA/IS for Contract 3 tiers off the 1992 programmatic EIS/EIR, while the 1996 and 1999 EA/ISs are incorporated by reference into the EA/IS.

- The Sacramento River Flood Control System Evaluation, Phase II-V, Programmatic Environmental Impact Statement/Environmental Impact Report, dated May 1992 (USACE 1992), included a general discussion of potential alternative plans, existing environmental resources, types of effects of the alternatives on those resources, and types of mitigation measures. Alternative plans considered were drainage improvements, levee height increases, cutoff walls, and stabilizing berms. Detailed designs and additional environmental documentation are needed for each phase.
- The Sacramento River Flood Control System Evaluation, Phase III, Mid-Valley Area, Environmental Assessment/Initial Study, dated March 1996 (USACE 1996b), described the project, which then consisted of 30 levee restoration sites; analyzed the effects of the project on environmental resources; and proposed mitigation measures to reduce any effects to less than significant. This document includes the most recent Habitat Evaluation Procedure (HEP) for the Mid-Valley area.
- The Supplemental Environmental Assessment/Initial Study, Sacramento River Flood Control System Evaluation, Phase III - Mid-Valley Area, dated November 1999 (USACE 1999), described proposed project changes at 12 of the 30 restoration sites. The environmental consequences of the changes were then analyzed, and mitigation measures were proposed to reduce any additional effects on resources to less than significant.

Project Location

The project area for this levee work is located downstream of Knights Landing in east Yolo County, approximately 26 miles northwest of Sacramento. The project area includes sections of SRFCP levees, easements, and right-of-way areas along the Sacramento River and Knights Landing Ridge Cut (KLRC), which flow roughly north to south through this rural agricultural area. The following are the specific locations of activities that will take place on the Sacramento River and the Knights Landing Ridge Cut sites.

Sacramento River

Work on the Sacramento River levee would be conducted at Sites 9, 10, and 11 between river miles 70 and 113 southeast of Knights Landing. These sites are located on the gravel maintenance road on top of the levee between the river and Yolo County Road 116B.

- Site 9 starts approximately 1 mile east of Knights Landing at river mile (RM) 87.2 and extends 793 feet downstream to RM 87.1.
- Site 10 starts approximately 1,584 feet downstream of Site 9 at RM 86.8 and extends 878 feet downstream to RM 86.7.
- Site 11 starts approximately 1.5 miles downstream of Site 10 at RM 85.2 and extends 1.05 miles (5,555 feet) downstream to RM 84.1 along County Road 116B just down river from Sites 9 and 10.

Knights Landing Ridge Cut

Work on the KLRC levee would be conducted on the landside at Sites 12, 12A, and 13. These sites are located on the east bank of the levee south of Knights Landing. The project area also includes the landside easement area alongside the levee.

- Site 12 starts approximately 0.75 mile south of the Town of Knights Landing at cut mile (CM) 5.0 and extends 14,100 feet downstream to CM 2.3.
- Site 12A is contiguous with the south end of Site 12 and extends 2,100 feet downstream to CM 1.9.
- Site 13 is contiguous with the south end of Site 12A and extends 2,000 feet downstream to CM 1.5.

Project Description

The Proposed Alternative would include (1) installing slurry cutoff walls on the existing levee at Sites 9, 10, and 11 along the west side of the Sacramento River and (2) remediating the existing levee at Sites 12, 12A, and 13 along the east side of the KLRC.

Remediation work at Sites 9, 10, and 11 would consist of installing a soil/bentonite cutoff wall of various lengths and depths. The work would involve (1) degrading the existing top of the levee down 4 to 5 feet to create a level working surface to install the cutoff wall and (2) excavating a trench 3 feet wide and at least 21 feet deep down through the crown of the levee, as follows:

- Site 9 cutoff wall depth would vary from 26.27 feet to 31.08 feet deep.
- Site 10 cutoff wall depth would vary from 23.04 feet to 26.38 feet deep.
- Site 11 cutoff wall depth would vary from 21.00 feet to 116.75 feet deep, as follows:
    - 900 feet (Stations 0+00 to 9+00) would be 21.00 feet to 27.04 feet deep.
    - 700 feet (Stations 9+00 to 16+00) would be 24.95 feet to 26.15 feet deep.
    - 800 feet (Stations 16+00 to 24+00) would be 23.52 to 25.3 feet deep.
    - 3155 feet (Stations 24+00 to 55+57) would be 113.48 feet to 116.75 feet deep.

At Sites 12, 12A and 13, levee rehabilitation will consist of actions that reinforce the land side of the levee, including reconstructing the landside to make it less pervious, constructing land side toe slope spoil berms made from waste sediment from the land side reconstruction, relocating and rehabilitating irrigation ditches/drains, and elevating three pump discharge pipes above the KLRC channel design water surface elevation, which is above the ordinary high water lines of the adjacent waterway. Two existing pump stations would also be relocated, while a third pump station would not need to be relocated, as follows. Utility lines, including a natural gas pipeline and overhead power lines, would also need to be relocated away from the reconstructed levee.

- Site 13 pump station would be relocated to a new location within the same ditch.
- Site 12 pump station would be relocated to the newly realigned ditch.
- Site 12A pump station would remain in place during construction; however, the pipe crossing underneath the levee from KLRCS would be removed and replaced.

Potentially Significant Impacts and Mitigation Measures

Air Quality

Best management practices (BMP) will be implemented by the USACE construction contractor at each repair site. These include dust and PM_{10} abatement by watering, limiting on-site idling time of heavy equipment, and ensuring that all internal combustion engine equipment is properly tuned to the manufacturer's specification. These practices would result in limiting emissions during the construction period and would be sufficiently effective to avoid exceeding significance thresholds.

To help protect ambient air quality conditions, standard construction practices at the erosion sites would ensure that exhaust emissions from all off-road diesel-powered equipment used on the sites do not exceed 40% opacity for more than three minutes in any one hour. Any equipment found to exceed 40% opacity (or Ringelmann 2.0) would be repaired immediately. USACE and/or the appropriate local air quality agency would be notified within 48 hours of identification of non-compliant equipment.

Additional BMPs would be implemented for O_3 and PM_{10} to help protect ambient air quality conditions. To reduce O_3 and PM_{10} levels, the contractor would perform routine tuning and maintenance of construction equipment to ensure that the equipment is in proper running order. The contractor would also monitor dust conditions along access roads and within the construction area to ensure that the generation of fugitive dust, which includes PM_{10} and $PM_{2.5}$, is minimized below the 50 ug/m^3 24-hour threshold. Water sprays would be periodically applied to disturbed areas and soil stockpiles for dust control (at least three times per day during hot weather). Minimum freeboard for all haul vehicles would be two-feet or greater. Lastly, soil-disturbing activities would be suspended during periods with winds over 25 miles per hour.

Best management practices will be implemented by the USACE construction contractor at each repair site. These include dust and PM_{10} abatement by watering, limiting on-site idling time of heavy equipment, and ensuring that all internal combustion engine equipment is properly tuned to the manufacturer's specification. These practices would result in limiting emissions during the construction period and would be sufficiently effective to avoid exceeding significance thresholds.

The project could have a potentially significant impact on air quality from NO_x emissions.

Mitigation Measures

To reduce NO_x emissions for this project, the applicant may employ one or more of the following measures:

- Require injection timing retard of two degrees on all diesel vehicles, where applicable.
- Install high pressure injectors on all vehicles, where feasible.
- Encourage the use of reformulated diesel fuel.
- Electrify equipment, where feasible.
- Maintain equipment in tune with manufacturer's specifications.
- Install catalytic converters on gasoline-powered equipment.
- Substitute gasoline-powered for diesel-powered equipment where feasible.
- Use compressed natural gas or on-site propane mobile equipment instead of diesel-powered equipment, where feasible.
- Consider using a combination of CARB-verified technologies and/or later model off-road

equipment meeting CARB's newer Tier levels or equivalent (Tier 2 or cleaner).

- Limit idling of all vehicles and equipment to no more than 5 minutes.
- Encourage workers to carpool to and from work.

In addition, the contractor shall submit to USACE, CVFPB, and YSAQMD 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. The inventory shall include the horsepower rating, engine production year, and projected hours of use or fuel throughput for each piece of equipment. The inventory shall be updated and submitted monthly throughout the duration of construction activities, except that an inventory shall not be required for any 30-day period in which no construction activity occurs. At least 48 hours prior to the use of subject heavy-duty off-road equipment, the contractor shall provide the YSAQMD with the anticipated construction timeline, including start date and the name and phone number of the project manager and on-site foreman. The local air quality district and/or other officials may conduct periodic site inspections to determine compliance. Nothing in this section would supersede YSAQMD or State rules or regulations. Portable diesel fueled equipment greater than 50 horsepower, such as generators or pumps, must be registered with either the Air Resources Board's Portable Equipment Registration Program (http://www.arb.ca.gov/perp/perp.htm) or with YSAQMD.

Implementation of the mitigation described above would reduce potential impacts from the proposed action to a less-than-significant level.

Vegetation and Wildlife

The project could have a significant impact to vegetation and wildlife habitat. Adoption of the proposed mitigation measures as stated in the U.S. Fish and Wildlife Service *Final Coordination Act Report for the Sacramento River Flood Control System Evaluation Phase III*, would reduce these impacts to a less than significant level. However, the California Department of Water Resources (DWR), acting on behalf of the non-federal sponsor (CVFPB), has determined that the current CDFG Swainson's hawk protocols require a 0.5-mile radius survey. As a result, the DWR and CVFPB would increase the size of the survey to meet the State's protocol.

Mitigation Measures

- The loss of riparian habitat would be mitigated for on-site with the creation of 4.8 acres of riparian woodland habitat. At least 675 of the riparian plantings/seedlings covering 4.47 acres are expected to be planted at Site 12 along and to the east of the new or existing wetland ditch.
- Affected emergent marsh habitat would be mitigated on-site with the creation of 7.33 acres of new emergent marsh habitat. A new agricultural drainage ditch at Sites 12 and 13 would be relocated within 50 feet of the existing one. Riparian trees and scrub-shrub species will be planted along both sides of the newly relocated ditch in order to establish a wildlife corridor. Mitigation for grasslands would be accomplished on-site by planting new native grasses on the constructed levees and spoil berms.
- Mitigation for grasslands would be accomplished on-site by planting new native grasses on the constructed levees and spoil berms.
- In addition, the USACE will provide and incorporate the below mitigation/design measures recommended by the USFWS in their *Final Coordination Act Report for the Sacramento River Flood Control System Evaluation Phase III* (Appendix B). However, the Corps has determined that the current CDFG Swainson's hawk protocols require a 0.5-mile radius survey. As a result,

the Corps would increase the size of the survey to meet the State's protocol. In addition, the last two bullets have been complied with as the draft EA/IS was sent to the CDFG and NOAA Fisheries, but neither agency provided any comments. Further, the effects of the project on State-listed species and anadromous fish have been adequately addressed elsewhere in this document.

- Avoid impacts to migratory birds nesting in trees along the access routes and adjacent to the proposed repair sites by conducting pre-construction surveys for active nests along proposed haul roads, staging areas, and construction sites. Work activity around active nests should be avoided until the young have fledged. The following protocol from the California Department of Fish and Game for Swainson's Hawk would suffice for the pre-construction survey for raptors.

  A focused survey for Swainson's hawk nests will be conducted by a qualified biologist during the nesting season (February 1 to August 31) to identify active nests within 0.25 mile of the project area. The survey will be conducted no less than 14 days and no more than 30 days prior to the beginning of construction. If nesting Swainson's hawks are found within 0.25 mile of the project area, no construction will occur during the active nesting season of February 1 to August 31. Or until the young have fledged (as determined by a qualified biologist), unless otherwise negotiated with the California Department of Fish and Game. If work is begun and completed between September 1 and February 28, a survey is not required.

- Avoid future impacts to the site by ensuring all fill material is free of contaminants.

- Minimize project impacts by reseeding all disturbed areas at the completion of construction with forbs and grasses.

- Minimize the impact of removal and trimming of all trees and shrubs by having these activities supervised and/or completed by a certified arborist.

- Compensate for the loss of 1.93 acres of riparian woodland by acquiring a minimum of 9.65 acres at the Schreiner's mitigation site for the adverse impacts on wildlife from project construction activities affecting riparian woodland and riparian scrub-shrub cover types. If the Schreiner's site will not be used, inform the Service of current plans for mitigation.

- Compensate for the loss of 2.43 acres of emergent marsh along the existing landside toe ditch by relocating or replacing the toe ditch and replanting it with emergent marsh cover. The new ditch would create 7.33 acres of emergent marsh.

- Implement at least a 20-year monitoring and remediation period to determine the success of the plantings and correct any failures of the mitigation effort. Monitoring and reporting to the Service should be required every year for the first 5 years of the 20-year period, and every 5 years afterward. If, within the monitoring period, revegetation efforts are unsuccessful, corrective actions would be required until mitigation goals are met. Funding sources for monitoring and remediation should be appropriated prior to project construction.

- Contact the California Department of Fish and Game (CDFG) regarding possible effects of the project on State-listed species.

- Contact NOAA Fisheries regarding possible effects of the project on the anadromous fish species of the Sacramento River.

Special Status Species

The project could have a significant impact to special status species. Adoption of the proposed mitigation measures would reduce these impacts to a less than significant level.

Mitigation Measures

Giant Garter Snake

- The loss of riparian habitat would be mitigated for on-site with the creation of 4.8 acres of riparian woodland habitat. At least 675 of the riparian plantings/seedlings covering 4.47 acres are expected to be planted at Site 12 along and to the east of the new or existing wetland ditch.
- Affected emergent marsh habitat would be mitigated on-site with the creation of 7.33 acres of new emergent marsh habitat. A new agricultural drainage ditch at Sites 12 and 13 would be relocated within 50 feet of the existing one. Riparian trees and scrub-shrub species will be planted along both sides of the newly relocated ditch in order to establish a wildlife corridor. Mitigation for grasslands would be accomplished on-site by planting new native grasses on the constructed levees and spoil berms.
- Mitigation for grasslands would be accomplished on-site by planting new native grasses on the constructed levees and spoil berms.
- In addition, the USACE will provide and incorporate the below mitigation/design measures recommended by the USFWS in their *Final Coordination Act Report for the Sacramento River Flood Control System Evaluation Phase III* (Appendix B). However, the Corps has determined that the current CDFG Swainson's hawk protocols require a 0.5-mile radius survey. As a result, the Corps would increase the size of the survey to meet the State's protocol. In addition, the last two bullets have been complied with as the draft EA/IS was sent to the CDFG and NOAA Fisheries, but neither agency provided any comments. Further, the effects of the project on State-listed species and anadromous fish have been adequately addressed elsewhere in this document.
    - Avoid impacts to migratory birds nesting in trees along the access routes and adjacent to the proposed repair sites by conducting pre-construction surveys for active nests along proposed haul roads, staging areas, and construction sites. Work activity around active nests should be avoided until the young have fledged. The following protocol from the California Department of Fish and Game for Swainson's Hawk would suffice for the pre-construction survey for raptors.

      A focused survey for Swainson's hawk nests will be conducted by a qualified biologist during the nesting season (February 1 to August 31) to identify active nests within 0.25 mile of the project area. The survey will be conducted no less than 14 days and no more than 30 days prior to the beginning of construction. If nesting Swainson's hawks are found within 0.25 mile of the project area, no construction will occur during the active nesting season of February 1 to August 31. Or until the young have fledged (as determined by a qualified biologist), unless otherwise negotiated with the California Department of Fish and Game. If work is begun and completed between September 1 and February 28, a survey is not required.

    - Avoid future impacts to the site by ensuring all fill material is free of contaminants.
    - Minimize project impacts by reseeding all disturbed areas at the completion of construction with forbs and grasses.
    - Minimize the impact of removal and trimming of all trees and shrubs by having these

activities supervised and/or completed by a certified arborist.

- Compensate for the loss of 1.93 acres of riparian woodland by acquiring a minimum of 9.65 acres at the Schreiner's mitigation site for the adverse impacts on wildlife from project construction activities affecting riparian woodland and riparian scrub-shrub cover types. If the Schreiner's site will not be used, inform the Service of current plans for mitigation.
- Compensate for the loss of 2.43 acres of emergent marsh along the existing landside toe ditch by relocating or replacing the toe ditch and replanting it with emergent marsh cover. The new ditch would create 7.33 acres of emergent marsh.
- Implement at least a 20-year monitoring and remediation period to determine the success of the plantings and correct any failures of the mitigation effort. Monitoring and reporting to the Service should be required every year for the first 5 years of the 20-year period, and every 5 years afterward. If, within the monitoring period, revegetation efforts are unsuccessful, corrective actions would be required until mitigation goals are met. Funding sources for monitoring and remediation should be appropriated prior to project construction.
- Contact the California Department of Fish and Game (CDFG) regarding possible effects of the project on State-listed species.
- Contact NOAA Fisheries regarding possible effects of the project on the anadromous fish species of the Sacramento River.

Valley Elderberry Longhorn Beetle

- Approximately 6.7 acres of elderberry mitigation habitat will be planted onsite. This acreage includes the establishment of associated native plantings. It is expected that 2.5 acres of this would be planted in the near future to mitigate for elderberry impacts at Sites 12, 12A, and 13 and the rest would be planted at a later time.
- Avoidance and mitigation measures outlined in the *Mitigation Guidelines for the Valley Elderberry Longhorn Beetle, July 9, 1999* (USFWS 1999) would be followed in addition to any other terms and conditions issued by the USFWS. They are listed below:

Protective Measures

- Fence and flag all areas to be avoided. Provide a minimum setback of at least 20 feet from the drip line of any elderberry plants.
- Provide worker awareness training to contractors and work crews on the need to avoid damaging the elderberry plants and possible penalties for not complying with these requirements.
- Place signs every 50 feet along the edge of the avoidance areas with the following information: "This area is habitat of the valley elderberry longhorn beetle, a threatened species, and must not be disturbed. This species is protected by the Endangered Species Act of 1973, as amended. Violators are subject to prosecution, fines, and imprisonment." The signs would be clearly readable from a distance of 20 feet, and would be maintained for the duration of construction.

Restoration and Maintenance

- Restore any damage done to the buffer area during construction. Provide erosion control

and revegetate with appropriate native plants.

- No insecticides, herbicides, fertilizers, or other chemicals that might harm the beetle or its host plant would be used in the core and buffer avoidance areas, or within 100 feet of any elderberry plant with a stem measuring 1.0 inch or greater in diameter at ground level.
- The construction contractor would be required to provide a written description of how the core and buffer avoidance areas are to be restored and protected.

Swainson's Hawk

- Conduct surveys for Swainson's Hawks in the vicinity of the Contract Area 3 in accordance with CDFG (2000) guidelines prior to the start of construction. These surveys would occur within one-half mile of all six levee construction sites, including staging areas, and borrow sites.
- If hawks with active nests are found within the one-half mile radius of the worksite, USACE would implement appropriate mitigation measures to be defined by CDFG. Measures could include a moratorium on construction in the area where the nest(s) is/are located until the newly hatched young have exited the nest (usually May through August 31 depending upon how early nesting activity started).

Water Quality

The project could have a significant impact to water quality. Adoption of the proposed mitigation measures would reduce these impacts to a less than significant level.

Mitigation Measures

Project areas (Sites 9, 10 and 11 and Sites 12, 12A, and 13) would be subject to Clean Water Act (CWA) regulations, such as the National Pollutant Discharge Elimination System (NPDES) pursuant to Section 402 of the CWA. Similar to previous work on the flood control project, the Section 401 and 402 approvals would require the implementation of numerous BMPs to reduce any potential adverse effects to water quality. Implementation of these BMPs would reduce any adverse effects to water quality to less than significant.

Erosion control and sediment detention devices such as using straw bales, fencing, sandbags, and/or similar devices would be incorporated into the project and implemented at the time of the project action. These devices would be in place during the project action, and after if necessary, for the purpose of minimizing fine sediment/water slurry input to flowing water. The devices would be placed at all locations where the likelihood of sediment input exists.

The contractor would prepare and implement (1) an erosion and sediment control plan for minimizing the potential for sediment input into the river or KLRC; (2) a toxic material control and spill response plan for preventing toxic material spills; (3) a soil management plan that provides criteria for classifying wastes in soil and managing soils possibly contaminated by toxics; and (4) a hazardous and toxic materials contingency plan in the event that unlisted hazardous and toxic sites are uncovered during construction.

Dewatering of work areas, such as pumping the wetland ditches dry, would be conducted in accordance with all regulatory requirements to avoid or minimize any effects on water quality.

All fill and rock materials would be non-toxic. Any combination of wood, plastic, concrete, or steel is acceptable, provided that there are no toxic coatings, chemical anti-fouling products, or other treatments that could leach into the surrounding environment.

Traffic and Transportation

The project could have a significant impact to traffic and transportation. Adoption of the proposed mitigation measures would reduce these impacts to a less than significant level.

Mitigation Measures

- Traffic Control Plan
    - The construction contractor would prepare and implement a traffic control plan (or plans) that address conditions at each site. The plan(s) would be approved by Yolo County Department of Public Works, the Town of Knights Landing if their city streets would be used, and Caltrans, as applicable, prior to the initiation of construction activities. The plan(s) would include measures to (1) reduce, to the extent practicable, the number of vehicles (construction-related and other) on the roadways adjacent to the sites; (2) reduce, to the extent practicable, the interaction between construction equipment and other vehicles; and (3) promote public safety through actions aimed at driver and road safety.
    - Prior to implementation of construction activities, the contractor would verify that all roads, bridges, culverts, and other infrastructure along the access routes can support expected vehicle loads.
    - The plan(s) would identify all intended haul routes, locations of signage, locations of flaggers, approved permits, documentation of coordination with local and State agencies, and locations of potential delays to vehicle and pedestrian traffic. Construction vehicles would follow established truck routes to the greatest extent practicable.
- Travel Flow and Access Measures
    - The contractor would maintain travel traffic on all roads adjacent to the site and on all affected public roads during the construction period. Measures for the protection and diversion of traffic, including the provision of watchmen and flagmen, erection of barricades, placing of lights around and in front of equipment and the work, and the erection and maintenance of adequate warning, danger, and direction signs, would be as required by State and local authorities having jurisdiction.
    - The traveling public would be protected from construction and work damage to person and property. The contractor's traffic on roads selected for hauling material to and from the site would interfere as little as possible with public traffic.
    - Traffic controls on major roads and collectors would include flag-persons wearing safety vests and using "stop/slow" paddles to direct drivers.
    - Through access for emergency vehicles would be provided at all times.
    - Access to public transit would be maintained, and movement of public transit vehicles would not be impeded as a result of construction activities.
    - Access to driveways and private roads would be maintained.
- Construction-Related Traffic Measures
    - Construction parking would be restricted to the designated staging areas.
    - During peak periods, construction-generated traffic would avoid roadway segments or intersections that are at, or approaching, a level of service that exceeds local standards.
    - The speed of all construction vehicles would be limited to a maximum of 10 miles per

hour on the levee access roads. The contractor would provide a minimum of four construction speed limit signs large enough to be visible by the passing traffic. The speed limit signs would be in English units and posted on the levee and on each of the access roads. Signs would be posted for both incoming and outgoing traffic.

- Construction warning signs would be posted in accordance with the local standards or those set forth in the *Manual on Uniform Traffic Control Devices* (FHWA 2012) in advance of the construction area and at any intersection that provides access to the construction area.
- A sign, at least one square yard in size, would be posted at all active construction sites that gives the name and telephone number or email address to contact with complaints regarding construction traffic.
- Measures would be implemented as needed to reduce erosion of temporary roadbeds by construction traffic, especially during wet weather. The construction contractor would minimize the amount of mud transported onto paved public roads by vehicles or runoff.
- Rock, dirt, and/or other fill materials would be prevented from being accidently dropped from trucks traveling on highways to and from the erosion sites.
- Any damage to roads caused by construction operations would be repaired to pre-project conditions.

Cultural Resources

None of the historical period properties in the area of potential effects of the proposed Project are associated with important historical events; are associated with the lives of persons important in our past; embody characteristics that are distinctive of a type, period, region, or method or represent the work an important creative individual; or are able to yield information that is important in history or prehistory, pursuant to Section 15064.5(a)(3)(A-D) of CEQA. As a result, these properties do not meet any of the criteria for inclusion in the California Register of Historic Places.

Therefore, the determination is made that that the Sacramento River Flood Control System Evaluation, Phase III, Mid-Valley, Contract Area 3 project would have no effect on historic properties that are eligible for, or listed in, the California Register of Historic Resources.

Findings

Based on the information in the Environmental Assessment and Initial Study for the Sacramento River Flood Control System Evaluation-Phase III Mid-Valley Contract Area 3 and the entire record, the Central Valley Flood Protection Board finds that although the Project could have a significant impact on the environment, mitigation measures have been incorporated into the Project that reduce these impacts to less than significant.

By: William H. Edgar Date: July 26, 2013

William H. Edgar
President

By: Date: July 26, 2013

Jane Dolan
Secretary

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LIST OF ACRONYMS AND ABBREVIATIONS

APE	area of potential effect
BMP	best management practices
CAR	Fish & Wildlife Coordination Act Report
CARB	California Air Resources Board
CDFG	California Department of Fish and Game
CDOC	California Department of Conservation
CEQA	California Environmental Quality Act
CH_4	methane
CM	channel mile
CO	carbon monoxide
CO_2	carbon dioxide
Corps	U.S. Army Corps of Engineers
CVFPB	Central Valley Flood Protection Board
CWA	Clean Water Act
DWR	California Department of Water Resources
EA/IS	Environmental Assessment/Initial Study
EIP	State of California Early Implementation Program
EIS/EIR	Environmental Impact Statement / Environmental Impact Report
EPA	U.S. Environmental Protection Agency
ESA	Environmental Site Assessment
FHWA	Federal Highway Administration
FONSI	Finding of No Significant Impact
HFC	hydrofluorocarbons
KLRC	Knights Landing Ridge Cut
LF	linear foot/feet
N_2O	nitrous oxide
NAAQ	National Ambient Air Quality Standards
NEPA	National Environmental Policy Act
NO_x	Nitrogen Oxides
NMFS	National Marine Fisheries Service

NPDES	National Pollution Discharge Elimination System
NPS	National Park Service
NRCS	Natural Resources Conservation Service (a USDA agency)
O_3	ozone
PFC	perfluorocarbons
PM_{10}	particulate matter 10 micrometers in diameter
$PM_{2.5}$	particulate matter 2.5 micrometers in diameter
RD	Reclamation District
RECs	Recognized Environmental Conditions
RM	river mile
ROG	Reactive Organic Matter
SF_6	sulfur hexafluoride
SHPO	California State Historic Preservation Officer
SMAQMD	Sacramento Metropolitan Air Quality Management District
SRA	shaded riverine aquatic (habitat)
SRBPP	Sacramento River Bank Protection Project
SRFCP	Sacramento River Flood Control Project
SVAB	Sacramento Valley Air Basin
TAC	Technical Advisory Committee
USACE	U.S. Army Corps of Engineers
USDA	U.S. Department of Agriculture
USFWS	U.S. Fish and Wildlife Service
YSAQMD	Yolo-Solano Air Quality Management District

1.0 PURPOSE AND NEED

1.1 Proposed Action

The U.S. Army Corps of Engineers (Corps) and the Central Valley Flood Protection Board (CVFPB) propose to (1) install slurry cutoff walls on the existing levee at three sites between river miles (RM) 70 and 118 along the west side of the Sacramento River and (2) remediate the existing levee at three sites between channel miles (CM) 1.6 and 5.0 along the east side of the Knights Landing Ridge Cut (KLRC). Design and construction details of the proposed action are included in Section 2.3.

These levees are features of the Sacramento River Flood Control Project (SRFCP), which includes over 1,000 miles of levees, overflow weirs, relief structures, and bypass channels designed to reduce the risk of flooding in the Sacramento Valley and San Joaquin Delta. The work would help to maintain the integrity of the SRFCP by reducing the potential for erosion and levee failure due to seepage under or through the levees and levee instability at these six sites.

1.2 Location of Project Area

The project area for this levee work is just downstream of the small town of Knights Landing in east Yolo County, approximately 26 miles northwest of Sacramento (Plate 1). The project area includes sections of SRFCP levees, easements, and right-of-way areas along the Sacramento River and KLRC, which flow roughly north to south through this rural agricultural area (Plate 2). Plate 2 shows the locations and assigned numbers of these sites along each water course as described below.

1.2.1 Sacramento River

Work on the Sacramento River levee would be conducted at sites 9, 10, and 11 between river miles 70 and 118 southeast of Knights Landing. These sites are located on the gravel maintenance road on top of the levee between the river and Yolo County Road 116B.

- Site 9 starts approximately 1 mile east of Knights Landing at river mile (RM) 87.2 and extends 793 feet downstream to RM 87.1.
- Site 10 starts approximately 1,584 feet downstream of site 9 at RM 86.8 and extends 878 feet downstream to RM 86.7.
- Site 11 starts approximately 1.5 miles downstream of site 10 at RM 85.2 and extends 1.05 miles (5,555 feet) downstream to RM 84.1 along County Road 116B just down river from sites 9 and 10.

1.2.2 Knights Landing Ridge Cut

Work on the KLRC levee would be conducted on the landside at sites 12, 12A, and 13. These sites are located on the east bank of the levee south of Knights Landing. The project area also includes the landside easement area alongside the levee.

- Site 12 starts approximately 0.75 mile south of the Town of Knights Landing at CM 5.0 and extends 14,100 feet downstream to CM 2.3
- Site 12A is contiguous with the south end of site 12 and extends 2,100 feet downstream to CM 1.9
- Site 13 is contiguous with the south end of site 12A and extends 2,000 feet downstream to CM 1.5.

1.3 Need for Proposed Action

1.3.1 Background

After flooding and levee failures during the winter of 1986, the Corps was directed by Congress to conduct a system-wide evaluation of the Sacramento River and its tributaries to determine if the structures and features were functioning in accordance with the original design of the SRFCP. Because of the size and complexity of the SRFCP area, the evaluation and subsequent proposed remediation work were divided into five phases to be completed based on available funding and local support.

Phase I, Sacramento Urban Area, and Phase II, Marysville/Yuba City, were (partially) completed first because of the higher risk of property damage and potential loss of life in these highly populated areas. Phase III is Mid-Valley, which is the focus of this EA/IS. The remaining phases are Phase IV, Lower Sacramento River, and Phase V, Upper Sacramento River north of Knights Landing. Work on Phase III began with the Initial Appraisal Report – Mid-Valley Area completed by the Corps in December 1991.

1.3.2 Phase III, Mid-Valley, Contract 3

In June 1996, the Corps completed the *Sacramento Flood Control Project, California, Mid-Valley Area, Phase III, Design Memorandum* (DM) (USACE 1996a), which proposed remediation work along various levee locations in the Phase III area. These locations included portions of the Sacramento River (RM 70 to 118), Feather River (RM 0 to 3), KLRC, Sutter Bypass (Tisdale Bypass to the Feather River), and Yolo Bypass (Fremont Weir to the Sacramento Bypass).

The 1996 DM separated the designs for the Phase III remediation work into four construction contract areas. Contract Area 1 (Reclamation District 1500) on the Sutter Bypass and Sacramento River from RM 85.2 to 117.2 was completed in 1998. Contract Area 2 (Reclamation District 1001) is on the Feather River and Sacramento River from RM 79 to 79.5. Contract Area 3 (Knights Landing) is the subject of this Environmental Assessment/Initial Study (EA/IS). Contract Area 4 (Elkhorn) is on the Yolo Bypass and Sacramento River from RM 80.8 to 81.5.

Because of local soil conditions, the six remediation sites in the Contract 3 area are at risk of erosion and failure during flooding or even normal flow conditions. Due to hydraulic pressure, high water in the Sacramento River can cause water to slowly flow (seep) through pervious sandy soils, as well as under areas of impervious soils. This seepage weakens the levees, increasing the risk of erosion, levee failure, and flooding into adjacent and downstream areas. According to the 1996 DM, the KLRC levees have a long history of stability problems. Records dating to 1951 have described levee deformation, slippage, and partial collapse. Many of the failures have been on the landside slope and are often shallow, involving approximately the upper 5 feet of the levee. Deeper slides, sometimes resulting in significant slumping of the crown, have also occurred. Past repairs have included removal and recompaction of the failed material with flatter slopes and inclusion of a stabilizing berm to counterbalance the tendency for rotational failures of the levee fill. A total of 67 levee repair and reconstruction sites have been noted in USACE documents since 1956. USACE has previously evaluated the levees and developed a rehabilitation scheme that consists of replacing a portion of the landside slope with lean clay, constructing a toe berm at the landside toe, and relocating the drain ditch further from the levee.

These levees in the Contract 3 area are integral to the system-wide performance of the SRFCP. They provide direct flood protection to the towns of Knights Landing, Verona, and Nicholas, as well as indirect flood protection to the cities of Sacramento and West Sacramento. In addition, these levees allow 93,000 acres of farmland and associated infrastructure to remain in production year-round. These six sites must be remediated before their condition degrades further and emergency repair is required to avoid or minimize property damage and potential loss of life.

1.4 Authorization

The SRFCP was originally authorized by the Flood Control Act of 1917 (Public Law 64-367). Subsequent modifications to the project were authorized by the Flood Control Acts of 1928, 1936, 1941, 1944, and 1950, as well as the Rivers and Harbors Act of 1937. The Corps completed construction of the SRFCP in 1955 and turned the project over to the State of California in 1958 for maintenance.

After flooding and levee failures during the winter of 1986, the Corps was directed by Congress to conduct a system-wide evaluation of the Sacramento River and its tributaries. The authority for this system evaluation was the Conference Report accompanying the Energy and Water Development Act for 1987 (Public Law 99-591).

1.5 Purpose of Environmental Assessment/Initial Study

This EA/IS describes the environmental resources in the Contract Area 3 project area; evaluates the effects of the alternatives (including the proposed action) on these resources; and proposes measures to avoid, minimize, or mitigate/compensate any adverse effects to a less-than-significant level. This EA/IS is a joint document that has been prepared in accordance with the National Environmental Policy Act (NEPA) and California Environmental Quality Act (CEQA). The Corps is the Federal lead agency, and the CVFPB is the State lead agency and non-Federal sponsor.

Based on the results of the EA/IS and public/agency comments, the District Engineer, the commander of the Sacramento District of the Corps, will determine whether the proposed levee work qualifies for a Finding of No Significant Impact (FONSI) or whether a supplemental Environmental Impact Statement (EIS) must be prepared. Similarly, the CVFPB will decide whether the proposed levee work qualifies for a Negative Declaration (ND) or whether a supplemental Environmental Impact Report (EIR) must be prepared.

1.6 Previous Environmental Documents

The following previous documents are relevant to the proposed Phase III work. This EA/IS for Contract 3 tiers off the 1992 programmatic EIS/EIR, while the 1996 and 1999 EA/IS's are incorporated by reference into the EA/IS.

- The *Sacramento River Flood Control System Evaluation, Phase II-V, Programmatic Environmental Impact Statement/Environmental Impact Report*, dated May 1992 (USACE 1992), included a general discussion of potential alternative plans, existing environmental resources, types of effects of the alternatives on those resources, and types of mitigation measures. Alternative plans considered were drainage improvements, levee height increases, cutoff walls, and stabilizing berms. Detailed designs and additional environmental documentation are needed for each phase.
- The *Sacramento River Flood Control System Evaluation, Phase III, Mid-Valley Area, Environmental Assessment/Initial Study*, dated March 1996 (USACE 1996b), described the project, which then consisted of 30 levee restoration sites; analyzed the effects of the project on environmental resources; and proposed mitigation measures to reduce any effects to less than significant. This document includes the most recent Habitat Evaluation Procedure (HEP) for the Mid-Valley area.
- The *Supplemental Environmental Assessment/Initial Study, Sacramento River Flood Control System Evaluation, Phase III - Mid-Valley Area*, dated November 1999 (USACE 1999), described proposed project changes at 12 of the 30 restoration sites. The environmental consequences of the changes were then analyzed, and mitigation measures were proposed to

reduce any additional effects on resources to less than significant

2.0 ALTERNATIVES

2.1 Alternatives Not Considered Further

Initially, the Corps considered other methods to reduce the potential for through- and under-seepage at the six levee sites. These methods included the proposed alternatives in the 1996 and 1999 EA/ISs (Table 1). However, subsequent geotechnical data and unanticipated problems at some of the sites indicated that the originally proposed alternatives would not be effective in reducing seepage. The geotechnical data showed that a seepage stability berm would not protect the levee at sites 9 and 10 as it would not prevent underseepage from occurring. In addition, it was determined that lime treatment could adversely affect water quality and vegetation. As a result, these alternatives were not considered further.

Table 1 Alternatives Proposed in the 1996 and 1999 EA/ISs

Site No.	November 1999 EA/IS	March 1996 EA/IS
9	Seepage/stability berm Toe drain	Seepage/stability berm Toe drain
10	Levee crown slurry wall	Seepage/stability berm Toe drain
11	Seepage/stability berm Toe drain	Seepage/stability berm Toe drain
12	Replace top soil Reshape levee Relocate drainage ditch	Lime treatment Reshape levee Relocate drainage ditch
12A	Replace top soil Reshape levee	Lime treatment
13	Replace top soil Reshape levee Relocate drainage ditch	Lime treatment Relocate drainage ditch

2.2 No-Action Alternative

Under the No-Action Alternative, the Corps and the CVFPB would not implement the proposed remediation work at the six levee sites in the Contract 3 area. As a result, these levees would continue to be at risk of erosion and failure due to seepage during flooding or even under normal flow conditions. High water in the Sacramento River and KLRC could cause water to seep through pervious sandy soils, as well as under areas of impervious clay soils. This seepage could weaken the levees, increasing the risk of erosion, levee failure, and flooding into adjacent and downstream areas. The flooding could damage or destroy public and private property, infrastructure, and farmland; and a sudden levee break near the town of Knights Landing could also result in injury or loss of life.

Without improvements to the levee system, the risk of levee failure would remain high. Under these conditions, any of the levees not meeting original Corps design could cause portions of the levee to fail, triggering widespread flooding and extensive damage. If a catastrophic flood were to occur, emergency flood fighting and clean-up actions would require the use of a considerable amount of heavy construction equipment. Timing and duration of use would directly correlate with flood fighting needs, but it is likely that pollutants emitted would violate air quality standards for pollutants (including those for which the area is already considered non-attainment), increase air pollutant emissions, and expose sensitive receptors to toxic air emissions. Depending on the magnitude of the flood, flood fighting could last for weeks or even months. Furthermore, because of the unpredictable nature of an emergency response, no best management practices (BMPs) to manage emissions would be in place. All of these effects could be considered significant. However, the timing, duration, and magnitude of a flood event are speculative and unpredictable, and therefore a precise determination of significance is not possible.

2.3 Proposed Alternative (Levee Remediation Work)

The Proposed Alternative would include (1) installing slurry cutoff walls on the existing levee at sites 9, 10, and 11 along the west side of the Sacramento River and (2) remediating the existing levee at sites 12, 12A, and 13 along the east side of the KLRC. Design and construction details of the proposed remediation work are provided below (see also Plates 3 through 13).

2.3.1 Pre-construction Activities

2.3.1.1 Permits, Approvals, and Utilities

Prior to initiation of work in Contract Area 3, the construction contractor would be required to obtain all Federal, State, and local permits and approvals necessary to perform the work, including those related to storm water discharge, groundwater, fugitive dust, and traffic. A Clean Water Act Section 404 permit from the Corps Regulatory Division would also be required for the wetland fill at sites 12 and 13, if the sponsor proposes to do the work under an approved Early Implementation Program. Specific permits and approvals are identified and discussed under each applicable resource in Section 3.0.

The contractor would also be required to verify the depths and locations of all existing utilities in the project area. Potentially affected utility companies and suppliers would be notified and coordinated with directly concerning the timing and degree of the levee work, including proposed relocation of any electric, gas, or water lines. The sponsor would be responsible for ensuring that the utility relocations are completed to the satisfaction of the utility companies and suppliers, which includes Pacific Gas and Electric, and Yolo County.

2.3.1.2 Groundwater Dewatering

The depth to groundwater at sites 9, 10, and 11 is approximately 30 feet. Although the depth of the new cutoff walls would vary from 21.00 to 116.75 feet, groundwater dewatering would not be needed since the bentonite would provide the stability needed to construct the cutoff walls. At sites 12, 12A, and 13, the depth to ground water is approximately 15 feet. Since the levee remediation work at these sites would not involve any excavation below the existing ground level, no groundwater dewatering would be needed.

2.3.1.3 Surface Water Dewatering

There would be no surface water dewatering for the project from the project area. The project specifications prohibit the contractor from performing any in-water work, including no taking of water from the Sacramento River or KLRC for project purposes, such as for water trucks.

2.3.1.4 Staging Area

The Corps expects the main staging area for sites 9 to 11 would be located on private property on the southwest side of site 11 on the Sacramento River. The staging area would encompass approximately 1 acre of previously disturbed area now covered with gravel. Prior to initiation of work, the CVFPB would either acquire the private property in fee or obtain an easement from the current landowner to use the property for staging. The main staging area at the KLRC for sites 12, 12A, and 13 would be limited to highly disturbed areas within the project footprint. Protective fencing would be placed along the east edge of the primary staging area at site 12 to ensure that construction activities do not impact the adjacent elderberry bushes.

2.3.1.5 Mobilization

During mobilization, construction equipment would be moved to the main staging area, along with bentonite, cement, clean soil, and other construction materials. Types of equipment would include a hydraulic excavator, front end loaders, compactor, dump trucks, haul trucks, and water trucks. In addition, areas would be provided for an administrative trailer and parking of worker vehicles. Access to the main staging areas would be via Yolo County Road 116B for sites 9 to 11 and Yolo County Road 16 for sites 12, 12A, and 13.

2.3.2 Construction Details

Proximity and similarity of treatment allow the construction to be broken into two groups, or "projects": one project consists of sites 9, 10 and 11; the other project consists of sites 12, 12A, and 13.

2.3.2.1 Sites 9, 10, and 11

Remediation work at sites 9, 10, and 11 would consist of installing a soil/bentonite cutoff wall of various lengths and depths. The work would involve (1) degrading the existing top of the levee down 4 to 5 feet to create a level working surface to install the cutoff wall and (2) excavating a trench 3 feet wide and at least 21 feet deep down through the crown of the levee, as follows:

- Site 9 cutoff wall depth would vary from 26.27 feet to 31.08 feet deep.
- Site 10 cutoff wall depth would vary from 23.04 feet to 26.38 feet deep.
- Site 11 cutoff wall depth would vary from 21.00 feet to 116.75 feet deep, as follows:
    - 900 feet (Stations 0+00 to 9+00) would be 21.00 feet to 27.04 feet deep.
    - 700 feet (Stations 9+00 to 16+00) would be 24.95 feet to 26.15 feet deep.
    - 800 feet (Stations 16+00 to 24+00) would be 23.52 feet to 25.3 feet deep.
    - 3155 feet (Stations 24+00 to 55+55) would be 113.48 feet to 116.75 feet deep.

The material excavated from the top of the levee would be temporarily sidecast in an approximately 30-foot wide pile parallel to the levee. The Corps expects the temporary sidecast pile at sites 9 and 10 to be placed along the east toe of the levee in a ruderal grassland area that is about 25 feet from the top of the bank of the Sacramento River. A riparian forest that would not be disturbed is located between the ruderal grassland and the top of the river bank. The Corps expects the temporary sidecast pile at site 11, which is

adjacent to Yolo County Road 116B, to be placed along the west toe of the levee in a previously disturbed area, including an access road.

The trench would then be backfilled with the slurry mixture of bentonite, soil, and water; cement may also be included in portions of the site 11 cutoff wall. The top of the levee would then be restored with the material that was removed originally, and the slope returned to natural contours on the water (east) side of the levee. On the water (east) side, the level cut forming the new levee top would extend just past (water ward) the proposed edge of the patrol road (or County Road) running along the levee top. At sites 9 and 10, the reconstructed water side of the levee would be sloped 2H:1V to a point in the existing levee bank in an upland area at least 25 feet from the river bank along the Sacramento River. On the landside, the reconstructed levee side would extend almost horizontally to the point where it intersects the bank slope on the upland side. All excavated material would be placed on grassy upland levee slopes, such as the upland water (east) side toe at sites 9 and 10, or other upland non-woody areas. The cutoff wall would be 793 feet long at site 9; 878 feet long at site 10; and 5,555 feet long at site 11.

The area would be restored to its pre-project condition after construction is completed. Exposed soils would be hydroseeded with a native hybrid herbaceous vegetation mix similar to what has been used in the past for the flood control project.

2.3.2.2 Sites 12, 12A, and 13

At sites 12, 12A and 13, levee rehabilitation would consist of actions that reinforce the land side of the levee, including reconstructing the landside to make it less pervious, constructing land side toe slope spoil berms made from the land side reconstruction, relocating and rehabilitating irrigation ditches/drains, and elevating three pump discharge pipes above the KLRC channel design water surface elevation, which is above the ordinary high water lines of the adjacent waterway. Two existing pump stations would also be relocated, but a third pump station would not need to be relocated, as follows. Utility lines, including a natural gas pipeline and overhead power lines, would also need to be relocated away from the reconstructed levee.

- Site 13 pump station would be relocated to a new location within the existing ditch.
- Site 12 pump station would be relocated into the newly realigned ditch.
- Site 12A pump station would remain in place during construction; however, the pipe crossing underneath the levee from KLRCS would be removed and replaced.

The spoil berm and the maintenance easement road that would be constructed on top of it would extend 28 feet from the toe of the new levee and would be 4 feet thick. A portion (2,675 linear feet (LF)) of a wetland drainage ditch at site 12 would be avoided because there is enough land space to construct the berm and maintain the ditch. However, 1.93 miles of this drainage ditch at site 12 and 1,850 LF of existing wetland ditch at site 13 would need to be relocated since it lies adjacent to the levee and is unavoidable. Therefore, the ditch would be realigned 15 feet away from the toe of the new spoil berm into the agricultural field and connect back to the existing ditch. In cross section, the total distance affected from the toe of the existing levee out to the new ditch would be 43 feet. An additional 700 LF of existing pond and/or wider ditch area would need to be partially filled and excavated to accommodate the spoil berms at this location in site 12. The existing wetland ditch and pond area would be pumped dry prior to filling them. The 150 feet of wetland ditch along site12A north of CR 16 would be avoided and the remaining 1,850 feet of levee in site 12A south of CR 16 has no ditch along it. The existing patrol road on top of the levees would be replaced with a 20-foot wide aggregate based road that would be closed or gated from public use. The levee is 2.67 miles (14,100 LF) long at site 12; site 12A is 2,100 LF and site 13 is 2,000 LF.

Native riparian and marsh plants would be planted in the new wetland ditches and along the edge of the new pond. Other exposed soils would be hydroseeded with a native hybrid herbaceous vegetation mix similar to what has been used in the past for the flood control project.

2.3.3 Borrow, Stockpiling, and Disposal

2.3.3.1 Borrow Materials and Sources

Material for work would most likely come from a commercial source within 30 miles of the project site. A total of 188,558 cubic yards (CY) of material would be needed for the embankment with 132,800 CY at sites 9, 10, and 11 and 55,758 CY for sites 12, 12A, and 13. Aggregate, drainage material, and slurry materials for the slurry walls would be supplied from commercial quarries.

2.3.3.2 Stockpiling Areas

Because of the distances between the main staging area and remediation sites, most imported soils, excavated material, and waste would be stockpiled on or near the work sites. Excavated soil at sites 9, 10, and 11 would be temporarily stockpiled onto adjacent ruderal grassland or previously disturbed areas. At sites 12, 12A, and 13, both excavated and imported soil would be stockpiled within the construction footprint, which includes approximately 10.76 acres of existing agricultural land. Prior to initiation of work, the CVFPB would either acquire the agricultural land in fee or obtain an easement from the current landowner to use the property for stockpiling.

2.3.3.3 Disposal Areas

The work at sites 9, 10 and 11 would result in the excavation of approximately 116,807 cubic yards of the existing levee, but it is expected that most of this material would be used to backfill the levee to pre-construction contours. Work at sites 12, 12A, and 13 would result in the excavation of approximately 180,900 cubic yards of the existing levees, with most of the excavated material being sidecast along the land (east) side of the levee to construct the new spoil berms. Excess excavated material or material determined to be unsuitable for onsite disposal would be hauled to an existing landfill site capable of handling such material.

2.3.4 Construction Schedule

Due to funding restrictions, the Corps does not expect the work at sites 9, 10, and 11 to begin until 2015. It is expected the local sponsor (CVFPB or Yolo County) would notify affected landowners just prior to construction.

Likewise, the Corps does not expect construction for sites 12, 12A, and 13 to commence until 2016. However, on February 15, 2011, the local levee maintaining agency, the Knights Landing Ridge Drainage District, applied to the California Department of Water Resources (DWR) to obtain funding for construction through DWR's Early Implementation Program (EIP). If approved, the CVFPB and Knights Landing Ridge Drainage District could start construction in 2013 by following the Corps approved design and the construction schedule. The EIP application and additional information regarding this project can be found on the Knights Landing Ridge Drainage District website at: http://rd108.org/images/stories/knights%20landing%202011%20eip%20application.pdf . The Knights Landing Ridge Drainage District and DWR are currently negotiating how EIP funds might be used to fund construction for sites 12, 12A, and 13.

Prior to the start of construction, environmental mitigation measures, such as transplanting mature elderberries, would be completed in the period from November 1 to February 15. Ground disturbance

work at the sites would commence on the following May 1 and would typically end October 1 in order to minimize effects on the threatened giant garter snake. In addition, construction within 0.5 mile of active migratory bird nests would not occur until September 1 or until the chicks have fledged (left the nest) as confirmed by a qualified biologist or ornithologist. Of particular concern is the State endangered Swainson 's hawk, which returns to its traditional nesting territories by April 1 (CDFG 2000). Extension of the ground disturbance window of operations may be possible with the concurrence of the U.S. Fish and Wildlife Service (USFWS). The Corps anticipates that the two projects (sites 9, 10, and 11, and sites 12, 12A, and 13) would each require 10 months to complete; therefore, to avoid environmental harm, each project would need two 5-month-long construction years to complete.

2.3.5 Post-Construction Activities

2.3.5.1 Demobilization and Clean Up

Once construction is completed at a site, all construction equipment would be removed from the site and the staging areas would be restored to previous conditions. In addition, the protective fencing at the site 12 staging area would be removed and all sites would be inspected to ensure that no hazardous or toxic waste or other trash remains at the staging and construction sites.

2.3.5.2 Operation and Maintenance

Local levee maintaining agencies, in cooperation with the CVFPB, are responsible for the operation and maintenance (O&M) of this Corps project. The local levee maintaining agency for sites 9, 10, and 11 is Yolo County Service Area No. 6 and the local levee maintaining agency for sites 12, 12A, and 13 is Knights Landing Ridge Drainage District.

The Corps of Engineers May 1955 (Corps 1955) *Standard Operation and Maintenance Manual for the Sacramento River Flood Control Project* (SRFCP) governs O&M procedures at these project sites and the rest of the SRFCP sites. Supplements to this O&M manual further define the O&M procedures for each of the SRFCP sites, including the six sites subject of this EA/IS. The June 1953 (Corps 1953) supplement for Yolo County Service Area No. 6 further defined the O&M work at all six sites, including sites 12, 12A, and 13 along the Knights Landing Ridge Cut (KLRC) and other sites. This 1953 manual superseded the Corps supplemental manual designated as Unit No. 7 of the SRFCP entitled, *West Levee of the Sacramento River and the South Levee of Sycamore Slough at Knights Landing*. However, the October 1959 supplement (Corps 1959) for Knights Landing Ridge Drainage District superseded the June 1953 for work along the KLRC, including sites 12, 12A, and 13. The Corps July 17, 2011, *Design Documentation Report (DDR) for Sites 12, 12A, and 13* states, "Once construction is completed, the O&M manual [supplement] for the KLRC channel will need to be updated to reflect the new project conditions such as the new pump stations and pipe penetrations, and relocation of the PG&E [Pacific Gas and Electric] overhead electrical lines" (USACE 2011:13).

On August 21, 2012, the Corps sent a letter to the CVFPB, indicating that the Mid-Valley Project is one of 17 projects that would be losing its eligibility under the Corps' Rehabilitation and Inspection Program (P.L. 84-99) because the project is not in compliance with the Corps' O&M standards. The construction work being proposed in this EA/IS is not expected to address these O&M deficiencies so CVFPB would need to perform additional work on the levee to comply with the Corps' O&M standards. If this additional work affects species listed under the Federal Endangered Species Act, such as the removal of mature elderberry bushes or the removal of shoreline woody vegetation, then the sponsor would need to coordinate with the appropriate resource agency (USFWS and/or NMFS) to comply with the ESA. The sponsor would also need to comply with any other relevant laws and regulations in order to complete this O&M compliance work.

3.0 AFFECTED RESOURCES AND ENVIRONMENTAL EFFECTS

The resources not considered in detail are discussed in Section 3.1. Sections 3.2 to 3.9 describe the significant resources in the project area, as well as any effects of the alternatives on those resources. When necessary, mitigation measures are also proposed to avoid, reduce, minimize, or compensate for any effects determined to be significant.

3.1 Resources Not Considered in Detail

Because of the nature and location of Contract Area 3, the remediation work would have no effects on climate, geology, seismicity, topography, water rights, and environmental justice. The project could have minimal to no effect on soils; fisheries; socioeconomics; noise; recreation; aesthetics and visual resources; hazardous, toxic, and radiological waste; and water resources.

3.1.1 Soils

Soils in the area are predominantly unconsolidated sandy loam, clay loam, silt loam, silty clay loam, clay, and all are hydric (USDA, 2012). Appendix A, Section II.e.(5)(b) presents a more thorough description of the soils in the project area. These drained hydric soils are used for producing a wide variety of irrigated crops including rice, tomatoes, grain sorghum, corn, and sugar beets (USDA 1972). The sedimentary deposits within this area are classified as either channel deposits, natural levees, or basin deposits (alluvium).

The proposed construction alternatives would disturb soils in and around the levees, and the borrow and staging areas at the six repair sites. Additional soils trucked in from borrow sites would be used to construct the cutoff walls and backfill the levees. The soils for the spoil berms would be taken from the levee in the contract areas and would not introduce new soil types not already found in the Central Valley floor.

3.1.2 Fisheries

The Sacramento River in the project area supports a wide array of anadromous and resident fish species, including several that are on the Federal Endangered Species Act (ESA) list. These include the endangered winter-run Chinook salmon (*Oncorhynchus tshawytscha*), and the threatened spring-run Chinook salmon, the threatened steelhead trout *Oncorhynchus mykiss*), and the threatened green sturgeon (*Acipenser medirostris*). Other anadromous fish inhabiting these waters include the striped bass (*Morone saxatillis*), American shad (*Alosa sapidissim*), and white sturgeon (*Acipenser transmontanus*), Resident warm water fish include largemouth bass, catfish, bluegill, tule perch, and sunfish (USFWS 1995).

The KLRC seasonally supports many of the same species as the Sacramento River because these fish use the KLRC when it sustains flows during high water stages in the Sacramento River. The KLRC is directly connected to the Sacramento River upstream through the Colusa Basin Drainage canal and downstream through the Yolo Bypass. However, during low flows in summer and early fall, only the waterside canals near the levees contain water and suitable habitat to support various fish species.

The proposed construction at the six repair sites would not involve in-water work or the clearing of near-bank vegetation that serves as shaded riverine aquatic (SRA) habitat. Construction of the spoil berms would be entirely on the landside of the levees. Material from degrading the top of the levee where the two bentonite cutoff walls (at sites 9 and 10) are proposed would likely be temporarily stockpiled on the waterside of the levees, but the use of best management practices (BMPs) would ensure no material enters the Sacramento River. No waterside staging areas would be allowed in order to prevent accidental leaks

of oils or fuels into the waterways. Therefore, Federally or State-listed anadromous fishes and their critical habitat are not likely to be adversely affected.

3.1.3 Socioeconomics

The project sites are located in Yolo County. Land use and the economy are largely based on agriculture, although rapidly growing residential and commercial areas are located in some parts of the county. Most of the area in and around sites 9, 10, 11, 12, 12A and 13 is rural. According to www.city-data.com, the Town of Knights Landing had a population of 4,319 in July 2007. The town is approximately 1 mile north of the northern-most Knights Landing Ridge Cut site.

The work along the levees and trips to and from the borrow sites would temporarily disrupt farming operations as haul trucks may impede the movement of some farm machinery. Some crop production would be lost when the wetland ditches at sites 12 and 13 are relocated farther away from the landside of the levee. Additional farm land is expected to be used for environmental mitigation plantings.

Knights Landing, a small community within 1 to 2 miles of levee sites in Contract Area 3, consists primarily of lower income housing, according to www.city-data.com. The site shows an estimated median house or condo value in town at $258,410 for 2009, while the median for the State of California was $384,200 for the same time period. This housing would not be affected by construction of the spoil berms or slurry walls since no haul trucks would be routed through the town. A few residences in Contract Area 3 are close to the levee sites, but any effects would be temporary and would consist primarily of increased traffic and noise from the construction during working hours.

Levee improvements would provide increased flood protection for farmlands on the landside of the levees. This would have a beneficial effect since farmers and farm workers would be less likely to suffer economic setbacks from crop losses.

Any potential short-term effects on existing utilities in the project area would be coordinated with the utility companies to ensure that there would be no interruption in electric or gas supply to nearby buildings or businesses. In addition, any potentially affected users in the area would be kept informed and encouraged to comment.

3.1.4 Noise

Yolo County does not have established noise standards, but construction noise remains a project concern. Significant noise effects are defined as a significant increase in noise levels audible to people living in the vicinity of a project site. Typical examples of noise standards for non-transportation noise in residential areas are 70 dBA daytime between the hours of 7 a.m. and 10 p.m. and 65 dBA between the hours of 10 p.m. and 7 a.m. in *2002 Zone 40 Water Supply Master Plan EIR, Sacramento County Water Agency* (Sacramento County 2012).

Construction equipment noise varies with the type of equipment. The typical noise output by equipment, as measured at a standard of 50 feet, for the Mid-Valley project would be 86-90 dBA for front loaders, 85-90 dBA for dozers, 72-92 dBA for backhoes, and 82-97 dBA for large trucks. Attenuation of sound by the atmosphere is typically 6 dBA per doubling of the distance from the source if no other sound barriers are used.

Construction effects on noise in and around the six levee repair sites would be temporary and minimal because there are few receptors in the area: most noise would be attenuated to near background levels prior to reaching receptors in the area. Nonetheless, several measures would be implemented to reduce the project's short-term noise effects. First, construction equipment would be limited to daylight hours, starting no earlier than 7 a.m. Mufflers would be installed on all equipment. Any stationary noise

generating construction equipment would be located at least 400 feet away from any residences. Finally, no haul routes would go through towns such as Knights Landing thus there would be no increase in noise due to vehicular construction equipment.

There are no nearby residences at sites 9, 11, 12, 12A, or 13 so excess noise is not considered an issue. There is a nearby residence at site 10, but noise impacts should be minimal since the work would be limited to day time hours and the other measures described above would be implemented.

3.1.5 Recreation

Few recreational activities would be affected because most of the construction sites in the area have restricted access with the exception of site 11. Since this site is on a public road, casual recreationists could be temporarily disrupted on their way to the rivers by trucks or other construction vehicles on the roads.

3.1.6 Aesthetics and Visual Resources

Aesthetics, including the views along the rivers, would be temporarily disrupted by construction. There are no designated visual resources in or near the construction sites. There would be no long-term adverse effects on recreation, aesthetics, or visual resources due to the levee repair work.

3.1.7 Hazardous, Toxic, and Radiological Waste

Hazardous, toxic, and radiological waste (HTRW) Phase I Environmental Site Assessment (ESA) surveys were performed at the Mid-Valley sites in 1994 and 1999. No HTRW was found.

Another survey was conducted in May 2012. The guidelines used were from USACE ER 1165-2-132, *Hazardous, Toxic and Radioactive Waste Guidance (HTRW) for Civil Works Projects,* ASTM E 1527-05, *Standard Practice for Environmental Site Assessment: Phase I Environmental Site Assessment Process,* and the EPA *All Appropriate Inquiries (AAI)* standards. The purpose of this survey was to identify any Recognized Environmental Conditions (RECs) at the sites and surrounding areas.

The 2012 survey consisted of three parts: (1) a review of the regulatory list of REC sites, historical literatures, aerial photographs, and websites; (2) interviews with people who were knowledgeable about the current and past uses of the sites and surrounding areas; and (3) a site reconnaissance.

The 2012 survey yielded three conclusions:

1. Five RECs were identified. Two were privately owned natural gas well facilities that contain volatile organic compounds and three were PG&E pole-mounted electrical transformers that may contain polychlorinated biphenyls. Since these RECs are physically secured and under active management control, CESPK determined that these RECs would not impact the reconstruction activities.
2. The levees that are located next to farming areas and orchards may have been exposed to pesticide and herbicide spraying. However, since the pesticides and herbicides were historically and routinely applied, CESPK determined they are *de minimus* and not RECs.
3. CESPK determined that no further environmental site assessments are warranted for the sites.

The complete 2012 HTRW Phase I ESA Report is available by request to the Corps. During construction, precautions would be followed to avoid oil or fuel spills at the work sites. They include having a spill control plan, not having any staging areas near water, and properly storing and disposing of hazardous waste generated at the site. No other HTRW issues are expected.

3.1.8 Water Resources

It is expected that the deep cutoff wall in site 11 could have a slight effect on groundwater movement, but the groundwater would move along the cutoff wall until it gets around the end of the deeper cutoff wall in site 11. Hence, no mitigation measures are needed. The cutoff walls at sites 9 and 10 would have no effect on groundwater movement as they are located above the groundwater table.

3.2 Vegetation and Wildlife

3.2.1 Existing Conditions

Grassland, agricultural, woody riparian, emergent marsh (wetland ditch/pond), and elderberry shrub habitat acreages for the design at the six levee reconstruction sites have been calculated (Table 2). Since the project footprints, including the extent of the berms and/or slurry walls, and the permanent and temporary construction easements are known, the engineered drawings served as the basis for field observations to determine actual losses of habitat. No woody vegetation losses were identified at construction staging areas or borrow sites since effects to woody vegetation at these locations would be avoided by fencing prior to construction.

Table 2 Habitat impacts (in approximate acres except as noted)

Site	Woody Riparian[1] Habitat (acres/# of trees)	Giant Garter Snake Habitat (emergent marsh or wetland ditch/ pond)	Agricultural Habitat (all Prime Farmland)	Elderberry Shrub Habitat (>1" stems) (# of shrubs;[2] stems with exit holes; stems w/o exit holes)	Grassland (GL) Habitat (Total Levee Area[3]/ Total Grassland Affected)
9	0	0	0	0	1.1/1.29[4]
10	0	0	0	1; 0; 6	0.84/1.05[4]
11	0.11/17	0	0	13; 8; 185	5.78/2.37
Sub-total	**0.11/17**	**0**	**0**	**14; 8; 191**	**7.72/4.71**
12	1.69/256	2.39	12.39 (mitigation for sites 9-11: 5.68 sites 12-13: 6.71)	21; 2; 52	38.03/36.32 (GGS GL habitat)
12A	Included in site 12	0	1.99	Included in site 12	Included in site 12
13	0.02/3	0.04	2.06	1; 0; 4	Included in site 12
Sub-total	**1.82/259**	**2.43**	**16.44**	**22; 2; 56**	**38.03/36.32 (GGS GL habitat)**
Grand Total	**1.93/276**	**2.43**	**16.44**	**36; 10; 247**	**45.75/41.03**

[1]Excluding elderberry (valley elderberry longhorn beetle habitat), as it is covered in fifth column.
[2]One elderberry shrub can and often does have more than one stem protruding from the ground.
3Consists of roadway (patrol road or County Road 116B for site 13) and levee slopes
[4]Includes expected temporary sidecast grassland area, unless material is hauled offsite.

All six sites have waterside corridors of riparian vegetation. Sites 9, 10, and 11 are located adjacent to the riparian corridor along the Sacramento River; sites 12, 12A, and 13 lie adjacent to Knights Landing Ridge Cut. Vegetation at each site consists of common species typically observed within the Central Valley riverine system, including tall trees as well as scrub-shrub species. The majority of trees at these sites include: Fremont cottonwood (*Populus fremontii*), valley oak (*Quercus lobata*), alder (*Alnus* spp.), box elder (*Acer negundo*), a variety of willows (*Salix* spp.), California sycamore (*Platanus racemosa*) , walnut (*Juglans hindsii*), Oregon ash *(Fraxinus latifolia*), elm (*Ulmus americana*), and a few nonnative trees. Scrub-shrub species include coyote brush (*Baccharis pilularis*) , blackberry (*Rubus* spp.), elderberry (*Sambucus* spp.), wild rose (*Rosa californica*), wild grape (*Vitis californica*), poison oak (*Toxicodendron diversilobum*), and fennel species (*Foeniculum* sp.). Both native and nonnative grasses as well as herbaceous forbs dominate the understory and levee slopes at each site. Sites 12 and 13 are located next to farm drainage ditches used to convey runoff from adjacent fields. At the time of the Corps survey these ditches were observed to have emergent marsh vegetation such as cattails (*Typha* spp.), tules (bulrush) (*Scirpus* spp.), sedges (*Carex* spp.), rushes, and other facultative/obligate wetland species.

The riparian corridors at each site provide suitable habitat for many native mammal species. Black-tailed jackrabbit (*Lepus californicus*), western gray squirrel (*Sciurus griseus*), red fox (*Vulpes vulpes*), raccoon (*Procyon lotor*), bobcat (*Lynx rufus*), mule deer (*Odocoileus hemionus*), coyote (*Canis latrans*), long-tailed weasel (*Mustela frenata*) , striped skunk (*Mephitis mephitis*), spotted skunk (*Spilogale gracilis*), badger (*Taxidea taxus*), muskrat (*Ondatra zibethicus*), river otter (*Lontra canadensis*), and beaver (*Castor canadensis*) are all found in the Mid-Valley project area. Riparian areas also provide nesting and feeding habitat for resident birds. The Sacramento River system is part of the Pacific Flyway and provides important resting and feeding areas for migratory waterfowl, shorebirds, and other water associated birds. Common bird species found in the Mid-Valley project area include California quail (*Callipepla califiornica*), ring-necked pheasant (*Phasianus colchicus*), mourning dove (*Zenaida macroura*), band-tailed pigeon (*Patagioenas fasciata*), common merganser (*Mergus merganser*), mallard (*Anas platyrhynchos*), great blue heron (*Ardea herodias*), great egret (*Ardea alba*), belted kingfisher (*Megaceryle alcyon*), marsh wren (*Cistothorus palustris*), song sparrow (*Melospiza melodia*) owls, woodpeckers, red-tailed hawk (*Buteo jamaicensis*) and Swainson's hawk (*Buteo swainsoni*). Amphibians and reptiles found in the area include the gopher snake (*Pituophis catenifer catenifer*), western fence lizard (*Sceloporus occidentalis*), several species of garter snake (*Thamnophis* spp.), and Pacific tree frog (*Pseudacris regilla*).

3.2.2 Effects

3.2.2.1 Significance Criteria

Effects on vegetation and wildlife are considered significant if construction or maintenance of the Proposed Alternative:

- Interferes with the movement of any resident or migratory wildlife species;
- Results in the substantial loss, degradation, or fragmentation of any natural plant communities and wildlife habitat; or
- Substantially diminishes habitat for any fish life stage or results in displacement of spawning fish such that year-class strength is substantially reduced.

3.2.2.2 No-Action Alternative

Under the No-Action Alternative, the Proposed Alternative would not be constructed. Continued seepage at these levee sites would increase the risk of levee failure and flooding of surrounding areas. Levee failure and flooding could result in significant effects to surrounding biological resources, including the transport of fish out of the Sacramento River into areas where they are likely to become stranded, the loss of terrestrial habitat, and increased sedimentation. In addition, floodwaters have the potential to entrain toxic substances into the water, including gasoline, lubricants, insecticides, pesticides, sewage, and other petroleum-based products. Floodwaters could carry these substances into the Sacramento River where they could kill aquatic organisms through exposure to lethal concentrations. Even exposure to non-lethal levels could cause physiological stress and increased susceptibility to other sources of mortality. Although unlikely, direct mortality of aquatic species could also occur as a result of flood fighting, such as in-water construction activities involving the placement of rock revetment during repair of any breached levees.

3.2.2.3 Proposed Alternative

The Corps has determined that the Proposed Alternative would affect a total of 61.83 acres of habitat during construction at the six levee repair sites. Permanent impacts would occur to approximately 16.44 acres of agricultural lands, 1.93 acres of woody riparian, and 2.43 acres of emergent marsh habitat, but the riparian and wetland impacts would be mitigated onsite by the creation of new similar habitats. An additional 41.03 acres of ruderal grassland would be temporarily disturbed and replaced with native grassland as the grassy levee slopes are excavated and re-sloped and approximately 1.16 acres of grassland would be used for temporary disposal at sites 9 and 10. All of the construction would occur adjacent to existing levees and open space areas, such as the new levee berms, and these areas would be reseeded with native grasses and other native plants.

The affected area at site 9 would be 1.29 acres of grassland with 0.55 acres of this adjacent to the waterside (east) upland toe of the levee that would be used as a temporary stockpile area for the excavation of the levee (Table 2). Likewise, approximately 1.05 acres of grassland at site 10 would be affected by the work with 0.61 acres of this to be used as a temporary stockpile area at the waterside upland toe of the levee. There is also one mature elderberry shrub, which is potential habitat for the threatened valley elderberry longhorn beetle, on this levee that would be transplanted prior to construction. Construction at site 11 would affect 2.37 acres of grassland, 0.11 acres of riparian habitat, and 13 mature elderberry bushes.

Construction along site 12 would affect 2.39 acres of emergent marsh habitat and 12.39 acres of agricultural lands for mitigation plantings, although it is expected that only 6.71 acres of these lands would be planted in the near future to compensate for habitat losses at sites 12, 12A, and 13. Approximately 1.69 acres of woody riparian habitat and 21 mature elderberry bushes would be affected by the work at sites 12 and 12A. An additional 1.99 acres of agricultural land would be lost at site 12A for the construction footprint. Site 13 activities would affect 0.02 acres of woody riparian habitat, 0.42 acre of emergent marsh habitat, 2.06 acres of agricultural land for the construction footprint, and 1 mature elderberry shrub. A total of approximately 36.32 acres of grassland, which is potential habitat for the threatened giant garter snake, would also be affected at sites 12, 12A, and 13. The 2.43 acres of emergent marsh habitat lost at sites 12 and 13 would be restored prior to and during construction of the spoil berms along the levee toe. The installation of the berms would require relocating the drainage ditches at sites 12 and 13; therefore, the riparian and emergent marsh habitat identified at sites 12 and 13 would be adversely affected by construction of the spoil berms. These affects would be compensated for by a new and wider drainage ditch that would be realigned less than 50 feet away and then connect back to sections not affected by project construction. Wildlife would likely be displaced by the construction effort until all

work is complete and the area revegetated. Within a year or two of completion of construction, emergent marsh habitat would likely establish in the newly relocated drainage ditches at sites 12 and 13. It is likely that local wildlife dependent on this habitat would be displaced until the new emergent marsh habitat matures.

In addition, construction activities could adversely affect any nesting birds or mammals in or near the project area. Peak nesting and rearing of young typically starts in April and May for most avian species and other wildlife species, and extends through July. For about 5 months (period of breeding and raising young during the spring and summer), construction activities could result in adverse effects to resident and seasonal wildlife species due to disturbance to the soils where ground dwelling species live, disturbance to the nearby existing vegetation, and noise and human disturbance from construction activities. As a consequence, effects to wildlife could result in their temporary dispersal, avoidance of the area, or limiting their daily or seasonal use during non-construction periods early in the morning or at the end of the day after construction stops. However, the project would have a less than significant effect on vegetation and wildlife with the incorporation of the below mitigation measures with the project.

3.2.3 Mitigation

Mitigation for grassland, woody riparian, emergent marsh (wetland ditch/pond) acreages and elderberry impacts for the design at the six levee reconstruction sites have been calculated and are shown in Table 3.

Table 3 Habitat mitigation (in approximate acres, except as noted)

Site	Woody Riparian[1] Habitat (acres/# of trees)	Giant Garter Snake Habitat (wetland restoration)	Elderberry (>1" stems) (shrubs/stems transplanted[1] + stems planted = acres needed; Mitigation Ratios (MR)[2]	Grassland (GL) (native GL planted)
9	0	0	0	1.29
10	0	0	1/6 + 16 = 0.13; MR: 3@2:1; 2@3:1; 1@4:1	1.05
11	0.33/50	0	13/185 + 342 = 4.07; MR: 83@1:1; 71@2:1; 23@3:1; 8@6:1	2.37
Sub-total	**0.33/50**	**0**	**14/191 + 358 = 4.2**	**4.71**
12	4.09/618	6.48	21/52 + 144 = 2.25; MR: 33@2:1; 6@3:1; 11@4:1; 2@8:1	37 (GGS GL habitat)
12A	Included in site 12	0	Included in site 12	Included in site 12
13	0.05/7	0.84	1/4 + 10 = 0.25; MR: 2@2:1; 2@3:1	Included in site 12
Sub-total	**4.47/675**	**7.33**	**22/56 + 154 = 2.5**	**37 (GGS GL habitat)**
Grand Total	**4.8/725**	**7.33**	**36/247 + 512 = 6.7**	**40.55**

[1]-not all existing stems may be transplanted so total to be planted equals number of new stems/seedlings plus the transplanted bush(es) plus an appropriate amount of native associated plants (not shown) that's determined by the VELB Guidelines (US Fish & Wildlife Service, 1999)

[2]-mitigation ratios based upon size classes and exit holes present or not (see Table 5) and whether the elderberry bushes are located in non-riparian areas (site 11) or riparian areas (all other sites) per VELB Guidelines (US Fish & Wildlife Service, 1999)

The loss of riparian habitat would be mitigated for onsite with the creation of 4.8 acres of riparian woodland habitat. At least 675 of the riparian plantings/seedlings covering 4.47 acres are expected to be planted at site 12 along and to the east of the new or existing wetland ditch.

Affected emergent marsh habitat would be mitigated on site with the creation of 7.33 acres of new emergent marsh habitat. A new agricultural drainage ditch at sites 12 and 13 would be relocated within 50 feet of the existing one. Riparian trees and scrub-shrub species would be planted along both sides of the newly relocated ditch in order to establish a wildlife corridor. Mitigation for grasslands would be accomplished onsite by planting new native grasses on the constructed levees and spoil berms.

In addition, the Corps would provide and incorporate the below mitigation/design measures recommended by the USFWS in their *Final Coordination Act Report for the Sacramento River Flood Control System Evaluation Phase III*, dated October 5, 2012, (Appendix B). However, the Corps has determined that the current CDFG Swainson's hawk protocols require a 0.5-mile radius survey. As a result, the Corps would increase the size of the survey to meet the State's protocol. In addition, the last two bullets have been complied with as the draft EA/IS was sent to the CDFG and NOAA, but neither agency provided any comments. Further, the effects of the project on State-listed species and anadromous fish have been adequately addressed elsewhere in this document.

- Avoid impacts to migratory birds nesting in trees along the access routes and adjacent to the proposed repair sites by conducting pre-construction surveys for active nests along proposed haul roads, staging areas, and construction sites. Work activity around active nests should be avoided until the young have fledged. The following protocol from the California Department of Fish and Game for Swainson's Hawk would suffice for the pre-construction survey for raptors:

  A focused survey for Swainson's hawk nests will be conducted by a qualified biologist during the nesting season (February 1 to August 31) to identify active nests within 0.25 miles [0.5 mile] *of the project area. The survey will be conducted no less than 14 days and no more than 30 days prior to the beginning of construction. If nesting Swainson's hawks are found within 0.25 miles* [0.5 mile] *of the project area, no construction will occur during the active nesting season of February 1 to August 31. Or until the young have fledged (as determined by a qualified biologist), unless otherwise negotiated with the California Department of Fish and Game. If work is begun and completed between September 1 and February 28, a survey is not required.*

- Avoid future impacts to the site by ensuring all fill material is free of contaminants.

- Minimize project impacts by reseeding all disturbed areas at the completion of construction with forbs and grasses.

- Minimize the impact of removal and trimming of all trees and shrubs by having these activities supervised and/or completed by a certified arborist.

- Compensate for the loss of 1.93 acres of riparian woodland by restoring a minimum of 1.93 acres at a site approved by the USFWS or the adverse impacts on wildlife from project construction activities affecting riparian woodland and riparian scrub-shrub cover-types.

- Compensate for the loss of 2.43 acres of emergent marsh along the existing landside toe ditch by relocating or replacing the toe ditch and replanting it with emergent marsh cover. The new ditch would create 7.33 acres of emergent marsh.

- Implement at least a 20-year monitoring and remediation period to determine the success of the plantings and correct any failures of the mitigation effort. Monitoring and reporting to the Service

[USFWS] should be required every year for the first 5 years of the 20-year period, and every 5 years afterward. If, within the monitoring period, revegetation efforts are unsuccessful, corrective actions would be required until mitigation goals are met. Funding sources for monitoring and remediation should be appropriated prior to project construction.

- Contact the California Department of Fish and Game regarding possible effects of the project on State listed species.
- Contact NOAA Fisheries regarding possible effects of the project on the anadromous fish species of the Sacramento river.

3.3 Special Status Species

3.3.1 Existing Conditions

An updated species list (Appendix C) was generated from the USFWS Sacramento Office website on June 15, 2012 for the Knights Landing USGS 7.5-minute quadrangle map where the levee construction sites are located. The California Natural Diversity Database was also accessed on June 15, 2012, to determine species most likely to occur within each project areas (Table 4).

Table 4 Listed species with the potential to occur in the area of the six levee repair sites

Name	USFWS	CA State	Habitat	Potential Onsite Presence
AMPHIBIANS and REPTILES				
California tiger salamander *(Ambystoma californiense*)	T	---	Vernal pools; seasonal ponds; stock ponds.	No suitable habitat; Not known to be in area.
California red-legged frog *(Rana draytonii)*	T	---	Dense, shrubby or emergent riparian vegetation adjacent to deep (>2 1/3') still or slow moving water.	No suitable habitat; Not known to be in area.
Giant garter snake *(Thamnophis gigas)*	T	T	Requires emergent, herbaceous vegetation (cattails, tules) for cover, grassy areas for basking, uplands for refuge. Emergent marsh habitat, irrigation ditches, canals with water.	Yes, likely to occur in irrigation ditches adjacent to Knights Landing Ridge Cut Slough;, suitable habitat exists on sites 12, 12A, and 13
BIRDS				
Swainson's hawk *(Buteo swainsoni)*	--	T	Riparian riverine systems with tall trees along aquatic sources and open fields. Nesting period is March to August.	Yes, could potentially exist on each site nesting in nearby trees. Mostly tall cottonwoods or oak trees. Surveys would be conducted prior to construction. Known to occur within vicinity of each site.
Bank swallow *(Riparia riparia)*	--	T	Vertical banks and cliffs with fine-textured or sandy soils near streams	No suitable habitat exists on site, levees are not steep enough.
INVERTEBRATES				
Vernal pool fairy shrimp *(Branchinecta lynchi)*	T	--	Vernal pool species.	No vernal pools in or around project sites. No suitable habitat.
Vernal pool tadpole shrimp *(Lepidurus packardi)*	E	--	Vernal pool species.	No vernal pools in or around project sites. No suitable habitat.
Valley elderberry longhorn beetle *(Desmocerus californicus dimorphus)*	T	--	Inhabits elderberry shrubs all over Central Valley.	Yes, shrubs with exit holes present at sites 11, 12, and 12A. Suitable habitat exists within project area adjacent to levees, riparian corridors.

In compliance with the California Endangered Species Act and the Fish and Wildlife Coordination Act, the Corps and California Department of Water Resources (DWR) have coordinated with CDFG to determine that there would be no effects to other State-listed species with the possible exception of the State-threatened Swainson's hawk and giant garter snake. For the giant garter snake, CDFG concurred that the reasonable and prudent measures to be issued in the biological opinion from USFWS for the snake, when implemented, would reduce any project-caused effects to the snake to less than significant. For the Swainson's hawk, specific avoidance measures are to be implemented to avoid significant effects to the hawk. The measures to be implemented by the Corps are listed below.

The special status species that would most likely occur and have the potential to be affected by project activities include giant garter snake, valley elderberry longhorn beetle, and Swainson's hawk.

3.3.1.1 Giant Garter Snake

Field visits by Corps, USFWS, and DWR staff have confirmed the existence of various levels of suitable habitat for the giant garter snake at levee repair sites 12 and 13. Each site has a significant water source to support giant garter snakes and their habitat. The water side of sites 12 and 13 levees includes the Knights Landing Ridge Cut Slough, which is considered prime habitat for the snake. On the landside of the levee there is an 8 to 10 foot wide farm drainage ditch used to convey runoff from the adjacent fields. This ditch is primarily dominated by emergent marsh vegetation (tules, sedges, and cattails) and standing water occurs throughout the year. Giant garter snakes may use the upland slope portions of the levee as a corridor between the slough and drainage ditch as well as for basking during summer months.

The ditches at sites 12 and 13 are not regularly maintained. Consistent over growth within the channels of emergent vegetation and riparian trees/shrubs along the banks has encouraged garter snakes to use this habitat. It is the Corps' biological assessment that the project could temporarily adversely affect giant garter snake habitat during construction and relocation of the drainage ditches at sites 12 and 13.

3.3.1.2 Valley Elderberry Longhorn Beetle

Each site was surveyed for elderberry shrubs that could potentially be inhabited by the beetle. Elderberry shrubs that would be affected by the project were identified and measured by Corps biologists on September 2011 and April 2012. All the elderberries, except for those found at site 11, were found on the waterward side of the levee slopes, along riparian corridors, and adjacent to drainage ditches interspersed among riparian trees such as oak, box elder, wild grape, and other herbaceous vegetation. The elderberry bushes found at site 11 were found on the landward side of the levee slopes and are considered non-riparian, which was confirmed by the USFWS. A total of 36 mature shrubs that would be affected by the work were recorded during the survey as being within or adjacent to five of the project sites. Site 9 had no elderberry shrubs at the date of the most recent survey. Two of the larger established elderberry shrubs were observed having beetle exit holes (Table 5).

3.3.1.3 Swainson's Hawk

The proposed alternative may adversely affect the State-listed Swainson's hawk. Suitable nesting habitat for Swainson's hawk, including tall riparian trees with nearby foraging fields, is located within 0.5 mile of all six sites. Depending on the timing and duration of construction activities, the area would be surveyed using recommendations developed by the Swainson's Hawk Technical Advisory Committee to maximize the potential for locating nesting Swainson's hawks so that the potential for nest failures as a result of project activities/disturbances can be minimized.

Table 5 Stem count at each remediation site based on elderberry shrub surveys

Site	Number of Shrubs	Number of stems with beetle exit holes			Number of stems without beetle exit holes		
		1-3 in.	3-5 in.	5+ in.	1-3 in.	3-5 in.	5+ in.
Site 9	0	N/A	N/A	N/A	N/A	N/A	N/A
Site 10	1	0	0	0	3	2	1
Site 11	13	0	0	0	83	71	23
Site 12*	21	0	0	2	33	6	11
Site 13	1	0	0	0	2	2	0
Total	36	0	0	2	121	81	35

*-includes site 12A

3.3.2 Effects

3.3.2.1 Significance Criteria

Effects on special-status species would be considered significant if construction or operation of the project:

- Has a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by CDFG or USFWS;
- Substantially conflicts with the provisions of an adopted Habitat Conservation Plan (HCP), Natural Community Conservation Plan, or other approved local, regional, or State HCP;
- Substantially reduces the number or restricts the range of an endangered, rare, or threatened species.

3.3.2.2 No-Action Alternative

Under the No-Action Alternative, the Proposed Alternative would not be constructed. Continued seepage at these levee sites would increase the risk of levee failure and possible flooding of surrounding areas. Levee failure and flooding could result in significant effects to special status species that inhabit the area. Special status fish species and their habitat not affected by the proposed action could be affected as a result of flood fighting, such as for emergency repairs of any breached levees and/or future necessary actions to immediately repair the levees.

3.3.2.3 Proposed Alternative

Under the Proposed Alternative, substantial adverse impacts resulting in a take, as defined by the Federal ESA, would occur to the threatened giant garter snake and the threatened valley elderberry longhorn beetle. The State-listed Swainson's hawk would also be affected by construction at the six levee repair sites if the work is in close proximity to an active nest. Giant garter snake and Swainson's hawk habitats would be disturbed by removing existing riparian trees and emergent marsh vegetation to construct the spoil berms. Elderberry shrubs and giant garter snake habitat would be mitigated for onsite. The proposed onsite mitigation and the additional mitigation measures described below would reduce these effects on Special Status Species to a less than significant level.

Valley elderberry longhorn beetle habitat would be affected by construction at five of the six levee repair sites. One elderberry shrub was surveyed at site 10 next to the slurry wall footprint zone. Site 11 has 13 elderberry shrubs located on the landside of the levee directly within the construction footprint. All of these shrubs would be directly affected by construction and would be relocated onsite. Sites 12 and 12A have 21 elderberry shrubs growing on the landside of the Knights Landing Ridge Cut. These shrubs would be directly affected by spoil berm construction and the realignment of the existing drainage ditch. They would be relocated onsite. There is 1 elderberry shrub present at site 13 that would also be relocated onsite in site 12. No elderberries were located at site 9.

Giant garter snake habitat would be affected by construction activities at three of the 6 levee repair sites. The drainage ditches running along sites 12, 12A, and 13 have suitable habitat for giant garter snake. The relocation and realignment of these ditches would temporarily affect snake habitat. Approximately 1.93 miles of drainage ditch (2.4 acres of emergent marsh) would be relocated at site 12 and 1,850 LF (0.42 acre of emergent marsh) would be relocated at site 13. Both ditches would be realigned less than 50 feet from their existing locations. The ditches would be realigned and connect back to the undisturbed sections. An additional 700 LF of existing drainage ditch that widens into a pond area would be partially filled and re-excavated at site 12. There is no suitable habitat for the giant garter snake at sites 9, 10, and 11. Table 6 shows the acreages of suitable garter snake habitat affected by project construction.

The latest elderberry survey, conducted in compliance with the *Mitigation Guidelines for the Valley Elderberry Longhorn Beetle, July 9, 1999* (USFWS 1999), was completed in September 2011 and sites identified were revisited in April 2012 to confirm their presence. Other field observations, such as dimensions of the existing ditches, was also obtained during these site visits. The areas described in Table 3, 5, and 6 were determined using the above field observations with the proposed plans.

Table 6 Acres of giant garter snake habitat affected by this project

Site Location	Emergent Wetlands Habitat (acres)	Upland Grassland Habitat (acres)	Total
12	2.4	29.17*	31.57*
13	0.04	7.15	7.57
Total	2.43	36.32	39.14

*-includes site 12A

3.3.3 Mitigation

Avoidance and mitigation measures would be undertaken to minimize and prevent adverse effects to special status species.

3.3.3.1 Giant Garter Snake

The project plans, which proposes mitigating for giant garter snake aquatic habitat on a more than 3:1 scale, is consistent or exceeds the terms and conditions to mitigate giant garter snake habitat impacts in the USFWS October 5, 2012, Biological Opinion issued for this EA/IS. Further, the following mitigation conditions would also be followed:

- Harassment, harm, or mortality of giant garter snakes due to construction and operations associated with implementing the project would be minimized. (See the *Standard Avoidance and Minimization Measures During Construction Activities in Giant Garter Snake Habitat* online at: http://www.fws.gov/sacramento/ES/Survey-Protocols-

Guidelines/Documents/GGS%20Appendix%20C.pdf.)

- All construction activity within giant garter snake habitat would be conducted between April 30 and October 1. If work beyond October 1 in any year is necessary, the Corps [and its contractors] would not be exempt from Section 9 of the ESA and must reinitiate consultation. To allow sufficient time for reinitiation of consultation, the Corps would reinitiate by July 15 of that year.
- Prior to construction activities, a qualified biologist would provide construction personnel with worker awareness training to recognize the giant garter snake and its habitat.
- Prior to construction activities, the site would be inspected by a qualified biologist, who has been approved by the Sacramento Field Office of the USFWS, so that the killing and harassing of giant garter snakes can be minimized or avoided.
- Nearby habitat designated as environmentally sensitive to the snake would be flagged and avoided by all construction personnel.
- Movement of heavy equipment to and from the project site or borrow site would be confined to existing roadways to minimize habitat disturbance. Equipment would stay at least 200 feet from the banks of giant garter snake aquatic habitat, wherever feasible.
- Drainage/wetland ditches and ponds would be pumped dry and would remain dry for at least 15 consecutive days prior to construction/fill.
- If a giant garter snake is encountered during construction, activities would cease until capture and relocation have been completed by the USFWS-approved biologist.
- Any incidental take would be reported to the USFWS immediately by telephone at (916) 414-6600/6601.
- If construction were to extend into October at a site, a USFWS-approved biologist would be onsite to monitor construction activities.
- New irrigation or drainage ditches would be excavated prior to filling the existing ditches.
- Mitigation for giant garter snake habitat would take place onsite. Both upland and emergent wetland habitat would be created to offset effects to their habitat during construction of the spoil berms and realignment of the ditches.

3.3.3.2 Valley Elderberry Longhorn Beetle

A total of 36 elderberry shrubs affected by this project would be mitigated by onsite transplants and plantings. Table 3 identifies the amount of acreage required to mitigate for these effects. Construction in Contract Area 3 would require a total of 6.7 acres of elderberry mitigation habitat to be planted onsite. This acreage includes the establishment of associated native plantings. It is expected that 2.5 acres of this would be planted in the near future to mitigate for elderberry impacts at sites 12, 12A, and 13 and the rest would be planted at a later time (see the Construction Schedule earlier in this EA/IS).

Avoidance and mitigation measures outlined in the *Mitigation Guidelines for the Valley Elderberry Longhorn Beetle, July 9, 1999* (USFWS 1999) would be followed in addition to any other terms and conditions issued in the USFWS October 5, 2012, Biological Opinion (Appendix D) as listed below. The Biological Opinion issued on October 5, 2012, was amended on March 25, 2013, at the Corps request (Appendix D), as additional analysis modified the elderberry mitigation plantings.

Protective Measures

- Fence and flag all areas to be avoided. Provide a minimum setback of at least 20 feet from the drip line of any elderberry plants.
- Provide worker awareness training to contractors and work crews on the need to avoid damaging the elderberry plants and possible penalties for not complying with these requirements.
- Place signs every 50 feet along the edge of the avoidance areas with the following information: "This area is habitat of the valley elderberry longhorn beetle, a threatened species, and must not be disturbed. This species is protected by the Endangered Species Act of 1973, as amended. Violators are subject to prosecution, fines, and imprisonment." The signs would be clearly readable from a distance of 20 feet, and would be maintained for the duration of construction.

Restoration and Maintenance

- Restore any damage done to the buffer area during construction. Provide erosion control and revegetate with appropriate native plants.
- No insecticides, herbicides, fertilizers, or other chemicals that might harm the beetle or its host plant would be used in the core and buffer avoidance areas, or within 100 feet of any elderberry plant with a stem measuring 1.0 inch or greater in diameter at ground level.
- The construction contractor is required to provide a written description of how the core and buffer avoidance areas are to be restored and protected.

Compensatory Mitigation (per USFWS Biological Opinion

- Any adverse effects to elderberry plants as a result of the proposed project shall be compensated by the Corps [contractor] as set forth in the Guidelines [*Conservation Guidelines for the Valley Elderberry Longhorn Beetle* (FWS 1999) that can be found online at: http://www.fws.gov/sacramento/ES/Survey-Protocols-Guidelines/Documents/velb_conservation.pdf]
- Prior to any groundbreaking activities for the Mid-Valley project, the Corps [contractor] shall develop a detailed, Service [USFWS]-approved conservation and monitoring plan for the beetle. The plan would include, but is not limited to: (1) a description of how and when transplanted elderberry shrubs would be moved from the project site to a Service [USFWS]-approved compensation site; (2) a description of how plantings will be established and the establishment period, as discussed by the Guidelines; (3) a description of the irrigation system; (4) a description of the amount and type of fertilizer each plant will receive each year and the timing of each application; and (5) a description of the monitoring period, as directed by the Guidelines.
- The Corps [contractor] shall acquire a suitable site for the transplanted shrubs and other plantings and shall maintain this site for the beetle in perpetuity as set forth in the Guidelines. No ground-breaking activities would occur until the site is approved by the Service [USFWS].
- No more than 36 elderberry shrubs, consisting of no more than 251 stems measuring 1.0 inch or greater in diameter at ground level, shall be transplanted from the construction site to the compensation site. Shrubs will be transplanted when the plants are dormant. Transplanting outside the dormant season would require additional Service [USFWS]-approved conservation measures.
- The Corps [contractor] shall also plant 512 elderberry plants or cuttings and 576 associated native plants along with the transplanted elderberry clumps. The plantings will be spaced in

accordance with the Guidelines.

3.3.3.3 Swainson's Hawk

Conduct surveys for Swainson's hawks in the vicinity of the Contract Area 3 in accordance with CDFG (2000) guidelines prior to the start of construction. These surveys would occur within one-half mile of all six levee construction sites, including staging areas, and borrow sites.

If hawks with active nests are found within the one-half mile radius of the worksite, the Corps would implement appropriate mitigation measures to be defined by CDFG. Measures could include a moratorium on construction in the area where the nest(s) is/are located until the newly hatched young have exited the nest (usually May through August 1 depending upon how early nesting activity started).

3.4 Water Quality and Wetlands

3.4.1 Existing Conditions

3.4.1.1 Water Quality

Water quality in the Mid-Valley area is based on the quality of its numerous beneficial uses recognized by the Central Valley Regional Water Quality Control Board (CVRWQCB). The October 2011 fourth edition to *The Water Quality Control Plan (Basin Plan) for the Central Valley Region* (CVRWQCB 2011) shows that beneficial uses for the primary waterways adjacent to the project area include domestic municipal use, irrigation for agriculture, livestock watering, recreation, warm water and coldwater fish habitat, wildlife habitat, and navigation.

Rivers and streams in the Mid-Valley project area are part of the Sacramento River Basin. Numerous streams and rivers including the Feather River drain the western slopes of the Sierra Nevada and Cascades and empty into the Sacramento River. Overall, water quality of the Sacramento River is good near the project sites as indicated by results reported by the U.S. Geological Survey (USGS 2005). However, water quality at specific sites varies due to the effects of variations in stream flow and the quantity of local waste discharges and irrigation return flows.

Turbidity in the Sacramento River is highest in the winter and spring, corresponding to the heavy runoff season. Tributary streams receive agricultural drainage and natural runoff (Corps 1991). Water quality varies near agricultural runoff and urban storm drainage areas.

The Knights Landing Ridge Cut (KLRC) drains agricultural waters from the Colusa Basin Drainage Canal to the Yolo Bypass. This irrigation drainage water has significant turbidity and includes fertilizer and pesticide runoff. The water quality in the KLRC is seasonally poor, especially during low-flow periods in the spring and summer when agricultural runoff is highest.

During high flows in the Sacramento River, floodwaters are diverted into the Yolo Bypass and conveyed south around Sacramento. Additional flows enter the bypass from west side tributaries, including Willow Slough and the Willow Slough Bypass. Water quality in the Yolo Bypass is similar to the Sacramento River, but with increased turbidity. Non-floodwater uses consist of irrigation for agriculture, livestock, and private hunting clubs.

The water in the drainage ditches is pumped into the KLRC and has similar water quality as the Sacramento River, but is slightly more turbid. The farther the water is from the pumping source, a higher percentage of agricultural runoff and dissolved salts that have entered the ditch and, therefore, the lower the quality of the water.

3.4.1.2 Wetlands

Jurisdictional wetlands or emergent marsh exists at sites 12 and 13. These include the 2.75 miles of drainage ditches that convey runoff from the adjacent farm land toward the KLRC. These ditches were artificially created but have not been maintained regularly. Therefore wetland vegetation (cattails, sedges, and bulrushes), hydric soils, and evidence of wetland hydrology were observed during the field surveys to each site. See Appendix A for a further analysis of the project's impacts on these wetlands.

3.4.2 Effects

3.4.2.1 Significance Criteria

- Violates applicable water quality standards or otherwise substantially degrades water quality; or
- Substantially alters the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner which would result in a substantial increase in the availability and mobilization of sediments and associated contaminants.

3.4.2.2 No-Action Alternative

Under the No-Action Alternative, the Proposed Alternative would not be constructed. Continued seepage at these levee sites would increase the risk of levee failure and flooding of surrounding areas. Levee failure and flooding could result in significant effects to the water quality of the Sacramento River and KLRC. As described in Section 3.2.2.2, floodwaters have the potential to entrain toxic substances into the water, including gasoline, lubricants, insecticides, pesticides, sewage, and other petroleum-based products. Floodwaters could carry these substances into the Sacramento River where they would severely degrade water quality and effect aquatic organisms through exposure to lethal concentrations. Flood fighting efforts could also cause greater water quality impacts .than the project, especially if earthen embankments need to be constructed since they would be subject to erosion resulting in increased downstream turbidity impacts.

3.4.2.3 Water Quality

Except for the slurry walls at sites 9, 10 and 11, all work would be done on the landside of the existing levees. No haul roads or any staging areas would occur on the waterside. The temporary stockpiling of the top 7 feet of the levee at sites 9 and 10 for the slurry wall trenching would be on the waterside of the levee, but it would be in an upland area at least 25 feet from the top of the bank of the Sacramento River landward of a riparian forest that would not be affected. As a precaution, silt fencing would be placed on the waterside of the levee to keep the sediment from entering the river.

In addition, all work including seeding for erosion control would be completed prior to the rainy season of each construction year. For sites with relocations of toe drains or ditches, the work would either be completed during the dry season for that construction year and/or the ditches would be pumped dry prior to filling them.

3.4.2.4 Wetlands

The Proposed Alternative requires a Section 404 (b) (1) evaluation (Appendix A) pursuant to the Clean Water Act because there would be filling of waters of the U.S., specifically the emergent marsh drainage ditches at sites 12 and 13. The Section 404(b)(1) evaluation found that the project would have a substantial impact on the wetlands in the project area located at sites 12 and 13. However, the proposed project design with the creation of 7.33 acres of similar wetlands and the below mitigation measures results in a less than significant effect on wetlands and water quality for the project. A State 401 Water

Quality Certification would also be obtained from the Central Valley Regional Water Quality Control Board prior to construction.

3.4.3 Mitigation

Substantial impacts would occur to wetlands as a result of the work at sites 12 and 13. Total wetland impacts would be 2.43 acres caused by the filling of the wetland ditches and pond at site 12 (2.39 acres) and the filling of a wetland ditch at site 13 (0.04 acres). However, the wetland impacts would be mitigated onsite and would total 7.33 acres through the excavation of a wider wetland ditch or pond and other wider wetland ditches totaling 6.48 acres at site 12 and a new wider wetland ditch at site 13 that would provide 0.85 acres of wetlands.

Under Section 401 of the Clean Water Act, the projects at sites 12, 12A, and 13 are subject to the conditions of certification to be issued by the State Water Resources Control Board. Since there would be no other work in any wetlands or waters, the work at sites 9, 10, and 11 would not require Section 401 certification.

However, each of the project areas (sites 9, 10 and 11 and sites 12, 12A, and 13) would be subject to additional Clean Water Act (CWA) regulations, such as the National Pollutant Discharge Elimination System (NPDES) pursuant to Section 402 of the CWA. Similar to previous work on the flood control project, the Section 401 and 402 approvals require the implementation of numerous BMPs to reduce any potential adverse effects to water quality. Implementation of these BMPs would reduce any adverse effects to water quality to less than significant.

Erosion control and sediment detention devices such as using straw bales, fencing, sandbags, and/or similar devices would be incorporated into the project and implemented at the time of the project action. These devices would be in place during the project action, and after if necessary, for the purpose of minimizing fine sediment/water slurry input to flowing water. The devices would be placed at all locations where the likelihood of sediment input exists.

The contractor would prepare and implement (1) an erosion and sediment control plan for minimizing the potential for sediment input into the river or KLRC, (2) a toxic material control and spill response plan for preventing toxic material spills, (3) a soil management plan that provides criteria for classifying wastes in soil and managing soils possibly contaminated by toxics, and (4) a hazardous and toxic materials contingency plan in the event that unlisted hazardous and toxic sites are uncovered during construction.

Dewatering of work areas, such as pumping the wetland ditches dry, would be conducted in accordance with all regulatory requirements to avoid or minimize any effects on water quality. Also, no haul roads or any staging areas would occur on the waterside

All fill and rock materials would be non-toxic. Any combination of wood, plastic, concrete, or steel is acceptable, provided that there are no toxic coatings, chemical anti-fouling products, or other treatments that could leach into the surrounding environment.

3.5 Air Quality and Climate Change

3.5.1 Existing Conditions

3.5.1.1 Regulatory Background

Construction of the project would occur within the Sacramento Valley Air Basin (SVAB). Air quality in the air basin is regulated by Federal, State, and regional agencies. At the Federal level, the U.S. Environmental Protection Agency (EPA) is responsible for overseeing implementation of the 1990

Federal Clean Air Act (42 U.S.C. 7401 et seq.). The Air Resources Board is the State agency that regulates mobile sources and oversees implementation of State air quality laws, including the 1988 California Clean Air Act (Health & Safety §§ 42300 *et seq*). The Yolo-Solano Air Quality Management District (YSAQMD) is the primary agency that regulates air quality on a regional level over stationary sources in the project area. Regional planning and attainment of air quality goals also involve air quality agencies in neighboring counties.

The EPA developed the General Conformity Rule to implement Section 176(c) of the Federal Clean Air Act. The rule states that a Federal action must not cause or contribute to any violation of the National Ambient Air Quality Standards (NAAQS). A conformity determination is required for each pollutant where the total of direct and indirect emissions caused by a Federal action in a non-attainment area exceeds *de minimus* threshold levels listed in the General Conformity Rule (40 CFR 93.153(b)). If it is predicted that local air standards of significance would be exceeded, the construction contractor would need to implement appropriate mitigation measures.

Pursuant to the Federal Clean Air Act, the EPA has established National ambient air quality standards for criteria pollutants, including ozone (O_3), carbon monoxide (CO), particulate matter 10 micrometers in diameter (PM_{10}), and particulate matter of respirable size ($PM_{2.5}$). California's ambient air quality standards are generally more stringent than the Federal standards. The Federal and State standards for O_3, CO, PM_{10} and $PM_{2.5}$ are summarized in Table 7.

Table 7 Ambient air quality standards

Pollutant	Averaging Time	California Standards[1]	Federal Standards[2]	
			Primary[3]	Secondary[4]
O_3	8 hour 1 hour	0.07 ppm 0.09 ppm	0.075 ppm --	0.075 ppm --
CO	8 hour 1 hour	9.0 ppm 20 ppm	9 ppm 35 ppm	-- --
PM_{10}	Annual arithmetic mean 24 hour	20 ug/m^3 50 ug/m^3	-- 150 ug/m^3	-- 150 ug/m^3
$PM_{2.5}$	Annual arithmetic mean 24 hour	12 ug/m^3 --	15 ug/m^3 35 ug/m^3	15 ug/m^3 35 ug/m^3

[1]California standards for O_3, CO, and PM_{10} are values that are not to be exceeded.

[2]National standards, other than ozone and those based on annual averages or annual arithmetic mean are not to be exceeded more than once a year. The ozone standard is attained when the expected number of days per calendar year with maximum hourly average concentrations above the standard is equal to or less than one.

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

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

Source: CARB (2008).

3.5.1.2 Local Air Quality Management

Project site standards would follow those enforced by the YSAQMD. The YSAQMD is the primary local agency responsible for protecting human health and property from the harmful effects of air pollution for all of Yolo County and northeastern Solano County.

The Sacramento Valley Air Basin, including Yolo County, is designated as a non-attainment area for the Federal and State ozone standards. Yolo County is designated as a severe non-attainment area according to Federal 8-hour and non-attainment for State 1-hour and 8-hour ozone standards. Yolo County is classified as non-attainment based on Federal $PM_{2.5}$ standards. For the State PM_{10} standards, the entire air basin is currently considered a non-attainment area.

Existing conditions for air quality in the project area can be described with summary statistics for critical air pollutants. Typical pollutants include O_3, CO, and coarse particles: PM_{10} and $PM_{2.5}$. Air quality data for the Sacramento Valley Air Basin from 2008 to 2011 are summarized in Table 8.

Table 8 Air quality data for the Sacramento Valley Air Basin, 2008-2011

Year	Pollutant (AveragingTime)	Maximum Concentration	Number of Days Exceeding Federal Standards	Number of Days Exceeding State Standards[1]
2008	O_3 (1h)	0.135 ppm	9	41
	O_3 (8h)	0.120 ppm	54	78
	CO (8h)	3.49 ppm	0	0
	PM_{10} (daily)	236.7 ug/m^3	7	69
2009	O3 (1h)	0.136 ppm	0	29
	O_3 (8h)	0.118 ppm	45	65
	CO (8h)	3.06 ppm	0	0
	PM_{10} (daily)	76 ug/m^3	0	18
2010	O_3 (1h)	0.138 ppm	0	15
	O_3 (8h)	0.121 ppm	29	46
	CO (8h)	2.75 ppm	0	0
	PM_{10} (daily)	87.4 ug/m^3	0	12
2011	O_3 (1h)	0.123 ppm	0	26
	O_3 (8h)	0.112 ppm	46	59
	CO (8h)	2.78 ppm	0	0
	PM_{10} (daily)	73.5 ug/m^3	0	24

[1]N/A = not applicable; State standards for ozone are based on 1 hour averaging time only.

ppm = parts per million; ug/m^3 = micrograms/per cubic meter.

Source: CARB (2009a)

The Sacramento Valley Air Basin does not consistently meet several applicable State air quality standards (CARB 2009b). Depending on the pollutant, the boundaries of the attainment areas vary. Between 2008 and 2011, measures of ozone frequently exceeded both Federal and State standards, whereas concentrations of PM_{10} rarely exceeded Federal standards (Table 8). PM_{10} concentrations did, however, frequently exceed State standards. Concentrations of CO did not exceed State or Federal standards during 2008 to 2011.

3.5.1.3 Greenhouse Gas (GHG) Emissions

Climate change results from the accumulation in the atmosphere of "greenhouse gases" produced by the burning of fossil fuels for energy. The principal greenhouse gases are carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), sulfur hexafluoride (SF_6), perfluorocarbons (PFC), hydrofluorocarbons (HFC), and water vapor. Carbon dioxide is produced during the burning of fossil fuels and is the predominant greenhouse gas created during this project. Because no major sources exist for the other greenhouse gases during the construction process, they are not considered to be significant and no quantitative emission calculations were made for them.

The California Global Warming Solution Act of 2006 (AB 32), mandates that emissions of greenhouse gases must be capped at 1990 levels. Considering that about 40% of greenhouse gas emissions come from motor vehicles, projects that generate new vehicle trips can be in conflict with AB 32 goals. While there are no specific thresholds associated with greenhouse gases, it is still recommended to at least include a qualitative discussion of greenhouse gases in air quality analyses for sizable projects (YSAQMD 2007).

3.5.2 Effects

3.5.2.1 Significance Criteria

The project would have a significant adverse effect on air quality if it:

- Conflicts with or obstructs implementation of an applicable air quality plan;
- Violates any air quality standard or contributes substantially to an existing or projected air quality violation;
- Results in a cumulatively considerable net increase of any criteria pollutant for which the project is in non-attainment under applicable Federal or State ambient air quality standards (including releasing emissions, which exceed quantitative thresholds for ozone precursors);
- Exposes sensitive receptors to substantial pollutant concentrations; or
- Creates objectionable odors affecting a substantial number of people.

3.5.2.2 No-Action Alternative

Under the No-Action Alternative, the Corps and the CVFPB would not implement the proposed remediation work at the six levee sites in Contract Area 3. Potential flood fighting activities would result in temporary effects to air quality that would likely be less than analyzed under the proposed alternative. The types of construction equipment would be similar, but the flood fighting activities would be expected to be a shorter duration. The No-Action Alternative would likely result in a continuation of the current air quality standard violations, similar to the trend shown in Table 8.

3.5.2.3 Proposed Alternative

Under the Proposed Alternative, short-term effects to air quality would occur in Yolo County. This section describes the potential air quality effects of the Proposed Alternative, including exhaust emissions from construction equipment and worker commute and delivery vehicles, fugitive dust generated by construction activities, and vehicle travel over unpaved roads. To complete the analysis, information was collected on projected construction activities, duration, and timing, equipment use, and activities for each construction year. Emissions associated with vehicle exhaust for employee commute vehicles and delivery trucks were estimated using SMAQMD's Road Construction Emission Model Version 6.3.2, (Appendix E). These emissions were based on assumptions in Table 9. Emissions associated with the

operation of construction equipment were estimated using the SMAQMD's *Guide to Air Quality Assessment in Sacramento County* (SMAQMD 2009). Construction equipment usage from similar projects under the SRBPP was used to estimate daily and annual exhaust emissions for construction equipment. Emissions are considered significant if emissions exceed the local thresholds established by these agencies for construction activities. Thresholds established to assist in analyses within the YSAQMD boundaries include the following (YSAQMD 2007):

- 10 tons per year of NO_X.
- 10 tons per year of ROG.
- 80 pounds per day of PM_{10}.

Emissions for the project are considered significant under NEPA if annual emissions exceed the EPA's general conformity thresholds. Conformity thresholds are based on the *de minimus* thresholds included in the EPA's general conformity guidelines for air pollutants in non-attainment areas (40 CFR 51.853), as applicable for the Sacramento area.

- 25 tons per year of NO_X.
- 50 tons per year of ROG.
- 100 tons per year of CO.
- 100 tons per year of $PM_{2.5}$

Potential air pollutants generated during construction include PM_{10} emissions from debris moving activities and vehicle travel on unpaved roads, and exhaust emissions from the operation of construction equipment, delivery and haul trucks, and employee vehicles. Tailpipe exhaust emissions include ozone precursors (NO_x and ROG) and PM_{10}. The air quality estimates are based on construction equipment emissions for sites 9, 10, 11 and sites 12, 12A, and 13.

Remediation work includes installation of three slurry walls down the crown of the levees (sites 9, 10 and 11) with the remainder of the levee work consisting of construction of spoil berms. Estimated equipment used would include a hydraulic crane, generator, excavators, loaders, rollers, blades, transit mixer, water tank, end-dump truck, 6 x 4 3-axle trucks, asphalt finisher (for County Road 116B restoration at site 11), a street sweeper, and a generator. Some equipment would be used to remove trees and other vegetation at the sites, the crane and excavators would be used for the slurry walls, loaders to move levee material, and large trucks to transport soil and aggregate. A water truck would be used to control dust. Table 9 shows a list of construction equipment to be used for each levee repair site.

Table 9 List of construction equipment

Emission Source	Levee Remediation Sites (*n* of equipment)
Material placed for all sites (hauled in by truck)	Sites 9-11: 91,208 cubic yards of soil Sites 12-13: 132,800 cubic yards of soil
Employee commute trips	Five employee trips per day, 20 miles each way (per site)
Delivery truck trips Debris haul truck trips	Ten trips per day for each repair site Average round trip for trucks: 60 miles 20 cubic yards average load for trucks 60-90 hauling days
Fuel-fired construction equipment for each site	Chain saws (2) Chippers (1) Dump trucks for delivery/hauling (10) Excavators (2) Dozer (1) Pickup trucks (4) Grader (1) Loader (1) Trencher (1) Paving equipment (1 each): rollers, pavers, surfacing machines Heavy duty water tank trucks (1)

The maximum daily emissions in pounds per day for construction of sites under the Proposed Action were estimated (Table 10) and the average annual emissions in tons per year for the construction period were also estimated (Table 11).

Table 10 Maximum daily construction emission estimates (pounds per day)

Project Component	NO_x	ROG	PM_{10}	CO	CO_2	Air Quality District
Sites 9, 10, 11	119.9	15.1	15.4	89.6	21,588	YSAQMD
Sites 12, 12A, 13	115.5	16.3	20.8	95.4	19,387.2	
Threshold	NDT	NDT	80	N/A	N/A	

NDT – no daily threshold, YSAQMD thresholds for NO_x and ROG are based on tons/year.

N/A - not applicable, California Ambient Air Quality Standards not based upon emission rate, but prohibit increases in ambient CO concentrations by 5% or more.

Table 11 Average annual construction emission estimates (tons per year)

Project Component	NO_x	ROG	PM_{10}	CO	CO_2	Air Quality District
Sites 9, 10, 11	9.2	1.2	1.4	6.8	1,569.4	YSAQMD
Sites 12, 12A, 13	9.0	1.3	1.9	7.4	1,468.6	
YSAQMD Threshold	10	10	N/A	N/A	N/A	

N/A - not applicable, due to being unclassified for all criteria pollutants based on Federal standards or unclassified for PM_{10} (YSAQMD 2007).

Based on this analysis, construction of the proposed project would result in the temporary increase in emissions of ROG, CO, NO_x, and PM_{10}. Estimated daily emissions of PM_{10}, as well as estimated yearly emissions of NO_x and ROG, would not exceed thresholds established by YSAQMD under the Proposed Action (Table 10, 11). These temporary increases in emissions are not considered to be a significant impact. Under NEPA, federal conformity for NO_x, ROG, PM_{10}, and CO would not be exceeded, based on annual thresholds (Table 11). The proposed best management practices (BMPs)included in Section 3.5.3 would reduce any temporary increases to emissions that effect air quality .

To help protect ambient air quality conditions, BMP's would be implemented for O_3 and PM_{10}. To reduce O_3 and PM_{10} levels, the contractor would perform routine tuning and maintenance of construction equipment to ensure that the equipment is in proper running order. The contractor would also monitor dust conditions along access roads and within the construction area to ensure that the generation of fugitive dust, which includes PM_{10} and $PM_{2.5,}$ is minimized below the 50 ug/m^3 24-hour threshold. Water sprays would be periodically applied to disturbed areas and soil stockpiles for dust control (at least three times per day during hot weather). Minimum freeboard for all haul vehicles would be two-feet or greater. Lastly, soil-disturbing activities would be suspended during periods with winds over 25 miles per hour.

The short-term construction activities would not conflict with or obstruct implementation of the YSAQMD air quality plan or substantially contribute to an existing or projected air quality violation. With respect to the air quality plan and contribution to existing or projected air quality violations the air quality effects of the proposed action would be less than significant.

In addition, construction of the Proposed Alternative would contribute to the generation of GHG emissions through short-term construction activities at the project site. Short-term air pollution in the form of particulate matter (fugitive dust) and CO_2 may be caused by construction activity, including truck and equipment movement, grading, and earthwork. While no Federal or State agency has established thresholds of significance for GHG or other impacts to global climate change, CARB has established 7,000 metric tons of CO_2 per year baseline to provide context to the scale for the proposed project. The proposed action is estimated to produce 1,569.4 and 1,468.6 tons per year of CO_2 under the construction for sites 9, 10, 11 and sites 12, 12A, 13, respectively (Table 11). These values are both well below the baseline of 7,000 metric tons per year suggested by CARB (2008). Therefore, the proposed action is not expected to significantly influence global climate change.

3.5.2.4 Sensitive Receptors

Sensitive receptors are located within the project areas of sites 9, 10, and 11 and consist of primarily individual residences within ½ mile or less (Table 12). The repair sites are mainly adjacent to agricultural lands set away from urban areas. The Proposed Alternative is not expected to create objectionable odors because diesel exhaust would be readily dispersed. Due to the short-term duration of this project and the dispersive nature of diesel emissions the effect on sensitive receptors is deemed less than significant.

Construction of the Proposed Alternative is not expected to create objectionable odors that would affect a large number of people or expose sensitive receptors to substantial pollutant concentrations. Therefore, the project would result in a less-than-significant effect on air quality associated with increasing objectionable odors or substantially increasing pollutant concentrations. No offsite mitigation is required.

Table 12 Sensitive receptors within one mile of each levee remediation site

Remediation Site	Sensitive Receptors
Site 9	Four individual residences (within ¼ mile of site)
Site 10	Four individual residences (within ¼ mile of site)
Site 11	One individual residence (within ½ mile of site)
Site 12	Farm and agricultural land surrounding site
Site 12A	Farm and agricultural land surrounding site
Site 13	Farm and agricultural land surrounding site

3.5.3 Mitigation

There would be a temporary increase in emissions; however, the estimated emissions of ROG, CO, and PM_{10} for the proposed project would not exceed any YSAQMD or Federal thresholds. Furthermore, the project is not expected to exceed annual NO_x emissions thresholds within the YSAQMD. As a result, the effects of the Proposed Project would be less than significant, and no mitigation would be required.

However, to reduce the temporary increase in emissions, best management practices (BMPs) would be implemented by the Corps construction contractor at each repair site. These include dust and PM_{10} abatement by watering, limiting onsite idling time of heavy equipment, and ensuring that all internal combustion engine equipment is properly tuned to the manufacturer's specification. These practices would result in minimizing emissions during the construction period.

Standard construction practices at the erosion sites would ensure that exhaust emissions from all off-road diesel-powered equipment used on the sites do not exceed 40% opacity for more than 3 minutes in any 1 hour. Any equipment found to exceed 40% opacity (or Ringelmann 2.0) would be repaired immediately. The Corps and/or the appropriate local air quality agency would be notified within 48 hours of identification of non-compliant equipment.

The project applicant or representative would also be required to provide a plan for approval by YSAQMD and the USACE or CVFPB demonstrating that the construction activities would not exceed YSAQMD thresholds. The plan would demonstrate that heavy-duty (>50 horsepower) off-road vehicles to be used in the construction project, including owned, leased, and subcontractor vehicles, would achieve a project-wide fleet-average 20 percent NO_x reduction and 45 percent particulate reduction compared to the most recent CARB fleet average at time of construction. To reduce emissions for this project, the applicant may implement one or more of the following measures:

- Require injection timing retard of two degrees on all diesel vehicles, where applicable.
- Install high pressure injectors on all vehicles, where feasible.
- Encourage the use of reformulated diesel fuel.
- Electrify equipment, where feasible.
- Maintain equipment in tune with manufacturer's specifications.

- Install catalytic converters on gasoline-powered equipment.
- Substitute gasoline-powered for diesel-powered equipment where feasible.
- Use compressed natural gas or onsite propane mobile equipment instead of diesel-powered equipment, where feasible.
- Consider using a combination of CARB-verified technologies and/or later model off-road equipment meeting CARB's newer Tier levels or equivalent (Tier 2 or cleaner).
- Limit idling of all vehicles and equipment to no more than 5 minutes.
- Encourage workers to carpool to and from work.

In addition, the contractor would be required to submit to USACE, CVFPB, and YSAQMD a comprehensive inventory of all off-road construction equipment equal to or greater than 50 horsepower that would be used an aggregate of 40 or more hours during any portion of the construction project. The inventory would include the horsepower rating, engine production year, and projected hours of use or fuel throughput for each piece of equipment. The inventory would be updated and submitted monthly throughout the duration of construction activities, except that an inventory would not be required for any 30-day period in which no construction activity occurs. At least 48 hours prior to the use of subject heavy-duty off-road equipment, the contractor would provide the YSAQMD with the anticipated construction timeline, including start date and the name and phone number of the project manager and onsite foreman. The local air quality district and/or other officials may conduct periodic site inspections to determine compliance. Nothing in this section would supersede YSAQMD or State rules or regulations. Portable diesel fueled equipment greater than 50 horsepower, such as generators or pumps, must be registered with either the Air Resources Board's Portable Equipment Registration Program (http://www.arb.ca.gov/perp/perp.htm) or with YSAQMD.

BMPs and implementation of the standard construction mitigation measures as recommended by YSAQMD would reduce GHG emissions through the same processes that reduce total NOx and PM10 emissions.

3.6 Land Use and Agriculture

3.6.1 Existing Conditions

All sites contain agricultural land used for growing crops such as wheat, beans, tomatoes, and other specialty crops, including walnut orchards. According to the NRCS, soils of the project areas in Yolo County are considered Prime Farmland when irrigated, except for those in the Yolo Bypass, which are not Prime Farmland (CDOC 2009). For Yolo County, the total Prime and Unique Farmland as identified in the year 2002 is 316,235 acres (CDOC 2002).

3.6.2 Effects

3.6.2.1 Significance Criteria

Effects are considered significant if the project:

- Has a substantial effect on an established community;
- Conflicts with an applicable land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect set forth by an agency with jurisdiction over any of the erosion sites that together make up the project;

- Converts a substantial amount of Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Important Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use;
- Converts a substantial amount of land in an area designated by existing zoning for agricultural use or under a Williamson Act contract, or in a Farmland Security Zone to an inconsistent use; or
- Involves other changes in the existing environment that, due to their location or nature, could result in conversion of Farmland to non-agricultural use.

3.6.2.2 No-Action Alternative

Under the No-Action Alternative, no action would be taken to repair the levee at the six sites. Land uses associated with the existing levees would remain unchanged for the immediate future. Agricultural operations would continue under the threat of increased seepage and eventual levee failure. There would be no direct effect on existing land uses, no conversion of existing land uses would occur, and there would be no conflict with any land use policy, plan, or regulation.

Continued seepage at these levee sites would increase the risk of levee failure and possible flooding of surrounding areas. Levee failure and flooding may result in significant effects to surrounding land uses and established agricultural operations as a result of flooding and resultant flood fighting caused by levee failure.

3.6.2.3 Proposed Alternative

Under the Proposed Alternative, approximately 4.05 acres of Prime and Unique Farmland would be affected by the levee reconstruction at sites 12A and 13. An additional 12.39 acres of Prime and Unique Farmland at site 12 is expected to be converted to non-agricultural use by the mitigation plantings for riparian and elderberry impacts. Borrow sites would not affect Prime or Unique Farmlands. No Prime or Unique Farmlands would be affected at sites 9, 10, and 11.

A Farmland Conversion Impact Rating (AD-1006) form was submitted to the USDA/NRCS office in Woodland, California, to ensure compliance with the Farmland Protection Policy Act (FPPA) (Appendix F). The completed form shows total points to be 228. The FPPA rules state: "For project sites where the total points equal or exceed 160, consider alternative actions, as appropriate, that could reduce adverse impacts (e.g. Alternative Sites, Modifications or Mitigation)." The Corps has determined that there are no feasible alternative actions to the proposed project since 4.05 acres of the farmland impacts are necessary to properly rehabilitate the existing levee, which would protect the remaining farmland from flooding. Further, the 12.39 acres of farmland impacts are necessary to provide onsite compensatory mitigation for impacts to species listed under the Federal Endangered Species Act, which requires onsite mitigation, when feasible. The elderberry bushes that are required to be transplanted have the greatest chance of survival with onsite mitigation so that handling time is greatly reduced and transport disturbances are minimized to the greatest extent feasible.

Preparation of the levee slope for construction of the spoil berms would include clearing and grubbing to remove all existing vegetation, crops, and farming equipment on the landside of the levee. The work at sites 9, 10, and 11 is not expected to impact any farmland as it can be avoided with minimal effects to ruderal grasslands, as described above. Site 12 mitigation work would affect 12.39 acres; site 12A construction work would affect 1.99 acres; and site 13 construction work would affect 2.06 acres of farmland along Knights Landing Ridge Cut slough. A total of 16.45 acres of prime agricultural land would be affected by construction activities in Contract Area 3. However, 5.68 acres of the mitigation work at site 12 would likely not occur until 2015, at the earliest, and it may occur at a different site, such as the farmland at site 11. The spoil berms would be seeded with native grasses to establish an open space

grassland habitat. These sites would be maintained by the local reclamation district. This results in a less than significant effect on land use and agriculture.

All the levee stabilization would be occurring in agricultural areas directly benefiting the farmers and the continued use of this land for farming. Stabilization of the levees would occur in agricultural areas and would help ensure that the levees do not continue to weaken and be subject to the effects of seepage, boils, as well as levee failures. The Prime and Unique Farmland would benefit from the construction of the spoil berms and slurry walls as it would be better protected from potential flooding.

If it is determined that land purchased for the levee improvements or mitigation sites is under a Williamson Act contract, notification would be required under Government Code Section 51291. That law requires the California Department of Conservation to be notified, "when there is a need for a public agency or other eligible entity to acquire land enrolled in a Williamson Act contract." That responsibility would fall to the CVFPB's local sponsors: Yolo County for sites 9 to 11 and Knights Landing Ridge Drainage District for sites 12, 12A, and 13.

3.6.3 Mitigation

The environmental values of open space and habitat would remain similar before and after construction so the impacts are less than significant; therefore no mitigation is required.

3.7 Traffic and Circulation

3.7.1 Existing Conditions

The highways and roads that would be used to transport materials, equipment, and personnel to the repair sites receive widely varying levels of traffic. Existing traffic volumes not only vary widely among the road systems serving the six repair sites, but they also vary at each site in accordance with time of day and season of year. Sites 9, 10, 12, 12A, and 13 receive little traffic because they are located on levee roads behind locked gates where public travel is restricted. Site 11 is located along a road that receives substantial use. Table 13 identifies the most likely roadways that would be used for transportation of construction materials, equipment and personnel to the repair sites.

Table 13 Roads used to access the remediation sites

Remediation Site	Access Roads
Site 9	Interstate 5 (I-5) to Road 102 to Road 16 to County Road 116B to Levee Gravel Road
Site 10	I-5 to Road 102 to County Road 16 to County Road 116B to Levee Gravel Road
Site11	I-5 to Road 102 to County Road 16 to County Road 116B
Site 12	I-5 to Road 102 to County Road 16 to Knights Landing Ridge Cut Slough Levee Gravel Road
Site 12A	I-5 to Road 102 to County Road 16 to Knights Landing Ridge Cut Slough Levee Gravel Road
Site 13	I-5 to Road 102 to County Road 16 to Knights Landing Ridge Cut Slough Levee Gravel Road

Levels of Service
Levels of service (LOS) are a qualitative description of operation of a roadway based on length of delay and degree of maneuverability, ranging from "A", representing free-flow conditions, to "F", representing gridlock and heavy traffic congestion.

Table 14. Un-signalized Intersection Level of Service Definitions

Level of Service	Average Control Delay (seconds/vehicle)
A	< 10.0
B	10.1 – 15.0
C	15.1 – 25.0
D	25.1 – 35.0
E	35.1 – 50.0
F	> 50.0

Source: *Highway Capacity Manual*, Transportation Research Board 2010.

Table 15 below displays the LOS for roadways in the vicinity of the Mid-Valley project, Knights Landing Area, sites 9-13

Table 15. Level of Service for Yolo County Roads used to access Mid-Valley Project construction sites.

Yolo County Roadway	LOS
Road 102	**A**
Road 16	**A**
Road 116	**A**
Road 116A	**A**
Road 116B	**A**

LOS A has free-flow travel with an excellent level of comfort and convenience and the freedom to maneuver and very low delay is experienced at intersections. Traffic congestion is not a problem on these rural county roads that are mainly used for commuting, agricultural operations, recreation, and rural residential use.

3.7.2 Effects

Construction access would be determined based upon the contractor and the location of each site. Truck traffic that would result from landside construction may temporarily affect roads in the vicinity of the levee repair sites.

3.7.2.1 Significance Criteria

Effects to traffic and transportation as a result of implementing the proposed levee repairs would be significant if the project would:

- Cause an increase in traffic that is substantial in relation to the existing traffic load and capacity of the road system;

- Exceed, either individually or cumulatively, a level of service standard established by the county congestion management agency for designated roads and highways;
- Result in a change in traffic patterns, including either an increase in traffic levels or a change in location, that results in substantial safety risks; or
- Result in inadequate parking capacity.

3.7.2.2 No-Action Alternative

Under the No-Action Alternative, no activities would be conducted to repair the six levee sites. Traffic conditions near the repair sites would remain unchanged; no effects would occur from repair site-related construction traffic. Over time, flood flows, and human disturbance would contribute to continued instability and risk of levee failure.

Given the extent of existing seepage, seepage would likely increase in severity to the point that pre-failure emergency repairs would be warranted or the levee would fail, resulting in flooding, greatly accelerated seepage, and the need for flood fighting involving post-failure emergency repairs. Pre-failure and post-failure emergency repairs would result in substantial traffic increase during transportation of equipment and personnel to the repair sites. Lane closures and traffic delays might be necessary to accommodate emergency staging and construction activities. The duration of traffic effects might be greater than under the proposed action because a larger repair area would likely be required. Additionally, the need for emergency repairs would allow minimal opportunity for planning haul routes and traffic detours to minimize effects to traffic. Levee failure, flooding, and flood fighting could result in road closures and other restrictions in traffic flow, including access by emergency vehicles.

3.7.2.3 Proposed Alternative

Under the Proposed Alternative, access to the construction sites would be via Federal highways, State routes (SR), and county and local roads, including gravel levee roads. Interstate 5, State Routes 99 and 113, and Garden Highway levee road are the larger transportation routes that would be used by construction equipment and worker vehicles to access the project sites. The county roads provide access to the small rural communities and are used mainly by the local residents. Traffic on the roadways includes cars, light trucks, farm equipment, and 18-wheel trucks on larger roadways. The unpaved roads and levee roads are almost exclusively used by local farmers or resource agencies. It would not be necessary to route construction vehicles through the community of Knights Landing since the borrow sites are located to the east of the levee sites rather than to the west and north where Knights Landing is located.

The contractor would be responsible for developing a traffic management plan and obtaining any required permits prior to construction. Adherence to load limits and size restrictions of construction equipment would be the responsibility of the contractor to prevent damage to State and county highways or roads. Payment for damages to State and county highways or roads due to levee construction activities would be the responsibility of the construction contractor. All ramps to homes and farms would remain in place, unobstructed, so as to allow access during construction. The contractor would avoid blocking off ramps to residences and would provide access lanes for local traffic or establish detour routes around the construction.

The Proposed Alternative would involve the placement of soil revetment on the landside of the levee slopes. This construction work would involve the steady transport of large loads of soil fill for a substantial portion of the construction timeframe. The duration of construction activities is estimated to be up to 300 days for each project area (sites 9/10/11 and sites 12/12A/13), with the majority of material and

debris hauling completed within 60 days. Estimated construction personnel commute trips is 10 trips/day per site, with an estimated average round trip commute of 40 miles.

Vehicle trips associated with construction activities would generally take place between the hours of 6:00 a.m. and 5:00 p.m. Most trips would occur during off-peak traffic hours between 9:00 a.m. and 4:00 p.m.

The LOS standard for the roads used to access sites 9-13 may increase to "B" due to the construction of the levees. County Road 16 which comes off Road 102 main route between Woodland and Knights Landing would have more construction related traffic as a result of this project. This road and County Road 116B along the Sacramento River are rarely used during the day since there are only a few small residential homes located along those roads. Most of the traffic on those roads is driven by agricultural vehicles and delivery trucks. There would be a temporary increase of usage on these roads during construction activities. County Road 16 would be open during construction of sites 12 and 13 and a traffic control plan would be implemented as required. Country Road 116 which comes out of the town of Knights Landing at the north end of the project area would also be open to traffic but haul truck traffic to the construction sites would increase during those activities.

Due to the construction of the levee on County Road 116B (site 11) , a 1-mile section of this road would be closed temporarily to 2-way traffic. The road would be closed where it intersects at County Road 16 and 116A on the south portion of site 11 construction activity. Residents and farmers who live and work on Country Roads 16 and 116A would still be able to access their homes and properties from Road 102 running between Woodland and Knights Landing. There are two private dirt farm roads that can be utilized on the land side of site 11 during construction.

At the north end of site 11 the road would be closed to traffic where County Road 116B drops down off the levee splitting from the levee gravel road used to access sites 9 and 10. This area does not have any residential homes, only agricultural land which is easily accessible via dirt farm roads just before where the road closure would take place.

3.7.3 Mitigation

Substantial impacts to traffic would occur by the project dependent upon traffic flow and capacity. The most severe effects would occur by the work for site 11 as portions of County Road 116B, which is located on top of the Corps levee at site 11, would need to be entirely closed and traffic detoured around the site to complete the work. However, implementation of the following mitigation measures would reduce potential traffic- and circulation-related effects to less-than-significant levels. These measures would be incorporated as appropriate in construction plans and specifications.

3.7.3.1 Transportation Management Plan (TMP)

a. The construction contractor would prepare and implement a TMP that addresses conditions at each site. The plan(s) would be approved by the Yolo County Department of Public Works, the Town of Knights Landing if their city streets would be used, and Caltrans, as applicable, prior to the initiation of construction activities. The TMP would include measures to (1) reduce, to the extent practicable, the number of vehicles (construction-related and other) on the roadways adjacent to the sites; (2) reduce, to the extent practicable, the interaction between construction equipment and other vehicles; and (3) promote public safety through actions aimed at driver and road safety. The TMP would also include a (1) Trip Generation Table showing the volume of trucks to be used; (2) Trip Distribution Diagram to identify the daily and peak hour trip generation and distribution; and (3) a Construction Traffic Impact Study, if needed. The TMP would be prepared in accordance with Caltrans' "Manual on Uniform Traffic Control Devices."

b. Prior to implementation of construction activities, the contractor would verify that all roads, bridges, culverts, and other infrastructure along the access routes can support expected vehicle loads.

c. The TMP would identify all intended haul routes, locations of signage, locations of flaggers, approved permits, documentation of coordination with local and State agencies, and locations of potential delays to vehicle and pedestrian traffic. Construction vehicles would follow established truck routes to the greatest extent practicable.

3.7.3.2 Travel Flow and Access

a. The contractor would maintain travel traffic on all roads adjacent to the site and on all affected public roads during the construction period. Measures for the protection and diversion of traffic, including the provision of watchmen and flagmen, erection of barricades, placing of lights around and in front of equipment and the work, and the erection and maintenance of adequate warning, danger, and direction signs, would be as required by State and local authorities having jurisdiction.

b. The traveling public would be protected from construction and work damage to person and property. The contractor's traffic on roads selected for hauling material to and from the site would interfere as little as possible with public traffic.

c. Traffic controls on major roads and collectors would include flag-persons wearing safety vests and using “stop/slow” paddles to direct drivers.

d. Detour and road closure signs would be placed on both ends of County Road 116B during construction activities on site 11.

e. Through access for emergency vehicles would be provided at all times.

f. Access to public transit would be maintained, and movement of public transit vehicles would not be impeded as a result of construction activities.

g. Access to driveways and private roads would be maintained.

3.7.3.3 Construction-Related Traffic Measures

a. Construction parking would be restricted to the designated staging areas.

b. During peak periods, construction-generated traffic would avoid roadway segments or intersections that are at, or approaching, a level of service that exceeds local standards.

c. The speed of all construction vehicles would be limited to a maximum of 10 miles per hour on the levee access roads. The contractor would provide a minimum of four construction speed limit signs large enough to be visible by the passing traffic. The speed limit signs would be in English units and posted on the levee and on each of the access roads. Signs would be posted for both incoming and outgoing traffic.

d. Construction warning signs would be posted in accordance with the local standards or those set forth in the *Manual on Uniform Traffic Control Devices* (FHWA 2012) in advance of the construction area and at any intersection that provides access to the construction area.

e. A sign, at least one square yard in size, would be posted at all active construction sites that gives the name and telephone number or email address to contact with complaints regarding construction traffic.

f. Measures would be implemented as needed to reduce erosion of temporary roadbeds by construction traffic, especially during wet weather. The construction contractor would minimize the amount of mud transported onto paved public roads by vehicles or runoff.

g. Rock, dirt, and/or other fill materials would be prevented from being accidently dropped from trucks traveling on highways to and from the erosion sites.

h. Any damage to roads caused by construction operations would be repaired to pre-project conditions.

3.8 Cultural Resources

3.8.1 Existing Conditions

3.8.1.1 Records and Literature Search

Because the project area is in Yolo County, a records and literature search of the individual project sites was obtained from the Northwest Information Center at California State University, Sonoma. Areas of Potential Effect (APE) were defined as each levee site footprint, including the levee reconstruction area, as well as both permanent maintenance and temporary construction easements. Borrow sites would not be expected to have cultural resources since existing borrow areas have been used previously for levee material or for other commercial purposes. Staging areas would be located on top of, or adjacent to, the existing levees, and haul routes for the levee materials would be on established roads.

The records and literature search was received from CSU, Sonoma, on February 25, 2009. Four sites were found within, or near the levee site APE's:

- The Colusa Drainage Canal and Knights Landing Ridge Cut were identified as CA-YOL-183H.
- CA-YOL-184H was recorded in 1992 as a surface distribution of farming and ranching equipment and domestic debris.
- In 1986, Kathleen Les recorded an oak grove as a historic resource, P-57-000132H, based on the assumption that some of the trees were 300 to 400 years old. The trees will not be affected by the proposed project.
- CA-YOL-43 was recorded in 1960 as a possible prehistoric site. The site form, which did not indicate the type of site, noted only that there were no surface artifacts and that the majority of the site had been removed to reinforce a levee. This site lies about one-fourth mile upstream from the upper end of levee repair site 9.

Additional resources that were checked for the presence of cultural resources were the National Register of Historic Places web site (NPS 2011) and *Historic Spots in California* (Hoover et al. 1990). No historic properties or Places of Historic interest were found in or near the levee site APE's.

3.8.1.2 Field Inventory

All six levee reconstruction sites have been subjected to on-the-ground surveys in 2004 by a Corps archeologist qualified under the Secretary of the Interior's Standards for Professional Archeologists. The toe of the levee and footprints of the proposed spoil berms were examined. Surveys for all the levee sites consisted of walking the entire lengths of the site footprints parallel to the levees, including the berm, and permanent and temporary construction easements. Borrow sites proposed for each contract area were also walked. The areas were examined in 1998-1999 for the 1999 EA/IS, and again in 2002-2004. Since there are often ditches adjacent to the levee toes and the agricultural fields are seasonally cultivated, ground

visibility was good to excellent. No cultural materials were discovered. Following the reduction in size of the area of potential effects (APE) in 2009, the APE was revisited by Corps personnel to verify the adequacy of the 2004 survey and record a pump house in site 12. Since 4 years have passed since the last cultural resources surveys of the sites in 2009, an updated cultural resources survey of the current proposed project was conducted in September 2012. The 2012 survey validated the results of the 2004 survey and resulted in the recordation of another pump house in site 13, and the Sacramento River levee.

3.8.2 Effects

3.8.2.1 Significance Criteria

An alternative would be considered to have a significant adverse effect on cultural resources if it diminishes the integrity of the resource's location, design, setting, materials, workmanship, feeling, or association. Types of effects include physical destruction, damage, or alteration; isolation or alteration of the character of the setting; introduction of elements that are out of character; neglect; and transfer, lease, or sale.

3.8.2.2 No-Action Alternative

Under the No-Action Alternative, no activities would be conducted to repair the six levee sites. As there are no known NRHP eligible sites, continued erosion of the levees would have no effect on historic properties.

3.8.2.3 Proposed Alternative

National Register of Historic Places Evaluation

There are no known prehistoric archeology sites in the APE. However, there are five known historic period sites and a historic resource within or adjacent to the levee site APE's.

- CA-YOL-184/H was recorded in 1992 as a surface distribution of farming and ranching equipment and domestic debris. The recorders noted in 1992 that the resource was probably associated with agricultural use in the surrounding region from the first half of the 1900's. However, field investigations in 2004 revealed that the farm debris recorded as CA-YOL-184/H has been removed and the area is currently farmed. No trace of the site remains.
- CA-YOL-183/H**,** the KLRC, was constructed from 1913-1915 to provide drainage from the Colusa Basin area northwest of Knights Landing through to the Yolo Bypass. Approximately 6 miles long and 800 feet wide, the KLRC was constructed by excavating and removing the soil to form a canal. The excavated material was then dumped to form the levees on either side of the canal. The KLRC is over 50 years old and therefore meets the threshold for evaluation of a cultural property for eligibility to the NRHP. The landside of the left levee (looking downstream) of the KLRC is within the APE for sites 12, 12A, and 13 for a total distance of 18,000 linear feet.

  Despite its age, the KLRC does not appear to meet any of the criteria for eligibility to the NRHP. Individually, the KLRC is not associated with any person or event important in our history (Criteria a and b), and it does not have the potential to yield information important in history (Criterion d). It does not represent an important method of construction, nor is it distinctive of any particular type or period (Criterion c). The KLRC also has not retained integrity since it has been subject to erosion and repaired numerous times. Several evaluations by various archeological consultants and Corps archeological staff were completed in 1986, 1992, 1998, and 2002. All noted the numerous alterations and erosion to the KLRC.

Within a larger historical context, the KLRC was one of hundreds of features including canals, lateral ditches, drains, levees, and other features of the overall farming region that were constructed to convey water to desired locations and remove it from undesired locations. These water conveyance systems, which were built over many years at various times, are still in use and are dominant characteristics of the landscape in the Central Valley. The KLRC is a prominent feature known to local residents and farmers, but one that is easily overlooked by the casual traveler since no public roads are located on its levees. Levees are also a common physical presence of the area as a glance at the U.S.G.S. 7.5-minute Knights Landing quadrangle readily shows.

- The proposed project would affect two pump houses, which are associated features of the KLRC. The pump houses would be relocated within 80 to 100 feet and continued to be used. One pump house, P-57-000671 was recorded in 2009, and a more recently identified pump house, P-57-000667, was recorded in 2012. Both pump houses are potentially older than 50 years but they have no features or qualities that would render them eligible for listing in the National Register of Historic Places. Altogether there are six pump houses on the KLRC alone. The two in question at sites 12 and 13 are not unique and are not associated with any historical agricultural events, or important historical people in the area. An updated archeological field investigation was undertaken in late September to record and evaluate the pump house at site 13 and the Sacramento River levee, and to verify the validity of the 2004 survey.

- The proposed project will also affect the Sacramento River levee which was recently recorded as P-57-000668. The same arguments against National Register eligibility for the KLRC (CA-YOL-183/H) hold true for the Sacramento River levee. The levee which has been exposed to repeated episodes of erosion and reconstruction, was built by local interests and constructed from local sediments. As mentioned earlier, levees are a common physical presence in the Knights Landing quadrangle and as such are not a unique structural feature.

Native American Consultation

In accordance with 36 CFR § 800.4(a)(1) the Corps contacted potentially interested Native Americans from list provided by the Native American Heritage Commission in 2004 and 2009. The previous Project cultural resources specialist, Ms. Melissa Montag requested a list of Native American contacts from the Native American Heritage Commission (NAHC) in October of 2004. The NAHC replied with an extensive list on October 22, 2004. On December 14, 2005 Ms. Montag wrote the various Tribes and Interested individuals. She followed up with telephone calls on January 13, 2005. Ms. Montag left messages, and most of the contacts had no concerns, or were not responsive. On April 6, 2009 Ms. Montag received a new list from the NAHC which was much smaller than the 2004 list. Ms. Montag sent new letters on April 24, 2009. Responses were received from the Mechoopda Indian Tribe of Chico Rancheria, and the Yocha DeHe Wintun Nation. In 2010, a representative from the Yocha DeHe Wintun Nation monitored geotechnical boring for a few days. Additionally, the tribes from the 2009 NAHC list have been sent copies of the draft EA for their review.

3.8.3 Mitigation

The Corps has made determinations of non-eligibility for the known cultural resources within the APE. Concurrence with those determinations was requested from the California State Historic Preservation Officer (SHPO). If the SHPO concurs with the Corps' determinations of non-eligibility for the KLRC, P-57-000667, _P-57-000668, and P-57-000671, then the proposed project would have no effects to historic properties, and there would be no need for mitigation measures. However, the SHPO failed to

respond within the 30 day review period as specified in 36 CFR 800.4(1)(i). Therefore, the Corps' determination of no Historic Properties affected supersedes the requirement to have a written response. from SHPO. Therefore, no mitigation is required

However, if archeological deposits are found during project activities, work would be stopped pursuant to 36 CFR 800.13(b), Discoveries without Prior Planning, to determine the significance of the find and, if necessary, complete appropriate discovery procedures.

4.0 CUMULATIVE AND GROWTH-INDUCING EFFECTS

4.1 Cumulative Effects

A cumulative effect is the effect on the environment that results from the incremental effect of the action when added to other past, present, and reasonably foreseeable future actions (40 CFR 1508.7). At present, there are no other levee reconstruction projects planned for this area. The Sacramento River Bank Protection Project (SRBPP) is an authorized project that focuses on repairs to waterside bank and levee erosion on the Sacramento and Feather Rivers. Several erosion sites within the vicinity may be repaired under SRBPP, but not affect actions of the Mid-Valley project. Lands near the project contract areas are expected to remain as farmland.

The town of Knights Landing located near the levee repairs is experiencing a small growth in residential construction, but this is not located adjacent to the project levee repair sites. There would be a small permanent loss of farmland due to the project levee footprints where spoil berms and environmental mitigation sites are proposed. However, this loss would be offset by the increased levee stability which would protect the adjacent farmlands from flooding and diminish economic losses associated with the loss of crops due to flooding. Loss of special status species habitat, that is, the elderberry shrubs and giant garter snake habitat, would be mitigated onsite. Any effects on air quality would only be short-term. Loss of habitat, including wetlands, t would be mitigated and/or replaced by natural re-emergence depending on the resource type. There would be less than significant effects on water quality with the inclusion of mitigation measures.

As described in Section 3.5, the proposed action would have construction-related effects on air quality as a result of the equipment needed to complete the substantial amount of earth-moving activity that would be required. Existing air quality thresholds for O_3 and particulate matter are already exceeded and in violation of State and Federal standards in the affected air basin. Therefore, any additional contributions of pollutants resulting from the project would be potentially significant and cumulative.

Mitigation for the proposed action consists of BMPs and the implementation of onsite mitigation measures, including control of dust, and proper maintenance of construction equipment. Although some air quality thresholds would be exceeded, implementation of the mitigation measures identified in Section 3.5 would reduce impacts to a less-than-significant level. With the implementation of the mitigation measures, the incremental effect of the proposed action on air quality is not cumulatively considerable and is therefore less than significant.

There are no non-cumulative GHG emission impacts. From a climate change perspective, GHG impacts are recognized as exclusively cumulative impacts. Due to the size and short-term construction emissions the additive effect of the purposed project's GHG emissions would not result in a reasonably foreseeable cumulatively considerable contribution to global climate change.

4.2 Growth-Inducing Effects

The proposed project is not likely to have any growth-inducing effects because only small segments of the levee system would be reconstructed, thereby providing greater flood protection for a limited area. Growth in Yolo County is proceeding at rapid rates independently of the project in accordance with the Yolo County General Plans.

5.0 COMPLIANCE WITH ENVIRONMENTAL LAWS AND REGULATIONS

5.1 Federal Laws and Regulations

- **Clean Air Act (42 U.S.C. 1857 et seq.), as amended and recodified (42 U.S.C. 7401 et seq.).** *Compliance.* The proposed project is not expected to violate any Federal or State air quality standards, or hinder the attainment of air quality objectives in the local air basins. The Corps has determined that the proposed project would have no significant adverse effects on the future air quality of the area and is in compliance with this act.
- **Clean Water Act (33 U.S.C. 1251 et seq.).** *Compliance.* A Section 404 (b)(1) water quality analysis has been completed for the project (Appendix A). Section 401 Water Quality Certification is also required since the agricultural drainage ditch located at sites 12 and 13 contains wetlands that were historically and are currently hydraulically connected to other waters of the U.S. The ditch would be realigned and reconnected back to these waters of the U.S once construction of the project is completed. The project would also require an NPDES permit, through the development of a Stormwater Pollution Prevention Plan by the project contractor(s), since each project area would disturb more than one acre of ground. A separate Section 404 permit from the Corps Regulatory Division would also need to be obtained by the CVFPB or Knights Landing Ridge Drainage District if they wish to pursue working on the project (at sites 12, 12A, and 13) themselves under an EIP.
- **Endangered Species Act (16 U.S.C. 1531 et seq.).** *Compliance.* The Federally listed valley elderberry longhorn beetle and giant garter snake and their associated habitats would be adversely affected by project activities. The Corps received a reinitiated Biological Opinion for the proposed project on October 5, 2012 (Appendix D). All terms and conditions in the Opinion would be incorporated into the construction contract.
- **Executive Order 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations.** *Compliance.* The order directs all Federal agencies to identify and address adverse human health or environmental effects of their programs, policies, and activities on minority and low-income populations. The proposed project would not significantly affect farm workers or residents, or have disproportionate adverse effects to minority and low-income populations within the project study area.
- **Executive Order 11988, Flood Plain Management.** *Compliance.* This Executive Order requires the Corps to provide leadership and take action to (1) avoid development in the base (1 in 100 annual event) flood plain (unless such development is the only practicable alternative); (2) reduce the hazards and risk associated with floods; (3) minimize the effect of floods on human safety, health, and welfare; and (4) restore and preserve the natural and beneficial values of the base flood plain.

The project would provide increased stability to existing levees in selected areas that have been determined to require reinforcement. This would decrease the risk of flooding and hazards associated with floods. It would not create development in the base flood plain but would preserve the natural and beneficial values associated with the present agricultural uses.

- **Executive Order 11990, Protection of Wetlands.** *Compliance*. This order directs the Corps to provide leadership and take action to minimize the destruction, loss, or degradation of wetlands and to preserve and enhance the natural and beneficial values of wetlands in implementing Civil Works projects. Emergent marsh that would be affected by the project would re-establish naturally in relocated ditches. The proposed work would result in more than a 2.5:1 replacement ratio. Design of the relocated ditches would enable better access by wildlife.

- **Farmland Protection Policy (U.S. Code Title 7, Chapter 23).** *Compliance*. The purpose of this regulation is to minimize the extent to which Federal programs contribute to the unnecessary and irreversible conversion of farmland to nonagricultural uses, and to assure that Federal programs are administered in a manner that, to the extent practicable, are compatible with State, unit of local government, and private programs and policies to protect farmland. A Farmland Conversion Impact Rating (Form AD-1006) was completed and submitted to the local USDA/NRCS office for approval (see Appendix F).

- **Fish and Wildlife Coordination Act of 1958, as amended (16 U.S.C. 661, et seq.).** *Compliance.* This act requires Federal agencies to consult with the USFWS and State fish and game agencies before undertaking projects that control or modify surface water (water projects). The consultation is intended to promote the conservation of wildlife resources by preventing loss of or damage to fish and wildlife resources and to provide for the development and improvement of fish and wildlife resources in connection with water projects. The USFWS has participated in site visits and review of the proposed design refinements and has submitted a final Fish and Wildlife Coordination Act Report (Appendix B). The Corps also coordinated this project and EA/IS with the California Department of Fish and Game to seek their comments regarding State fish and wildlife resources, but no comments were received from the CDFG.

- **Migratory Bird Treaty Act (16 U.S.C. 703 et seq.).** *Compliance.* Construction would be accomplished to avoid destruction or harassment of active bird nests or the young of birds that breed in the area. A qualified biologist would survey the area prior to initiation of construction. If active nests are located, a protective buffer would be delineated, and the entire area would be avoided to prevent destruction of nests or harassment of young until the birds are no longer on the nests, unless otherwise negotiated with the CDFG, as the FWS CAR states.

- **National Environmental Policy Act (42 U.S.C. 4321 et seq.).** *Compliance.* This final EA/IS provides responses to public comments on the draft EA/IS. A signed Finding of No Significant Impact completes the environmental documentation required for this Act.

- **National Historic Preservation Act of 1966, as amended (16 U.S.C. 470 et seq.).** *Compliance.* The project is in compliance with Section 106 of the National Historic Preservation Act, as amended and it's implementing regulations (36 CFR 800). A letter dated November 18, 2004, was sent to the California State Historic Preservation Officer (SHPO) asking for their concurrence with the Corps' determination of the APE. An updated letter was sent to the SHPO (Appendix G) documenting the current APE of the proposed project, asking for their comment and concurrence with the Corps' determination of non-eligibility and no effect. According to 36 CFR 800.4(1) (i) if the SHPO does not object within 30 days of receipt of an adequately documented finding, the agency official's responsibilities under Section 106 are fulfilled. A letter that retained the original date of signing, February 12, 2013, was delivered to SHPO on March 4,

2013. They have exceeded 30 days with which to reply, therefore the Corps is in compliance with Section 106.

- **Tribal Coordination.** A request to the Native American Heritage Commission for potentially interested parties was sent on March 12, 2009. Letters to potentially interested Native Americans asking for their knowledge of locations of archeological sites or areas of traditional cultural interest or concern were sent. The draft EA/IS was also provided for 30 days to the potentially interested Native Americans for their review and comment, but none responded.

5.2 State of California Laws and Regulations

- **California Environmental Quality Act, California Public Resources Code, Section 21000, et. seq.** *Compliance.* The Act requires disclosure of environmental effects, alternatives, potential mitigation, and environmental compliance of the proposed action. This document will be adopted as an EA/IS and will be accompanied by a Mitigated Negative Declaration. These CEQA documents will provide full compliance with the act.
- **California Endangered Species Act of 1984.** C*ompliance.* The CDFG administers this Act, which requires non-Federal lead agencies to prepare a Biological Assessment if a project may adversely affect one or more State-listed endangered species. The restoration project would not adversely affect any State-listed endangered species.
- **California Clean Air Act of 1988.** C*ompliance.* The YSAQMD determines whether project emission sources and emission levels significantly affect air quality based on Federal standards established by the EPA and State standards set by the California Air Resources Board. The restoration project is in compliance with all provisions of Federal and State Clean Air Acts.
- **California Fish and Game Code.** *Compliance*. Under sections 1600-1616, the CDFG regulates activities that would substantially divert, obstruct, or change the natural flow of a river, stream, or lake; substantially change the bed, channel, or bank of a river, stream, or lake; or use material from a streambed that falls under CDFG jurisdiction. In practice, CDFG marks its jurisdictional limit at the top of the stream or lake bank, or the outer edge of the riparian vegetation, where present, and sometimes extends its jurisdiction to the edge of the 100-year floodplain. Notification is required prior to any such activities, and CDFG will issue an agreement with any necessary mitigation to ensure protection of the State's fish and wildlife resources. The local sponsor would be responsible for obtaining any needed Streambed Alteration Permit.
- **California Land Conservation (Williamson) Act**. *Compliance*. This Act enables local governments to enter into contracts with private landowners for the purpose of restricting specific parcels of land to agricultural or related open space use, and in return the landowners receive lower tax assessments. The local sponsor would be responsible for compliance with this Act.

6.0 COORDINATION AND REVIEW OF EA/IS

6.1 Agencies and Persons Consulted

The draft EA/IS and the proposed design refinements have been coordinated with all the appropriate government agencies including USFWS, CVFPB, DWR, CDFG, SHPO, and the local RD managers.

6.2 Public Involvement and Review

Public involvement for the Mid-Valley Project in its entirety has a long history, beginning with a Notice of Intent published on February 1, 1990, in the *Federal Register* prior to preparation of the Programmatic EIS/EIR for the Sacramento River Flood Control System Evaluation. The Reclamation Board sponsored four environmental scoping meetings to provide information to the public and solicit input.

The draft EA/IS prepared to address design changes in the Mid-Valley project was circulated for public and agency comment in 1995. A final EA/IS and FONSI/Mitigated Negative Declaration was prepared in March 1996. Five agency comments were received.

Because of problems at several construction sites due to high waters, design revisions were again considered. Another draft EA/IS was distributed to the public and agencies for review and comment in 1999. The final EA/IS with FONSI/Mitigated Negative Declaration was prepared in November 1999. One comment was received.

Due in part to rising costs and in part to levee problems at some sites since 1999, additional design refinements have been prepared. The draft EA/IS, issued in August 2012, had been prepared to address those refinements, was circulated for public and agency review for 30 days. Five comments were received and have been addressed (see Appendix H).

7.0 CONCLUSIONS

This draft EA/IS evaluated the environmental effects of the proposed reconstruction at six levee sites. Potential adverse effects to vegetation and wildlife, special status species, air quality, traffic, and cultural resources were analyzed. Other resources not reanalyzed in detail for this draft EA/IS include soils, water quality, fisheries, socioeconomics/land use, recreation/aesthetics/visual resources, noise, and hazardous, toxic, and radiological waste. These were addressed extensively in the previous two EA/IS's, and significant effects are not anticipated for the proposed design refinements.

This draft EA/IS was submitted to the USFWS to reinitiate formal Section 7 consultation for the valley elderberry longhorn beetle and the giant garter snake. The adverse effects to the snake or its habitat and the elderberry shrubs, host of the beetle, would be mitigated to less than significance by implementing avoidance measures during construction and by mitigating for loss habitat by following the reasonable and prudent measures, and terms and conditions in the Biological Opinion issued by the USFWS.

A draft Fish and Wildlife Coordination Act Report (CAR) was prepared by the USFWS and their design and mitigation recommendations were carefully considered in preparing this final EA/IS report. A final CAR was submitted by the USFWS and all of its recommendations have been incorporated into this final EA/IS (see Appendix B).

Based on the evaluation in this EA/IS, construction of this levee rehabilitation project could have adverse effects on environmental resources and the quality of the human environment. However, construction activities would be scheduled to avoid adverse effects to the extent possible. In addition, implementation of mitigation measures, which are summarized in Table 16, included in this document would reduce these adverse effects to less than significant. See Appendix I for a complete listing of all mitigation measures/conditions in this EA/IS, which would be appended to the project specifications. Therefore, a FONSI and MND have been prepared and accompany this EA/IS.

Table 16 Summary of Mitigation Measures/Conditions

Resource	Refer to page(s)	Mitigation Measure/Condition
Fisheries	10	No waterside staging areas. At sites 9 and 10, BMPs would be used to ensure that material temporarily stockpiled on the waterside of the levee does not enter the water.
Socioeconomics	11	Contractor to coordinate with utility companies to avoid service disruption(s). Potentially affected users in the area would be kept informed
Noise	11	Construction equipment would be limited to daylight hours, starting no earlier than 7 a.m. Mufflers would be installed on all equipment. Any stationary noise generating construction equipment would be located at least 400 feet away from any residences. No haul routes would go through towns such as Knights Landing.
Vegetation and Wildlife	16-17	Refer to Table 3 for habitat mitigation acreages and Appendices B and I for mitigation conditions
Special Status Species	22-23	See Appendices B and I for a list of all conditions. The USFWS Biological Opinions lists the conditions for this section. Giant garter snake- Ground disturbance activity within or near potential giant garter snake habitat would be limited in time to between April 30 and October 1, unless otherwise approved by USFWS; and 12 other conditions (see p. 22). Valley elderberry longhorn beetle- Fence and flag all areas to be avoided. Provide a minimum setback of at least 20 feet from the drip line of any elderberry plants and 11 other conditions (see pp. 22-23); Swainson's Hawk - Conduct surveys for Swainson's hawks in the vicinity of the Contract Area 3 in accordance with CDFG (2000) guidelines prior to the start of construction and construction buffers if active nests found (see p. 23)
Water Quality and Wetlands	25-26	Create 7.33 acres of wetlands, as shown on project plans; Fill into wetlands/ditches would only occur after they are pumped dry; Contractor to obtain and comply with clean Water Act Section 401 water quality certification and 402/NPDES/SWPPP; The contractor would also prepare and implement (1) an erosion and sediment control plan for minimizing the potential for sediment input into the river or KLRC, (2) a toxic material control and spill response plan for preventing toxic material spills, (3) a soil management plan that provides criteria for classifying wastes in soil and managing soils possibly contaminated by toxics, and (4) a hazardous and toxic materials contingency plan in the event that unlisted hazardous and toxic sites are uncovered during construction;

		Erosion control and sediment detention devices to be used; All fill and rock materials would be non-toxic (see Appendix I for details) No haul roads or any staging areas would occur on the waterside
Air Quality and Climate Change	32-33	Best management practices (BMPs) would be implemented by the Corps construction contractor at each repair site. These include dust and PM_{10} abatement by watering, limiting onsite idling time of heavy equipment, and ensuring that all internal combustion engine equipment is properly tuned to the manufacturer's specification; Additional mitigation conditions/BMPs (see Appendix I)
Traffic and Circulation	39-40	Contractor to develop a Transportation Management Plan (TMP); Travel flow and Access-7 mitigation conditions (see Appendix I); Construction-related traffic Measures-9 measures (see Appendix I)
Cultural Resources	43	If archeological deposits are found during project activities, work would be stopped pursuant to 36 CFR 800.13(b), Discoveries without Prior Planning, to determine the significance of the find and, if necessary, complete appropriate discovery procedures.

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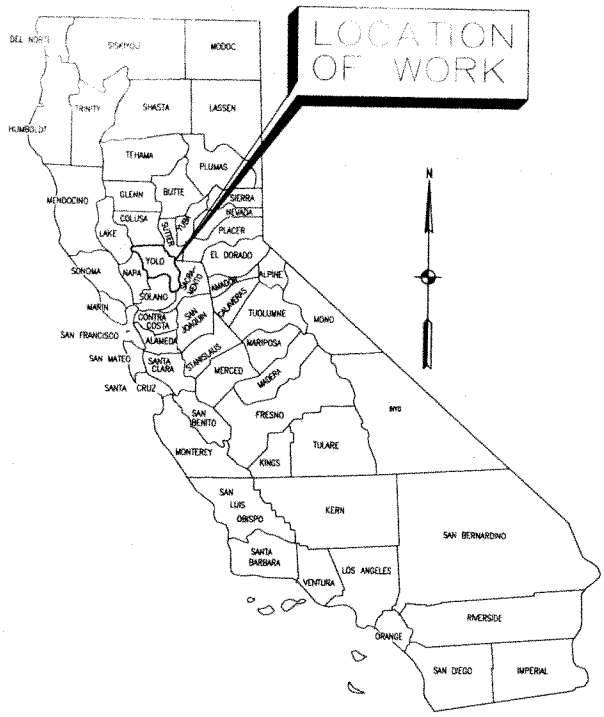
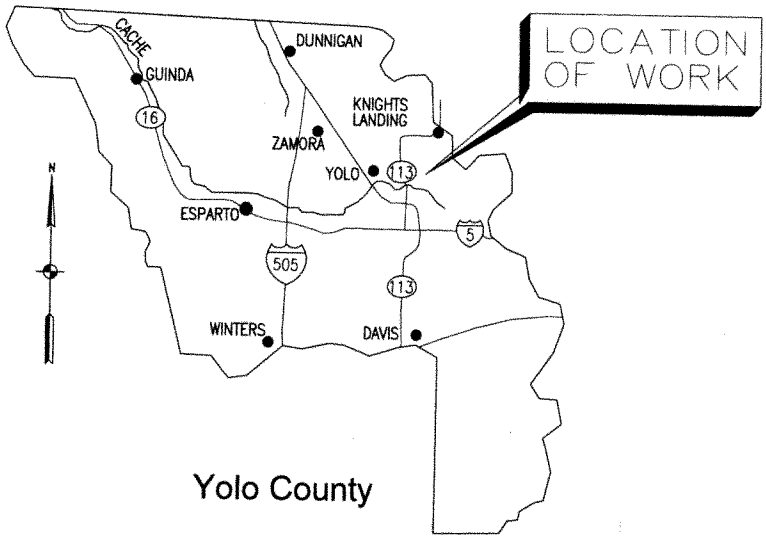
PLATES



CALIFORNIA STATE MAP

SCALE: NTS



Yolo County

LOCATION MAP

SCALE: NTS

Plate 1. Vicinity Map

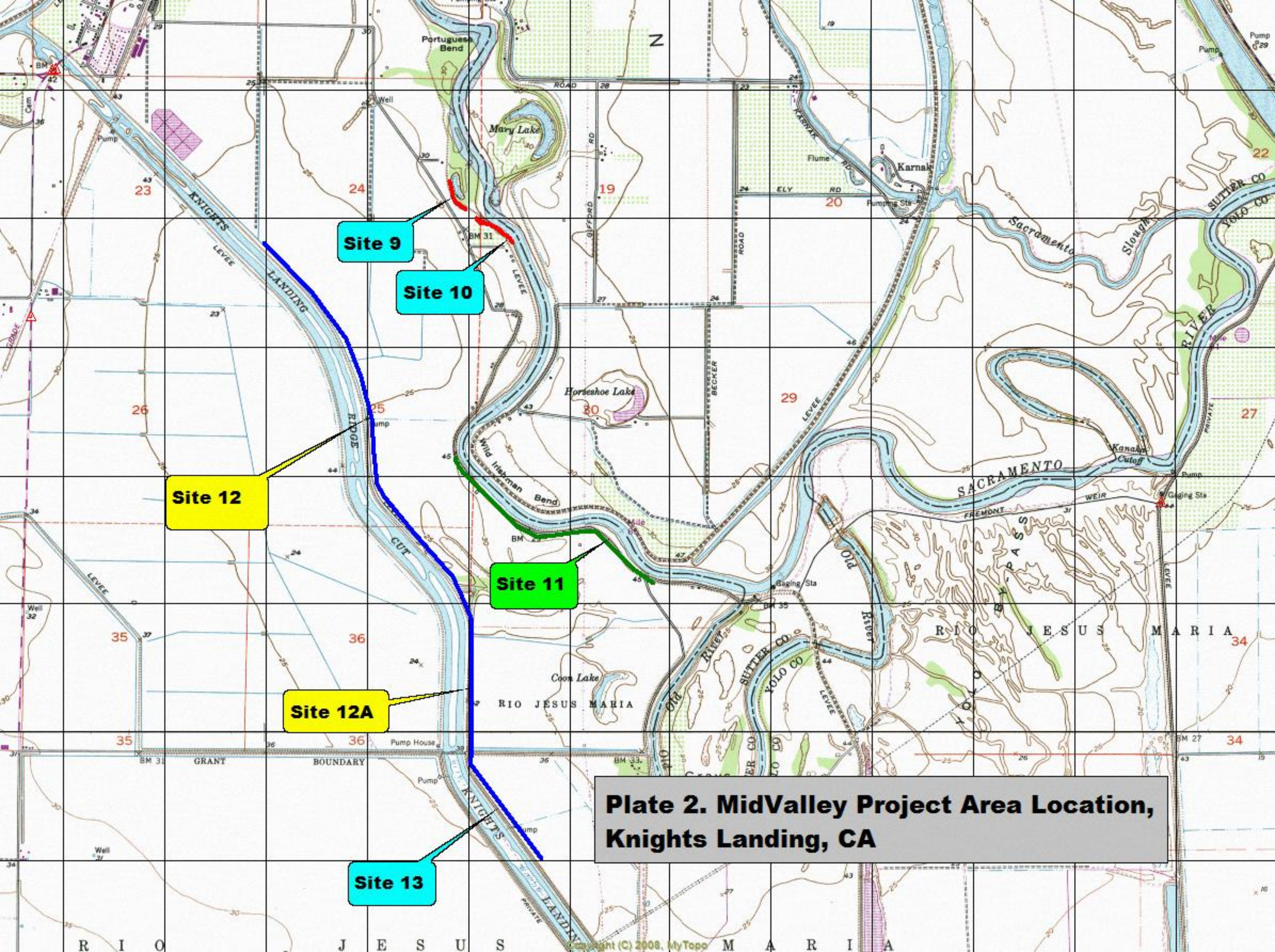


Plate 2. MidValley Project Area Location, Knights Landing, CA

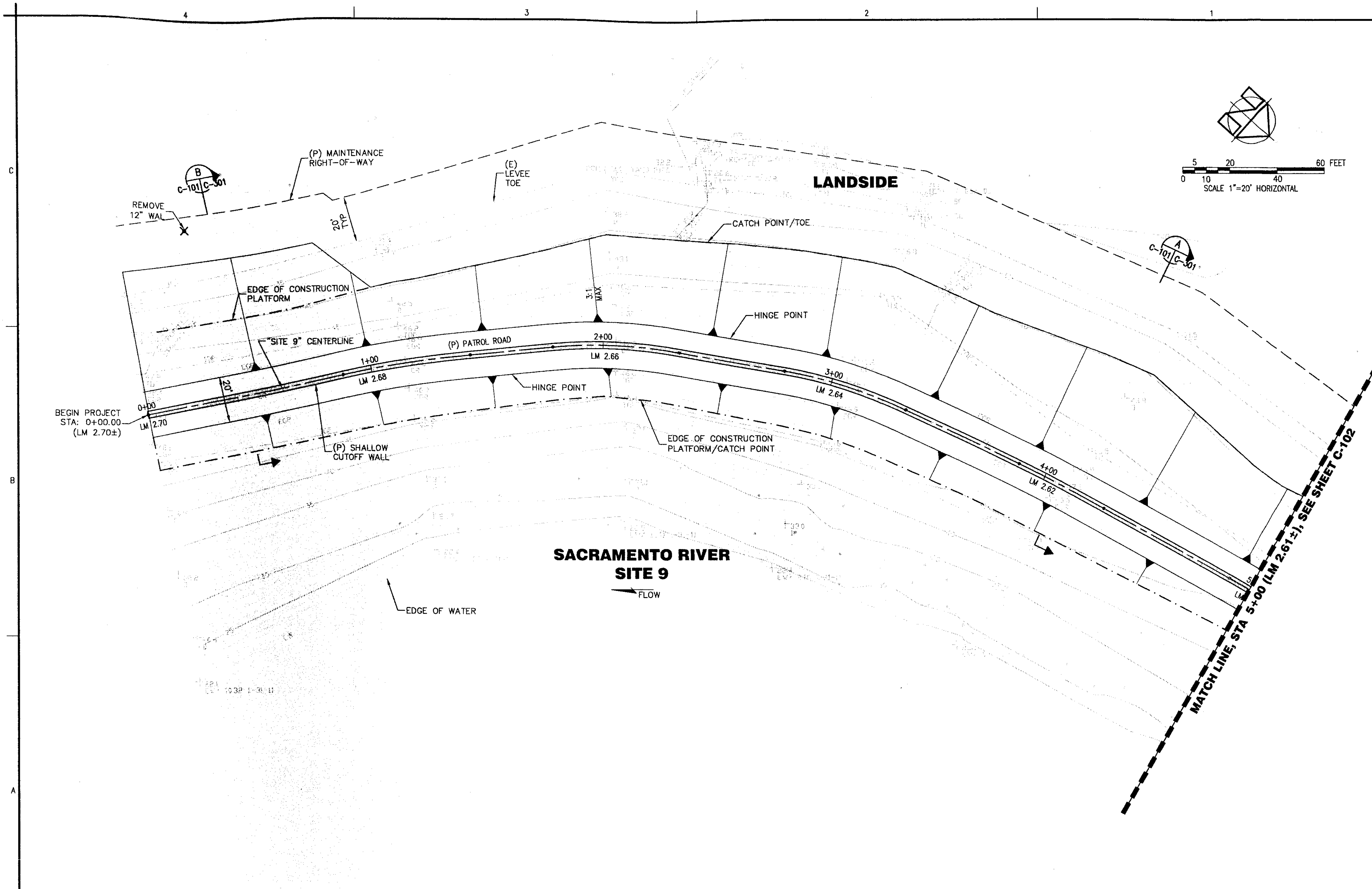


Plate 3. Plan View of Site 9

NOTE: REDUCED PLAN 1/2 SCALE

US Army Corps of Engineers Sacramento District

Symbol	Description	Date	Approved

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SACRAMENTO, CALIFORNIA

Designed by: STEPHEN R. HAWKINS	Date: 11/14/2011	Rev.
Dwn by:	Spec No.: 1871	Design file no: 6-04-2243
Reviewed by: R. SENNETT, PE, SE		Drawing Code:
Submitted by: STEPHEN R. HAWKINS		File name: Plot date: Dwg scale:

YOLO COUNTY SRFCP CALIFORNIA
MID-VALLEY AREA PHASE III AREA 3, SITES 9, 10, & 11
LEVEE IMPROVEMENTS
RIGHT BANK SACRAMENTO RIVER

LEVEE PLAN
SITE 9 NO. 1

Sheet reference number:
C-101
Sheet 33 of 67

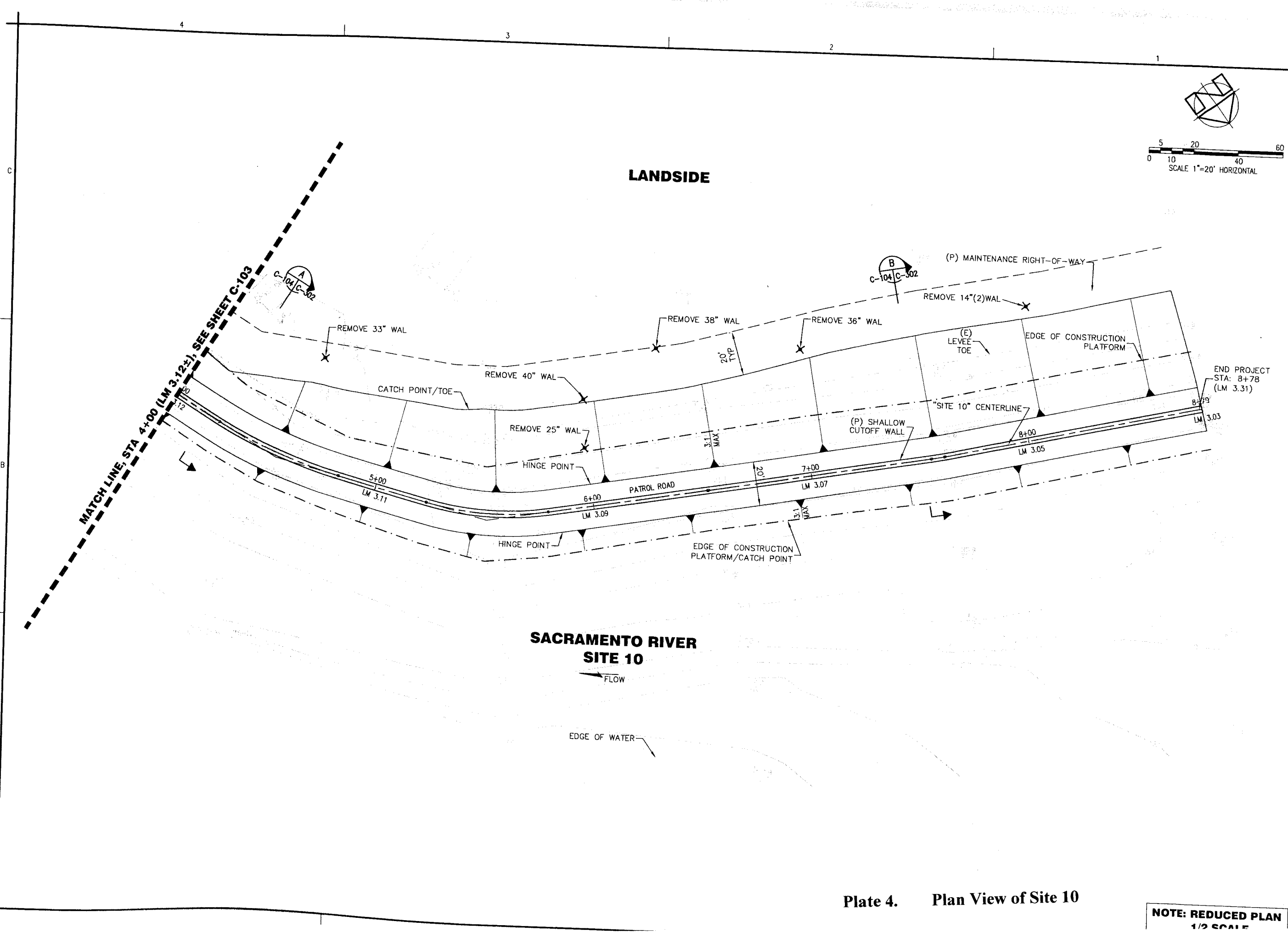

Plate 4. Plan View of Site 10

NOTE: REDUCED PLAN 1/2 SCALE

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YOLO COUNTY, CALIFORNIA
SRFCP
MID-VALLEY AREA PHASE II AREA 3, SITES 9, 10, & 11
LEVEE IMPROVEMENTS
RIGHT BANK SACRAMENTO RIVER

LEVEE PLAN
SITE 10 NO. 2

Sheet reference number:
C-104

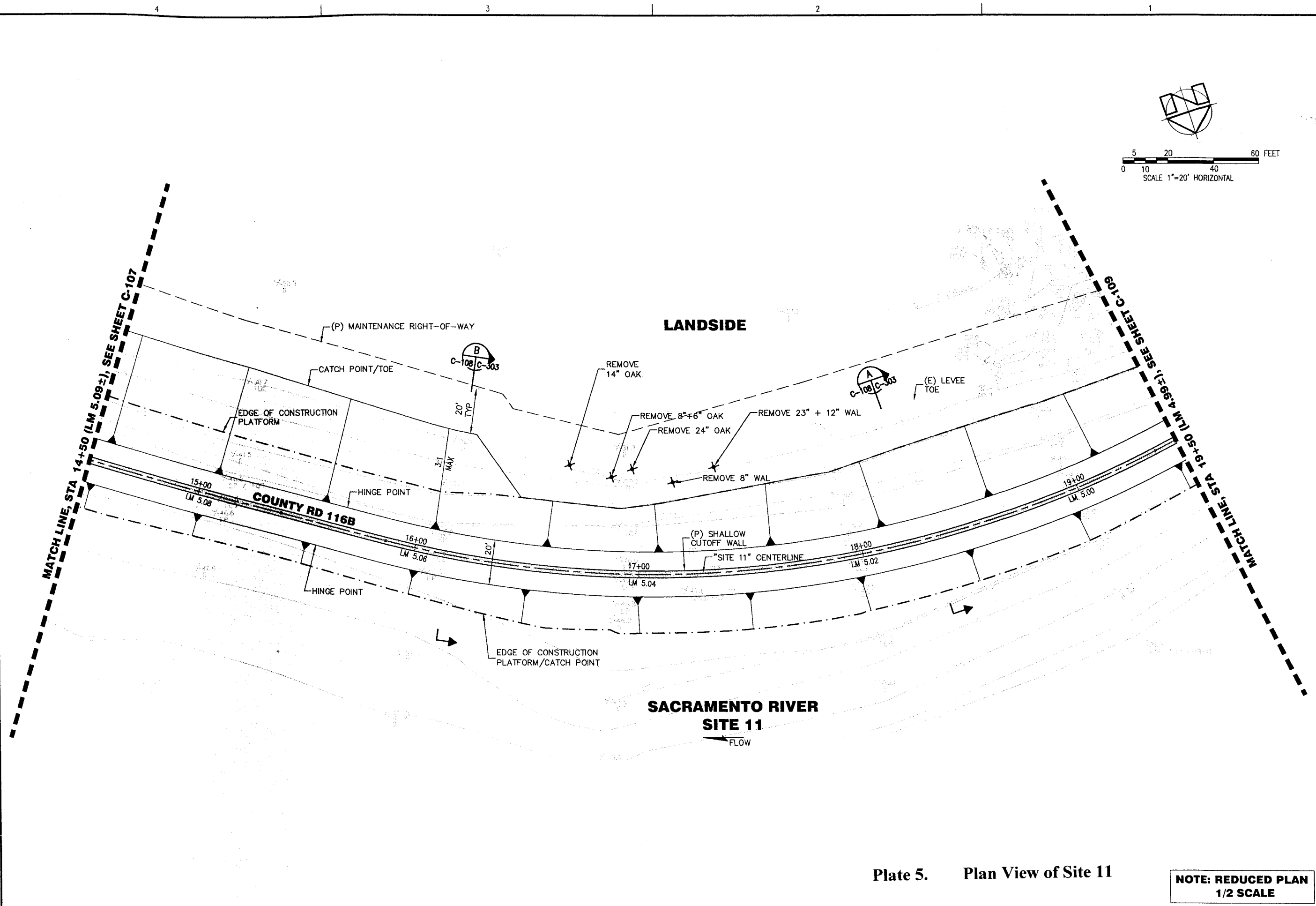

Plate 5. Plan View of Site 11

NOTE: REDUCED PLAN 1/2 SCALE

US Army Corps of Engineers Sacramento District

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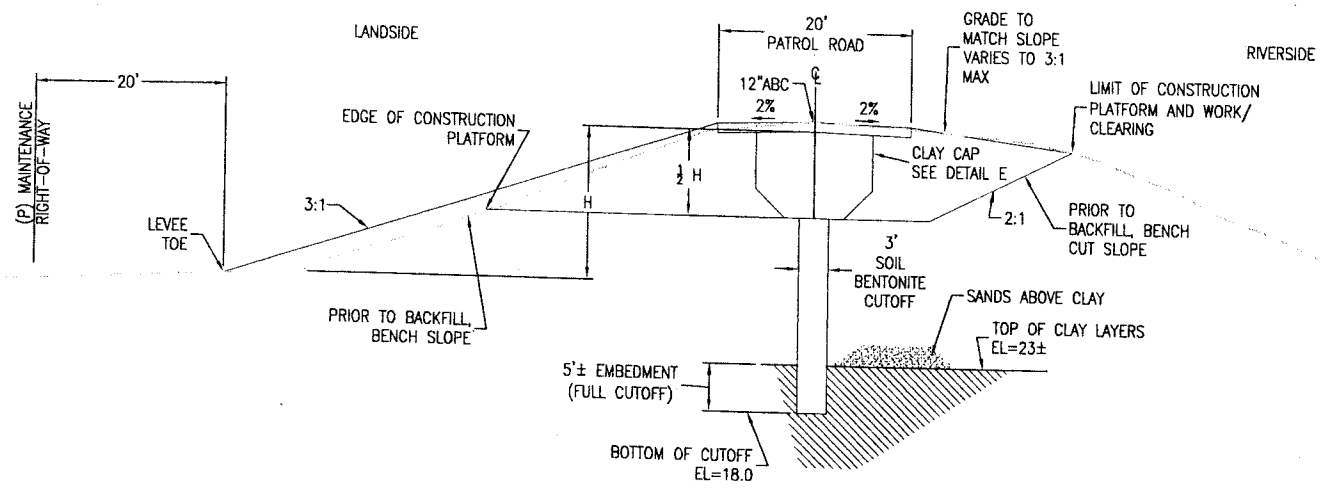
CORPS OF ENGINEERS
SACRAMENTO, CALIFORNIA

YOLO COUNTY SRFCP MID-VALLEY AREA PHASE 3 OF AREA 3, SITES 9, 10, & 11 LEVEE IMPROVEMENTS RIGHT BANK SACRAMENTO RIVER CALIFORNIA

LEVEE PLAN

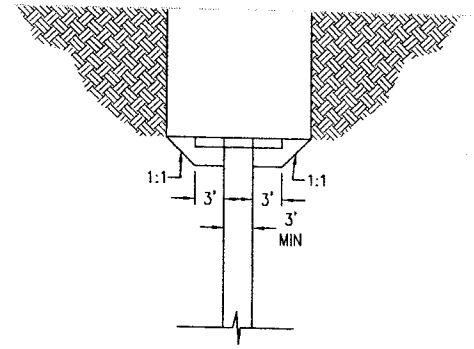
Sheet reference number: **C-108**

Sheet 40 of 6

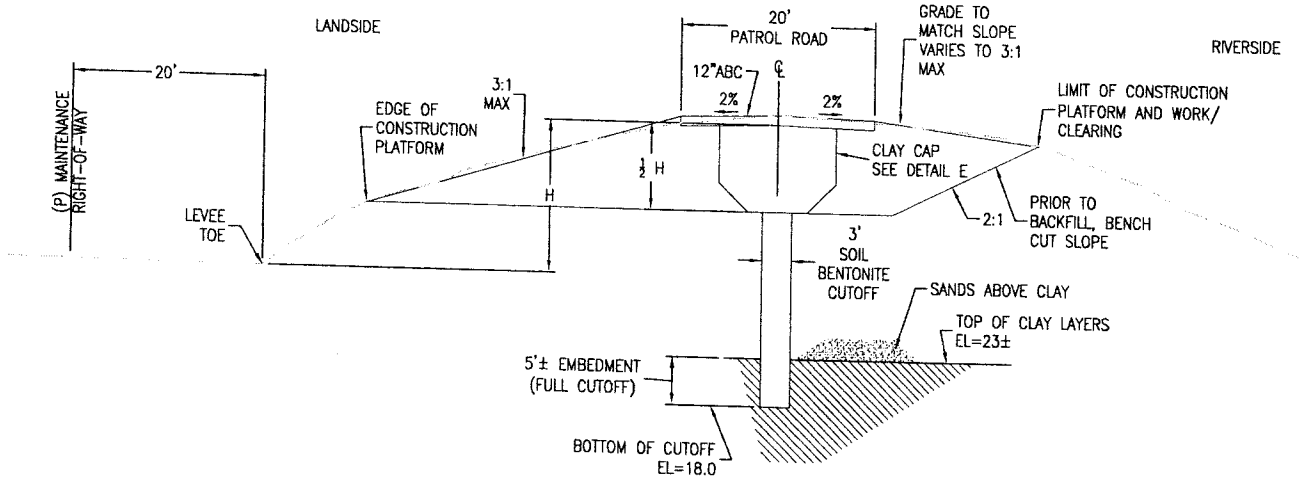


TYPICAL CROSS SECTION SITE 9
NOT TO SCALE
B
C-101 TO C-102 | C-301

STA 00+00.00 TO 01+00.00,
STA 06+75.00 TO 07+85.00



CLAY CAP DETAIL
NOT TO SCALE
E
C-301 TO C-303 | C-301



TYPICAL CROSS SECTION SITE 9
NOT TO SCALE
A
C-101 TO C-102 | C-301

STA 1+00.00 TO 06+75.00

NOTE: REDUCED PLAN 1/2 SCALE

Plate 6. Typical Cross Section of Slurry Cutoff Wall, Site 9

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No.	Date	Designed by: STEPHEN R. HAWKINS	Spec No.: 1671	Designed by: R. SENETT, PE, SE
	11/14/2011	Drn by: LEHONG LIU	Design file no: 4-04-2243	Drawing Code:

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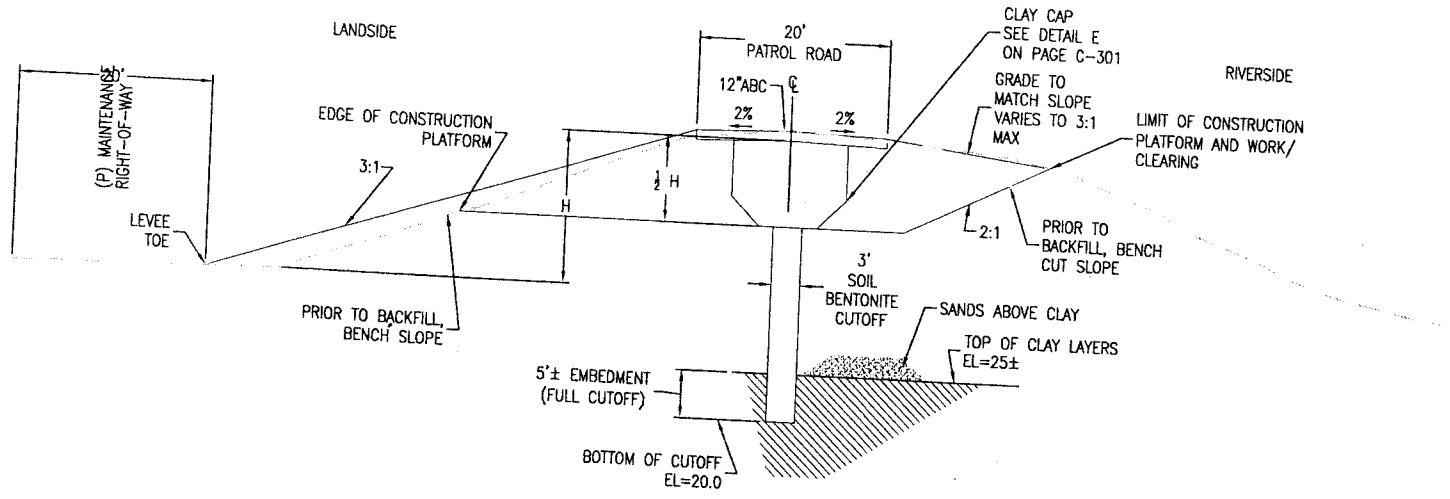
SACRAMENTO, CALIFORNIA

SRFCP
YOLO COUNTY CALIFORNIA
MID-VALLEY AREA, PHASE II AREA 3, SITES 9, 10, & 11
LEVEE IMPROVEMENTS
RIGHT BANK SACRAMENTO RIVER

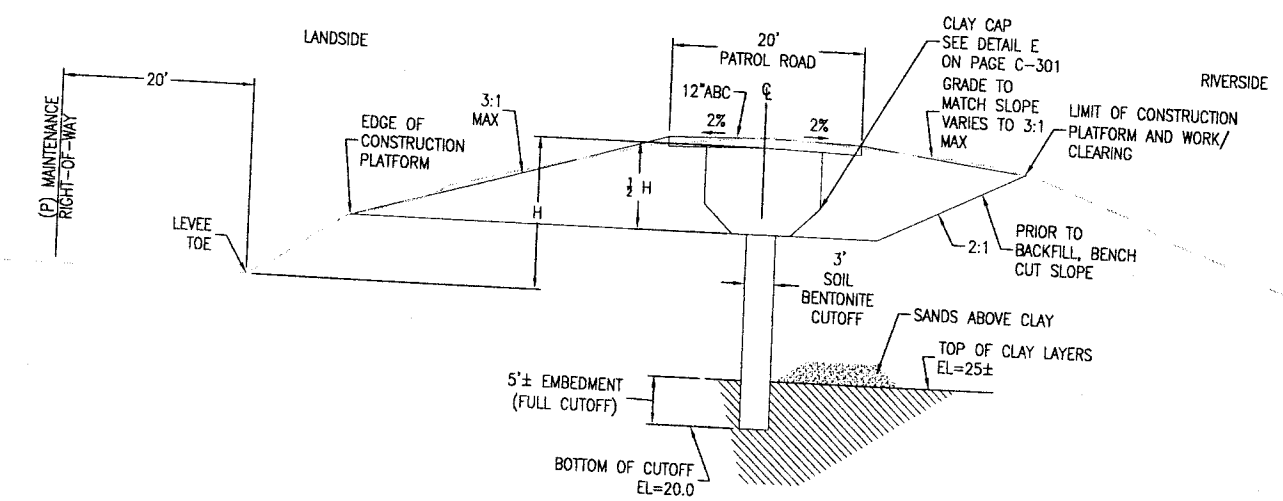
LEVEE TYPICAL CROSS

Sheet reference number:
C-301
Sheet 65 of 6



TYPICAL CROSS SECTION SITE 10
NOT TO SCALE
STA 04+49.68 TO 08+75.00

B
C-103 TO C-104 | C-302



TYPICAL CROSS SECTION SITE 10
NOT TO SCALE
STA 00+00.00 TO 04+49.68

A
C-103 TO C-104 | C-302

Plate 7. Typical Cross Section of Slurry Cutoff Wall, Site 10

NOTE: REDUCED PLAN 1/2 SCALE

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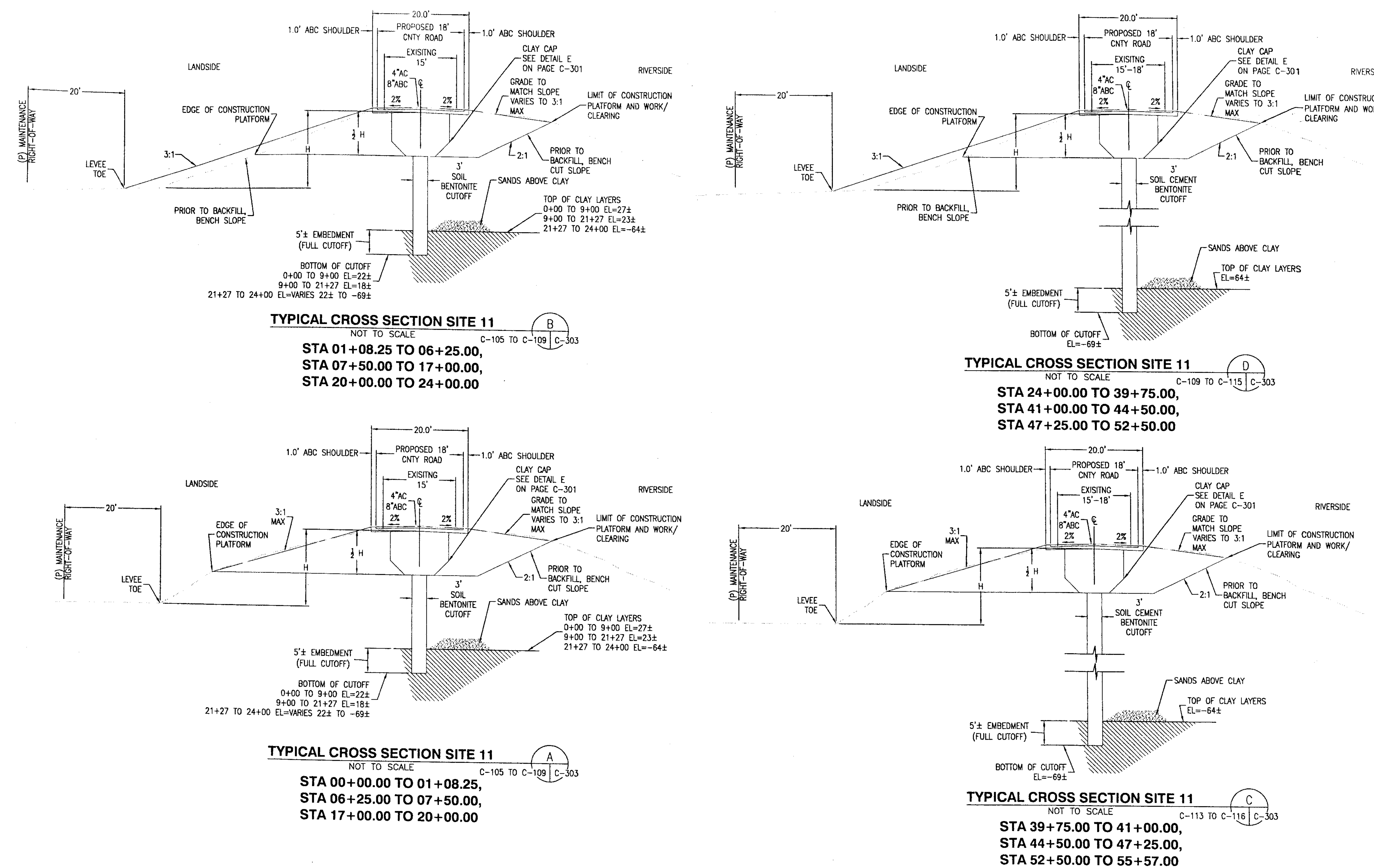
Drawn by: LIHONG LIU
Reviewed by: R. SENKETI, PE, SE
Date: 11/14/2011
Spec No.: 1671
Design file no: 8-04-2243
Drawing Code:

SRCP
YOLO COUNTY, CALIFORNIA
MID-VALLEY AREA PHASE II AREA 3, SITES 9, 10, & 11
LEVEE IMPROVEMENTS
RIGHT BANK SACRAMENTO RIVER

LEVEE TYPICAL CROSS SECTIONS - SITE 10

Sheet reference number:



NOTE: REDUCED PLAN 1/2 SCALE

Plate 8. Typical Cross Section of Slurry Cutoff Wall, Site 11

US Army Corps of Engineers Sacramento District

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Designed by: STEPHEN R. HAWKINS	Date: 11/14/2011	Rev.
Dwn by: LIHONG LIU	Spec No.: 1871	Design file no: 8-04-2243
Reviewed by: R. SENNETT, PE, SE		Drawing Code:
Submitted by: STEPHEN R. HAWKINS		File name: Plot date: Plan scale:

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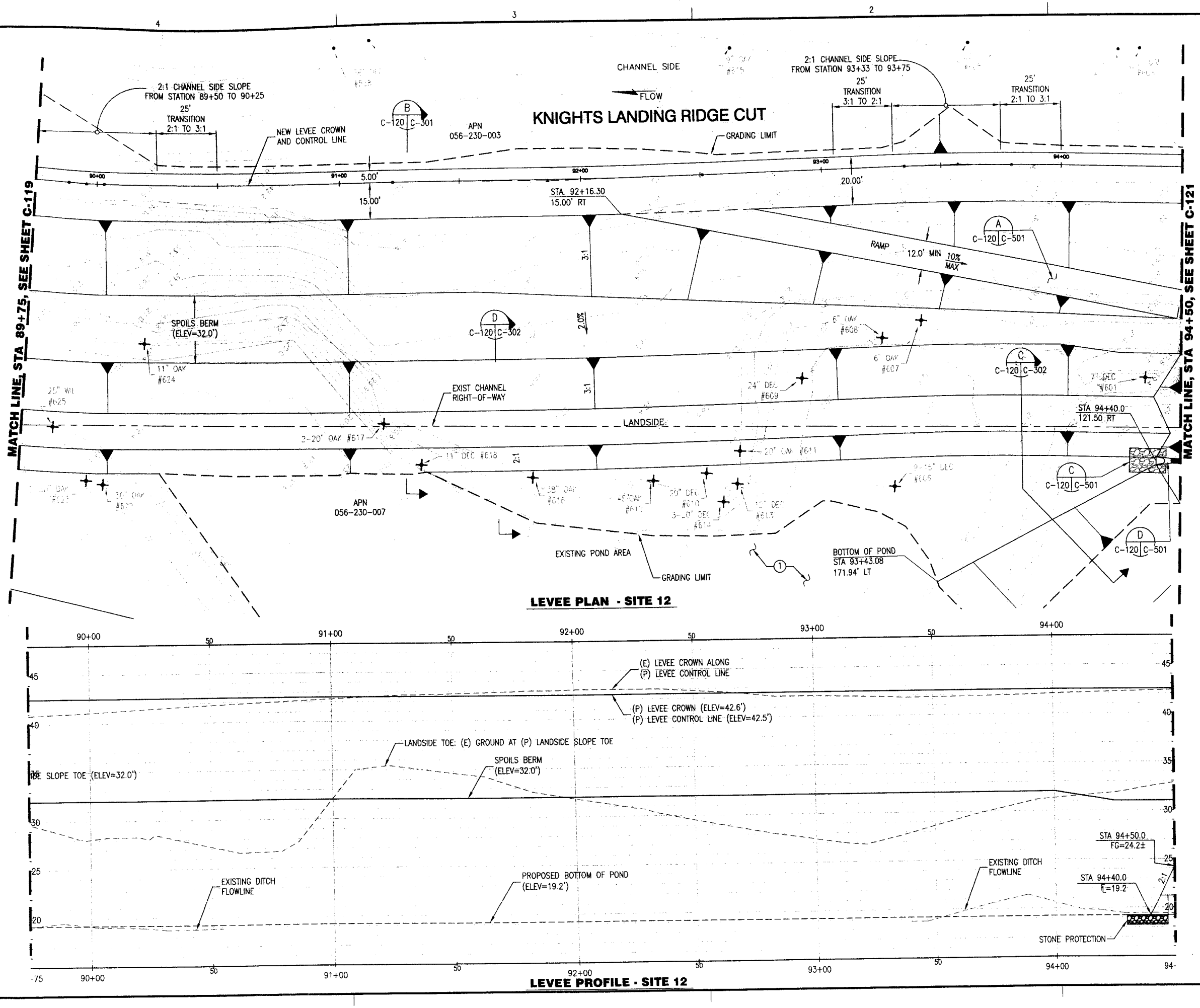
YOLO COUNTY SRFCP CALIFORNIA
MID-VALLEY AREA PHASE III AREA 3, SITES 9, 10, & 11
LEVEE IMPROVEMENTS
RIGHT BANK SACRAMENTO RIVER

LEVEE TYPICAL CROSS SECTIONS - SITE 11

Sheet reference number: **C-303**



LEVEE PLAN - SITE 12

LEVEE PROFILE - SITE 12

LEGEND

- REMOVE EXISTING TREE
- EXISTING TREE TO REMAIN

NOTES

NTR=17

KEYNOTE

1 SEE SHEET C-201 FOR POND AREA GRADING.

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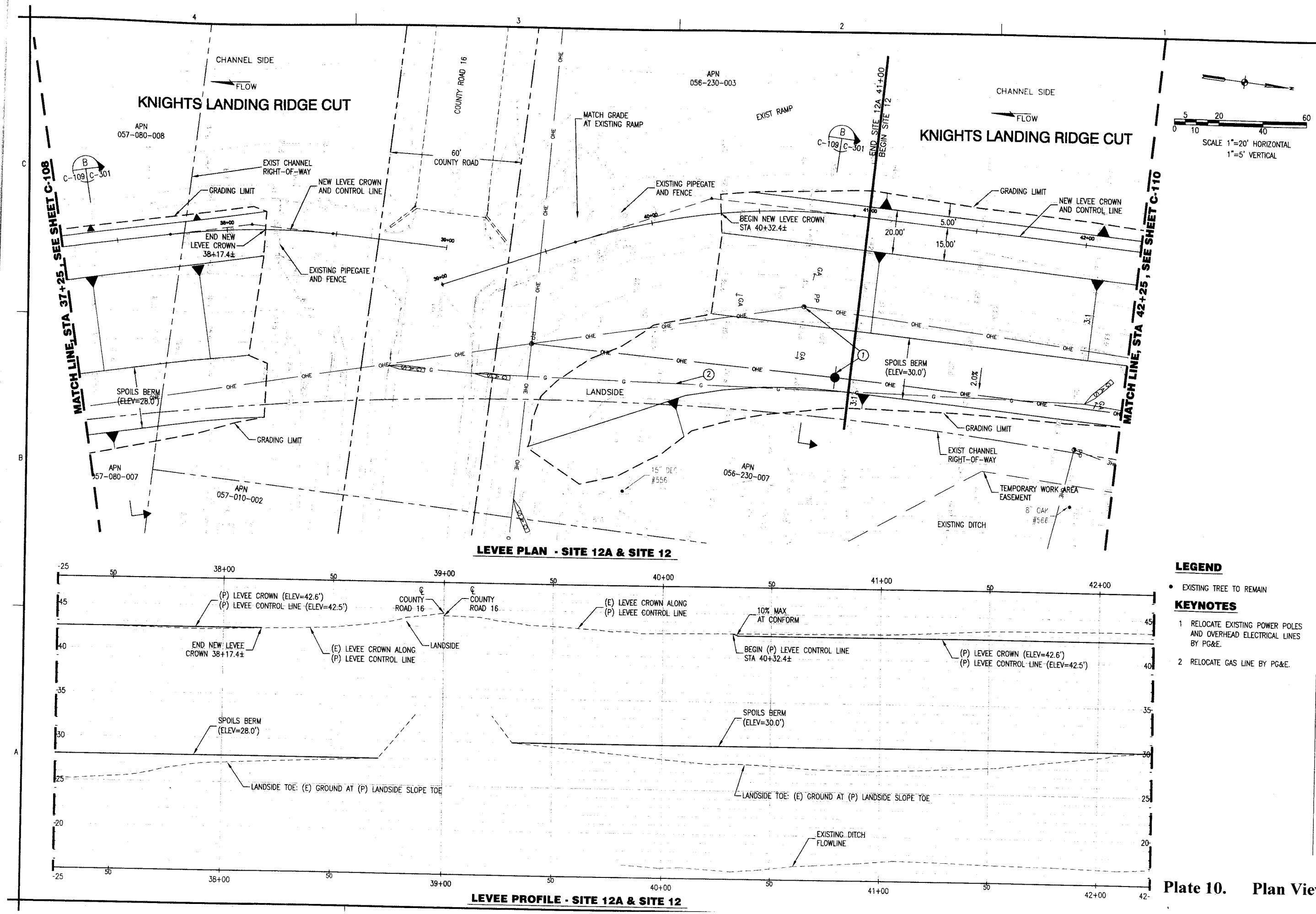
Designed by: DAVID L. BROTCHIE, PE
Drn by: RB
Reviewed by: R. SERMETI, PE, SE
Submitted by: /S/ DAVID L. BROTCHIE
Date: 08/17/2011
Spec No.: 1816
Design file no: 6-4-2240
Drawing Code:
File name:
Dwg code:

MID-VALLEY AREA PHASE III
AREA 3, LEFT BANK
YOLO COUNTY, CALIFORNIA
KNIGHTS LANDING RIDGE CUT, SITES 12, 12A, & 13

LEVEE PLAN & PROFILE - SITE 12 NO. 12

Plate 9. Plan View of Site 12



LEGEND

- EXISTING TREE TO REMAIN

KEYNOTES

1. RELOCATE EXISTING POWER POLES AND OVERHEAD ELECTRICAL LINES BY PG&E.
2. RELOCATE GAS LINE BY PG&E.

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DEPARTMENT OF THE ARMY CORPS OF ENGINEERS SACRAMENTO, CALIFORNIA

MID-VALLEY AREA PHASE III
AREA 3, LEFT BANK
YOLO COUNTY, CALIFORNIA
KNIGHTS LANDING RIDGE CUT, SITES 12, 12A, & 13

LEVEE PLAN & PROFILE - SITE 12A NO. 5 & SITE 12 NO. 1

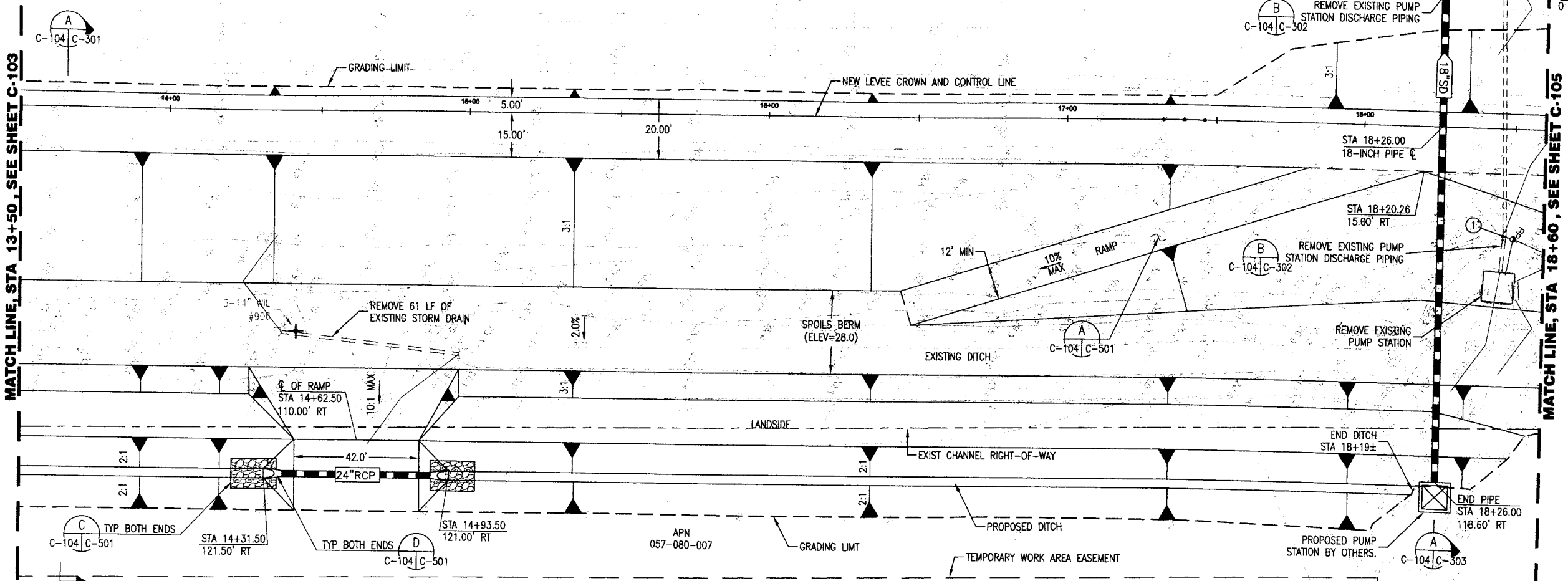
Plate 10. Plan View of Site 12A

CHANNEL SIDE

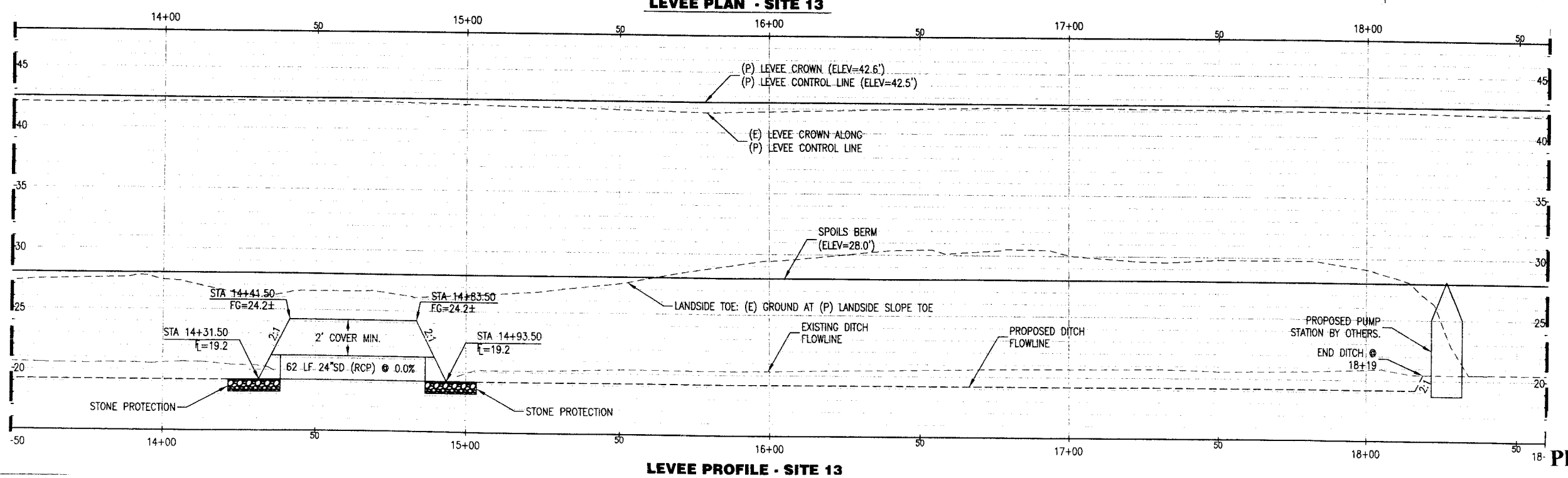
FLOW

KNIGHTS LANDING RIDGE CUT

APN
057-080-006



LEVEE PLAN - SITE 13



LEVEE PROFILE - SITE 13

LEGEND

REMOVE EXISTING TREE

NOTES

NTR=1

KEYNOTE

1 RELOCATE EXISTING POWER POLES AND OVERHEAD ELECTRICAL LINES BY PG&E.

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Sacramento District

SCALE 1"=20' HORIZONTAL
1"=5' VERTICAL

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SACRAMENTO, CALIFORNIA

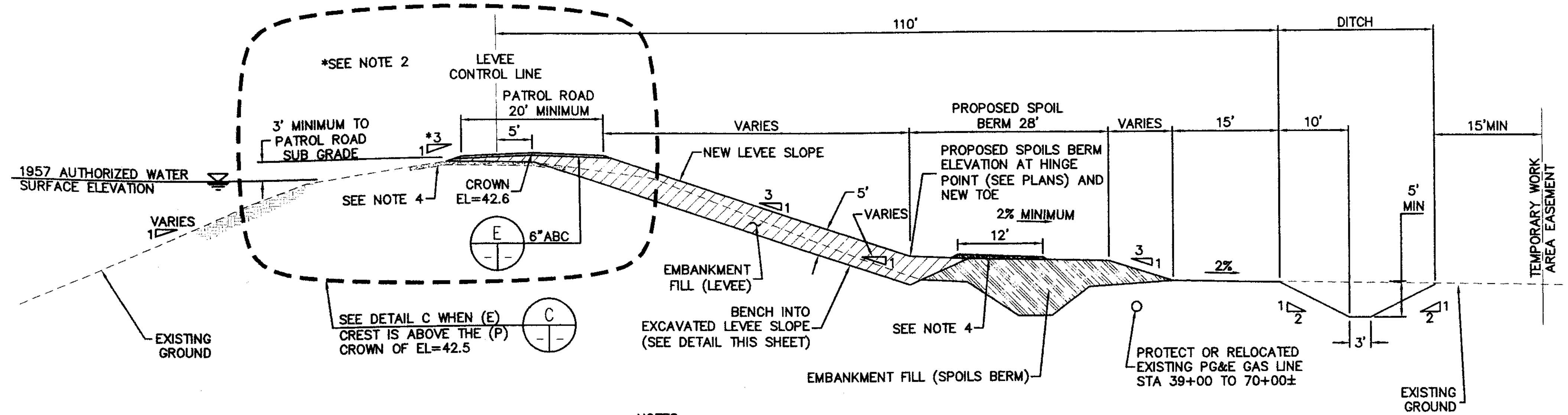
GHT2

MID-VALLEY AREA PHASE III
AREA 3, LEFT BANK
YOLO COUNTY, CALIFORNIA
KNIGHTS LANDING RIDGE CUT, SITES 12, 12A, & 13

LEVEE PLAN & PROFILE - SITE 13 NO. 4

Sheet

Plate 11. Plan View of Site 13

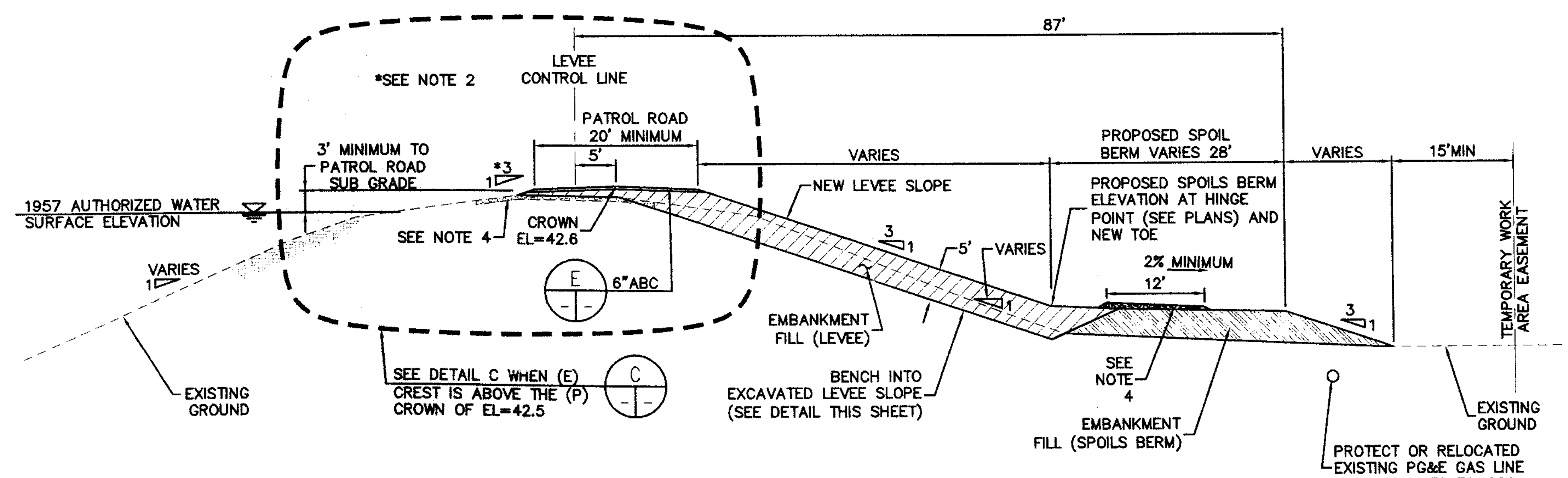


NOTES:

1. CLEAR AND STRIP TO A DEPTH OF 6" WITHIN PROPOSED GRADED AREA.
2. SLOPE ON THE RIVERSIDE ARE 3:1 UNLESS OTHERWISE NOTED ON THE PLANS.
3. HYDROSEED ALL DISTURBED AREAS NOT TO RECEIVE ABC.
4. SALVAGE SUITABLE ABC FROM EXITING LEVEE CROWN FOR USE AS ACCESS ROAD ON SPOILS BERM.

TYPICAL CROSS SECTION SITES 12, 12A, & 13 (A) C-101 TO C-139 | C-301

NOT TO SCALE

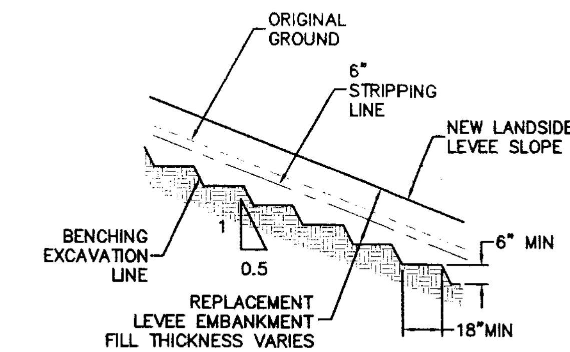


NOTES:

1. CLEAR AND STRIP TO A DEPTH OF 6" WITHIN PROPOSED GRADED AREA.
2. SLOPE ON THE RIVERSIDE ARE 3:1 UNLESS OTHERWISE NOTED ON THE PLANS.
3. HYDROSEED ALL DISTURBED AREAS NOT TO RECEIVE ABC.
4. SALVAGE SUITABLE ABC FROM EXITING LEVEE CROWN FOR USE AS ACCESS ROAD ON SPOILS BERM.

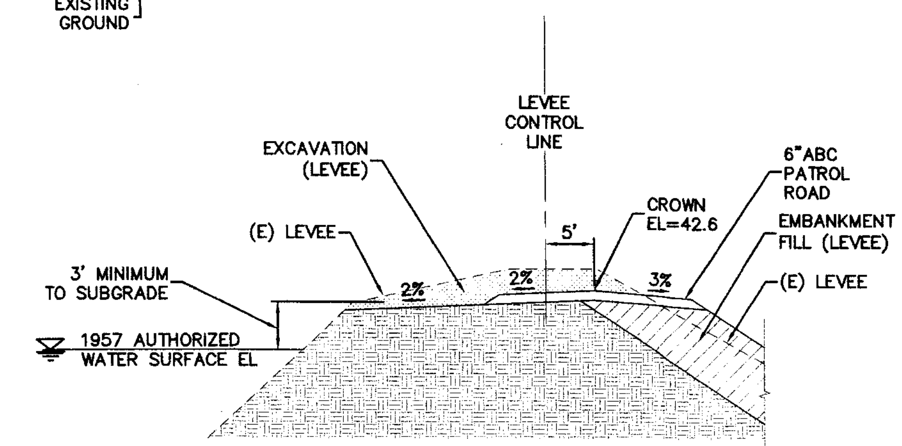
TYPICAL CROSS SECTION SITES 12, 12A, & 13 (B) C-101 TO C-139 | C-301

NOT TO SCALE



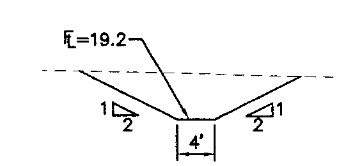
EXISTING LEVEE SLOPE BENCHING DETAIL

NOT TO SCALE



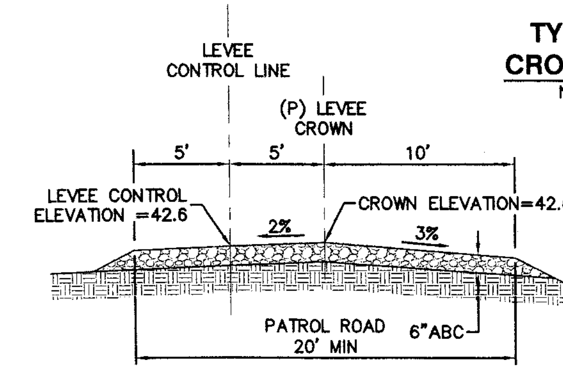
EXISTING LEVEE CREST ABOVE PROPOSED CROWN TYPICAL CROSS SECTION (C)

NOT TO SCALE



TYPICAL DITCH CROSS SECTION (D) C-127 | C-301

NOT TO SCALE



PATROL ROAD SECTION (E)

NOT TO SCALE

Plate 12.

Typical Cross Section of Levee Remediation and Ditch/Berm, Sites 12,12A and 13

US Army Corps of Engineers Sacramento District

Symbol	Description	Date	Approved

Designed by: DAVID L BROTCHIE, PE | Date: 06/17/2011 | Rev.
Dwn by: DB | Spec No.: 1818 | Design file no: 6-04-2240
Reviewed by: R. SENNETT, PE, SE | Drawing Code:
Submitted by: /S/ DAVID L BROTCHIE | File name: Plot date: Dwg scale:

DEPARTMENT OF THE ARMY CORPS OF ENGINEERS SACRAMENTO, CALIFORNIA

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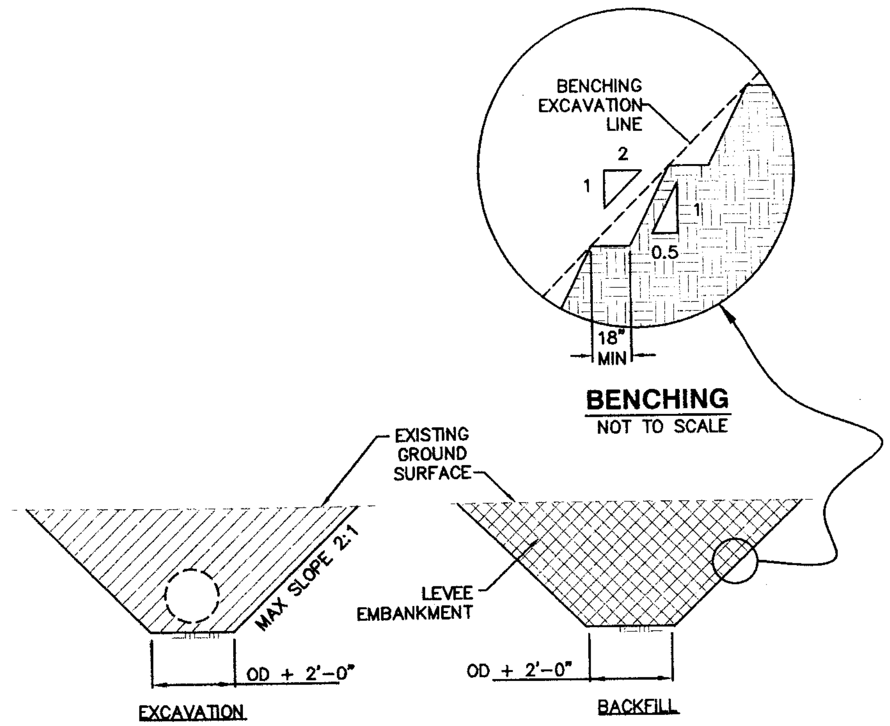
MID-VALLEY AREA PHASE III
AREA 3, LEFT BANK
YOLO COUNTY, CALIFORNIA
KNIGHTS LANDING RIDGE CUT, SITES 12, 12A, & 13

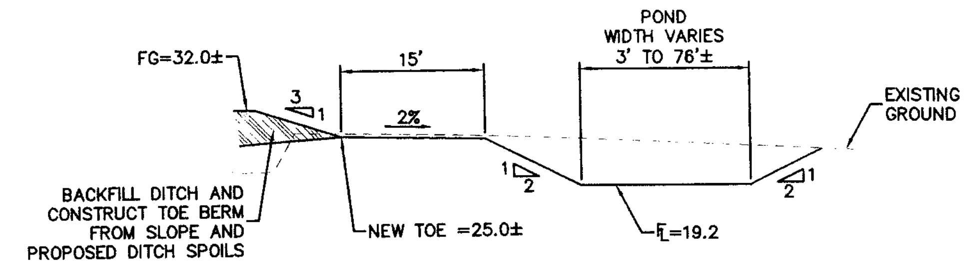
LEVEE CROSS SECTIONS SITE 12, 12A, & 13

Sheet reference number: **C-301**

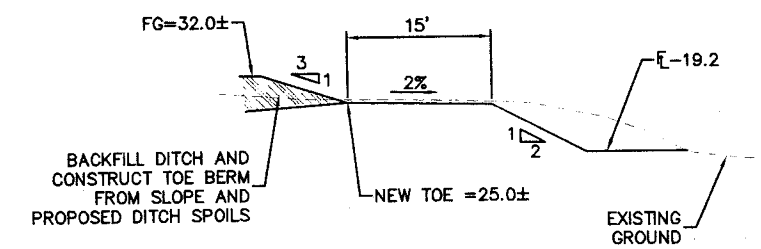
Sheet 77 of 82



REMOVE PIPING - TYPICAL CROSS SECTION
NOT TO SCALE C-104, C-110, C-127 | B | C-302



POND CROSS SECTION C
NOT TO SCALE C-119, C-120, C-201 | C | C-302



POND CROSS SECTION D
NOT TO SCALE C-120, C-201 | D | C-302

Plate 13. Typical Cross Section of Piping Removal and Ponds, Sites 12, 12A and 13

US Army Corps of Engineers Sacramento District

Symbol	Description	Date	Approved

Designed by: DAVID L BROTCHIE, PE	Date: 08/17/2011	Rev.
Dwn by: DB	Spec No.: 1816	Design file no: 6-04-2240
Reviewed by: R. SENNETT, PE, SE		Drawing Code:
Submitted by: /S/ DAVID L BROTCHIE		File name: Plot date: Dwg scale:

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CORPS OF ENGINEERS
SACRAMENTO, CALIFORNIA

GHT2

MID-VALLEY AREA PHASE III
AREA 3, LEFT BANK
YOLO COUNTY, CALIFORNIA
KNIGHTS LANDING RIDGE CUT, SITES 12, 12A, & 13
LEVEE CROSS SECTIONS
SITE 12, 12A, & 13

Sheet reference number: **C-302**
Sheet 78 of 82

APPENDIX A

Section 404(b)(1) Clean Water Act Analysis

Sacramento River Flood Control Project Systems Evaluation
Phase III: Mid-Valley
Knights Landing, Yolo County, California

Section 404(b)(1) Evaluation

I. Project Description

The U.S. Army Corps of Engineers, Sacramento District (Corps), and the Central Valley Flood Protection Board (CVFPB), with assistance from Yolo County Special District No. 6 and Knights Landing Ridge Drainage District, propose levee repair work at six sites along the Sacramento River and Knights Landing Ridge Cut. The sites are located south and southeast of the town of Knights Landing in Yolo County, California (Plate 1 of the Environmental Assessment/Initial Study).

A complete project description can be found in Chapter 2 of the draft environmental assessment/initial study (EA/IS). This evaluation describes how the proposed project complies with the Section 404(b)(1) guidelines (Guidelines) that can be found online at:
http://www.epa.gov/owow/wetlands/pdf/40cfrPart230.pdf

a. Location

The study area comprises two project areas located approximately 0.75 to 1.5 miles south and southeast of the Town of Knights Landing, California. Sites 9, 10 and 11 are located along the right (west) bank of the Sacramento River starting at river mile (RM) 87.2, approximately 1.5 miles southeast of Knights Landing, and extends downriver to RM 84.1. The Knights Landing sites (Sites 12, 12A, and 13) are located along the left (east) side of the Knights Landing Ridge Cut (KLRC) starting approximately 0.75 miles south of the Town of Knights Landing and extends downstream approximately 3.4 miles. The area of effects described in the draft Environmental Assessment/Initial Study (EA/IS) encompasses the six sites described above, the vicinity of the surrounding roads leading to the above six sites, and the immediate area that is adjacent to the six sites, including the Sacramento River and the KLRC.

b. General Description

The proposed purpose is to repair 4.7 miles of existing Federal (Corps) levees to ensure they effectively stop floodwaters up to the 1% (100-year) flood event, as originally designed and approved. The overall general site plan of the project including limits of work (footprint) for the six sites is illustrated in Plates 1 to 6. Two different construction methods have been selected to repair the primary problem with the existing dikes, which is seepage.

Sites 9, 10 and 11: A soil/bentonite slurry cutoff wall would be used to repair these three sites. The wall would be 21to 27 feet deep and would be a maximum of 117 feet deep at Site 11, which is a paved county highway. All excavated material taken from the 3-foot wide trench that the slurry wall would be put into would be retained on the existing levee and/or hauled off-site to a previously approved disposal Site. The three sites would be restored to their pre-construction contours once work is completed.

Knights Landing (Sites 12, 12A, and 13): The work at this location would involve excavating the landward half of the existing levee and replacing it with more suitable non-porous soil (i.e. clay) with the excavated material placed in a spoils berm on the landward side of the levee. Approximately 12,050 linear feet of an existing drainage ditch, which is classified as a wetland since it is located in hydric soils, would be relocated to the landward side of the spoils berm. In addition, an approximately 22,740 square feet (SF) portion of an existing pond, which is also a wetland, would be filled by the project, but the pond would be enlarged by about the same size (27,406 SF) to compensate for the filling of it.

c. Background

Levees proposed for repair under this Mid-Valley project are a component of the Sacramento River Flood Control Project (SRFCP). After the 1986 flood, the Corps initiated a system-wide analysis (see next section for authorization) to determine structural deficiencies within the project area, which included the Sacramento River and its tributaries. The results were published in the *Sacramento River Flood Control System Evaluation, Phase II-V, Programmatic Environmental Impact Statement/Environmental Impact Report (EIS/EIR)*, dated May 1992. Phase I and II evaluations include the Sacramento urban area and the Marysville/Yuba City area. Phase III is the Mid-Valley area and the focus of this report. Phase IV and V include the lower Sacramento River area south of Sacramento and the upper Sacramento River area north of Knights Landing. According to the November 2002 *SRFCP Limited Reevaluation Report* (LRR), "Phase VI was more recently added to evaluate additional potential sites in all phases", but its supplemental DM had not been completed at that time.

The Corps then developed the *Sacramento Flood Control Project, California, Mid-Valley Area, Phase III Design Memorandum* (DM), dated June 1996 that proposed work at various Mid-Valley locations. These locations included portions of the Sacramento River (RM 70 to 118), Feather River (RM 0 to 3), KLRC, Sutter Bypass (from the Tisdale Bypass to the Feather River), and Yolo Bypass (from the Fremont Weir to the Sacramento Bypass). Only the Sacramento River and KLRC sites are evaluated in this Section 404(b)(1) evaluation as they are the only work areas being proposed at this time.

The 1996 Design Memorandum discusses potential alternatives for 14 Mid-Valley seepage sites proposed for levee reconstruction under four construction contract areas. The 1996 DM proposed seepage/stability berms at Sites 9 and 11 and a toe drain at Site 10. The 1996 DM also proposed ditch relocation at Sites 12 and 13, as is currently proposed, with lime treatment at all three sites, and reshape the levee at Site 12.

The 1996 DM described four contract areas for Mid-Valley work. Contract area 1 (Reclamation District 1500) was completed in 1998. Contract area 2 (Reclamation District 1001) is on the Feather River and Sacramento River RM 79 to 79.5. Contract area 3 (Knights Landing) is the subject of this evaluation and its six sites are described above. Contract area 4 (Elkhorn) is on the Yolo Bypass and Sacramento River RM 80.8 to 81.5.

d. Authorization and Purpose

The SRFCP was authorized by the Flood Control Act of 1917, and received subsequent authorizations under the Flood Control Acts of 1928, 1936, and 1941 as well as the Rivers and Harbors Act of 1937. The Flood Control Acts of 1944 and 1950 authorized additional modifications. It was constructed by the Corps and completed in 1955.

The Mid-Valley Area, Phase III is a component of the SRFCP. After the 1986 flood, the Corps conducted a system-wide analysis (System Evaluation) of the SRFCP to bring it up to current design standards. The authority for this system evaluation is from the Conference Report accompanying the Energy and Water Development Act for 1987 (Public Law 99-591), which included funds under Operation and Maintenance, General Appropriations, and Inspection of Completed Works for evaluation of the flood control system for the Sacramento River and its tributaries (SRFCP System Evaluation). The House of

Representatives report (99-670) and the Senate Report (99-441) contain similar language as noted in the DM.

Under a Project Cooperation Agreement (PCA), the U.S. Army Corps of Engineers, Sacramento District (Corps) is the responsible Federal agency and the Central Valley Flood Protection Board (CVFPB) is the non-Federal project sponsor. Local reclamation districts are participating by agreement with the Reclamation Board.

The proposed purpose of the project is to repair 4.7 miles of existing Federal (Corps) levees to ensure they effectively stop floodwaters up to the 1% (100-year) flood event, as originally designed and approved. The primary problem with the existing levees is seepage.

e. General Description and Quantity of Dredged or Fill Material

(1) General Characteristics of Material

The primary imported soil to all six sites would be clay. Bentonite, which is an absorbent aluminum phyllosilicate, would also be imported for Sites 9, 10, and 11.

(2) Source of Material

Fill materials would come from a permitted off-site commercial borrow site or another commercial source. However, clean excavated material from the Knights Landing sites (Sites 12, 12A, 13) would be used to construct the spoils berm on the landward side of the existing levee.

If a borrow site is selected that has not been evaluated in this document, the contractor would be responsible for providing all applicable NEPA, CEQA, and other appropriate environmental compliance.

f. Description of the Proposed Discharge Sites

(1) Location (map)

The location of the discharge subject to this evaluation are the wetland areas to be filled at Sites 12 and 13 (see Section IIe(5)(b) below). Also, see project area and vicinity map, Plates 1 and 2 of EA/IS

(2) Size (acres)

Discharges at Sites 9 to 11 are limited to the upland (i.e. existing levee). The discharges at the Knights Landing sites are limited to existing wetlands (i.e. ditch and pond) with no discharge to the primary adjacent waterway, KLRC. The existing drainage ditch is approximately 3.2 miles (16, 875 linear feet (LF)) long by 8 to 10 feet wide, encompassing 3.5 acres. Of this, 2.17 miles (11,465 LF) or 2.43 acres would be filled. Approximately 0.52 acres of the area filled would result from the filling of a pond along 700 LF of the existing ditch where it widens out.

(3) Type of Site (confined, unconfined, open water)

The long, hot, dry summers of northern California would likely dry up any water in the drainage ditch and the shallow round pond by late summer. However, the proposed fill would

likely be placed in the wetlands when they are still flooded in May or early June so that the work can stay on schedule, but the wetland ditches and pond could be pumped dry using existing infrastructure. The ditch has confined narrow slopes with a 3-foot bottom width and about a 8 to 10-foot top width. The fill in the pond would not be confined to a sloped bank, but the fill would be sloped with a 3:1 slope horizontal: vertical so that it remains stable and does not erode into the remainder of the pond.

(4) Types of Habitat

The U.S. Fish & Wildlife Service (FWS) National Wetlands Inventory (NWI) map does not show the wetland ditch or pond to be filled by the project, but these wetlands appear to have been created/excavated after the June 1984 NWI photo date. The NWI map does show an approximate 9.5 acre palustrine emergent semi-permanently flooded excavated (PEMFx) wetland located east of and adjacent to the narrow tree line that borders the proposed staging area at station 80+00. Current aerial photography (i.e. Google Earth) now shows this 9.5 acre area to be farmed. However, the wetland ditch and pond to be filled appear to be the same wetland type. They would be replaced or mitigated for on-site by further excavation.

(5) Timing and Duration of Discharge

Discharge activities would occur between May 2 and September 31 to minimize impacts to the threatened giant garter snake. However, timing would need to be delayed until August 15 if the work is found to be within 0.5 mile of any active raptor nests. Final timing would be consistent with resource agency approvals, particularly the USFWS Biological Opinions and CDFG approval(s).

The work at Sites 9-11 would take approximately 10 months to complete with the work to occur in 2015 and 2016. The work at Knights Landing (Sites 12, 12A, 13) would also take approximately 10 months to complete and would occur in 2016 to 2017 if the Corps is lead agency, but the State is seeking an Early Implementation Program to start in 2013.

g. Description of Disposal Method (hydraulic, drag line, etc.)

Smaller heavy equipment would be used for this project including smaller models of graders, excavators, backhoes, and bulldozers. Dump trucks would also be used to import the needed soils.

II. Factual Determinations (Section 230.11)

a. Physical Substrate Determinations (consider items in Section 230.11(a) and 230.20 Substrate)

(1) Substrate Elevation and Slope

The discharge site in the wetlands is at approximately +23’ NGVD 1929 with a 2:1 average bank slope.

(2) Sediment Type

The 1972 USDA soil survey for Yolo County shows the pond to be located in Sycamore silty clay loam and the ditches are located in the same soil type and Sacramento clay and Capay silty clay. All three soil types (Sycamore, Sacramento, and Capay) are hydric (wetland) soils.

(3) Dredged/Fill Material Movement

Fill material would not be expected to be subject to movement since the wetlands would be pumped dry prior to filling and the fill would be confined within the ditch slopes and the pond.

(4) Physical Effects on Benthos (burial, changes in sediment types, etc.)

The proposed project would have a physical (burial) effect on any benthos present during the construction by the placement of the fill material in the wetlands. However, similar and larger benthic habitat would be created by the project through the excavation of new ditches and a larger pond area.

(5) Other Effects

No other effects are anticipated.

(6) Actions Taken to Minimize Impacts (Subpart H)

There is a firm environmental commitment for the mandatory use of approved Best Management Practices (BMPs) that requires and allows the contractor to reduce turbidity and completely prevent materials from falling into the Sacramento River, KLRC, or the 9.5 acre wetland east of the Knights Landing staging area. This would occur during all phases of the project so it would avoid significant adverse effects to water quality. Further, as stated above, the wetlands to be filled would be replaced on-site by similar and larger excavated wetland areas.

b. Water Circulation, Fluctuation, and Salinity Determinations

(1) Water (refer to section 230.11(b), 230.22, Water, and 230.25 Salinity Gradients; test specified in Subpart G may be required)

Consider effects on:

(a) Salinity

The Sacramento River at Knights Landing is tidal so the Sacramento River adjacent to Sites 9, 10, and 11 is also tidal, but there will be no work or fill being discharged into this waterway so salinity is not affected. The KLRC is a distributary off the Colusa Basin Drainage Canal (CBDC), which is a tributary to the Sacramento River. The CBDC has a dam on it in the Town of Knights Landing, just downstream of its confluence with the KLRC so the KLRC is not tidal and would be expected to have no saline waters. Further, no work or fill would occur in the KLRC and the fill occurring in the wetlands as part of the proposed project is being discharged into non-tidal waters subject to inundation and

periodic flooding. When the area receives water, it is from rain or flood events or from seepage of surrounding hydric soils. All waters/wetlands affected are freshwater and therefore, filling these areas would not adversely affect salinity.

(b) Water chemistry (pH, etc.)

The fill area in the wetlands would likely be placed in the flooded wetlands since the filling would likely occur in May or early June when the wetlands are still flooded. However, the water in the ditches and pond is expected to be pumped dry using the existing pump stations so the fill could be placed in dry conditions. Further, fill materials would be tested for pH prior to placement as not to affect water quality.

(c) Clarity

Fill could occur in shallow (less than 2 feet deep) water of a small pond and even shallower water of wetland ditches or the fill could be placed in dry wetlands if surface water could be pumped to the KLRC. During filling operations, the Corps would adhere to turbidity and water chemistry requirements associated with the State 401 water quality certification. No other turbidity is expected to occur since the fill would occur out of the water and above the high tide lines of the primary waterways (Sacramento River and KLRC).

(d) Color

The proposed project is not expected to affect color in the primary waterways. Discoloration of any water in the pond or wetland ditches may occur, if the water is not pumped out, but this is expected to be temporary and have minor visual effects.

(e) Odor

The proposed project is not expected to affect odor.

(f) Taste

The proposed project is not expected to affect odor.

(g) Dissolved Gas Level

The proposed project is not expected to affect dissolved gas levels since it is expected that the fill placement would occur in the dry de-watered (i.e. pumped out) portion of the ditches and pond or placed in naturally dry wetlands later in the year.

(h) Nutrients

The proposed project components are not expected to adversely affect nutrients in the primary waterways since no shaded riverine aquatic cover habitat would be removed. Minor and temporary affects to any nutrients in the wetlands may occur, but they would be replaced by creating/excavating new and larger wetlands and planting adjacent vegetation.

(i) Eutrophication

The proposed project is not expected to affect eutrophication since all fill is expected to occur in the dry, de-watered wetlands.

(j) Others as Appropriate

The proposed project is not expected to affect other water characteristics.

(2) Current Patterns and Circulation (consider items in Section 230.11(b) and 230.23); Current Flow and Water Circulation

(a) Current Patterns and Flow

The proposed project is not expected to affect general current and flow patterns during de-watering since pumping the water out of the wetlands is a typical agricultural practice for this area. Further, the ditches to be filled would be replaced along the same alignment 50 feet from the existing ditches so flow patterns would stay the same after the work is completed.

(b) Velocity

The proposed fill areas are not expected to affect general current velocity and flow patterns since the new and larger ditches would have the same characteristics. The velocities of storm water runoff and the velocities during flood events are not expected to change with the project.

(c) Stratification

The proposed project is not expected to affect stratification since no permanent waters would be filled.

(d) Hydrologic Regime

The hydrologic regime of the storm water runoff is not expected to change with the proposed project.

(3) Normal Water Level Fluctuations (tides, river stage, etc.) (consider items in Sections 230.11(b) and 230.24)

Normal water fluctuations would not be affected. The water in the wetlands is routinely pumped out, as the three pump stations in the project area demonstrate.

(4) Salinity Gradients (consider items in Section 230.11(b) and 230.5)

Since the fill areas receive freshwater only from storm water runoff and groundwater seepage, salinity gradients would not be affected.

(5) Actions that will be Taken to Minimize Impacts (refer to Subpart H)

Effects to pattern or flow of storm water runoff are not expected to be significant. Therefore, no additional minimization measures are needed that are not already defined in Subpart H.

c. Suspended Particulate/Turbidity Determinations

(1) Expected changes in Suspended Particulates and turbidity Levels in Vicinity of Disposal Site (consider items in section 230.1(c) and 230.21)

No unusual effects to turbidity are expected since the water in the wetlands is typically de-watered or pumped out as normal agricultural practice for the area.

(2) Effects (degree and duration) on Chemical and Physical Properties of the Water Column (consider environmental values in Section 230.21, as appropriate)

(a) Light Penetration

There may be a minor and temporary effect on light penetration on the water in the wetlands until the vegetation planted adjacent to the wetlands matures.

(b) Dissolved Oxygen (DO)

There would be no adverse effects to DO due to the project since the fill would be placed in dry, de-watered wetlands. Normal DO levels are anticipated in the new wetlands once the project is completed.

(c) Toxic Materials and Organics

The Corps conducted a Phase I evaluation of the site for hazardous, toxic, and radioactive wastes and found no such contaminants at the six sites. Although pesticides and herbicides may be in the soils in the agricultural lands being used for the project, these are not expected to be above toxic levels.

Further, due to the inertness of the fill materials, there would be no exchange of constituents between the fill and the wetlands. Measures described in the Stormwater Pollution Prevention Plan and prepared guidelines would minimize the potential for contaminants to be introduced into the fill areas.

(d) Pathogens

The proposed project would not introduce pathogens to the aquatic community or wetlands.

(e) Esthetics

There would be short-term esthetic effects during construction (construction equipment and general disturbance), but the effects would not be considered significant by most people.

(f) Others as Appropriate

There would be no other significant adverse effects to the chemical and physical properties of the water column.

(3) Effects in Biota (consider environmental values in Section 230.21, as appropriate)

(a) Primary Production, Photosynthesis

The project would affect primary production and photosynthesis in those areas permanently filled, but the effect would be minor.

(b) Suspension/Filter Feeders

The project would likely have an effect on suspension and filter feeders, if present in the wetlands, since parts of the entire wetland ditches and the pond would be filled.

(c) Sight Feeders

The project should have no effect on sight feeders since none would be expected to occur in the de-watered area during the filling action. It is unlikely that they inhabit the wetlands when flooded due to the temporary nature of the water column.

(4) Actions Taken to Minimize Impacts (Subpart H)

During construction, the Corps would require the contractor to prevent all construction pollutants from contacting storm water and eliminate or reduce non-storm water discharges to either the primary waterways (i.e. Sacramento River and KLRC) or off-site waters. Best Management Practices (BMPs) would be appropriate for the site characteristics. The BMPs would be adequate to control erosion, trap sediment, and prevent any possible pollutants from entering receiving waters. BMPs are expected to consist of soil stabilization practices including hydroseeding and slope stabilization using at least one or more of the following techniques: silt fence, fiber rolls, gradual sloped landings, and straw wattles. Exposed soils within the project area would be fully stabilized prior to the rainy season as this is the period when river flows reach the higher elevations of the channel. These practices are required to be implemented by the contractor to contain the amount of soil (sediment) that is removed from the project site to completely avoid any potential adverse effects from surface storm water runoff or dirt pushed toward the river or KLRC. In addition, the Corps would require its contractor to work in dry, de-watered wetlands

d. Contaminant Determinations (consider items in Section 230.11(d))

The proposed project would not add contaminants to any nearby body of water. BMPs to reduce the potential of accidental spills during construction are included in the environmental assessment and would be included in the project specifications the contractor is required to follow. The fill material for the sites would not be contaminated and would be tested for contaminants prior to placement.

e. Aquatic Ecosystem and Organisms Determinations (use evaluation and testing procedures in Subpart G, as appropriate)

(1) Effects on Plankton

There would be no impact to plankton by the project if the wetlands are pumped dry prior to filling them. It is also unlikely the wetlands, when ponded, have any substantial planktonic life in them as the wetlands have an intermittent water column that is regularly pumped dry.

(2) Effects on Benthos

Effects to the wetlands benthic environment would be permanent as the wetlands would be permanently filled by the spoils berm at the Knights Landing project area. However, these permanent effects are not considered significant since only a small area (2.43 acres) of degraded wetlands (see subsection (5)(b) below) would be replaced on-site.

(3) Effects on Nekton

There would be no impact to water-dependent nektonic life, such as fish. It is unlikely that the wetlands, when ponded, have any nektonic life in them as the wetlands have an intermittent water column that is regularly pumped dry. However, the USFWS (1999) stated

that the threatened "giant garter snake occupies a niche similar to some eastern water snakes (*Nerodia*)" as their aquatic prey includes fish and amphibians. Britannica (2012) recognizes such aquatic snakes as chordate nekton. Ultimately, the project would result in a net gain of ponded wetlands available to this nekton life and measures would be taken to ensure there would be no mortality to any giant garter snake.

(4) Effects on aquatic Food Web (refer to Section 230.31)

There would be no significant adverse effects to the aquatic food web, or the benthic and nektonic communities within the project area. The benthic community would be permanently filled and lost, but would be replaced onsite by a similar community. Nekton, primarily the threatened giant garter snake, would be affected through the loss of its wetland habitat, but this habitat would be replaced and enlarged onsite.

(5) Effects on Special Aquatic Sites

(a) Sanctuaries and Refuges (refer to Section 230.40)

There would no effects to such sites since none exist within the project area.

(b) Wetlands (refer to section 230.41)

The work proposed along the Sacramento River (Sites 9, 10, 11) would not impact any wetlands since none have been delineated in this area, although this entire area is also underlain with hydric (wetland) soils. However, the work proposed along the Knights Landing Ridge cut (Sites 12, 12A, and 13) would result in the filling of approximately 2.43 acres of wetlands at five wetland sites as shown in the below Table 1.

Table 1 Wetland Impacts at Knights Landing Ridge Cut (Sites 12, 12A, and 13)

Site	**Location station to station)**	**Wetland/landscape formation**	**Length (linear feet-LF); Fill area: square feet-SF (acres-A)**	**Wetland Mitigation/ Restoration (within new ditch slopes)**
12	176+50 to 94+75	New ditch (fill old ditch)	8175 LF; 65,400 SF (1.5A)	204,375 SF (4.69A)
12	94+75 to 87+75	New pond (fill old pond)	700 LF; 22,740 SF (0.52A)	27,406 SF (0.63A)
12	87+75 to 81+25	New ditch (fill old ditch)	650 LF; 5200 SF (0.12A)	16,250 SF (0.37A)
12	81+25 to 66+00	Wetland ditch avoided	1525 LF; 0	0
12	66+00 to 52+25	New ditch (fill old ditch)	1375 LF; 11,000 SF (0.25A)	34,375 LF (0.79A)
12	52+25 to 40+75	Wetland ditch avoided	1150 LF; 0	0
12A	40+75 to 39+25	Wetland ditch avoided	150 LF; 0	0

12A	39+25 to 38+50	Yolo County Road 16	75 LF; 0	0
12A	38+50 to 20+00	No wetlands/ditch	1850 LF; 0	0
13	20+00 to 18+50	No wetlands/ditch	150 LF; 0	0
13	18+50 to 0+00	New ditch (fill old ditch)	1850 LF; 18,500 SF (0.04A)	37,000 SF (0.85A)
Total			17,440 LF; (2.43A)	(7.33A)

All wetlands were excavated from hydric soils consisting of Sycamore silty clay loam, Clear Lake loam, Sacramento clay, and Capay silty clay. All these hydric soils are adjacent to and contiguous with the Knights Landing Ridge Cut (KLRC), with the wetlands separated from the KLRC by the Corps levee that is to be repaired under this project. The Corps 1996 Design Memorandum for the project states, "The KLRC was constructed at the turn of the century [1900] by local interests to convey irrigation water to nearby fields and to provide drainage during the flood season. The KLRC consists of two parallel channels using a clamshell dragline. The dredged material was deposited in piles along the levee alignment without grubbing or removal of the surficial organic matter" (USACE 1996). Hence, it appears the wetlands to be filled were excavated after the KLRC was constructed and the three pump stations (two of which would be relocated for this project) were installed to provide additional drainage for the agricultural lands east of the KLRC.

The filling of the 2.43 acres of degraded wetlands would be considered a substantial effect considering that California has had the greatest wetland loss in the nation with an 85 to 90 per cent loss of wetlands throughout the State, according to the California Resources Agency (CRS 1995). However, this loss would be compensated for onsite by the creation of 7.33 acres of wetlands by excavating wider wetland ditches at Sites 12 and 13. The USACE (1999) EA/IS (Table 2) shows 7.39 acres of "emergent marsh" to be affected at Site 12 and 1.15 acres of "emergent marsh" to be affected at Site 13. However, this EA/IS also states (p. 25) that, "there would be no discharge of materials into waters of the United States or filling of wetlands." Therefore, it is presumed the 8.54 acres of affected wetlands described above are the wetlands within the KLRC along the waterside (west) side of the levee to be repaired. It appears the wetland ditches and pond were either not present when the 1999 EA/IS was issued or they were not delineated.

Further, the six wetland sites to be filled are severely degraded as they are located in a heavily concentrated agricultural area that was thoroughly drained in the past. The affected wetlands only exist since they were excavated by man after the construction of the KLRC and the wetlands are pumped dry on a regular basis. Despite their degradation the wetlands may still serve as potential habitat for the threatened giant garter snake, as described in Subsection e(3) above. Therefore, the wetlands would be replaced on-site and the new wetlands would be about 7.32 acres in size.

(c) Mud flats (refer to Section 230.42)

There are no tidal mud flats in the project area and the ditch bottoms after they are pumped dry would not meet the definition of a "mud flat" as defined by the Guidelines.

(d) Vegetated shallows (refer to Section 230.43)

There are no vegetated shallows in the project area.

(e) Coral Reefs (refer to Section 230.44)

There are no coral reefs in the project area.

(f) Riffle and Pool Complexes (refer to Section 230.45)

There are no riffle or pool complexes, as defined by the Guidelines, in the project area. The Guidelines state that "Pools are deeper areas associated with riffles", which are caused by "steep gradient sections". The existing pond to be filled is not a pool as the project area including the ditch and pond bottom are flat.

(6) Threatened and Endangered Species (refer to Section 230.30)

The project would not affect any designated critical habitat for any plant or animal species listed under the Federal Endangered Species Act (ESA). However, the project would adversely affect two species on the ESA list. The threatened valley elderberry longhorn beetle (VELB) would be affected by the project. A total of 36 elderberry plants with 257 stems (more than 1-inch in diameter), which is habitat for the VELB, would be impacted by the project. However, all these elderberry bushes would be transplanted on-site and additional elderberry shrubs would be planted to meet the requirements of the VELB protocols issued by the USFWS.

The Knights Landing project (Sites 12, 12A, 13) would also impact habitat for the giant garter snake (GGS), as mentioned above. This project would result in the filling of 2.43 acres of wetlands and 36.32 acres of upland grassland, which are considered habitat for the GGS. However, the project would result in the restoration of 7.32 acres of wetlands and 37 acres of upland grasslands that would be planted with native species.

The Corps has determined, and the USFWS has concurred, that Sites 9, 10, and 11 do not provides suitable GGS habitat. The USFWS (1999) states these "snakes are typically absent from larger rivers and other bodies of water that support large, predatory fish", such as the Sacramento River. The lack of wetlands at Sites 9, 10, and 11 also precludes these sites from being suitable GGS habitat. There would also be no affect to any ESA-listed fish species as there would be no in-water work with this project and best management practices would be required to ensure water quality in adjacent waterways is not affected.

(7) Other Wildlife (refer to Section 230.32)

Wildlife effects associated with the construction are expected to be temporary to permanent as wildlife habitat would be permanently or temporarily filled by the project. However, wildlife species that use these areas around the project area are mobile species that would leave the area during construction and may return when construction is completed. Therefore, the proposed project would not have any significant adverse effects to wildlife over what was described in the Environmental Assessment. In addition, the USFWS has issued recommendations under the Fish and Wildlife Coordination Act that the Corps accepts as project conditions, except as noted within the final EA/IS for the Swainson's hawk survey.

(8) Actions to Minimize Impacts (refer to Section H)

The Corps has determined that the proposed project is in compliance with this Guideline section as described in this evaluation and the Environmental Assessment.

f. Proposed Disposal Site Determinations

(1) Mixing Zone Determinations (refer to Section 230.11(f)(2)).

Not applicable.

(2) Determinations of compliance with Applicable Water Quality Standards

The Corps has determined that no water quality or effluent standards would be violated either during or after construction of the project. Project conditions would require the testing of any questionable fill material to ensure it is clean and free of contaminants. A Clean Water Section 401 water quality certification and a Stormwater Pollution Prevention Plan approval would be obtained from the State Regional Water Quality Control Board prior to the start of construction.

(3) Potential Effects on Human Use characteristics

The proposed project would not have any significant adverse effects to municipal and private water supply, recreational and commercial fisheries, or water-related recreation. There would be no national or historic monuments, parks, seashores, wilderness areas, research sites or similar preserves affected by the proposed project.

g. Determination of Cumulative Effects on the Aquatic Ecosystem (consider requirements in Section 230.11(g))

There would no other cumulative effects to the wetlands to be filled as they lie entirely within the project area with no other future work proposed.

h. Determination of Secondary Effects on the Aquatic Ecosystem (consider requirements in Section 230.11(h))

There would be no other secondary effects from the project as the wetlands are being replaced and enlarged on-site.

III. Findings of Compliance or Non-Compliance With the Restrictions on Discharge

a. Adaptation of the Section 404(b)(1) Guidelines to this Evaluation

No significant adaptations of the Guidelines were made relative to this evaluation.

b. Evaluation of Availability of Practicable Alternatives to the Proposed Discharge Site Which Would Have Less Impact on the Aquatic Ecosystem

There were no alternatives identified that would have significantly less adverse effects on the aquatic ecosystem than the proposed alternative. The use of a cutoff wall, as is being used at Sites 9 to 11, could have avoided the fill into the wetlands. However, the Corps determined that a cutoff wall cannot be used

at Sites 12, 12A, or 13 as there is no deep impermeable layer to tie in to. In addition, the project as currently designed would result in a larger on-site wetland area so the project could be considered environmentally beneficial. Therefore, the least environmentally damaging practicable alternative is the proposed project.

Summary

c. Compliance with Applicable State Water Quality Standards

State water quality standards would not be violated.

d. Compliance with Applicable Toxic Effluent Standard or Prohibition under Section 307 of the Clean Water Act

The proposed action would not violate the Toxic Effluent Standards of Section 307 of the Clean Water Act.

e. Compliance with Endangered Species Act (ESA) of 1973

Two threatened and endangered species, valley elderberry longhorn beetle and giant garter snake, would be affected by the proposed project. However, the Corps and its contractors would follow all conditions in the USFWS Biological Opinions so that impacts would be minimized and compensated for to the maximum extent practicable.

f. Compliance with Specified Protection Measures for Marine Sanctuaries Designated by the Marine Protection, Research, and Sanctuaries Act of 1972

Not applicable.

g. Evaluation of Extent of Degradation of the Waters of the United States

(1) Significant Adverse Effects on Human Health and Welfare

The proposed project would not cause significant adverse effect on human health and welfare, including municipal and private water supplies, recreation and commercial fishing. Construction activities would affect benthic communities and plankton. There would be temporary and permanent adverse effects to wildlife and special aquatic sites. The proposed project would not significantly affect recreation or economic values. Temporary effects to esthetics would occur during construction.

h. Appropriate and Practicable Steps Taken to Minimize Potential Adverse Impacts of the Discharge on the Aquatic Ecosystem

Appropriate and practicable steps to minimize potential adverse effects of discharge and fill on the aquatic ecosystem include: placing fill material only where it is needed for the proposed project and confining it to the smallest practicable area. The areas disturbed by construction would be returned as close as possible to pre-project conditions where practicable.

i. On the Basis of the Guidelines, the Proposed Disposal Site(s) for the discharge of fill material complies with the requirements of these Guidelines.

On the basis of the Guidelines, the proposed project is specified as complying with the inclusion of appropriate and practical conditions to minimize pollution or adverse effect on the aquatic ecosystem.

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APPENDIX B

U.S. Fish and Wildlife Service
Final Fish and Wildlife Coordination Act Report

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Sacramento Fish and Wildlife Office
2800 Cottage Way, Room W-2605
Sacramento, California 95825-1846

In Reply Refer To:
08ESMF00-2012-CPA-0110-3

OCT 05 2012

Alicia Kirchner
Chief, Planning Division
Corps of Engineers, Sacramento District
1325 J Street
Sacramento, California 95825-2922

Dear Ms. Kirchner:

The Corps of Engineers (Corps) has requested supplemental coordination under the Fish and Wildlife Coordination Act (FWCA) for the Sacramento River Flood Control System Evaluation Phase III, Mid-Valley Levee Improvement Project. The proposed levee improvements would occur on the right bank of the Sacramento River and the left bank of the Knights Landing Ridge Cut, Yolo County, California. The Fish and Wildlife Service (Service) supplied a Draft Supplemental FWCA report for the proposed repairs in Phase III of the SRFCSE dated June 28, 2012 (Service file #2012-CPA-0110-1.docx). Based on comments received from the Corps we are providing this revised final FWCA report for inclusion in the final Environmental document for this project.

BACKGROUND

The Sacramento Flood Control Project was authorized by the Flood Control Act of 1960 to protect communities and agricultural lands throughout the Sacramento Valley. As part of that project, over 1,000 miles of levees were constructed, along with overflow weirs, pumping stations, and bypass channels. Floods in 1986 stressed the flood control system and prompted the Corps to initiate a system-wide analysis to determine levee condition throughout the lower Sacramento Valley. The analysis and subsequent proposed reconstruction activities were divided into five phases. The Phase III, or Mid-Valley area, includes levees along the Sacramento River and Knights Landing Ridge Cut, south of Knights Landing (Figure 1). Of the 30 sites identified for reconstruction in Phase III, this report discusses plans at 6 sites in Area 3 – sites 9, 10, and 11 along the right bank of the Sacramento River, and sites 12, 12A, and 13 along the left bank of Knights Landing Ridge Cut.

The FWCA report was completed by the Service in 1995 for all of the Phase III sites (USFWS 1995), and contributed to an authorized Corps design memorandum in 1996. Subsequently, difficulties at 12 of the Phase III sites, including sites 12, 12A, and 13 discussed herein, prompted new designs and a Supplemental FWCA report in 1999 (USFWS 1999). Further design changes led to drafting of a second Supplemental FWCA report in 2005 (USFWS 2005). Table 1 outlines changes in project plans at the six sites discussed in this report.

Table 1 Site and past project construction authorizations analyzed in the 1995, 1999. and 2005, FWCA and supplemental FWCA reports for the Sacramento River Flood Control System Evaluation Project, Phase III sites 9, 10, 11, 12, 12A, and 13.

Site No.	Authorized Project Feature and Length Linear Feet (LF) 1996	Project Description 1995 FWCA Report	Description of Proposed Changes 1999 FWCA Report	Description of Proposed Changes 2005 FWCA Report	Description of Proposed Changes 2012 (Current Report)
9	Landside seepage/stability berm 700 LF	Landside, with 5-foot-deep toe drain and internal drain. Average berm height 7 feet	No change	No change	Trench excavated, then shallow cutoff through levee crown. 793 LF
10	Slurry wall 700 LF	Slurry wall through crown of levee	No change	No change	No change 878 LF
11	Seepage/stability berm 2,000 LF	Landside, no toe drain. Average berm height 5 to 6 feet	No change	Extend seepage/stability berm, new 1,200-foot slurry wall upstream. Site now 4,200 LF total.	Trench excavated, then shallow and deep cutoff trenches through levee crown. 5,555 LF
12	Replace 4-foot-deep levee fat clay from levee crown to landside levee toe with suitable material. Backfill and relocate irrigation ditch 35 feet from levee toe 18,000 LF	Landside, flatten and stabilize slope	No change An updated HEP analysis was provided	Landside seepage/stability berm 4.5-foot height, 28 feet wide. relocate irrigation ditch 35 feet from levee toe, 18,000 LF	3:1 landside slope with 4-foot high. 28-foot wide spoil berm 14,100 LF
12A	Included in site 12	Landside, treat and stabilize slope	No change	Included in site 12	3:1 landside slope with 4-foot high, 28-foot wide spoil berm 2,100 LF
13	Included in site 12	Landside. treat and stabilize slope	No change	Included in site 12	3:1 landside slope with 4-foot high. 28-foot wide spoil berm 2,000 LF

Habitat Evaluation Procedures (HEP) analysis was used to assess project impacts on wildlife habitats in 1995 (USFWS 1995). In 1999 HEP was again performed at site 12 (including site 12A) because the project footprint had significantly changed to include habitat cover-types not previously analyzed (USFWS 1999). No HEP was performed for the 2005 report (USFWS 2005), therefore this supplemental report uses the mitigation ratios calculated by HEP from the 1995 and 1999 FWCA reports (Table 2). No HEP was performed for the grassland cover types – reports have recommended restoration of disturbed grassland and agricultural areas with native grassland species.

Table 2. Summary of cover-types impacted and the mitigation ratios determined through HEP for all sites of the Sacramento River Flood Control System Evaluation Project, Phase III (USFWS 2005).

COVER-TYPES IMPACTED	HEP YEAR	MITIGATION RATIO
Grassland/agricultural	None	None
Emergent marsh	1995	1:1
Riparian scrub-shrub	1999	1:1
Riparian woodland	1999	1:1

PROJECT DESCRIPTION

Knights Landing Ridge Cut Sites

The proposed work at sites 12, 12A, and 13 is designed to address landside slope stability on about 3.5 miles of levee along the left bank of the Knights Landing Ridge Cut (Figure 2). These sites are contiguous except for the crossing at Yolo County Road 16, and at each site the landside levees would be restructured. Site 12 is 14,100 linear feet (LF) long, site 12A is 2,100 LF, and site 13 is 2,000 LF. The levee reconstruction would bring the levee crown elevation at these sites to 42.5 feet above mean sea level, which would allow 3 feet of freeboard above the designed flood protection level. The designed top width of the levee is about 20 feet, and the landside levee prisms would be reconstructed to a 3:1 profile. The waterside of levee would not be altered. As noted in designs for sites 12, 12A, and 13 that were previously analyzed in FWCA reports, soils removed from the existing levee prism would be used to create a 4-foot high spoils berm that would extend 28 feet from the base of the existing landside levee. Due to this extension, about 12,750 LF of the current drainage ditch would need to be relocated. The ends of the newly constructed ditches would be joined to existing portions of the ditches in site 12 that are not within the construction footprint. Construction is scheduled to occur from May 1 to October 1 during a single year.

Seven access ramps on the landside of the levee would be replaced at their current locations among the three construction sites. Also, three irrigation pump stations exist within the construction footprint among the construction sites. The existing pump station near station 18+25 at site 13 would be relocated outside of the proposed spoil berm, and a new 18-inch pipe would pass through the levee above the freeboard elevation. Similarly, a pump station in site 12 at levee station 126+25 would be relocated outside of the proposed spoil berm, and a new

18-inch pipe would pass through the levee above the freeboard elevation. A third pump station in site 12, at levee station 42+50 and outside of the construction footprint, would remain in place, yet a new 18-inch pipe would pass through the levee above the freeboard elevation.

A Pacific Gas and Electric (PG&E) gas line and overhead power line emanate from County Road 16 and run along the landside levee toe. Both utilities diverge from the project around levee station 68+00. A separate PG&E overhead electrical line emanates from County Road 16 and terminates at the southern pump station at levee station 18+00. A new location would need to be proposed by PG&E for both facilities outside of the project footprint.

Sacramento River Sites

As with the levee sites along Knights Landing Ridge Cut, work at levee sites 9, 10, and 11 along the Sacramento River is designed to address landside slope stability, as well as through seepage (Figure 2). Site 9 is 793 LF and is designed for the levee crown to be a minimum of 44.1 feet above mean sea level. Site 10 is 878 LF with a crown elevation of 44.0 feet, and site 11 is 5,555 LF with a crown elevation of 43.6 feet. At each site, a 3:1 landside levee prism would be reconstructed and a 2-foot wide slurry wall would be constructed from the levee crown through the levee fill. At site 11, portions would include a deep slurry wall that would extend into the sand layer below the levee fill. Currently, County Road 116B runs along the crown of the levee and varies in width from 15 to 18 feet. The reconstructed levee would have a crown of 20 feet, with an 18-foot wide road. A 20-foot wide maintenance easement would be required along the landside toe. Construction is scheduled to occur from May 1 to October 1 during a single year.

Several utilities are located within the proposed project footprint, all at site 11. An 18-inch irrigation pump station discharge line crosses the levee at station 31+00. This line would be removed and relocated above the levee freeboard elevation at the same station. Also, a 12-inch irrigation pump discharge line crosses the levee at station 40+00 and would need to be relocated above the levee freeboard elevation. Similarly, upon confirmation from PG&E, a gas line that crosses the levee at station 34+00 may need to be relocated above the levee freeboard elevation. Coordination with PG&E also would be required for clearance around guy wires for an electrical tower by levee station 33+80. Additionally, there are about nine utility poles that would need relocation upon coordination with PG&E because they encroach upon the 20-foot levee easement that exists on both sides of the levee.

BIOLOGICAL RESOURCES

The biological resources, Service Mitigation Policy and resource category determinations were previously described in the Service's 1995 FWCA report (USFWS 1995), Supplemental FWCA report (USFWS 1999), and 2005 draft Supplemental FWCA report (USFWS 2005). These descriptions and determinations have not changed for the current proposed work at sites 9, 10, 11, 12, 12A, and 13 proposed in the Phase III, Mid-Valley area.

The previous HEP analyses of 1995 (USFWS 1995) and 1999 (USFWS 1999) identified four main cover-types for the habitats impacted at sites 9, 10, 11, 12, 12A, and 13. Table 3 indicates the amount of habitat impacted of each cover-type by the proposed construction. The mitigation ratios calculated by the previous HEP efforts recommend a 1:1 replacement of each acre impacted of emergent marsh cover, and 1:1 replacement of each acre of riparian woodland cover. The mitigation recommendation of 7.20 acres of emergent marsh can be accomplished by the replacement of the removed ditch with a newly formed ditch of about the same length. In 2005

Table 3. Cover-types and acres impacted for sites 9, 10, 11, 12, 12A, and 13 of the Phase III, Mid-Valley Levee Improvement Project, 2012.

SITE #	COVER-TYPE IMPACTED	ACRES IMPACTED
9	Grassland/agricultural	1.29
10	Grassland/agricultural	1.05
11	Grassland/agricultural Riparian woodland	2.37 0.11 2.48
12, 12A, and 13	Riparian woodland Emergent marsh Grassland/agricultural	1.82 2.43 36.32 40.57
		TOTAL: 45.39

the Schreiner's site, located along the Sutter Bypass, was identified as a potential mitigation site for riparian woodland. Based on the HEP analyses of 1999, the mitigation recommendation for riparian woodland cover is 1.93 acres. Wildlife species utilizing these areas would be displaced during construction and there would be a temporal loss of habitat values while mitigation plantings develop.

The project is located on the crown and landside of levees away from the Sacramento River and the Knights Landing Ridge Cut, thus no direct impacts are anticipated for fish species. However, mature riparian and oak woodland occurs within and adjacent to the project area. Measures should be included in the project description to avoid impacts to migratory birds which may be nesting in affected vegetation and nearby areas throughout the riparian corridor. In the California Natural Diversity Database there are six records of nesting Swainson's Hawks, for example, within 1 mile of the proposed construction sites (CNDDB 2012). Pre-construction surveys should be performed to determine if there are migratory birds nesting in the area. If nests are located, work should be deferred until any young have fledged the nest.

Based on a search of the Knights Landing USGS quadrangle map there are several federally-listed species which could occur within or near the project area. The complete list is included in Enclosure 1, as well as a summary of the Federal agencies responsibilities under the Endangered Species Act (ESA) of 1973, as amended. The species under the jurisdiction of the Service which may be affected by the project include the threatened valley elderberry longhorn beetle (beetle) and the threatened giant garter snake (snake). Anadromous fish that inhabit the Sacramento River are under the jurisdiction of National Marine Fisheries Service (NOAA Fisheries).

Thirty-six elderberry shrubs, with a total of 247 stems greater than 1 inch in diameter at ground level, were identified within the proposed work areas of five sites (site 9 has no elderberries) during surveys in September 2011. Also, potential giant garter snake habitat exists along the drainage ditch at the landside toe of construction sites 12, 12A, and 13. At sites 12 and 13, about

12,750 LF of the ditch would need to be relocated, and therefore the construction activities have a direct impact on the giant garter snake. A formal consultation under section 7 of the ESA for the snake and the beetle was completed on October 5, 2012, and is included in Enclosure 2.

RECOMMENDATIONS

The Service recommends:

1. Avoid impacts to migratory birds nesting in trees along the access routes and adjacent to the proposed repair sites by conducting pre-construction surveys for active nests along proposed haul roads, staging areas, and construction sites. Work activity around active nests should be avoided until the young have fledged. The following protocol from the California Department of Fish and Game for Swainson's hawk would suffice for the pre-construction survey for raptors.

   A focused survey for Swainson's hawk nests will be conducted by a qualified biologist during the nesting season (February 1 to August 31) to identify active nests within 0.25 miles of the project area. The survey will be conducted no less than 14 days and no more than 30 days prior to the beginning of construction. If nesting Swainson's hawks are found within 0.25 miles of the project area, no construction will occur during the active nesting season of February 1 to August 31, or until the young have fledged (as determined by a qualified biologist), unless otherwise negotiated with the California Department of Fish and Game. If work is begun and completed between September 1 and February 28, a survey is not required.

2. Avoid future impacts to the site by ensuring all fill material is free of contaminants.

3. Minimize project impacts by reseeding all disturbed areas at the completion of construction with forbs and grasses.

4. Minimize the impact of removal and trimming of all trees and shrubs by having these activities supervised and/or completed by a certified arborist.

5. Compensate for the loss of 1.93 acres of riparian woodland by restoring a minimum of 1.93 acres at a site approved by the Service for the adverse impacts on wildlife from project construction activities affecting riparian woodland and riparian scrub-shrub cover-types.

6. Compensate for the loss of 2.43 acres of emergent marsh along the existing landside toe ditch by relocating or replacing the toe ditch and replanting it with emergent marsh cover. The new ditch would create 7.33 acres of emergent marsh.

7. Implement at least a 20-year monitoring and remediation period to determine the success of all woody species plantings and correct any failures of all compensation efforts. Monitoring and reporting to the Service should be required every year for the first 5 years of the 20-year period, and every 5 years afterward. If, within the monitoring period, revegetation efforts are unsuccessful, corrective actions would be required until all compensation goals are met. Funding sources for monitoring and remediation should be appropriated prior to project construction.

9. Contact the California Department of Fish and Game regarding possible effects of the project on State listed species.

10. Contact NOAA Fisheries regarding possible effects of the project on the anadromous fish species of the Sacramento River.

If you have any questions regarding this report please contact Harry Kahler at (916) 414-6612.

Sincerely,

Daniel Welsh
Assistant Field Supervisor

cc:
Jeff Koschak, U.S. Army Corps of Engineers, Sacramento, CA

REFERENCES

CNDDB (California Natural Diversity Data Base). 2012. Natural Heritage Division, California Department of Fish and Game. Sacramento, California.

USFWS (U.S. Fish and Wildlife Service). 1995. Fish and Wildlife Coordination Act Report for the Sacramento River Flood Control System Evaluation Phase III. Sacramento Fish and Wildlife Office, Sacramento, California.

USFWS (U.S. Fish and Wildlife Service). 1999. Supplemental Fish and Wildlife Coordination Act Report for the Sacramento River Flood Control System Evaluation Phase III. Sacramento Fish and Wildlife Office, Sacramento, California.

USFWS (U.S. Fish and Wildlife Service). 2005. Draft Supplemental Fish and Wildlife Coordination Act Report for the Sacramento River Flood Control System Evaluation Phase III. Sacramento Fish and Wildlife Office, Sacramento, California.

ENCLOSURE 1

FEDERAL ENDANGERED AND THREATENED SPECIES THAT OCCUR IN OR MAY BE AFFECTED BY PROJECTS IN THE KNIGHTS LANDING U.S.G.S. 7 ½ MINUTE QUAD

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U.S. Fish & Wildlife Service
Sacramento Fish & Wildlife Office
Federal Endangered and Threatened Species that Occur in or may be Affected by Projects in the Counties and/or U.S.G.S. 7 1/2 Minute Quads you requested
Document Number: 120604011146
Database Last Updated: September 18, 2011

Quad Lists

Listed Species

Invertebrates

- *Branchinecta lynchi*
  - vernal pool fairy shrimp (T)
- *Desmocerus californicus dimorphus*
  - valley elderberry longhorn beetle (T)
- *Lepidurus packardi*
  - vernal pool tadpole shrimp (E)

Fish

- *Acipenser medirostris*
  - green sturgeon (T) (NMFS)
- *Hypomesus transpacificus*
  - delta smelt (T)
- *Oncorhynchus mykiss*
  - Central Valley steelhead (T) (NMFS)
  - Critical habitat, Central Valley steelhead (X) (NMFS)
- *Oncorhynchus tshawytscha*
  - Central Valley spring-run chinook salmon (T) (NMFS)
  - Critical Habitat, Central Valley spring-run chinook (X) (NMFS)
  - Critical habitat, winter-run chinook salmon (X) (NMFS)
  - winter-run chinook salmon, Sacramento River (E) (NMFS)

Amphibians

- *Ambystoma californiense*
  - California tiger salamander, central population (T)

- *Rana draytonii*
  - California red-legged frog (T)

Reptiles

- *Thamnophis gigas*
  - giant garter snake (T)

Candidate Species

Birds

- *Coccyzus americanus occidentalis*
  - Western yellow-billed cuckoo (C)

Quads Containing Listed, Proposed or Candidate Species:
KNIGHTS LANDING (529C)

Important Information About Your Species List

How We Make Species Lists

We store information about endangered and threatened species lists by U.S. Geological Survey 7½ minute quads. The United States is divided into these quads, which are about the size of San Francisco.
The animals on your species list are ones that occur within, or may be affected by projects within, the quads covered by the list.

- Fish and other aquatic species appear on your list if they are in the same watershed as your quad or if water use in your quad might affect them.
- Amphibians will be on the list for a quad or county if pesticides applied in that area may be carried to their habitat by air currents.
- Birds are shown regardless of whether they are resident or migratory. Relevant birds on the county list should be considered regardless of whether they appear on a quad list.

Plants

Any plants on your list are ones that have actually been observed in the area covered by the list. Plants may exist in an area without ever having been detected there. You can find out what's in the surrounding quads through the California Native Plant Society's online Inventory of Rare and Endangered Plants.

Surveying

Some of the species on your list may not be affected by your project. A trained biologist and/or botanist, familiar with the habitat requirements of the species on your list, should determine whether they or habitats suitable for them may be affected by your project. We recommend that your surveys include any proposed and candidate species on your list.
See our Protocol and Recovery Permits pages.
For plant surveys, we recommend using the Guidelines for Conducting and Reporting Botanical Inventories. The results of your surveys should be published in any environmental documents prepared for your project.

Your Responsibilities Under the Endangered Species Act

All animals identified as listed above are fully protected under the Endangered Species Act of 1973, as amended. Section 9 of the Act and its implementing regulations prohibit the take of a federally listed wildlife species. Take is defined by the Act as "to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect" any such animal.
Take may include significant habitat modification or degradation where it actually kills or injures wildlife by significantly impairing essential behavioral patterns, including breeding, feeding, or shelter (50 CFR §17.3).

Take incidental to an otherwise lawful activity may be authorized by one of two procedures:

- If a Federal agency is involved with the permitting, funding, or carrying out of a project that

may result in take, then that agency must engage in a formal consultation with the Service.

- During formal consultation, the Federal agency, the applicant and the Service work together to avoid or minimize the impact on listed species and their habitat. Such consultation would result in a biological opinion by the Service addressing the anticipated effect of the project on listed and proposed species. The opinion may authorize a limited level of incidental take.
- If no Federal agency is involved with the project, and federally listed species may be taken as part of the project, then you, the applicant, should apply for an incidental take permit. The Service may issue such a permit if you submit a satisfactory conservation plan for the species that would be affected by your project.
- Should your survey determine that federally listed or proposed species occur in the area and are likely to be affected by the project, we recommend that you work with this office and the California Department of Fish and Game to develop a plan that minimizes the project's direct and indirect impacts to listed species and compensates for project-related loss of habitat. You should include the plan in any environmental documents you file.

Critical Habitat

When a species is listed as endangered or threatened, areas of habitat considered essential to its conservation may be designated as critical habitat. These areas may require special management considerations or protection. They provide needed space for growth and normal behavior; food, water, air, light, other nutritional or physiological requirements; cover or shelter; and sites for breeding, reproduction, rearing of offspring, germination or seed dispersal.

Although critical habitat may be designated on private or State lands, activities on these lands are not restricted unless there is Federal involvement in the activities or direct harm to listed wildlife. If any species has proposed or designated critical habitat within a quad, there will be a separate line for this on the species list. Boundary descriptions of the critical habitat may be found in the Federal Register. The information is also reprinted in the Code of Federal Regulations (50 CFR 17.95). See our Map Room page.

Candidate Species

We recommend that you address impacts to candidate species. We put plants and animals on our candidate list when we have enough scientific information to eventually propose them for listing as threatened or endangered. By considering these species early in your planning process you may be able to avoid the problems that could develop if one of these candidates was listed before the end of your project.

Species of Concern

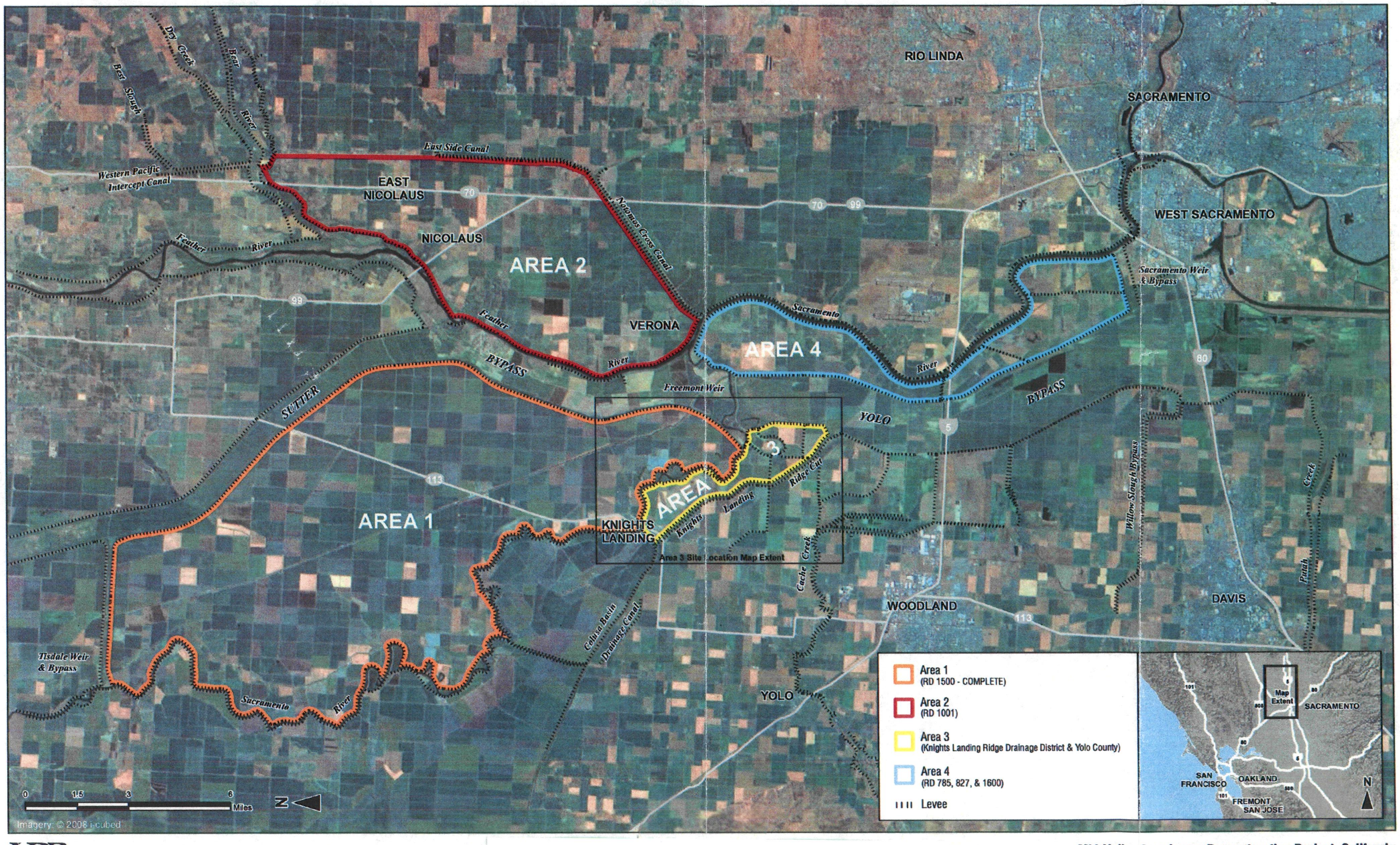
The Sacramento Fish & Wildlife Office no longer maintains a list of species of concern. However, various other agencies and organizations maintain lists of at-risk species. These lists provide essential information for land management planning and conservation efforts. More info

Wetlands

If your project will impact wetlands, riparian habitat, or other jurisdictional waters as defined by section 404 of the Clean Water Act and/or section 10 of the Rivers and Harbors Act, you will need to obtain a permit from the U.S. Army Corps of Engineers. Impacts to wetland habitats require site specific mitigation and monitoring. For questions regarding wetlands, please contact Mark Littlefield of this office at (916) 414-6520.

Updates

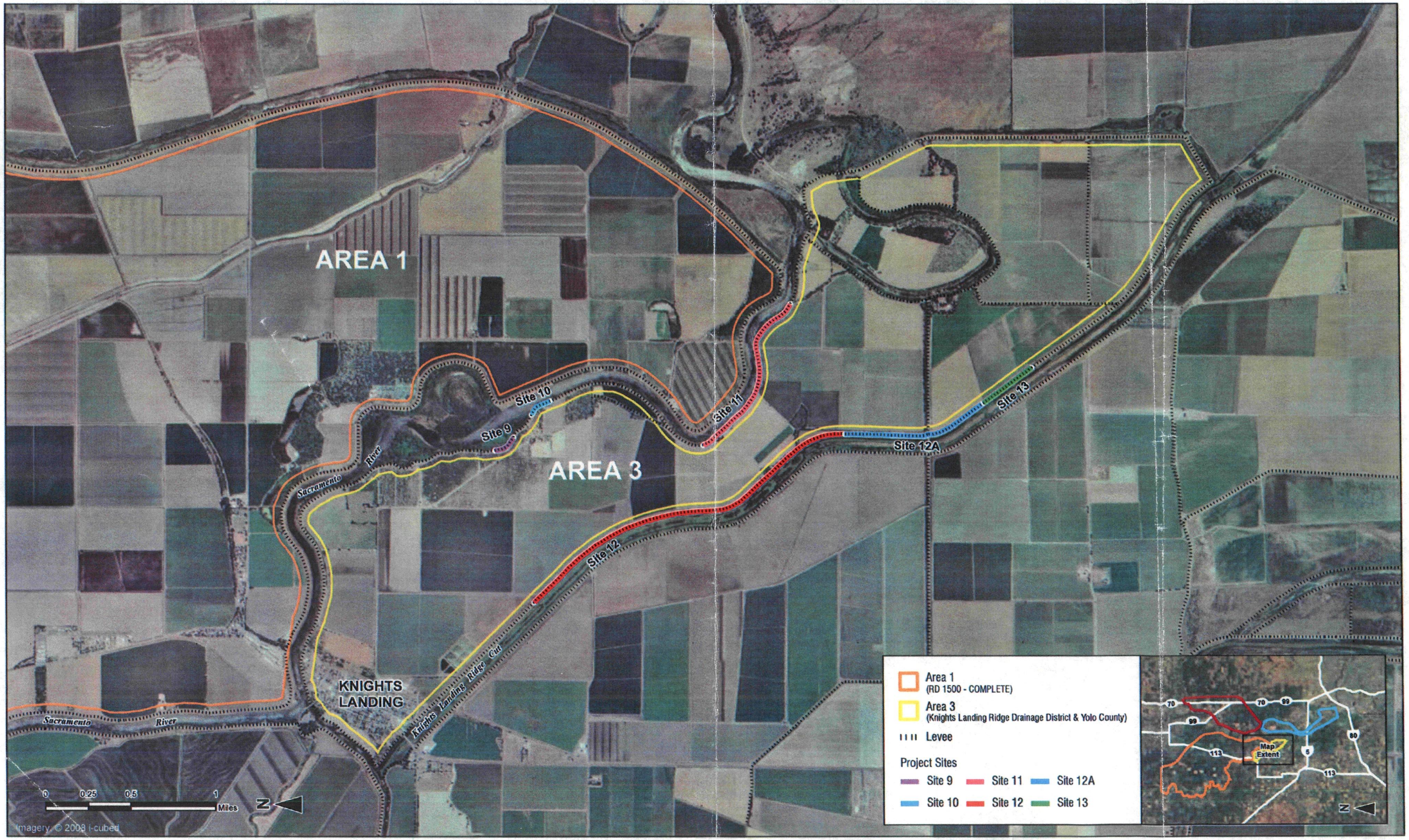
Our database is constantly updated as species are proposed, listed and delisted. If you address proposed and candidate species in your planning, this should not be a problem. However, we recommend that you get an updated list every 90 days. That would be August 15, 2012.



HDR
ONE COMPANY | *Many Solutions*™

Figure 1. Phase III, Mid-Valley Project Area (Area 3).

Mid-Valley Area Levee Reconstruction Project, California
Knights Landing Drainage District



HDR
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Figure 2. Phase III, Mid-Valley Area (Area 3) project site locations, 2012.

Mid-Valley Area Levee Reconstruction Project, California
Knights Landing Drainage District

APPENDIX C

Correspondence Regarding Special Status Species

United States Department of the Interior

FISH AND WILDLIFE SERVICE

Sacramento Fish and Wildlife Office
2800 Cottage Way, Room W-2605
Sacramento, California 95825

June 15, 2012

Document Number: 120615061829

Jeff Koschak
U.S.Army Corps of Engineers
1325 J Street
Sacramento, CA 95678

Subject: Species List for repair six Mid-Valley levee sites

Dear: Mr. Koschak

We are sending this official species list in response to your June 15, 2012 request for information about endangered and threatened species. The list covers the California counties and/or U.S. Geological Survey 7½ minute quad or quads you requested.

Our database was developed primarily to assist Federal agencies that are consulting with us. Therefore, our lists include all of the sensitive species that have been found in a certain area *and also ones that may be affected by projects in the area*. For example, a fish may be on the list for a quad if it lives somewhere downstream from that quad. Birds are included even if they only migrate through an area. In other words, we include all of the species we want people to consider when they do something that affects the environment.

Please read Important Information About Your Species List (below). It explains how we made the list and describes your responsibilities under the Endangered Species Act.

Our database is constantly updated as species are proposed, listed and delisted. If you address proposed and candidate species in your planning,

this should not be a problem. However, we recommend that you get an updated list every 90 days. That would be September 13, 2012.

Please contact us if your project may affect endangered or threatened species or if you have any questions about the attached list or your responsibilities under the Endangered Species Act. A list of Endangered Species Program contacts can be found here.

Endangered Species
Division

U.S. Fish & Wildlife Service
Sacramento Fish & Wildlife Office
Federal Endangered and Threatened Species that Occur in or may be Affected by Projects in the Counties and/or U.S.G.S. 7 1/2 Minute Quads you requested

Document Number: 120627012856

Database Last Updated: September 18, 2011

Quad Lists

Listed Species

Invertebrates

Branchinecta lynchi
vernal pool fairy shrimp (T)

Desmocerus californicus dimorphus
valley elderberry longhorn beetle (T)

Lepidurus packardi
vernal pool tadpole shrimp (E)

Fish

Acipenser medirostris
green sturgeon (T) (NMFS)

Hypomesus transpacificus
delta smelt (T)

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

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

Amphibians

Ambystoma californiense

California tiger salamander, central population (T)

Rana draytonii

California red-legged frog (T)

Reptiles

Thamnophis gigas

giant garter snake (T)

Candidate Species

Birds

Coccyzus americanus occidentalis

Western yellow-billed cuckoo (C)

Quads Containing Listed, Proposed or Candidate Species:

KNIGHTS LANDING (529C)

County Lists

No county species lists requested.

Key:

(E) *Endangered* - Listed as being in danger of extinction.

(T) *Threatened* - Listed as likely to become endangered within the foreseeable future.

(P) *Proposed* - Officially proposed in the Federal Register for listing as endangered or threatened.

(NMFS) Species under the Jurisdiction of the National Oceanic & Atmospheric Administration Fisheries Service. Consult with them directly about these species.

Critical Habitat - Area essential to the conservation of a species.

(PX) *Proposed Critical Habitat* - The species is already listed. Critical habitat is being proposed for it.

(C) *Candidate* - Candidate to become a proposed species.

(V) Vacated by a court order. Not currently in effect. Being reviewed by the Service.

(X) *Critical Habitat* designated for this species

Important Information About Your Species List

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We store information about endangered and threatened species lists by U.S. Geological Survey 7½ minute quads. The United States is

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Your Responsibilities Under the Endangered Species Act

All animals identified as listed above are fully protected under the Endangered Species Act of 1973, as amended. Section 9 of the Act and its implementing regulations prohibit the take of a federally listed wildlife species. Take is defined by the Act as "to harass, harm,

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Take may include significant habitat modification or degradation where it actually kills or injures wildlife by significantly impairing essential behavioral patterns, including breeding, feeding, or shelter (50 CFR §17.3).

Take incidental to an otherwise lawful activity may be authorized by one of two procedures:

- If a Federal agency is involved with the permitting, funding, or carrying out of a project that may result in take, then that agency must engage in a formal consultation with the Service.

  During formal consultation, the Federal agency, the applicant and the Service work together to avoid or minimize the impact on listed species and their habitat. Such consultation would result in a biological opinion by the Service addressing the anticipated effect of the project on listed and proposed species. The opinion may authorize a limited level of incidental take.

- If no Federal agency is involved with the project, and federally listed species may be taken as part of the project, then you, the applicant, should apply for an incidental take permit. The Service may issue such a permit if you submit a satisfactory conservation plan for the species that would be affected by your project.

  Should your survey determine that federally listed or proposed species occur in the area and are likely to be affected by the project, we recommend that you work with this office and the California Department of Fish and Game to develop a plan that minimizes the project's direct and indirect impacts to listed species and compensates for project-related loss of habitat. You should include the plan in any environmental documents you file.

Critical Habitat

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Although critical habitat may be designated on private or State lands, activities on these lands are not restricted unless there is Federal involvement in the activities or direct harm to listed wildlife.

If any species has proposed or designated critical habitat within a quad, there will be a separate line for this on the species list. Boundary descriptions of the critical habitat may be found in the Federal Register. The information is also reprinted in the Code of Federal Regulations (50 CFR 17.95). See our Map Room page.

Candidate Species

We recommend that you address impacts to candidate species. We put plants and animals on our candidate list when we have enough scientific information to eventually propose them for listing as threatened or endangered. By considering these species early in your planning process you may be able to avoid the problems that could develop if one of these candidates was listed before the end of your project.

Species of Concern

The Sacramento Fish & Wildlife Office no longer maintains a list of species of concern. However, various other agencies and organizations maintain lists of at-risk species. These lists provide essential information for land management planning and conservation efforts. More info

Wetlands

If your project will impact wetlands, riparian habitat, or other jurisdictional waters as defined by section 404 of the Clean Water Act and/or section 10 of the Rivers and Harbors Act, you will need to obtain a permit from the U.S. Army Corps of Engineers. Impacts to wetland habitats require site specific mitigation and monitoring. For questions regarding wetlands, please contact Mark Littlefield of this office at (916) 414-6520.

Updates

Our database is constantly updated as species are proposed, listed and delisted. If you address proposed and candidate species in your planning, this should not be a problem. However, we recommend that

you get an updated list every 90 days. That would be September 25, 2012.

DEPARTMENT OF THE ARMY
U.S. ARMY ENGINEER DISTRICT, SACRAMENTO
CORPS OF ENGINEERS
1325 J STREET
SACRAMENTO, CALIFORNIA, 95814-2922

REPLY TO
ATTENTION OF

Environmental Resources Branch

AUG 22 2012

Ms. Susan Moore, Field Supervisor
U.S. Fish and Wildlife Service
2800 Cottage Way, Suite W2605
Sacramento, California 95825-1846

Dear Ms. Moore:

This letter is to request reinitiation of formal consultation for the effects of design changes to the Sacramento River Flood Control System Evaluation, Phase III, Mid-Valley, Contract Area 3 project on the Federally listed valley elderberry longhorn beetle (*Desmocerus californicus*) and giant garter snake (*Thamnophis gigas*) under Section 7(a) of the Endangered Species Act, as amended. This project involves modifying levees, as well as relocating a drainage ditch and two pump stations, to reduce the potential for erosion and levee failure at Sites 9, 10, 11, 12, 12A, and 13 in the Mid-Valley area. The work is currently scheduled to be completed in three construction seasons from 2015 to 2017, pending availability of funding.

On October 22, 1999, your office provided the Corps with its Biological Opinion (BO) for the Mid-Valley project (1-1-99-F-0081). The BO covered the adverse effects on the valley elderberry longhorn beetle and giant garter snake based on the project design described in the Supplemental Environmental Assessment/Initial Study (EA/IS), Sacramento River Flood Control System Evaluation, Phase III – Mid-Valley Area, dated November 1999. At that time, the design involved construction of berms and toe drains at Sites 9 and 11, a cutoff wall at Site 10, and rehabilitation of levees and relocation of a drainage ditch and pumps at Sites 12, 12A, and 13. Incidental take coverage was provided based on the terms and conditions included in the BO.

Subsequent geotechnical studies have resulted in design changes at all of these six sites except Site 10. The project design now involves installation of 1.5 miles of soil/bentonite cutoff wall at Sites 9, 10, and 11 along the west bank of the Sacramento River. In addition, the 3.4 miles of levee rehabilitation work at Sites 12, 12A, and 13 would now include spoils berms along the land side of the east bank of the Knights Landing Ridge Cut. Details of the project design are provided in the draft Environmental Assessment/Initial Study (EA/IS) on the enclosed CD. Tables 2 and 3 on pages 13 and 16, respectively, in the draft EA/IS summarize the habitat effects and mitigation discussed in the two following paragraphs.

The installation of the cutoff wall at Sites 9, 10, and 11 would affect 14 blue elderberry (*Sambucus mexicana*) bushes, including 8 stems with valley elderberry longhorn beetle exit holes and an additional 191 stems greater than 1 inch in diameter. These effects would be mitigated onsite at the time of construction by transplanting the 14 elderberry bushes and 199 stems, and planting an additional 352 stems on approximately 5.35 acres of existing prime

farmland adjacent to Site 11 or 12. Landscape mitigation plans showing the location and details of the mitigation area for the valley elderberry longhorn beetle are also provided on the enclosed CD.

The rehabilitation of levees at Sites 12, 12A, and 13 would affect 22 blue elderberry bushes, including 2 stems with exit holes and an additional 56 stems greater than 1 inch in diameter. The work at Sites 12 and 12A would also involve filling 2.43 acres of drainage ditch considered to be potential giant garter snake aquatic habitat. A total of 36.32 acres of grassland considered to be potential giant garter snake habitat would also be affected by the work at Sites 12, 12A, and 13, but this habitat would be reseeded with native grasses once the work is completed. The landscape mitigation plans on the enclosed CD show an additional 2.24 acres of mitigation area for transplanting the 22 elderberry bushes with its 58 stems and planting an additional 96 stems. The plans also show that 7.33 acres of giant garter snake aquatic habitat would be created onsite by relocating the existing 8- to 10-foot-wide ditch to the east where a new 20-foot-wide ditch would be constructed.

In addition, the Corps would implement numerous other measures to avoid and/or minimize any effects of the project on the valley elderberry longhorn beetle and giant garter snake. These mitigation measures are listed on pages 22 and 23 in the draft EA/IS on the enclosed CD.

If you have any questions or need additional information, please contact Mr. Jeff Koschak, Environmental Manager, at (916) 557-6994 or email: jeff.a.koschak@usace.army.mil. Thank you for your attention to this matter.

Sincerely,

E. Scott Kirchner

Alicia E. Kirchner
Chief, Planning Division

Enclosure

Copy furnished (w/o encl):
Mr. Doug Weinrich, U.S. Fish and Wildlife Service, 2800 Cottage Way, Sacramento, CA 95825
Mr. Harry Kahler, U.S. Fish and Wildlife Service, 2800 Cottage Way, Sacramento, CA 95825

APPENDIX D

U.S. Fish & Wildlife Service Biological Opinion

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Sacramento Fish and Wildlife Office
2800 Cottage Way, Room W-2605
Sacramento, California 95825-1846

In reply refer to:
08ESMF00-2012-F-0660-R001

OCT 5 2012

Ms. Alicia E. Kirchner
Chief, Planning Division
U.S. Army Corps of Engineers, Sacramento District
1325 J Street
Sacramento, California 95814-2922

Subject: Reinitiation of Formal Consultation for the Sacramento River Flood Control System Evaluation, Phase III, Mid-Valley Project, Yolo County, California

Dear Ms. Kirchner:

This letter is in response to the U.S. Army Corps of Engineers' (Corps) August 22, 2012, request to reinitiate formal consultation with the U.S. Fish and Wildlife Service (Service) on the Sacramento River Flood Control System Evaluation (SRFCSE), Phase III, Mid-Valley Project (project), in Yolo County, California. The Service issued a biological opinion (BO) to the Corps for this project on October 22, 1999 (Service file #1-1-99-F-0081). The consultation concerned the effects of the project on the federally listed giant garter snake (*Thamnophis gigas*) (snake), the formerly federally listed Sacramento splittail (*Pogonichthys macrolepidotus*) (splittail), and the federally listed valley elderberry longhorn beetle (*Desmocerus californicus dimorphus*) (beetle). The proposed project is not located in proposed or designated critical habitat for any federally listed species. Our primary concern and mandate is the protection of federally listed species, and this biological opinion is issued in accordance with section 7(a)(2) of the Endangered Species Act of 1973, as amended (16 U.S.C. 1531 *et seq.*) (Act). As of September 22, 2003, the splittail is no longer a federally listed species, and therefore will not be considered in this reinitiation of the BO.

Since the issuance of the BO, the Corps has determined through geotechnical studies that design changes to six sites are necessary. The project involves installation of a soil/bentonite cutoff wall along the west bank of the Sacramento River at sites 9, 10, and 11. At Sites 12, 12A, and 13, along 3.4 miles of the east bank of the Knights Landing Ridge Cut, levee repairs include the installation of a landside spoil berm.

Project work at Sites 9, 10, and 11 will affect 14 elderberry bushes with a total of 191 stems greater than 1 inch in diameter at ground level, including 8 stems exhibiting exit holes made by the beetle (Table 1). The elderberry is the sole host plant for the beetle. The Corps has proposed compensation by transplanting all 14 shrubs, and planting an additional 352 elderberry seedlings

along with an equal number of associated native woody seedlings, on 5.35 acres of existing farmland adjacent to Site 11 and/or 12.

Project work at Sites 12, 12A, and 13 will affect 22 elderberry bushes with a total of 56 stems greater than 1 inch in diameter at ground level, including 2 stems exhibiting exit holes. Proposed compensation on an additional 2.24 acres adjacent to Site 12 includes transplanting the 22 existing shrubs, and planting an additional 96 elderberry seedlings with 96 associated native woody seedlings. Also, project plans at Sites 12 and 12A show that 2.43 acres of potential snake habitat will be affected by removing the 8- to 10-foot-wide landside toe ditch to make room for the landside spoil berm. However, project plans include the creation of a new 20-foot-wide toe ditch along the new levee alignment.

Amendments to the Existing Biological Opinion

The Service used the following in our review of your reinitiation request: 1) the Corp's reinitiation request letter dated August 22, 2012; 2) the Corp's Draft Environmental Assessment/Initial Study dated August, 2012; 3) electronic mail and other correspondence between Harry Kahler (Service) and Jeff Koschak (Corps); and 4) other information available to the Service. The existing BO was written for work at 20 sites throughout the Phase III, Mid-Valley area, not just 6 sites addressed in this amendment to the existing BO. Changes to the text are indicated by underline type. The October 22, 1999, BO is hereby amended as follows:

Page 3 – Table 1 in the Description of the Proposed Action, replace the following rows (original BO Table 1 footnotes are included here for clarification):

Site No.	Location[1]	Project Description[2]	Area (linear feet)	Species[3]
9	Sacramento River, RM 87.1-87.3, RB	Landside stability berm w/toe drain	700	none
10	Sacramento River, RM 86.8-86.9, RB	Slurry wall through levee crown	700	SS
11	Sacramento River, RM 80.8-81.5, RB	Landside stability berm w/toe drain	2,250	VELB
12	Knights Landing Ridge Cut, 2.8-5.0	Reshape levee and ditch relocation	11,500	VELB GGS
12A	Knights Landing Ridge Cut, 2.0-2.8	Reshape levee	4,500	VELB GGS
13	Knights Landing Ridge Cut, 1.6-2.0	Reshape levee and ditch relocation	2,000	GGS

[1] RM=river mile; LM=levee mile; LB=left bank looking downstream; RB=right bank. All work along the Knights Landing Ridge Cut is on the land side of the east levee.

[2] A more detailed description can be found within this section of this biological opinion.

[3] This column indicates the species located at the site or in the surrounding area that could be impacted by the proposed project and the appropriate conservation measures, as identified in the Terms and Conditions, to follow to compensate project impacts (VELB=valley elderberry longhorn beetle; GGS=giant garter snake; SS=Sacramento splittail; N/A indicate sites where work has been completed).

With:

Site No.	Location[1]	Project Description[2]	Area (linear feet)	Species[3]
9	Sacramento River, RM 87.2-87.1, RB	Slurry wall through levee crown	793	none
10	Sacramento River, RM 86.8-86.7, RB	Slurry wall through levee crown	878	VELB
11	Sacramento River, RM 85.2-84.1, RB	Slurry wall through levee crown	5,555	VELB
12	Knights Landing Ridge Cut, RM 2.3-5.0, LB	Reshape levee and ditch relocation	14,100	VELB GGS
12A	Knights Landing Ridge Cut, RM 1.9-2.3, LB	Reshape levee and ditch relocation	2,100	VELB GGS
13	Knights Landing Ridge Cut, RM 1.5-1.9, LB	Reshape levee and ditch relocation	2,000	VELB GGS

Page 4 – Project construction descriptions for Sites 9, 10, 11, 12, 12A, and 13 in the Description of the Proposed Action, replace with the following:

Project work at Sites 9, 10, and 11 would consist of installing a soil/bentonite cutoff wall of various lengths and depths. The work would involve: (1) degrading the existing top of the levee down 4 to 5 feet to create a level working surface to install the cutoff wall; and (2) excavating a trench 3 feet wide and at least 21 feet deep through the crown of the levee. The material excavated from the top of the levee would be temporarily sidecast in an approximately 30-foot wide pile parallel to the levee. The sidecast pile at Sites 9 and 10 will be placed along the east toe of the levee in a ruderal grassland area that is about 25 feet from the top of the bank of the Sacramento River. The temporary sidecast pile at Site 11, which is adjacent to Yolo County Road 116B, will be placed along the west toe of the levee in a previously disturbed area, including an access road. The trench would then be backfilled with the slurry mixture of bentonite, soil, and water; cement may also be included in portions of the Site 11 cutoff wall. The top of the levee would then be restored with the material that was removed originally, and the slope returned to natural contours on the water side of the levee. All excavated material would be placed on grassy upland levee slopes, such as the upland water (east) side toe at Sites 9 and 10, or other upland non-woody areas. The cutoff wall would be 793 feet long at Site 9; 878 feet long at Site 10; and 5,555 feet long at Site 11.

At Sites 12, 12A and 13, levee rehabilitation will reinforce the landside of the levee. Project work involves reconstructing the landside to make it less pervious, constructing landside toe slope spoil berms, relocating and rehabilitating irrigation ditches/drains, and elevating three pump discharge pipes above the channel design water surface elevation. Utility lines, including

a natural gas pipeline and overhead power lines, will be relocated away from the reconstructed levee. The spoil berm will extend 28 feet from the toe of the levee and will be 4 feet thick. A portion (2,675 linear feet (LF)) of a landside drainage ditch at Site 12 will be avoided because there is enough land space to construct the berm and maintain the ditch. However, 1.93 miles of this drainage ditch at Site 12 and 1,850 LF of existing ditch at Site 13 will be relocated to accommodate the new levee and berm. In that area, the ditch will be realigned 15 feet away from the toe of the new spoil berm into the agricultural field and connect at both ends back to the existing ditch. The wetland areas to be disturbed will be pumped dry prior to filling them. In total, the levee is 2.67 miles (14,100 LF) long at Site 12; Site 12A is 2,100 LF; and Site 13 is 2,000 LF.

Work is scheduled to occur between May 1 and October 1 in 2015 through 2017. At completion of construction exposed soils at Sites 9, 10, 11, 12, 12A, and 13 will be hydroseeded with a native hybrid herbaceous vegetation mix similar to what has been used in the past for the flood control project. Native riparian and marsh plants would be planted in the new wetland areas.

Pages 5 and 6 – Conservation Measures under the Description of the Proposed Action, replace:

8. Movement of heavy equipment to and from the project site or borrow sites will be confined to existing roadways to minimize habitat disturbance. Equipment will stay at least 30 feet from the banks of snake aquatic habitat.

10. Elderberry shrubs within the project area which can be avoided will be fenced off prior to construction.

With:

8. Movement of heavy equipment to and from the project site or borrow site will be confined to existing roadways to minimize habitat disturbance. Equipment would stay at least <u>200 feet</u> from the banks of giant garter snake aquatic habitat, <u>wherever feasible.</u>

10. <u>Fence and flag all areas to be avoided. Provide a minimum setback of at least 20 feet from the dripline of any elderberry plants.</u>

Pages 5 and 6 – Add the following to the Conservation Measures under the Description of the Proposed Action:

12. If a snake is encountered during construction, activities will cease until the snake has left the area on its own.

13. Any incidental take will be reported to the Service immediately by telephone at (916) 414-6600.

14. New irrigation or drainage ditches will be excavated prior to filling the existing ditches.

15. Compensation for snake habitat will take place onsite. Both upland and emergent wetland snake habitat will be created to offset effects to their habitat during construction of the spoil berms and realignment of the ditches.

16. Fence and flag all areas to be avoided. Provide a minimum setback of at least 20 feet from the dripline of any elderberry plants.

17. Provide worker awareness training to contractors and work crews on the need to avoid damaging the elderberry plants and possible penalties for not complying with these requirements prior to any construction activity.

18. Place signs every 50 feet along the edge of the avoidance areas with the following information: "*This area is the habitat of the valley elderberry longhorn beetle, a threatened species, and must not be disturbed. This species is protected by the Endangered Species Act of 1973, as amended. Violators are subject to prosecution, fines, and imprisonment.*" The signs will be clearly readable from a distance of 20 feet, and would be maintained for the duration of construction.

19. Provide erosion control measures and revegetate at the completion of project activities.

20. No insecticides, herbicides, fertilizers, or other chemicals that might harm the beetle or its host plant would be used within 100 feet of any elderberry plant with a stem measuring 1 inch or greater in diameter at ground level.

Page 11 – Within the Valley Elderberry Longhorn Beetle section under the Effects of the Proposed Action, replace:

According to your April 19, 1999, letter, the Corps proposes to transplant 20 mature clumps of elderberry shrubs with 57 stems greater than 1 inch in diameter.

With:

According to your August 22, 2012, letter, the Corps proposes to transplant 36 mature clumps of elderberry shrubs with 251 stems greater than 1 inch in diameter.

Page 11 – Within the Giant Garter Snake section under the Effects of the Proposed Action, replace:

The proposed project will also affect 13,500 linear feet of marginal aquatic habitat and the associated upland habitat for the snake as a result of ditch relocation activities. Additionally, reconstructing 39,650 linear feet of levee slopes will affect upland habitat for the snake.

With:

The proposed project will also affect 2.43 acres of marginal aquatic habitat and the associated upland habitat for the snake as a result of ditch relocation activities. Additionally, reconstructing levee slopes will affect 36.32 acres of upland habitat for the snake.

Page 13 - Within the Valley Elderberry Longhorn Beetle section under Amount or Extent of Take, replace:

Based on the available information, the Service anticipates that all beetles inhabiting the 20 clumps which may be removed, transplanted, or otherwise adversely impacted as a result of projection construction would be lost.

With:

Based on the available information, the Service anticipates that all beetles inhabiting the 36 clumps which may be removed, transplanted, or otherwise adversely impacted as a result of projection construction would be lost.

Page 14 – Within the Giant Garter Snake section under Amount or Extent of Take, replace:

Therefore, the Service anticipates that any snakes that occur along 13,500 linear feet of aquatic habitat may be harassed, harmed, or killed during construction. Additionally, the Service anticipates any snakes that occur along 53,150 (13,500 + 39,650) linear feet of upland habitat, consisting of levee slopes, may be harassed, harmed, or killed during construction.

With:

Therefore, the Service anticipates that any snakes that occur within the 2.43 acres of aquatic habitat may be harassed, harmed, or killed during construction. Additionally, the Service anticipates any snakes that occur within 36.32 acres of upland habitat, consisting of levee slopes, may be harassed, harmed, or killed during construction.

Page 15 – Under Terms and Conditions, replace:

2. The following terms and condition implement reasonable and prudent measure one (1) B:

    A. Any adverse effects to elderberry plants as a result of the proposed project shall be compensated by the Corps as set forth in the Guidelines.

B. Prior to any groundbreaking activities for the Mid-Valley project, the Corps shall develop a detailed, Service-approved conservation and monitoring plan for the beetle. The plan shall include, but is not limited to: 1) a description of how and when transplanted elderberry shrubs will be moved from the project site to a Service-approved compensation site; 2) a description of how the plantings will be established and the establishment period, as directed by the Guidelines; 3) a description of the irrigation system; 4) a description of the amount and type of fertilizer each plant will receive each year and the timing of each application; and 5) a description of the monitoring period, as directed by the Guidelines.

C. The Corps shall acquire a suitable site for the transplanted shrubs and other plantings and shall maintain this site for the beetle in perpetuity as set forth in the Guidelines. No ground-breaking activities shall occur until the site is approved by the Service.

D. No more than 20 elderberry clumps, consisting of no more than 57 stems measuring 1.0 inch or greater in diameter at ground level, shall be transplanted from the construction sites to the compensation site. Shrubs will be transplanted when the plants are dormant. Transplanting outside the dormant season will require additional, Service-approved conservation measures.

E. The Corps shall also plant 171 elderberry plants or cuttings and 171 associated native plants along with the transplanted elderberry clumps. The plantings will be spaced in accordance with the Guidelines.

With:

2. The following terms and condition implement reasonable and prudent measure one (1) B:

A. Any adverse effects to elderberry plants as a result of the proposed project shall be compensated by the Corps as set forth in the Guidelines.

B. Prior to any groundbreaking activities for the Mid-Valley project, the Corps shall develop a detailed, Service-approved conservation and monitoring plan for the beetle. The plan shall include, but is not limited to: 1) a description of how and when transplanted elderberry shrubs will be moved from the project site to a Service-approved compensation site; 2) a description of how the plantings will be established and the establishment period, as directed by the Guidelines; 3) a description of the irrigation system; 4) a description of the amount and type of fertilizer each plant will receive each year and the timing of each application; and 5) a description of the monitoring period, as directed by the Guidelines.

C. The Corps shall acquire a suitable site for the transplanted shrubs and other plantings and shall maintain this site for the beetle in perpetuity as set forth in the Guidelines. No ground-breaking activities shall occur until the site is approved by the Service.

D. No more than 36 elderberry clumps, consisting of no more than 251 stems measuring 1.0 inch or greater in diameter at ground level, shall be transplanted from the construction sites to the compensation site. Shrubs will be transplanted when the plants are dormant. Transplanting outside the dormant season will require additional, Service-approved conservation measures.

E. The Corps shall also plant 448 elderberry seedlings and 448 associated native plants along with the transplanted elderberry clumps. The plantings will be spaced in accordance with the Guidelines.

Page 16 – Under Terms and Conditions, replace:

3. The following terms and conditions implement reasonable and prudent measure two (2):

A. Harassment, harm, or mortality of giant garter snakes due to construction and operations associated with implementing the project shall be minimized (refer also to the attached *Standard Avoidance and Minimization Measures During Construction Activities in Giant Garter Snake Habitat.*)

B. All construction activity within giant garter snake habitat shall be conducted between April 30 and October 1.

With:

3. The following terms and conditions implement reasonable and prudent measure two (2):

A. Harassment, harm, or mortality of giant garter snakes due to construction and operations associated with implementing the project shall be minimized (refer also to the attached *Standard Avoidance and Minimization Measures During Construction Activities in Giant Garter Snake Habitat.*)

B. All construction activity within giant garter snake habitat shall be conducted between May 1 and October 1. If work beyond October 1 in any year will be necessary, the Corps will not be exempt from section 9 of the ESA and must reinitiate consultation. To allow sufficient time for reinitiation of consultation, the Corps must reinitiate by July 15 of that year.

Page 18 – Under Reporting Requirements, replace:

The Corps must provide the Service with annual reports to describe progress of implementation of all the commitments in the Conservation Measures and Terms and Conditions sections of the biological opinion. The first report is due by December 31, 2000.

With:

The Corps must provide the Service with annual reports to describe progress of implementation of all the commitments in the Conservation Measures and Terms and Conditions sections of the biological opinion. The first report is due by December 31, 2015.

All other text in the Service's October 22, 1999, BO remains unchanged.

If you have any questions regarding the Sacramento River Flood Control System Evaluation, Phase III, Mid-Valley Project, please contact Harry Kahler, Fish and Wildlife Biologist, or Doug Weinrich, Chief, Habitat Conservation Division, at (916) 414-6550.

Sincerely,

for Susan K. Moore
Field Supervisor

cc:
Mr. Jeff Koschak, U.S. Army Corps of Engineers, Sacramento, California
Regional Manager, Region 2, California Department of Fish and Game, Rancho Cordova, California

APPENDIX E
Air Quality Analysis

Road Construction Emissions Model, Version 6.3.2

Emission Estimates for -> Mid Valley Sites 9, 10, 11 Project Phases (English Units)	ROG (lbs/day)	CO (lbs/day)	NOx (lbs/day)	Total PM10 (lbs/day)	Exhaust PM10 (lbs/day)	Fugitive Dust PM10 (lbs/day)	Total PM2.5 (lbs/day)	Exhaust PM2.5 (lbs/day)	Fugitive Dust PM2.5 (lbs/day)	CO2 (lbs/day)
Grubbing/Land Clearing	5.6	26.1	38.5	12.0	2.0	10.0	3.9	1.9	2.1	5,108.2
Grading/Excavation	15.1	89.6	119.9	15.4	5.4	10.0	6.9	4.8	2.1	21,588.0
Drainage/Utilities/Sub-Grade	6.1	30.0	40.4	12.5	2.5	10.0	4.4	2.3	2.1	5,410.3
Paving	4.6	22.2	28.0	2.0	2.0	-	1.9	1.9	-	3,699.0
Maximum (pounds/day)	15.1	89.6	119.9	15.4	5.4	10.0	6.9	4.8	2.1	21,588.0
Total (tons/construction project)	1.2	6.8	9.2	1.4	0.4	0.9	0.6	0.4	0.2	1,569.4

Notes:

Project Start Year ->	2015
Project Length (months) ->	10
Total Project Area (acres) ->	23
Maximum Area Disturbed/Day (acres) ->	1
Total Soil Imported/Exported (yd^3/day)->	700

PM10 and PM2.5 estimates assume 50% control of fugitive dust from watering and associated dust control measures if a minimum number of water trucks are specified.

Total PM10 emissions shown in column F are the sum of exhaust and fugitive dust emissions shown in columns H and I. Total PM2.5 emissions shown in Column J are the sum of exhaust and fugitive dust emissions shown in columns K and L.

Emission Estimates for -> Mid Valley Sites 9, 10, 11 Project Phases (Metric Units)	ROG (kgs/day)	CO (kgs/day)	NOx (kgs/day)	Total PM10 (kgs/day)	Exhaust PM10 (kgs/day)	Fugitive Dust PM10 (kgs/day)	Total PM2.5 (kgs/day)	Exhaust PM2.5 (kgs/day)	Fugitive Dust PM2.5 (kgs/day)	CO2 (kgs/day)
Grubbing/Land Clearing	2.5	11.9	17.5	5.5	0.9	4.5	1.8	0.8	0.9	2,321.9
Grading/Excavation	6.8	40.7	54.5	7.0	2.5	4.5	3.1	2.2	0.9	9,812.7
Drainage/Utilities/Sub-Grade	2.8	13.7	18.4	5.7	1.2	4.5	2.0	1.1	0.9	2,459.2
Paving	2.1	10.1	12.7	0.9	0.9	-	0.8	0.8	-	1,681.4
Maximum (kilograms/day)	6.8	40.7	54.5	7.0	2.5	4.5	3.1	2.2	0.9	9,812.7
Total (megagrams/construction project)	1.1	6.2	8.3	1.3	0.4	0.8	0.5	0.4	0.2	1,423.5

Notes:

Project Start Year ->	2015
Project Length (months) ->	10
Total Project Area (hectares) ->	9
Maximum Area Disturbed/Day (hectares) ->	0
Total Soil Imported/Exported (meters^3/day)->	535

PM10 and PM2.5 estimates assume 50% control of fugitive dust from watering and associated dust control measures if a minimum number of water trucks are specified.

Total PM10 emissions shown in column F are the sum of exhaust and fugitive dust emissions shown in columns H and I. Total PM2.5 emissions shown in Column J are the sume of exhaust and fugitive dust emissions shown in columns K and L.

Road Construction Emissions Model, Version 6.3.2

Emission Estimates for -> Mid-Valley Sites 12, 12A, 13 Project Phases (English Units)	ROG (lbs/day)	CO (lbs/day)	NOx (lbs/day)	Total PM10 (lbs/day)	Exhaust PM10 (lbs/day)	Fugitive Dust PM10 (lbs/day)	Total PM2.5 (lbs/day)	Exhaust PM2.5 (lbs/day)	Fugitive Dust PM2.5 (lbs/day)	CO2 (lbs/day)
Grubbing/Land Clearing	6.3	30.1	39.8	17.2	2.2	15.0	5.1	2.0	3.1	5,762.1
Grading/Excavation	16.3	95.4	115.5	20.8	5.8	15.0	8.3	5.2	3.1	19,387.2
Drainage/Utilities/Sub-Grade	6.8	34.4	41.3	17.6	2.6	15.0	5.5	2.4	3.1	6,064.2
Paving	5.4	26.8	30.1	2.2	2.2	-	2.0	2.0	-	4,352.5
Maximum (pounds/day)	16.3	95.4	115.5	20.8	5.8	15.0	8.3	5.2	3.1	19,387.2
Total (tons/construction project)	1.3	7.4	9.0	1.9	0.5	1.4	0.7	0.4	0.3	1,468.6

Notes:

Project Start Year ->	2016
Project Length (months) ->	10
Total Project Area (acres) ->	56
Maximum Area Disturbed/Day (acres) ->	2
Total Soil Imported/Exported (yd^3/day)->	720

PM10 and PM2.5 estimates assume 50% control of fugitive dust from watering and associated dust control measures if a minimum number of water trucks are specified.

Total PM10 emissions shown in column F are the sum of exhaust and fugitive dust emissions shown in columns H and I. Total PM2.5 emissions shown in Column J are the sum of exhaust and fugitive dust emissions shown in columns K and L.

Emission Estimates for -> Mid-Valley Sites 12, 12A, 13 Project Phases (Metric Units)	ROG (kgs/day)	CO (kgs/day)	NOx (kgs/day)	Total PM10 (kgs/day)	Exhaust PM10 (kgs/day)	Fugitive Dust PM10 (kgs/day)	Total PM2.5 (kgs/day)	Exhaust PM2.5 (kgs/day)	Fugitive Dust PM2.5 (kgs/day)	CO2 (kgs/day)
Grubbing/Land Clearing	2.9	13.7	18.1	7.8	1.0	6.8	2.3	0.9	1.4	2,619.1
Grading/Excavation	7.4	43.4	52.5	9.4	2.6	6.8	3.8	2.4	1.4	8,812.4
Drainage/Utilities/Sub-Grade	3.1	15.6	18.8	8.0	1.2	6.8	2.5	1.1	1.4	2,756.5
Paving	2.4	12.2	13.7	1.0	1.0	-	0.9	0.9	-	1,978.4
Maximum (kilograms/day)	7.4	43.4	52.5	9.4	2.6	6.8	3.8	2.4	1.4	8,812.4
Total (megagrams/construction project)	1.2	6.7	8.2	1.7	0.4	1.3	0.7	0.4	0.3	1,332.1

Notes:

Project Start Year ->	2016
Project Length (months) ->	10
Total Project Area (hectares) ->	23
Maximum Area Disturbed/Day (hectares) ->	1
Total Soil Imported/Exported (meters^3/day)->	550

PM10 and PM2.5 estimates assume 50% control of fugitive dust from watering and associated dust control measures if a minimum number of water trucks are specified.

Total PM10 emissions shown in column F are the sum of exhaust and fugitive dust emissions shown in columns H and I. Total PM2.5 emissions shown in Column J are the sume of exhaust and fugitive dust emissions shown in columns K and L.

APPENDIX F
Correspondence Regarding USDA/Farmland

DEPARTMENT OF THE ARMY
U.S. ARMY ENGINEER DISTRICT, SACRAMENTO
CORPS OF ENGINEERS
1325 J STREET
SACRAMENTO, CALIFORNIA, 95814-2922

REPLY TO
ATTENTION OF

Environmental Resources Branch

AUG 16 2012

Mr. Phil Hogan, District Conservationist
Natural Resources Conservation Service
221 West Court Street, Suite 1
Woodland, California 95695

Dear Mr. Hogan:

This letter is a follow-up to your telephone conversation with Mr. Jeff Koschak on July 30, 2012, regarding our Sacramento River Flood Control System Evaluation, Phase III, Mid-Valley, Contract Area 3 project in Yolo County. Details of the project are provided in the draft Environmental Assessment/Initial Study (EA/IS) on the enclosed CD. The effects of the project on land use and agriculture are described in Section 3.6 of the EA/IS.

The project would involve installing 1.5 miles of soil and bentonite cutoff walls at three sites along the right (west) bank of the Sacramento River and remediating 3.4 miles of levee, including a new spoils berm, at three sites along the left (east) bank of the Knights Landing Ridge Cut (KLRC). The KLRC work would also involve relocating 3.3 miles of existing drainage ditch and two pump stations. We have determined that this work would result in the conversion of 16.44 acres of prime farmland along the KLRC to non-agricultural uses; i.e., approximately 4.05 acres for the new levee footprint and relocated drainage ditch, and 12.39 acres for a mitigation area. No prime or unique farmland would be affected at the work sites along the Sacramento River.

The enclosed CD also includes our Farmland Conversion Impact Rating form in compliance with the Farmland Protection Policy Act. We appreciate your willingness to assist us in completing this form, as well as your expeditious review of our evaluation of effects on prime and unique farmland. If you have any questions or need additional information, please contact Mr. Koschak at (916) 557-6994 or email: jeff.a.koschak@usace.army.mil. Thank you for your assistance with this matter.

Sincerely,

Alicia E. Kirchner
Chief, Planning Division

Enclosure

United States Department of Agriculture

NRCS
Natural Resources Conservation Service
Woodland Service Center (Yolo County)
221 West Court Street Suite 1
Woodland, CA 95932-3246
(530) 662-2037 X 111
(530) 662-4876 (Fax)

September 18, 2012

Alicia E. Kirchner
Chief, Planning Division
U.S. Army Corps of Engineers, Sacramento District
1325 J Street
Sacramento, CA 95814

Dear Ms. Kirchner:

RE: Farmland Conversion Impact Rating, Knights Landing Ridge Cut

Dear Ms. Kirchner:

Please find enclosed a copy of the following:

1) Form 1006, Farmland Conversion Impact Rating
2) Soils Map for Project Area
3) Documentation for Part II and IV for the 1006 form.

Soil Map

NRCS
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Woodland Service Center (Yolo County)
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Woodland, CA 95932-3246
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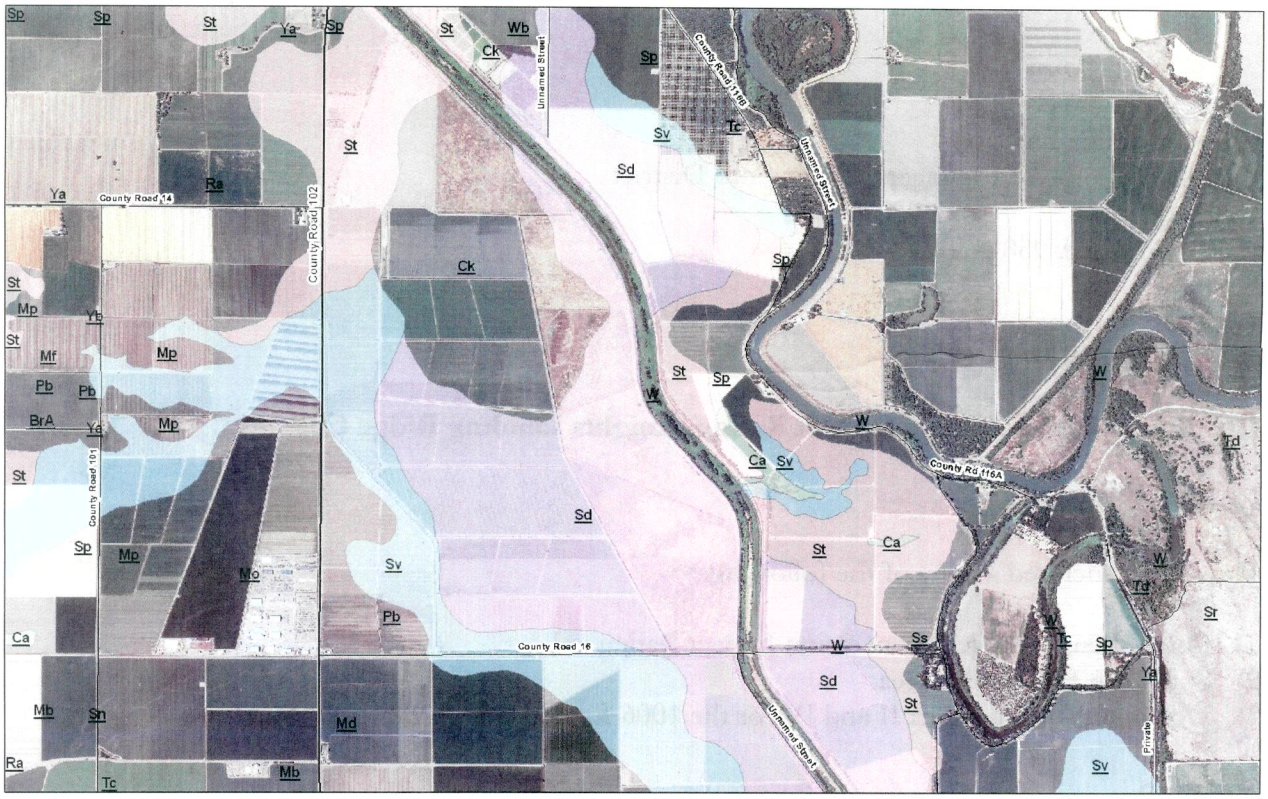

Soil Inventory

Soil Symbol	Acres	Storie Index	Category
Ca: Capay silty clay	0.04	45	Prime, if irrigated
Sd: Sacramento clay, drained	3.40	24	Prime, if irrigated
St: Sycamore silty clay loam, drained	10.80	61	Prime, if irrigated
Sv: Sycamore complex, drained	2.20	61	Prime, if irrigated
TOTAL:	16.44		

PART IVC, Form Ad-1006, Farmland Conversion Impact Rating

Acres to be converted/acres farmland in county X 100 = 16.44/390,252 X 100 = **.004%**

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PART V

Soil Symbol	Acres	Storie Index	Product
Ca: Capay silty clay	0.04	45	1.80
Sd: Sacramento clay, drained	3.40	24	81.60
St: Sycamore silty clay loam, drained	10.80	61	658.80
Sv: Sycamore complex, drained	2.20	61	134.20
TOTAL:	16.44		876.40

876.4/16.44 = **53**

PART IVD

Acres to be converted/acres with soils with Storie Index **53** or higher.

Map symbol	unit	Acres	Storie index
Ra:	Reiff very fine sandy loam	6,847	98
TaA:	Tehama loam, 0 to 2 percent slopes	16,622	98
Ya:	Yolo silt loam	39,698	98
Za:	Zamora loam	3,466	98
TaB:	Tehama loam, 2 to 5 percent slopes	1,242	93
BrA:	Brentwood silty clay loam, 0 to 2 percent slopes	23,045	88
Rg:	Rincon silty clay loam	24,580	88
Yb:	Yolo silty clay loam	5,040	88
HdA:	Hillgate loam, moderately deep, 0 to 2 percent slopes	2,367	71
Ld:	Lang silt loam	744	69
So:	Sycamore silt loam	4,474	68
Sp:	Sycamore silt loam, drained	6,054	68
HdC:	Hillgate loam, moderately deep, 2 to 9 percent slopes	1,060	66
La:	Lang sandy loam	3,001	65
Lb:	Lang sandy loam, deep	2,123	65
Lc:	Lang sandy loam, deep, flooded	280	65
Ss:	Sycamore silty clay loam	5,489	61

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St:	Sycamore silty clay loam, drained	7,839	61
Su:	Sycamore complex	3,206	61
Sv:	Sycamore complex, drained	9,241	61
Sw:	Sycamore complex, flooded	5,517	61
Mf:	Marvin silty clay loam	20,970	60
Rb:	Reiff gravelly loam	1,914	59
Sh:	San Ysidro loam	4,289	58
AaA:	Arbuckle gravelly loam, 0 to 2 percent slopes	2,391	57
HcA:	Hillgate loam, 0 to 2 percent slopes	4,029	57
AaB:	Arbuckle gravelly loam, 2 to 5 percent slopes	1,326	55
Tb:	Tyndall very fine sandy loam	3,726	55
Tc:	Tyndall very fine sandy loam, drained	1,989	55
Td:	Tyndall very fine sandy loam, flooded	684	55
Te:	Tyndall very fine sandy loam, deep	2,709	55
BaE2:	Balcom silty clay loam, 15 to 30 percent slopes, eroded	5,192	53
		221,154	

++(correlating with 1006 form): Percentage of farmland in government jurisdiction with same or relative higher value = 221,154 /390,252 X 100 = **57% (SEVENTEEN PERCENT)**

Note: What this tells us is that since the average weighted Storie Index for this parcel is 53, that there are a total of 221,154 acres in Yolo County that have a Storie Index of 53 or greater, and that the percentage of soils in Yolo County that are farmland that have a Storie Index of 53 or above is 57%

+Percentage of farmland to be converted with same or relative higher value = 16.44/221,154 X 100 = **.0007%**

United States Department of Agriculture

NRCS
Natural Resources Conservation Service
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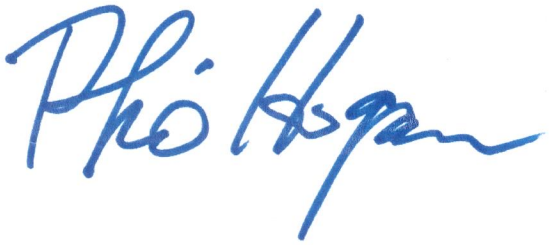
If there are any questions, please feel free to contact me.

Sincerely yours



PHIL HOGAN
District Conservationist

U.S. Department of Agriculture

FARMLAND CONVERSION IMPACT RATING

PART I *(To be completed by Federal Agency)*		Date Of Land Evaluation Request 7/31/12	
Name Of Project Sacramento River System Eval-Phase III-MidValley		Federal Agency Involved U.S. Army Corps of Engineers	
Proposed Land Use levee rehab (4.05 acres) & mitigation (12.39 acr		County And State Central Valley Flood Protection Board & Knights La	
PART II *(To be completed by NRCS)*		Date Request Received By NRCS	
Does the site contain prime, unique, statewide or local important farmland? *(If no, the FPPA does not apply -- do not complete additional parts of this form).*	Yes ☑ No ☐	Acres Irrigated 246,341	Average Farm Size 488
Major Crop(s) Tomatoes, rice, wheat, grapes	Farmable Land In Govt. Jurisdiction Acres: 311,307 % 48	Amount Of Farmland As Defined in FPPA Acres: 390,252 % 60	
Name Of Land Evaluation System Used Revised Storie Index	Name Of Local Site Assessment System	Date Land Evaluation Returned By NRCS 9/18/12	

PART III *(To be completed by Federal Agency)*	Alternative Site Rating			
	Site A	Site B	Site C	Site D
A. Total Acres To Be Converted Directly	16.4			
B. Total Acres To Be Converted Indirectly	0.0			
C. Total Acres In Site	16.4	0.0	0.0	0.0
PART IV *(To be completed by NRCS)* Land Evaluation Information				
A. Total Acres Prime And Unique Farmland	16.4			
B. Total Acres Statewide And Local Important Farmland				
C. Percentage Of Farmland In County Or Local Govt. Unit To Be Converted	0.0			
D. Percentage Of Farmland In Govt. Jurisdiction With Same Or Higher Relative Value	57.0			
PART V *(To be completed by NRCS)* Land Evaluation Criterion Relative Value Of Farmland To Be Converted *(Scale of 0 to 100 Points)*	53	0	0	0

PART VI *(To be completed by Federal Agency)* Site Assessment Criteria *(These criteria are explained in 7 CFR 658.5(b)*	Maximum Points				
1. Area In Nonurban Use					
2. Perimeter In Nonurban Use					
3. Percent Of Site Being Farmed					
4. Protection Provided By State And Local Government					
5. Distance From Urban Builtup Area					
6. Distance To Urban Support Services					
7. Size Of Present Farm Unit Compared To Average					
8. Creation Of Nonfarmable Farmland					
9. Availability Of Farm Support Services					
10. On-Farm Investments					
11. Effects Of Conversion On Farm Support Services					
12. Compatibility With Existing Agricultural Use					
TOTAL SITE ASSESSMENT POINTS	160	0	0	0	0
PART VII *(To be completed by Federal Agency)*					
Relative Value Of Farmland *(From Part V)*	100	53	0	0	0
Total Site Assessment *(From Part VI above or a local site assessment)*	160	0	0	0	0
TOTAL POINTS *(Total of above 2 lines)*	260	53	0	0	0

Site Selected:	Date Of Selection	Was A Local Site Assessment Used? Yes ☐ No ☐

Reason For Selection:

(See Instructions on reverse side)

This form was electronically produced by National Production Services Staff

Form AD-1006 (10-83)

STEPS IN THE PROCESSING THE FARMLAND AND CONVERSION IMPACT RATING FORM

Step 1 – Federal agencies involved in proposed projects that may convert farmland, as defined in the Farmland Protection Policy Act (FPPA) to nonagricultural uses, will initially complete Parts I and III of the form.

Step 2 – Originator will send copies A, B and C together with maps indicating locations of site(s), to the Natural Resources Conservation Service (NRCS) local field office and retain copy D for their files. (Note: NRCS has a field office in most counties in the U.S. The field office is usually located in the county seat. A list of field office locations are available from the NRCS State Conservationist in each state).

Step 3 – NRCS will, within 45 calendar days after receipt of form, make a determination as to whether the site(s) of the proposed project contains prime, unique, statewide or local important farmland.

Step 4 – In cases where farmland covered by the FPPA will be converted by the proposed project, NRCS field offices will complete Parts II, IV and V of the form.

Step 5 – NRCS will return copy A and B of the form to the Federal agency involved in the project. (Copy C will be retained for NRCS records).

Step 6 – The Federal agency involved in the proposed project will complete Parts VI and VII of the form.

Step 7 – The Federal agency involved in the proposed project will make a determination as to whether the proposed conversion is consistent with the FPPA and the agency's internal policies.

INSTRUCTIONS FOR COMPLETING THE FARMLAND CONVERSION IMPACT RATING FORM

Part I: In completing the "County And State" questions list all the local governments that are responsible for local land controls where site(s) are to be evaluated.

Part III: In completing item B (Total Acres To Be Converted Indirectly), include the following:

1. Acres not being directly converted but that would no longer be capable of being farmed after the conversion, because the conversion would restrict access to them.

2. Acres planned to receive services from an infrastructure project as indicated in the project justification (e.g. highways, utilities) that will cause a direct conversion.

Part VI: Do not complete Part VI if a local site assessment is used.

Assign the maximum points for each site assessment criterion as shown in § 658.5 (b) of CFR. In cases of corridor-type projects such as transportation, powerline and flood control, criteria #5 and #6 will not apply and will, be weighed zero, however, criterion #8 will be weighed a maximum of 25 points, and criterion #11 a maximum of 25 points.

Individual Federal agencies at the national level, may assign relative weights among the 12 site assessment criteria other than those shown in the FPPA rule. In all cases where other weights are assigned relative adjustments must be made to maintain the maximum total weight points at 160.

In rating alternative sites, Federal agencies shall consider each of the criteria and assign points within the limits established in the FPPA rule. Sites most suitable for protection under these criteria will receive the highest total scores, and sites least suitable, the lowest scores.

Part VII: In computing the "Total Site Assessment Points" where a State or local site assessment is used and the total maximum number of points is other than 160, adjust the site assessment points to a base of 160. Example: if the Site Assessment maximum is 200 points, and alternative Site "A" is rated 180 points:

$$\frac{\text{Total points assigned Site A}}{\text{Maximum points possible}} = \frac{180}{200} \times 160 = 144 \text{ points for Site "A."}$$

Site Assessment Scoring for the Twelve Factors Used in FPPA

The Site Assessment criteria used in the Farmland Protection Policy Act (FPPA) rule are designed to assess important factors other than the agricultural value of the land when determining which alternative sites should receive the highest level of protection from conversion to non agricultural uses.

Twelve factors are used for Site Assessment and ten factors for corridor-type sites. Each factor is listed in an outline form, without detailed definitions or guidelines to follow in the rating process. The purpose of this document is to expand the definitions of use of each of the twelve Site Assessment factors so that all persons can have a clear understanding as to what each factor is intended to evaluate and how points are assigned for given conditions.

In each of the 12 factors a number rating system is used to determine which sites deserve the most protection from conversion to non-farm uses. The higher the number value given to a proposed site, the more protection it will receive. The maximum scores are 10, 15 and 20 points, depending upon the relative importance of each particular question. If a question significantly relates to why a parcel of land should not be converted, the question has a maximum possible protection value of 20, whereas a question which does not have such a significant impact upon whether a site would be converted, would have fewer maximum points possible, for example 10.

The following guidelines should be used in rating the twelve Site Assessment criteria:

1. **How much land is in non-urban use within a radius of 1.0 mile from where the project is intended?**

More than 90 percent:	15 points
90-20 percent:	14 to 1 points
Less than 20 percent:	0 points

This factor is designed to evaluate the extent to which the area within one mile of the proposed site is non-urban area. For purposes of this rule, "non-urban" should include:

- Agricultural land (crop-fruit trees, nuts, oilseed)
- Range land
- Forest land
- Golf Courses
- Non paved parks and recreational areas
- Mining sites
- Farm Storage
- Lakes, ponds and other water bodies
- Rural roads, and through roads without houses or buildings
- Open space
- Wetlands
- Fish production
- Pasture or hayland

Urban uses include:

- Houses (other than farm houses)
- Apartment buildings
- Commercial buildings
- Industrial buildings
- Paved recreational areas (i.e. tennis courts)
- Streets in areas with 30 structures per 40 acres
- Gas stations

- Equipment, supply stores
- Off-farm storage
- Processing plants
- Shopping malls
- Utilities/Services
- Medical buildings

In rating this factor, an area one-mile from the outer edge of the proposed site should be outlined on a current photo; the areas that are urban should be outlined. For rural houses and other buildings with unknown sizes, use 1 and 1/3 acres per structure. For roads with houses on only one side, use one half of road for urban and one half for non-urban.

The purpose of this rating process is to insure that the most valuable and viable farmlands are protected from development projects sponsored by the Federal Government. With this goal in mind, factor S1 suggests that the more agricultural lands surrounding the parcel boundary in question, the more protection from development this site should receive. Accordingly, a site with a large quantity of non-urban land surrounding it will receive a greater
number of points for protection from development. Thus, where more than 90 percent of the area around the proposed site (do not include the proposed site in this assessment) is non-urban, assign 15 points. Where 20 percent or less is
non-urban, assign 0 points. Where the area lies between 20 and 90 percent non-urban, assign appropriate points from 14 to 1, as noted below.

Percent Non-Urban Land within 1 mile	**Points**
90 percent or greater	15
85 to 89 percent	14
80 to 84 percent	13
75 to 79 percent	12
70 to 74 percent	11
65 to 69 percent	10
60 to 64 percent	9
55 to 59 percent	8
50 to 54 percent	7
45 to 49 percent	6
40 to 44 percent	5
35 to 39 percent	4
30 to 24 percent	3
25 to 29 percent	2
21 to 24 percent	1
20 percent or less	0

2. How much of the perimeter of the site borders on land in non-urban use?

More than 90 percent:	I0 points
90 to 20 percent:	9 to 1 point(s)
Less than 20 percent:	0 points

This factor is designed to evaluate the extent to which the land adjacent to the proposed site is non-urban use. Where factor #1 evaluates the general location of the proposed site, this factor evaluates the immediate perimeter of the site. The definition of urban and non-urban uses in factor #1 should be used for this factor.

In rating the second factor, measure the perimeter of the site that is in non-urban and urban use. Where more than 90 percent of the perimeter is in non-urban use, score this factor 10 points. Where less than 20 percent, assign 0 points. If a road is next to the perimeter, class the area according to the

use on the other side of the road for that area. Use 1 and 1/3 acre per structure if not otherwise known. Where 20 to 90 percent of the perimeter is non-urban, assign points as noted below:

Percentage of Perimeter Bordering Land	Points
90 percent or greater	10
82 to 89 percent	9
74 to 81 percent	8
65 to 73 percent	7
58 to 65 percent	6
50 to 57 percent	5
42 to 49 percent	4
34 to 41 percent	3
27 to 33 percent	2
21 to 26 percent	1
20 percent or Less	0

3. How much of the site has been farmed (managed for a scheduled harvest or timber activity) more than five of the last ten years?

More than 90 percent:	20 points
90 to 20 percent:	19 to 1 point(s)
Less than 20 percent:	0 points

This factor is designed to evaluate the extent to which the proposed conversion site has been used or managed for agricultural purposes in the past 10 years.

Land is being farmed when it is used or managed for food or fiber, to include timber products, fruit, nuts, grapes, grain, forage, oil seed, fish and meat, poultry and dairy products.

Land that has been left to grow up to native vegetation without management or harvest will be considered as abandoned and therefore not farmed. The proposed conversion site should be evaluated and rated according to the percent, of the site farmed.

If more than 90 percent of the site has been farmed 5 of the last 10 years score the site as follows:

Percentage of Site Farmed	Points
90 percent or greater	20
86 to 89 percent	19
82 to 85 percent	18
78 to 81 percent	17
74 to 77 percent	16
70 to 73 percent	15
66 to 69 percent	14
62 to 65 percent	13
58 to 61 percent	12
54 to 57 percent	11
50 to 53 percent	10
46 to 49 percent	9
42 to 45 percent	8
38 to 41 percent	7
35 to 37 percent	6
32 to 34 percent	5
29 to 31 percent	4
26 to 28 percent	3

23 to 25 percent	2
20 to 22 percent percent or Less	1
Less than 20 percent	0

4. Is the site subject to state or unit of local government policies or programs to protect farmland or covered by private programs to protect farmland?

Site is protected:	20 points
Site is not protected:	0 points

This factor is designed to evaluate the extent to which state and local government and private programs have made efforts to protect this site from conversion.

State and local policies and programs to protect farmland include:

State Policies and Programs to Protect Farmland

1. Tax Relief:

   A. Differential Assessment: Agricultural lands are taxed on their agricultural use value, rather than at market value. As a result, farmers pay fewer taxes on their land, which helps keep them in business, and therefore helps to insure that the farmland will not be converted to nonagricultural uses.

      1. Preferential Assessment for Property Tax: Landowners with parcels of land used for agriculture are given the privilege of differential assessment.

      2. Deferred Taxation for Property Tax: Landowners are deterred from converting their land to nonfarm uses, because if they do so, they must pay back taxes at market value.

      3. Restrictive Agreement for Property Tax: Landowners who want to receive Differential Assessment must agree to keep their land in - eligible use.

   B. Income Tax Credits

   Circuit Breaker Tax Credits: Authorize an eligible owner of farmland to apply some or all of the property taxes on his or her farmland and farm structures as a tax credit against the owner's state income tax.

   C. Estate and Inheritance Tax Benefits

   Farm Use Valuation for Death Tax: Exemption of state tax liability to eligible farm estates.

2. "Right to farm" laws:

   Prohibits local governments from enacting laws which will place restrictions upon normally accepted farming practices, for example, the generation of noise, odor or dust.

3. Agricultural Districting:

   Wherein farmers voluntarily organize districts of agricultural land to be legally recognized geographic areas. These farmers receive benefits, such as protection from annexation, in exchange for keeping land within the district for a given number of years.

4. Land Use Controls: Agricultural Zoning.

Types of Agricultural Zoning Ordinances include:

A. Exclusive: In which the agricultural zone is restricted to only farm-related dwellings, with, for example, a minimum of 40 acres per dwelling unit.

B. Non-Exclusive: In which non-farm dwellings are allowed, but the density remains low, such as 20 acres per dwelling unit.

Additional Zoning techniques include:

A. Slidinq Scale: This method looks at zoning according to the total size of the parcel owned. For example, the number of dwelling units per a given number of acres may change from county to county according to the existing land acreage to dwelling unit ratio of surrounding parcels of land within the specific area.

B. Point System or Numerical Approach: Approaches land use permits on a case by case basis.

LESA: The LESA system (Land Evaluation-Site Assessment) is used as a tool to help assess options for land use on an evaluation of productivity weighed against commitment to urban development.

C. Conditional Use: Based upon the evaluation on a case by case basis by the Board of Zoning Adjustment. Also may include the method of using special land use permits.

5. Development Rights:

A. Purchase of Development Rights (PDR): Where development rights are purchased by Government action.

Buffer Zoning Districts: Buffer Zoning Districts are an example of land purchased by Government action. This land is included in zoning ordinances in order to preserve and protect agricultural lands from non-farm land uses encroaching upon them.

B. Transfer of Development Rights (TDR): Development rights are transferable for use in other locations designated as receiving areas. TDR is considered a locally based action (not state), because it requires a voluntary decision on the part of the individual landowners.

6. Governor's Executive Order: Policy made by the Governor, stating the importance of agriculture, and the preservation of agricultural lands. The Governor orders the state agencies to avoid the unnecessary conversion of important farmland to nonagricultural uses.

7. Voluntary State Programs:

A. California's Program of Restrictive Agreements and Differential Assessments: The California Land Conservation Act of 1965, commonly known as the Williamson Act, allows cities, counties and individual landowners to form agricultural preserves and enter into contracts for 10 or more years to insure that these parcels of land remain strictly for agricultural use. Since 1972 the Act has extended eligibility to recreational and open space lands such as scenic highway corridors, salt ponds and wildlife preserves. These contractually restricted lands may be taxed differentially for their real value. One hundred-acre districts constitute the minimum land size eligible.

Suggestion: An improved version of the Act would state that if the land is converted after the contract expires, the landowner must pay the difference in the taxes between market value for the land and the agricultural tax value which he or she had been

paying under the Act. This measure would help to insure that farmland would not be converted after the 10 year period ends.

B. Maryland Agricultural Land Preservation Program: Agricultural landowners within agricultural districts have the opportunity to sell their development rights to the Maryland Land Preservation Foundation under the agreement that these landowners will not subdivide or develop their land for an initial period of five years. After five years the landowner may terminate the agreement with one year notice.

As is stated above under the California Williamson Act, the landowner should pay the back taxes on the property if he or she decides to convert the land after the contract expires, in order to discourage such conversions.

C. Wisconsin Income Tax Incentive Program: The Wisconsin Farmland Preservation Program of December 1977 encourages local jurisdictions in Wisconsin to adopt agricultural preservation plans or exclusive agricultural district zoning ordinances in exchange for credit against state income tax and exemption from special utility assessment. Eligible candidates include local governments and landowners with at least 35 acres of land per dwelling unit in agricultural use and gross farm profits of at least $6.000 per year, or $18,000 over three years.

8. Mandatory State Programs:

A. The Environmental Control Act in the state of Vermont was adopted in 1970 by the Vermont State Legislature. The Act established an environmental board with 9 members (appointed by the Governor) to implement a planning process and a permit system to screen most subdivisions and development proposals according to specific criteria stated in the law. The planning process consists of an interim and a final Land Capability and Development Plan, the latter of which acts as a policy plan to control development. The policies are written in order to:

- prevent air and water pollution;
- protect scenic or natural beauty, historic sites and rare and irreplaceable natural areas; and
- consider the impacts of growth and reduction of development on areas of primary agricultural soils.

B. The California State Coastal Commission: In 1976 the Coastal Act was passed to establish a permanent Coastal Commission with permit and planning authority The purpose of the Coastal Commission was and is to protect the sensitive coastal zone environment and its resources, while accommodating the social and economic needs of the state. The Commission has the power to regulate development in the coastal zones by issuing permits on a case by case basis until local agencies can develop their own coastal plans, which must be certified by the Coastal Commission.

C. Hawaii's Program of State Zoning: In 1961, the Hawaii State Legislature established Act 187, the Land Use Law, to protect the farmland and the welfare of the local people of Hawaii by planning to avoid "unnecessary urbanization". The Law made all state lands into four districts: agricultural, conservation, rural and urban. The Governor appointed members to a State Land Use Commission, whose duties were to uphold the Law and form the boundaries of the four districts. In addition to state zoning, the Land Use Law introduced a program of Differential Assessment, wherein agricultural landowners paid taxes on their land for its agricultural use value, rather than its market value.

D. The Oregon Land Use Act of 1973: This act established the Land Conservation and Development Commission (LCDC) to provide statewide planning goals and guidelines.

Under this Act, Oregon cities and counties are each required to draw up a comprehensive plan, consistent with statewide planning goals. Agricultural land preservation is high on the list of state goals to be followed locally.

If the proposed site is subject to or has used one or more of the above farmland protection programs or policies, score the site 20 points. If none of the above policies or programs apply to this site, score 0 points.

5. How close is the site to an urban built-up area?

The site is 2 miles or more from an urban built-up area	15 points
The site is more than 1 mile but less than 2 miles from an urban built-up area	10 points
The site is less than 1 mile from, but is not adjacent to an urban built-up area	5 points
The site is adjacent to an urban built-up area	0 points

This factor is designed to evaluate the extent to which the proposed site is located next to an existing urban area. The urban built-up area must be 2500 population. The measurement from the built-up area should be made from the point at which the density is 30 structures per 40 acres and with no open or non-urban land existing between the major built-up areas and this point. Suburbs adjacent to cities or urban built-up areas should be considered as part of that urban area.

For greater accuracy, use the following chart to determine how much protection the site should receive according to its distance from an urban area. See chart below:

Distance From Perimeter of Site to Urban Area	Points
More than 10,560 feet	15
9,860 to 10,559 feet	14
9,160 to 9,859 feet	13
8,460 to 9,159 feet	12
7,760 to 8,459 feet	11
7,060 to 7,759 feet	10
6,360 to 7,059 feet	9
5,660 to 6,359 feet	8
4,960 to 5,659 feet	7
4,260 to 4,959 feet	6
3,560 to 4,259 feet	5
2,860 to 3,559 feet	4
2,160 to 2,859 feet	3
1,460 to 2,159 feet	2
760 to 1,459 feet	1
Less than 760 feet (adjacent)	0

6. How close is the site to water lines, sewer lines and/or other local facilities and services whose capacities and design would promote nonagricultural use?

None of the services exist nearer than 3 miles from the site	15 points
Some of the services exist more than one but less than 3 miles from the site	10 points
All of the services exist within 1/2 mile of the site	0 points

This question determines how much infrastructure (water, sewer, etc.) is in place which could facilitate nonagricultural development. The fewer facilities in place, the more difficult it is to develop an area. Thus, if a proposed site is further away from these services (more than 3 miles distance away), the site should be awarded the highest number of points (15). As the distance of the parcel of land to services decreases, the number of points awarded declines as well. So, when the site is equal to or further than 1 mile but less than 3 miles away from services, it should be given 10 points. Accordingly, if this distance is 1/2 mile to less than 1 mile, award 5 points; and if the distance from land to services is less than 1/2 mile, award 0 points.

Distance to public facilities should be measured from the perimeter of the parcel in question to the nearest site(s) where necessary facilities are located. If there is more than one distance (i.e. from site to water and from site to sewer), use the average distance (add all distances and then divide by the number of different distances to get the average).

Facilities which could promote nonagricultural use include:

- Water lines
- Sewer lines
- Power lines
- Gas lines
- Circulation (roads)
- Fire and police protection
- Schools

7. **Is the farm unit(s) containing the site (before the project) as large as the average-size farming unit in the county? (Average farm sizes in each county are available from the NRCS field offices in each state. Data are from the latest available Census of Agriculture, Acreage of Farm Units in Operation with $1,000 or more in sales.)**

As large or larger:	10 points
Below average: Deduct 1 point for each 5 percent below the average, down to 0 points if 50 percent or more is below average	9 to 0 points

This factor is designed to determine how much protection the site should receive, according to its size in relation to the average size of farming units within the county. The larger the parcel of land, the more agricultural use value the land possesses, and vice versa. Thus, if the farm unit is as large or larger than the county average, it receives the maximum number of points (10). The smaller the parcel of land compared to the county average, the fewer number of points given. Please see below:

Parcel Size in Relation to Average County Size	Points
Same size or larger than average (l00 percent)	10
95 percent of average	9
90 percent of average	8
85 percent of average	7
80 percent of average	6
75 percent of average	5
70 percent of average	4
65 percent of average	3
60 percent of average	2
55 percent of average	1
50 percent or below county average	0

State and local Natural Resources Conservation Service offices will have the average farm size information, provided by the latest available Census of Agriculture data

8. **If this site is chosen for the project, how much of the remaining land on the farm will become non-farmable because of interference with land patterns?**

Acreage equal to more than 25 percent of acres directly converted by the project	10 points
Acreage equal to between 25 and 5 percent of the acres directly converted by the project	9 to 1 point(s)
Acreage equal to less than 5 percent of the acres directly converted by the project	0 points

This factor tackles the question of how the proposed development will affect the rest of the land on the farm The site which deserves the most protection from conversion will receive the greatest number of points, and vice versa. For example, if the project is small, such as an extension on a house, the rest of the agricultural land would remain farmable, and thus a lower number of points is given to the site. Whereas if a large-scale highway is planned, a greater portion of the land (not including the site) will become non-farmable, since access to the farmland will be blocked; and thus, the site should receive the highest number of points (10) as protection from conversion

Conversion uses of the Site Which Would Make the Rest of the Land Non-Farmable by Interfering with Land Patterns

Conversions which make the rest of the property nonfarmable include any development which blocks accessibility to the rest of the site Examples are highways, railroads, dams or development along the front of a site restricting access to the rest of the property.

The point scoring is as follows:

Amount of Land Not Including the Site Which Will Become Non-Farmable	**Points**
25 percent or greater	10
23 - 24 percent	9
21 - 22 percent	8
19 - 20 percent	7
17 - 18 percent	6
15 - 16 percent	5
13 - 14 percent	4
11 - 12 percent	3
9 - 11 percent	2
6 - 8 percent	1
5 percent or less	0

9. **Does the site have available adequate supply of farm support services and markets, i.e., farm suppliers, equipment dealers, processing and storage facilities and farmer's markets?**

All required services are available	5 points
Some required services are available	4 to 1 point(s)
No required services are available	0 points

This factor is used to assess whether there are adequate support facilities, activities and industry to keep the farming business in business. The more support facilities available to the agricultural

landowner, the more feasible it is for him or her to stay in production. In addition, agricultural support facilities are compatible with farmland. This fact is important, because some land uses are not compatible; for example, development next to farmland cam be dangerous to the welfare of the agricultural land, as a result of pressure from the neighbors who often do not appreciate the noise, smells and dust intrinsic to farmland. Thus, when all required agricultural support services are available, the maximum number of points (5) are awarded. When some services are available, 4 to 1 point(s) are awarded; and consequently, when no services are available, no points are given. See below:

Percent of Services Available	Points
100 percent	5
75 to 99 percent	4
50 to 74 percent	3
25 to 49 percent	2
1 to 24 percent	1
No services	0

10. Does the site have substantial and well-maintained on farm investments such as barns, other storage buildings, fruit trees and vines, field terraces, drainage, irrigation, waterways, or other soil and water conservation measures?

High amount of on-farm investment	20 points
Moderate amount of non-farm investment	19 to 1 point(s)
No on-farm investments	0 points

This factor assesses the quantity of agricultural facilities in place on the proposed site. If a significant agricultural infrastructure exists, the site should continue to be used for farming, and thus the parcel will receive the highest amount of points towards protection from conversion or development. If there is little on farm investment, the site will receive comparatively less protection. See-below:

Amount of On-farm Investment	Points
As much or more than necessary to maintain production (100 percent)	20
95 to 99 percent	19
90 to 94 percent	18
85 to 89 percent	17
80 to 84 percent	16
75 to 79 percent	15
70 to 74 percent	14
65 to 69 percent	13
60 to 64 percent	12
55 to 59 percent	11
50 to 54 percent	10
45 to 49 percent	9
40 to 44 percent	8
35 to 39 percent	7
30 to 34 percent	6
25 to 29 percent	5
20 to 24 percent	4
15 to 19 percent	3
10 to 14 percent	2
5 to 9 percent	1
0 to 4 percent	0

11. Would the project at this site, by converting farmland to nonagricultural use, reduce the support for farm support services so as to jeopardize the continued existence of these support services and thus, the viability of the farms remaining in the area?

Substantial reduction in demand for support services if the site is converted	10 points
Some reduction in demand for support services if the site is converted	9 to 1 point(s)
No significant reduction in demand for support services if the site is converted	0 points

This factor determines whether there are other agriculturally related activities, businesses or jobs dependent upon the working of the pre-converted site in order for the others to remain in production. The more people and farming activities relying upon this land, the more protection it should receive from conversion. Thus, if a substantial reduction in demand for support services were to occur as a result of conversions, the proposed site would receive a high score of 10; some reduction in demand would receive 9 to 1 point(s), and no significant reduction in demand would receive no points.

Specific points are outlined as follows:

Amount of Reduction in Support Services if Site is Converted to Nonagricultural Use	**Points**
Substantial reduction (100 percent)	10
90 to 99 percent	9
80 to 89 percent	8
70 to 79 percent	7
60 to 69 percent	6
50 to 59 percent	5
40 to 49 percent	4
30 to 39 percent	3
20 to 29 percent	2
10 to 19 percent	1
No significant reduction (0 to 9 percent)	0

12. Is the kind and intensity of the proposed use of the site sufficiently incompatible with agriculture that it is likely to contribute to the eventual conversion of the surrounding farmland to nonagricultural use?

Proposed project is incompatible with existing agricultural use of surrounding farmland	10 points
Proposed project is tolerable of existing agricultural use of surrounding farmland	9 to 1 point(s)
Proposed project is fully compatible with existing agricultural use of surrounding farmland	0 points

Factor 12 determines whether conversion of the proposed agricultural site will eventually cause the conversion of neighboring farmland as a result of incompatibility of use of the first with the latter. The more incompatible the proposed conversion is with agriculture, the more protection this site receives from conversion. Therefor-, if the proposed conversion is incompatible with agriculture, the site receives 10 points. If the project is tolerable with agriculture, it receives 9 to 1 points; and if the proposed conversion is compatible with agriculture, it receives 0 points.

CORRIDOR - TYPE SITE ASSESSMENT CRITERIA

The following criteria are to be used for projects that have a linear or corridor - type site configuration connecting two distant points, and crossing several different tracts of land. These include utility lines, highways, railroads, stream improvements, and flood control systems. Federal agencies are to assess the suitability of each corridor-type site or design alternative for protection as farmland along with the land evaluation information.

For Water and Waste Programs, corridor analyses are not applicable for distribution or collection networks. Analyses are applicable for transmission or trunk lines where placement of the lines are flexible.

(1) How much land is in nonurban use within a radius of 1.0 mile form where the project is intended?

(2)	More than 90 percent	(3)	15 points
(4)	90 to 20 percent	(5)	14 to 1 point(s).
(6)	Less than 20 percent	(7)	0 points

(2) How much of the perimeter of the site borders on land in nonurban use?

(3)	More than 90 percent	(4)	10 point(s)
(5)	90 to 20 percent	(6)	9 to 1 points
(7)	less than 20 percent	(8)	0 points

(3) How much of the site has been farmed (managed for a scheduled harvest or timber activity) more than five of the last 10 years?

(4)	More than 90 percent	(5)	20 points
(6)	90 to 20 percent	(7)	19 to 1 point(s)
(8)	Less than 20 percent	(9)	0 points

(4) Is the site subject to state or unit of local government policies or programs to protect farmland or covered by private programs to protect farmland?

Site is protected	20 points
Site is not protected	0 points

(5) Is the farm unit(s) containing the site (before the project) as large as the average - size farming unit in the County? (Average farm sizes in each county are available from the NRCS field offices in each state. Data are from the latest available Census of Agriculture, Acreage of Farm Units in Operation with $1,000 or more in sales.)

As large or larger	10 points
Below average deduct 1 point for each 5 percent below the average, down to 0 points if 50 percent or more below average	9 to 0 points

(6) If the site is chosen for the project, how much of the remaining land on the farm will become non-farmable because of interference with land patterns?

Acreage equal to more than 25 percent of acres directly converted by the project	25 points
Acreage equal to between 25 and 5 percent of the acres directly convened by the project	1 to 24 point(s)
Acreage equal to less than 5 percent of the acres directly converted by the project	0 points

(7) Does the site have available adequate supply of farm support services and markets, i.e., farm suppliers, equipment dealers, processing and storage facilities and farmer's markets?

All required services are available	5 points
Some required services are available	4 to 1 point(s)
No required services are available	0 points

(8) Does the site have substantial and well-maintained on-farm investments such as barns, other storage building, fruit trees and vines, field terraces, drainage, irrigation, waterways, or other soil and water conservation measures?

High amount of on-farm investment	20 points
Moderate amount of on-farm investment	19 to 1 point(s)
No on-farm investment	0 points

(9) Would the project at this site, by converting farmland to nonagricultural use, reduce the demand for farm support services so as to jeopardize the continued existence of these support services and thus, the viability of the farms remaining in the area?

Substantial reduction in demand for support services if the site is convened	25 points
Some reduction in demand for support services if the site is convened	1 to 24 point(s)
No significant reduction in demand for support services if the site is converted	0 points

(10) Is the kind and intensity of the proposed use of the site sufficiently incompatible with agriculture that it is likely to contribute to the eventual conversion of surrounding farmland to nonagricultural use?

Proposed project is incompatible to existing agricultural use of surrounding farmland	10 points
Proposed project is tolerable to existing agricultural use of surrounding farmland	9 to 1 point(s)
Proposed project is fully compatible with existing agricultural use of surrounding farmland	0 points

U.S. Department of Agriculture

FARMLAND CONVERSION IMPACT RATING

PART I *(To be completed by Federal Agency)*	Date Of Land Evaluation Request 7/31/12
Name Of Project Sacramento River System Eval-Phase III-MidValley	Federal Agency Involved U.S. Army Corps of Engineers
Proposed Land Use levee rehab (4.05 acres) & mitigation (12.39 acr	County And State Central Valley Flood Protection Board & Knights La
PART II *(To be completed by NRCS)*	Date Request Received By NRCS

Does the site contain prime, unique, statewide or local important farmland? *(If no, the FPPA does not apply -- do not complete additional parts of this form).* Yes ☑ No ☐		Acres Irrigated 246,341	Average Farm Size 488
Major Crop(s) Tomatoes, rice, wheat, grapes	Farmable Land In Govt. Jurisdiction Acres: 311,307 % 48	Amount Of Farmland As Defined in FPPA Acres: 390,252 % 60	
Name Of Land Evaluation System Used Revised Storie Index	Name Of Local Site Assessment System	Date Land Evaluation Returned By NRCS 9/18/12	

PART III *(To be completed by Federal Agency)*	Alternative Site Rating Site A	Site B	Site C	Site D
A. Total Acres To Be Converted Directly	16.4			
B. Total Acres To Be Converted Indirectly	0.0			
C. Total Acres In Site	16.4	0.0	0.0	0.0
PART IV *(To be completed by NRCS)* Land Evaluation Information				
A. Total Acres Prime And Unique Farmland	16.4			
B. Total Acres Statewide And Local Important Farmland				
C. Percentage Of Farmland In County Or Local Govt. Unit To Be Converted	0.0			
D. Percentage Of Farmland In Govt. Jurisdiction With Same Or Higher Relative Value	57.0			
PART V *(To be completed by NRCS)* Land Evaluation Criterion Relative Value Of Farmland To Be Converted *(Scale of 0 to 100 Points)*	53	0	0	0

PART VI *(To be completed by Federal Agency)* Site Assessment Criteria *(These criteria are explained in 7 CFR 658.5(b)*	Maximum Points				
1. Area In Nonurban Use		15			
2. Perimeter In Nonurban Use		10			
3. Percent Of Site Being Farmed		20			
4. Protection Provided By State And Local Government		20			
5. Distance From Urban Builtup Area		0			
6. Distance To Urban Support Services		0			
7. Size Of Present Farm Unit Compared To Average		10			
8. Creation Of Nonfarmable Farmland		25			
9. Availability Of Farm Support Services		5			
10. On-Farm Investments		20			
11. Effects Of Conversion On Farm Support Services		25			
12. Compatibility With Existing Agricultural Use		25			
TOTAL SITE ASSESSMENT POINTS	160	175	0	0	0
PART VII *(To be completed by Federal Agency)*					
Relative Value Of Farmland *(From Part V)*	100	53	0	0	0
Total Site Assessment *(From Part VI above or a local site assessment)*	160	175	0	0	0
TOTAL POINTS *(Total of above 2 lines)*	260	228	0	0	0

Site Selected:	Date Of Selection	Was A Local Site Assessment Used? Yes ☐ No ☒

Reason For Selection:

(See Instructions on reverse side)

This form was electronically produced by National Production Services Staff

Clear Form

Form AD-1006 (10-83)

APPENDIX G

Correspondence Regarding Cultural Resources

(NOTE: following letter was resent and hand-delivered to SHPO on March 4, 2013, as the original letter (enclosed) was returned due to a wrong address)

DEPARTMENT OF THE ARMY
U.S. ARMY ENGINEER DISTRICT, SACRAMENTO
CORPS OF ENGINEERS
1325 J STREET
SACRAMENTO, CALIFORNIA, 95814-2922

REPLY TO
ATTENTION OF

Environmental Resources Branch

Ms. Carol Roland-Nawl, Ph.D.
State Historic Preservation Officer
Office of Historic Preservation
725 23rd Street, Suite 100
Sacramento, California 95816

FEB 12 2013

Dear Dr. Roland-Nawl:

This letter is in regard to ongoing consultation for the proposed Sacramento River Flood Control System Evaluation Phase III, Mid-Valley, Contract Area 3, project in Yolo County, California. We are proposing to restore levees on the Sacramento River and the Knights Landing Ridge Cut (KLRC) south of the community of Knights Landing in Yolo County. We are writing pursuant to 36 CFR § 800.4(a)(1) and 36 CFR § 800.4(b) to request your concurrence with our determination of the area of potential effects (APE) and with our efforts to identify historic properties. We are also requesting your concurrence with our determination of "no historic properties affected" in accordance with 36 CFR § 800.4(d)(1) for the proposed levee restoration work. Your file number for this project is COE95128A.

The Mid-Valley project would include (1) installing soil/bentonite slurry cutoff walls on the existing levee at three sites (Sites 9, 10, and 11) along the west side of the Sacramento River between River Miles 70 and 118 and (2) remediating the existing levee at three sites (Sites 12, 12A, and 13) along the east side of the KLRC (enclosure 1). The Mid-Valley project previously included other levee sites; however, Sites 9, 10, 11, 12, 12A, and 13 are the six remaining sites selected for restoration. At Sites 9, 10, and 11, we have determined that the APE is confined to the levee prism since installing cutoff walls would directly affect the internal structure of the levees. At Sites 12, 12A, and 13, the APE includes both the levee of the KLRC and land side area within approximately 150 feet of the levee for restoration work and movement of construction equipment (enclosure 2).

We contacted you previously in regard to the Mid-Valley project in 2004 and 2005 (enclosure 3). In our most recent communication on the project, we provided additional information and clarification as requested by your office in 2004 and received no further response. Since 2004, our efforts to inventory the APE for historic properties have included conducting records and literature searches, reviewing previous archeological surveys within the APE, conducting archeological surveys of those portions of the APE not previously included in recent surveys, recording newly identified cultural resources, and determining eligibility for listing in the National Register of Historic Places (NRHP) for those cultural resources.

A records and literature search for the Mid-Valley project was originally conducted at the Northwest Information Center in 2004, and an update was completed in 2009. The records and literature search in 2004 revealed that there were two historic sites within the APE.

CA-YOL-183/H, the Colusa Drainage Canal and Knight's Landing Ridge Cut, was found ineligible for listing in the NRHP due to alterations that have modified the original integrity of the levees from their initial workmanship. CA-YOL-184/H was recorded in 1992 as a surface distribution of farming and ranching equipment and domestic debris. A field check of the site in 2004 revealed that the farm debris recorded as CA-Yol-184/H has been removed and that the area is currently farmed. No trace of the site remains. No other cultural resources were identified from the records and literature searches.

A total of 15 cultural resources investigations have been completed over the various sections of the APE. These investigations almost cover the entire APE. Corps cultural resources personnel conducted surveys in 2004 and 2009 for the APE of the Mid-Valley project at that time (enclosure 4). The 2012 archeological survey did not identify any additional cultural resources within the current APE. The 2009 archeological survey identified two historic period resources, a residential complex (MVP-1) and a pump house (MVP-2), within the APE. MVP-1 and MVP-2 were determined not eligible for listing in the NRHP. Since 2009, MVP-1 has been removed from the APE. MVP-2 is still within the APE for the Mid-Valley project, but it is not eligible for listing in the NRHP, as determined in 2009. In accordance with 36 CFR § 800.4(c)(2), we request your concurrence with our determination of non-eligibility for MVP-2.

After the previous inventory, survey, and identification efforts, changes to the Mid-Valley project description and APE necessitated additional archeological survey of some APE not previously included in the 2004 and 2009 surveys. On September 28, 2012, Corps cultural resources personnel revisited the KLRC river mile 1.90 to record an additional pump house (KLRC 1.90) and the Sacramento River levee at Sites 9, 10, and 11 (MV-4) as potential historic properties. The results of the 2012 archeological survey and determinations of effect for the pump house and levee are included in enclosure 5. Neither the pump house nor the Sacramento River levee as identified in 2102 were found eligible for listing in the NRHP. In accordance with 36 CFR § 800.4(c)(2), we request your concurrence with our determinations of non-eligibility for KLRC 1.90 and MV-4. All site forms have been sent to the Northwest Information Center with a request for site numbers.

In accordance with 36 CFR § 800.4(a)(1), we contacted potentially interested Native Americans from a list provided by the Native American Heritage Commission (NAHC) in 2004, 2009, and 2010, as follows. The previous project cultural resources specialist, Ms. Melissa Montag, requested a list of Native American contacts from the NAHC in October 2004. Ms. Debbie Pilas-Treadway replied with an extensive list on October 22, 2004. On December 14, 2005, Ms. Montag wrote the various Tribes and interested individuals. She followed up with telephone calls on January 13, 2005. Ms. Montag left messages, and most of the contacts had no concerns. On April 6, 2009, Ms. Montag received a new list from the NAHC, which was much smaller than the 2004 list. She wrote new letters on April 24, 2009.

Responses were received from the Mechoopda Indian Tribe of Chico Rancheria and the Yocha DeHe Wintun Nation. In 2010, a representative from the Yocha DeHe Wintun Nation monitored geotechnical boring for a few days. The Tribes from the NAHC's 2009 list will be provided with copies of the draft environmental document for the Mid-Valley project for their review.

In this letter, we have further defined the APE for the Mid-Valley project pursuant to 36 CFR § 800.4(a)(1). We have described the proposed project for the Mid-Valley project; described identification efforts, previous surveys, and sites in the APE in accordance with 36 CFR § 800.4(b); and determined that there are no historic properties within the APE. In accordance with 36 CFR § 800.4(d)(1), we have documented our determination of No Historic Properties Affected for the Mid-Valley project. Finally, we have described efforts to identify and contact potentially interested Native Americans pursuant to 36 CFR 800.4(a)(4).

We request any comments that you may have on the above determinations. In addition, we request your concurrence with the Corps' determinations as discussed in this letter. Comments may be sent to Mr. Richard Perry (CESPK-PD-R), U.S. Army Corps of Engineers, Sacramento District, 1325 J Street, Sacramento, California 95814-2922. If you have any questions, please contact Mr. Perry, Archeologist, at (916) 557-5218 or email: richard.m.perry@usace.army.mil. Please contact Mr. Charles Austin, Project Manager, at (916) 557-7750 with any specific project questions.

Sincerely,

Alicia E. Kirchner
Chief, Planning Division

Enclosures

APPENDIX H
Public Comments and Responses

The following agency comments were received on the draft EA/IS. Lengthy comments have been paraphrased. The Corps' response(s) follows each comment email, letter, or memorandum.

Public Comment 1 – U.S. Environmental Protection Agency

-----Original Message-----
From: Dawn Richmond [mailto:Richmond.Dawn@epamail.epa.gov]
Sent: Friday, October 05, 2012 9:26 AM
To: Koschak, Jeff A SPK
Cc: ThomasP Kelly
Subject: ENVIRONMENTAL ASSESSMENT/INITIAL STUDY SACRAMENTO RIVER FLOOD CONTROL SYSTEM EVALUATION PHASE III, MID-VALLEY, CONTRACT AREA 3

Hello,

Per our conversation...

Section 3.5.1.2 of the DEIS states that "The Sacramento Valley Air Basin, including Yolo County, is designated as a non-attainment area for the Federal and State ozone standards. Yolo County is designated as a serious non-attainment area according to Federal 8-hour and State 1-hour ozone standards. Yolo County is classified as non-attainment based on State 8-hour standards. For the state PM10 standards, the entire air basin is currently considered a nonattainment area." (p.27)

This is incorrect for the 1997 ozone standard. Yolo County is designated as Nonattainment (Subpart 2 - Severe-15). The de minimis level for ozone precursors (NOx and VOCs) for this area is currently 25 tons/year. Yolo County is also designated as Nonattainment for PM2.5. The de minimis level for PM2.5 for this area is currently 100 tons per year.

Thanks,

Dawn

Dawn Richmond

Environmental Protection Specialist

US EPA Region 9

Air Division, Planning Office

telephone: (415) 972-3097

Response: The Corps has made corrections and changes to the air quality discussion in the final EA/IS per this comment. The Corps updated the discussion in Section 3.5.1.2 and the de minimus standards in Section 3.5.2.3.

CALIFORNIA
Water Boards

Edmund G. Brown Jr.
GOVERNOR

Matthew Rodriquez
SECRETARY FOR
ENVIRONMENTAL PROTECTION

Central Valley Regional Water Quality Control Board

28 August 2012

Mary Ann Hadden
Central Valley Flood Protection Board
3464 El Camino Avenue, Room 200
Sacramento, CA 95821

CERTIFIED MAIL
7011 2970 0003 8939 2252

COMMENTS TO REQUEST FOR REVIEW FOR THE DRAFT MITIGATED NEGATIVE DECLARATION, SACRAMENTO RIVER FLOOD CONTROL SYSTEM EVALUATION, PHASE III, MID-VALLEY, CONTRACT AREA 3 PROJECT, SCH NO. 2012082015, YOLO COUNTY

Pursuant to the State Clearinghouse's 3 August 2012 request, the Central Valley Regional Water Quality Control Board (Central Valley Water Board) has reviewed the *Request for Review for the Draft Mitigated Negative Declaration* for the Sacramento River Flood Control System Evaluation, Phase III, Mid-Valley, Contract Area 3 Project, located in Yolo County.

Our agency is delegated with the responsibility of protecting the quality of surface and groundwaters of the state; therefore our comments will address concerns surrounding those issues.

Construction Storm Water General Permit

Dischargers whose project disturb one or more acres of soil or where projects disturb less than one acre but are part of a larger common plan of development that in total disturbs one or more acres, are required to obtain coverage under the General Permit for Storm Water Discharges Associated with Construction Activities (Construction General Permit), Construction General Permit Order No. 2009-009-DWQ. Construction activity subject to this permit includes clearing, grading, grubbing, disturbances to the ground, such as stockpiling, or excavation, but does not include regular maintenance activities performed to restore the original line, grade, or capacity of the facility. The Construction General Permit requires the development and implementation of a Storm Water Pollution Prevention Plan (SWPPP).

For more information on the Construction General Permit, visit the State Water Resources Control Board website at:
http://www.waterboards.ca.gov/water_issues/programs/stormwater/constpermits.shtml.

Phase I and II Municipal Separate Storm Sewer System (MS4) Permits[1]

The Phase I and II MS4 permits require the Permittees reduce pollutants and runoff flows from new development and redevelopment using Best Management Practices (BMPs) to the maximum extent practicable (MEP). MS4 Permittees have their own development standards, also known as Low Impact Development (LID)/post-construction standards that include a hydromodification component. The MS4 permits also require specific design concepts for LID/post-construction BMPs in the early stages of a project during the entitlement and CEQA process and the development plan review process.

For more information on which Phase I MS4 Permit this project applies to, visit the Central Valley Water Board website at:
http://www.waterboards.ca.gov/centralvalley/water_issues/storm_water/municipal_permits/.

Industrial Storm Water General Permit

Storm water discharges associated with industrial sites must comply with the regulations contained in the Industrial Storm Water General Permit Order No. 97-03-DWQ.

For more information on the Industrial Storm Water General Permit, visit the Central Valley Water Board website at:
http://www.waterboards.ca.gov/centralvalley/water_issues/storm_water/industrial_general_permits/index.shtml.

Clean Water Act Section 404 Permit

If the project will involve the discharge of dredged or fill material in navigable waters or wetlands, a permit pursuant to Section 404 of the Clean Water Act may be needed from the United States Army Corps of Engineers (USACOE). If a Section 404 permit is required by the USACOE, the Central Valley Water Board will review the permit application to ensure that discharge will not violate water quality standards. If the project requires surface water drainage realignment, the applicant is advised to contact the Department of Fish and Game for information on Streambed Alteration Permit requirements.

If you have any questions regarding the Clean Water Act Section 404 permits, please contact the Regulatory Division of the Sacramento District of USACOE at (916) 557-5250.

Clean Water Act Section 401 Permit – Water Quality Certification

If an USACOE permit, or any other federal permit, is required for this project due to the disturbance of waters of the United States (such as streams and wetlands), then a Water Quality Certification must be obtained from the Central Valley Water Board prior to initiation of project activities. There are no waivers for 401 Water Quality Certifications.

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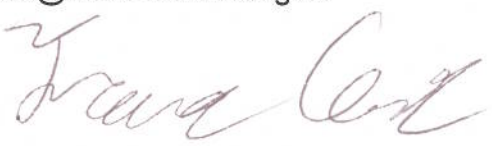
[1] Municipal Permits = The Phase I Municipal Separate Storm Water System (MS4) Permit covers medium sized Municipalities (serving between 100,000 and 250,000 people) and large sized municipalities (serving over 250,000 people). The Phase II MS4 provides coverage for small municipalities, including non-traditional Small MS4s, which include military bases, public campuses, prisons and hospitals.

Waste Discharge Requirements

If USACOE determines that only non-jurisdictional waters of the State (i.e., "non-federal" waters of the State) are present in the proposed project area, the proposed project will require a Waste Discharge Requirement (WDR) permit to be issued by Central Valley Water Board. Under the California Porter-Cologne Water Quality Control Act, discharges to all waters of the State, including all wetlands and other waters of the State including, but not limited to, isolated wetlands, are subject to State regulation.

For more information on the Water Quality Certification and WDR processes, visit the Central Valley Water Board website at: http://www.waterboards.ca.gov/centralvalley/help/business_help/permit2.shtml.

If you have questions regarding these comments, please contact me at (916) 464-4684 or tcleak@waterboards.ca.gov.



Trevor Cleak
Environmental Scientist

cc: State Clearinghouse Unit, Governor's Office of Planning and Research, Sacramento

Public Comment 2 – Central Valley Regional Water Quality Control Board

2-1: **Construction Storm Water General Permit:** This comment states the need to obtain a Stormwater Pollution Prevention Plan (SWPPP).

Response: The Corps and its sponsor, CVFPB, recognizes the need for the project to have an acceptable SWPPP in place prior to construction, but this responsibility lies with the selected contractor who is required to develop the SWPPP. This is noted in the CEQA Mitigated Negative Declaration at the start of this EA/IS and in Sections 3.4.3 and 5.1 and Appendix A of this EA/IS. The project specifications, which the contactor is required to follow, also includes requirements to obtain a SWPPP. The Corps Environmental Chemistry Section develops and provides project specific specifications for storm water compliance and stands ready to assist the selected contractor in developing an exemplary SWPPP.

2-2: **Phase I and II Municipal Separate Storm Sewer System (MS4) Permits**: This comment describes the need for a Phase I or II Municipal Separate Storm Sewer System (MS4) permit.

Response: The Corps has reviewed the agency's website that was provided and has determined that the Phase I or II MS4 permit does not apply to this project. The proposed project involves construction work that would correct current deficiencies to an existing government flood risk management levee system. There is no medium or large municipality served by this project as Phase I MS4 permits apply to nor is the project a government facility, such as a military base, public school, prison, or hospital, as stated in the website/ However, the Corps Environmental Chemistry Section would, as part of the specification development, look to see if the site is within the jurisdiction of a permitted MS4. If it is then certain Storm water requirements are waived that would be included in the project specifications.

2-3**: Industrial Storm Water General Permit**: This comment describes the need for an "industrial storm water general permit."

Response: The Corps notes that the proposed project would not fit under any of the "list of regulated standard industrial classification codes (SIC)," but notes it would be classified under OSHA SIC #4941 for "Transportation and Public Utilities, Industry" which is classified under OSHAs SIC #9511 for "Air and Water Resource and Solid Waste Management." This permit, if applicable, would also be obtained by the contractor prior to construction after the Corps Environmental Chemistry Section determines the applicability of this permit.

2-4: **Clean Water Act Section 404 Permit**: This comment describes the need to obtain a Section 404 clean Water Act permit from the Corps Regulatory office.

Response: The proposed project is a Corps Civil Works flood risk management project that is planned to be constructed by Corps-employed contractors. The Corps Regulatory office does not issue Section 404 (or Section 10) permits for Corps Civil Works projects pursuant to Regulatory Guidance Letter (RGL) 88-09. A Section 404(b)(1) evaluation (Appendix A) was completed, but was inadvertently left out of the draft EA/IS. Appendix A has been included as an Appendix to the final EA/IS. This evaluation thoroughly addresses impacts to the wetland ditches that would be affected by the proposed project and replaces the need for a Section 404 permit if Corps contractors perform the work. However, as Section 2.3.4 of the EA/IS describes, the local sponsor for sites 12 to 13, the Knights Landing Ridge Drainage District (KLRDD), is applying to the State to perform the work independently under an Early

Implementation Program (EIP). Should the EIP be approved than the KLRDD would need to seek a Section 404 permit decision from the Corps Regulatory office. However, it should be noted that wetland impacts evaluated in this NEPA document are not necessarily jurisdictional wetlands or Waters of the U.S. for the Corps Regulatory office.

2-5: **Clean Water Act Section 401-Water Quality Certification**: This comment addresses the need for State water quality certification pursuant to Section 401 of the Federal Clean Water Act.

Response: The Corps and its sponsor recognizes the need for Section 401 certification, regardless of whether or not a Section 404 permit is issued. This is described in the CEQA Mitigated Negative Declaration at the beginning of the EA/IS and in Sections 3.4.2.4; 3.4.3; 5.1; and Appendix A of the EA/IS. The Section 401 certification would also be obtained by the contractor or the local sponsor prior to construction

2-6: **Waste Discharge Requirements**: The Board's final comment stated the need for Waste Discharge Requirements (WDR) if the work was in "non-federal waters of the state."

Response: Section 5.1 of the EA/IS under the "Clean Water Act" description states, "Sites 12 and 13 contains wetlands that were historically and are currently hydraulically connected to other waters of the U.S." The Corps Environmental Resources Branch (PD-R), which administers NEPA compliance for Corps Civil Works projects, notes that the wetland ditches to be affected are located in drained hydric soils that are contiguous to the Knights Landing Ridge Cut and the tidal portion of the Sacramento river so the wetlands in question would appear to be adjacent to those waters and thereby jurisdictional. However, only the Corps Regulatory office can make the final determination for jurisdictional Waters of the U.S.. under Section 404 if they are involved, as described in the response to comment 1-4 above.

Public Comment 3 – California Department of Conservation

Memorandum for Record

(Telephone Record Form)

Person called: Jeff Koschak; Corps Environmental Manager (SPK-PD-RP)

Person Calling: Jackie Ramsey; CA Department of Conservation (DoC)

Ms. Ramsey returned my phone call O/A 9/5/12 after I returned her phone call to me the week before. Ms. Ramsey informed me that the Project would also need to comply with the CA Land Conservation (or Williamson) Act. She stated the Corps would need to submit a form to their office for a 30 day review and approval process. I confirmed the law would need to be complied with, but we would expect our non-federal sponsor, the State of CA or their local sponsors, to submit the form prior to construction that could be years away. I also requested that she send me their comment(s) in writing about this, but nothing was ever received.

Response: This comment was coordinated with the State (DWR) and they confirmed it would be their local sponsors who would need to submit the Williamson Act form(s). That would be the Knights Landing Ridge Drainage District for sites 12-13 and Yolo County for sites 9-11, if any Willamsons Act properties are affected in those areas. The Corps notes that this is consistent with the DoC website that states, "only the landowner can petition to cancel a [Williamson act] contract" as stated online at:

http://www.conservation.ca.gov/dlrp/lca/basic_contract_provisions/Pages/Index.aspx#what is a cancellation

As it would be CVFPB's local sponsors, and not the Corps nor the State, who would be the future landowners of the subject property so it would fall to CVFPB's local sponsors to comply with this law.

Text changes/additions have been made to Sections 3.6.2.3 and 5.2 to address the above comment.

DEPARTMENT OF TRANSPORTATION
703 B STREET
MARYSVILLE, CA 95901
PHONE (530) 741-4004
FAX (530) 741-5346
TTY 711

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September 10, 2012

0312-YOL-0023
03-YOL-5 PM 5.52
SCH# 2012082015

Ms. Mary Ann Hadden
Central Valley Flood Protection Board
3464 El Camino Avenue Room 200
Sacramento, CA 95821

Sacramento River Flood Control System Evaluation, Phase III, Mid-Valley, Contract Area 3 – Mitigated Negative Declaration (MND)/Draft Environmental Assessment (DEA)/Initial Study (IS)

Dear Ms. Hadden:

Thank you for including the California Department of Transportation (Caltrans) in the environmental review process for the project referenced above. The project proposes installing slurry cutoff walls on the existing levee at Sites 9, 10, and 11 along the west side of the Sacramento River, and remediating the existing levee at sites 12, 12A, and 13 along the east of the Knights Landing Ridge Cut (KLRC). The project sites are accessed via Interstate 5 (I-5) and County Road 102 (CR-102), and located along several rural locations along the Sacramento River levees just south and east of the Town of Knights Landing. The following comments are based on the MND/DEA.

Transportation Management Plan (TMP)

As identified in the project's MND/DEA significant traffic impacts may occur during construction and the project sponsor is going to prepare a TMP. A construction Traffic Impact Study may be required of the developer for approval by Caltrans prior to construction. We would like to review the TMP when it becomes available. The project sponsor should prepare a construction Trip Generation Table and Trip Distribution Diagram to identify the daily and peak hour trip generation and distribution. The volume of trucks should also be identified in the Trip Generation Table. The information will be used to determine project construction traffic impacts. TMPs must be prepared in accordance with Caltrans' *Manual on Uniform Traffic Control Devices.* Further information is available for download at the following web address:
http://www.dot.ca.gov/hq/traffops/signtech/mutcdsupp/pdf/camutcd2012/Part6.pdf

Further information is available on the following website:
http://www.dot.ca.gov/hq/tpp/offices/ocp/igr_ceqa.html.

For any questions regarding this letter, please contact Arthur Murray of my staff at 916-274-0616 or by email at: arthur_murray@dot.ca.gov

Sincerely,

Eric Fredericks

ERIC FREDERICKS, Chief
Office of Transportation Planning – South

c: Scott Morgan, State Clearinghouse

Public Comment 4 – California Department of Transportation (Caltrans)

Caltrans stated the importance of developing a Transportation Management Plan (TMP) for the work that they would review for its adequacy. They also provided details of what the TMP should include.

Response: The Corps and its sponsors fully concur with this comment and have revised Section 3.7.3 to address the above comment.

1947 Galileo Ct., Suite 103 • Davis, California 95616

(530) 757-3650 • (800) 287-3650 • Fax (530) 757-3670

August 30, 2012

Mr. Jeff Koschak
U.S. Army Corps of Engineers, Sacramento District
1325 J Street
Sacramento, CA 95814-2922

Re: **Environmental Assessment for Sacramento River Flood Control System Evaluation, Phase III, Mid-Valley, Contract Area 3**

Dear Mr. Koschak:

The Yolo-Solano Air Quality Management District (District) has received the above referenced project. The U.S. Army Corps of Engineers is proposing to modify levees and relocate a drainage ditch and two pump stations in order to reduce potential for erosion and levee failure due to seepage and levee instability.

The District has several comments on the Environmental Assessment (EA), which are listed below:

1. Table 10 of the EA/IS on page 31 indicates that the District has a maximum daily threshold for both reactive organic gases (ROG) and nitrogen oxides (NOx) of 55 pounds per day each, with a coarse particulate matter (PM10) threshold of 80 pounds per day. While the District has established a 80 pounds per day threshold for PM10, the District has not adopted a daily threshold for ROG or NOx. Adopted District thresholds can be found on page 6 of the District's *Handbook for Assessing and Mitigating Air Quality Impacts.*

2. Table 11 of the EA/IS states that the District has adopted annual thresholds for ROG and NOx of 50 tons per year. The District's annual ROG and NOx thresholds are actually 10 tons per year. The 50 ton per year limit is used for purposes of evaluating federal conformity. While the project would apparently exceed the District's annual thresholds of significance for ROG and NOx, it would not exceed the federal de minimus thresholds for conformity. As stated in #1, above, adopted District thresholds can be found on page 6 of the District's *Handbook for Assessing and Mitigating Air Quality Impacts.*

3. In addition to the mitigation measures listed under section 3.5.3.1, the District recommends considering the following additional mitigation measures to reduce exhaust smoke, criteria pollutants and GHG's:

- Standard construction practices at the erosion sites would ensure that exhaust emissions from all off-road diesel-powered equipment used on the sites do not exceed 20% opacity for more than three minutes in any one hour. Any equipment found to exceed 20% opacity (or Ringelmann 1) would be repaired immediately in accordance with District Rule 2-3, Ringlemann Chart. The Corps and/or the appropriate local air quality agency would be notified within 48 hours of identification of non-compliant equipment.

- Portable diesel fueled equipment greater than 50 horsepower (HP), such as generators or pumps, must be registered with either the Air Resources Board's (ARB's) Portable Equipment Registration Program (PERP) (http://www.arb.ca.gov/perp/perp.htm) or with the District.

- To reduce NOx and PM 10 emissions from heavy duty construction equipment, consider the use of a combination of CARB verified technologies and or later model off-road equipment meeting CARB's newer Tier levels or equivalent (Tier 2 or cleaner).

- All heavy-duty on-road and off-road vehicles and construction equipment greater than 25 horse power shall limit idling to no more than 5 minutes in accordance with CARB's Airborne Toxic Control Measure to Limit Diesel-Fueled Commercial Motor Vehicle Idling and the In-Use Off-Road Diesel Vehicle Regulation. In addition, idling should also be limited to 5 minutes or less for all other vehicles and equipment as well.

- Encourage workers to carpool to and from the work sites during all phases of the project if feasible.

4. The EA's Table of Contents shows that the air quality analysis is in Appendix D. Appendix D does not appear to be included in the EA or included as a separate document in the materials received by the District. Not having access to the appendix containing the air quality analysis makes a comprehensive evaluation of the project's air quality impacts difficult. For future projects, please include all relevant technical air quality studies.

In conclusion, the District appreciates receiving the proposed project development proposal. If you require additional information, please contact me at (530) 757-3668.

Sincerely,

Matthew R Jones

Matthew R. Jones
Supervising Air Quality Planner

Public Comment 5 – Yolo-Solano Air Quality Management District

3-1. Table 10 of the EA/IS on page 31 indicates that the District has a maximum daily threshold for both reactive organic gases (ROG) and nitrogen oxides (NOx) of 55 pounds per day each, with a coarse particulate matter (PM10) threshold of 80 pounds per day. While the District has established a 80 pounds per day threshold for PM10, the District has not adopted a daily threshold for ROG or NOx.

Response: Corrected Table 10 and added footnote indicating there are no daily thresholds for ROG and NOx.

3- 2. Table 11 of the EA/IS states that the District has adopted annual thresholds for ROG and NOx of 50 tons per year. The District's annual ROG and NOx thresholds are actually 10 tons per year. The 50 ton per year limit is used for purposes of evaluating federal conformity.

Response: Corrected Table 11 by adding YSAQMD annual thresholds for ROG and NOx.

3-3. In addition to the mitigation measures listed under section 3.5.3.1, the District recommends considering the following additional mitigation measures to reduce exhaust smoke, criteria pollutants and GHG's: Equipment should not exceed 20% opacity; equipment >50 hp should be registered with ARB or YSAQMD; consider using CARB technologies and or later model equipment; limit idling to no more than 5 minutes; encourage carpooling.

Response: Changed 40% opacity to 20% opacity in text. Added other measures as bullets in Section 3.5.2.1 Measures to be Implemented.

3-4. The EA's Table of Contents shows that the air quality analysis is in Appendix D [now Appendix E]. Appendix D [E] does not appear to be included in the EA or included as a separate document in the materials received by the District. Not having access to the appendix containing the air quality analysis makes a comprehensive evaluation of the project's air quality impacts difficult. For future projects, please include all relevant technical air quality studies.

Response: Plates and Appendices were inadvertently left out of the draft EA/IS, but were later provided to the YSAQMD by reposting the full document to the Corps website prior to the deadline for comments. The final EA/IS will include Plates and all Appendices.

APPENDIX I
Mitigation Conditions/Measures

Complete List of EA/IS Mitigation Conditions/Measures

Fisheries (p. 10-EA/IS page citation): "The proposed construction at the six repair sites would not involve in-water work or the clearing of near-bank vegetation that serves as shaded riverine aquatic (SRA) habitat. Construction of the spoil berms would be entirely on the landside of the levees. Material from degrading the top of the levee where the two bentonite cutoff walls (at Sites 9 and 10) are proposed can be temporarily stockpiled on the waterside of the levees, but the use of best management practices (BMPs) would ensure no material enters the Sacramento River. No waterside staging areas would be allowed in order to prevent accidental leaks of oils or fuels into the waterways."

Socioeconomics (p. 11): "Any potential short-term effects on existing utilities in the project area would be coordinated with the utility companies to ensure that there would be no interruption in electric or gas supply to nearby buildings or businesses. In addition, any potentially affected users in the area would be kept informed and encouraged to comment. "

Noise (p. 11): "…First, construction equipment would be limited to daylight hours, starting no earlier than 7 a.m. Mufflers would be installed on all equipment. Any stationary noise generating construction equipment would be located at least 400 feet away from any residences. Finally, no haul routes would go through towns such as Knights Landing thus there would be no increase in noise due to vehicular construction equipment."

Vegetation and Wildlife (pp. 15-17): "Mitigation for grassland, woody riparian, emergent marsh (wetland ditch/pond) acreages and elderberry impacts for the design at the six levee reconstruction sites have been calculated and are shown in [below] Table.

Site	Woody Riparian[1] Habitat (acres/# of trees)	Giant Garter Snake Habitat (wetland restoration)	Elderberry (>1" stems) (shrubs/stems transplanted[1] + stems planted = acres needed; Mitigation Ratios (MR)[2]	Grassland (native grassland planted)
9	0	0	0	1.29
10	0	0	1/6 + 16 = 0.13 MR: 3@2:1; 2@3:1; 1@4:1	1.05
11	0.33/50	0	13/185 + 342 = 4.07 MR: 83@1:1; 71@2:1; 23@3:1; 8@6:1	2.37
Sub-total	**0.33/50**	**0**	**14/191 + 358 = 4.2**	**4.71**
12	4.09/618	6.48	21/52 + 144 = 2.25 MR: 33@2:1; 6@3:1; 11@4:1; 2@8:1	37 (GGS GL habitat)
12A	Included in Site 12	0	Included in Site 12	Included in Site 12
13	0.05/7	0.84	1/4 + 10 = 0.25 MR: 2@2:1; 2@3:1	Included in Site 12
Sub-total	**4.47/675**	**7.33**	**22/56 + 154 = 2.5**	**37 (GGS GL habitat)**
Grand Total	**4.8/725**	**7.33**	**36/247 + 512 = 6.7**	**40.55**

[1]-not all existing stems may be transplanted so total to be planted equals number of new stems/seedlings plus the transplanted bush(es) plus an appropriate amount of native associated plants (not shown) per the VELB Guidelines (US Fish & Wildlife Service, 1999)
[2]-mitigation ratios based upon size classes and exit holes present or not (see Table 5) and whether the elderberry bushes are located in non-riparian areas (site 11) or riparian areas (all other sites) per VELB Guidelines (US Fish & Wildlife Service, 1999)

The loss of riparian habitat would be mitigated for onsite with the creation of 4.8 acres of riparian woodland habitat. At least 675 of the riparian plantings/seedlings covering 4.47 acres are expected to be planted at Site 12 along and to the east of the new or existing wetland ditch.

Affected emergent marsh habitat would be mitigated on site with the creation of 7.33 acres of new emergent marsh habitat. A new agricultural drainage ditch at Sites 12 and 13 would be relocated within 50 feet of the existing one. Riparian trees and scrub-shrub species would be planted along both sides of the newly relocated ditch in order to establish a wildlife corridor. Mitigation for grasslands would be accomplished on-site by planting new native grasses on the constructed levees and spoil berms.

In addition, the Corps would provide and incorporate the below mitigation/design measures recommended by the USFWS in their new and revised *Final Coordination Act Report for the Sacramento River Flood Control System Evaluation Phase III*, dated October 5, 2012 (Appendix B). However, the Corps has determined that the current CDFG Swainson's hawk protocols require a 0.5-mile radius survey. As a result, the Corps would increase the size of the survey to meet the State's protocol.

- Avoid impacts to migratory birds nesting in trees along the access routes and adjacent to the proposed repair sites by conducting pre-construction surveys for active nests along proposed haul roads, staging areas, and construction sites. Work activity around active nests should be avoided until the young have fledged. The following protocol from the California Department of Fish and Game for Swainson's Hawk would suffice for the pre-construction survey for raptors:

  A focused survey for Swainson's hawk nests will be conducted by a qualified biologist during the nesting season (February 1 to August 31) to identify active nests within 0.25 miles of the project area. The survey will be conducted no less than 14 days and no more than 30 days prior to the beginning of construction. If nesting Swainson's hawks are found within 0.25 miles of the project area, no construction will occur during the active nesting season of February 1 to August 31 or until the young have fledged (as determined by a qualified biologist), unless otherwise negotiated with the California Department of Fish and Game. If work is begun and completed between September 1 and February 28, a survey is not required.

- Avoid future impacts to the site by ensuring all fill material is free of contaminants.
- Minimize project impacts by reseeding all disturbed areas at the completion of construction with forbs and grasses.
- Minimize the impact of removal and trimming of all trees and shrubs by having these activities supervised and/or completed by a certified arborist.
- Compensate for the loss of 1.93 acres of riparian woodland by restoring a minimum of 1.93 acres at a site approved by the Service for the adverse impacts on wildlife from project construction activities affecting riparian woodland and riparian scrub-shrub cover types.
- Compensate for the loss of 2.43 acres of emergent marsh along the existing landside toe ditch by relocating or replacing the toe ditch and replanting it with emergent marsh cover. The new ditch would create 7.33 acres of emergent marsh.
- Implement at least a 20-year monitoring and remediation period to determine the success of the plantings and correct any failures of the mitigation effort. Monitoring and reporting to the Service should be required every year for the first 5 years of the 20-year period, and every 5 years afterward. If, within the monitoring period, revegetation efforts are unsuccessful, corrective actions would be required until mitigation goals are met. Funding sources for monitoring and remediation should be appropriated prior to project construction…"

Special Status Species (pp. 21-23): "Avoidance and mitigation measures wouls be undertaken to minimize and prevent adverse effects to special status species.

Giant Garter Snake

The project plans, which proposes mitigating for giant garter snake aquatic habitat on a more than 3:1 scale, is consistent or exceeds the terms and conditions to mitigate giant garter snake habitat impacts in the USFWS October 5, 2012, Biological Opinion issued for this EA. Further, the following mitigation conditions would also be followed:

- Harassment, harm, or mortality of giant garter snakes due to construction and operations associated with implementing the project would be minimized. (See the *Standard Avoidance and Minimization Measures During Construction Activities in Giant Garter Snake Habitat* online at: http://www.fws.gov/sacramento/ES/Survey-Protocols-Guidelines/Documents/GGS%20Appendix%20C.pdf

- All construction activity in giant garter snake habitat would be conducted between April 30 and October 1. If work beyond October 1 in any year would be necessary, the Corps [and its contractors] would not be exempt from Section 9 of the ESA and must reinitiate consultation. To allow sufficient time for reinitiation of consultation, the Corps must reinitiate by July 15 of that year.
- Prior to construction activities, a qualified biologist would provide construction personnel with worker awareness training to recognize the giant garter snake and its habitat.
- Prior to construction activities, the site would be inspected by a qualified biologist, who has been approved by the Sacramento Field Office of the USFWS, so that the killing and harassing of giant garter snakes can be minimized or avoided.
- Nearby habitat designated as environmentally sensitive to the snake would be flagged and avoided by all construction personnel.
- Movement of heavy equipment to and from the project site or borrow site would be confined to existing roadways to minimize habitat disturbance. Equipment would stay at least 200 feet from the banks of giant garter snake aquatic habitat, wherever feasible.
- Drainage/wetland ditches and ponds would be pumped dry and would remain dry for at least 15 consecutive days prior to construction/fill.
- If a giant garter snake is encountered during construction, activities would cease until capture and relocation have been completed by the USFWS-approved biologist.
- Any incidental take would be reported to the USFWS immediately by telephone at (916) 414-6600/6601.
- If construction were to extend into October at a site, a USFWS-approved biologist would be onsite to monitor construction activities.
- New irrigation or drainage ditches would be excavated prior to filling the existing ditches.
- Mitigation for giant garter snake habitat would take place onsite. Both upland and emergent wetland habitat would be created to offset effects to their habitat during construction of the spoil berms and realignment of the ditches.

<u>Valley Elderberry Longhorn Beetle</u>

The Biological Opinion issued on October 5, 2012, was amended on March 25, 2013, at the Corps request, as additional analysis modified the elderberry mitigation plantings. A total of 36 elderberry shrubs affected by this project would be mitigated by onsite transplants and plantings. Construction in Contract Area 3 would require a total of 6.7 acres of elderberry mitigation habitat to be planted onsite. This acreage includes the establishment of associated native plantings. It is expected that 2.5 acres of this would be planted in the near future to mitigate for elderberry impacts at Sites 12, 12A, and 13 and the rest would be planted at a later time (see the Construction Schedule in Section 2.3.4 of the EA/IS).

Avoidance and mitigation measures outlined in the *Mitigation Guidelines for the Valley Elderberry Longhorn Beetle, July 9, 1999* (USFWS 1999) would be followed in addition to any other terms and conditions issued by the USFWS. They are listed below:

Protective Measures

- Fence and flag all areas to be avoided. Provide a minimum setback of at least 20 feet from the drip line of any elderberry plants.
- Provide worker awareness training to contractors and work crews on the need to avoid damaging

the elderberry plants and possible penalties for not complying with these requirements.

- Place signs every 50 feet along the edge of the avoidance areas with the following information: "This area is habitat of the valley elderberry longhorn beetle, a threatened species, and must not be disturbed. This species is protected by the Endangered Species Act of 1973, as amended. Violators are subject to prosecution, fines, and imprisonment." The signs would be clearly readable from a distance of 20 feet, and would be maintained for the duration of construction.

Restoration and Maintenance

- Restore any damage done to the buffer area during construction. Provide erosion control and revegetate with appropriate native plants.
- No insecticides, herbicides, fertilizers, or other chemicals that might harm the beetle or its host plant would be used in the core and buffer avoidance areas, or within 100 feet of any elderberry plant with a stem measuring 1.0 inch or greater in diameter at ground level.
- The construction contractor is required to provide a written description of how the core and buffer avoidance areas are to be restored and protected.

Compensatory Mitigation (per USFWS Biological Opinion)

- Any adverse effects to elderberry plants as a result of the proposed project would be compensated by the Corps [contractor] as set forth in the *Conservation Guidelines for the Valley Elderberry Longhorn Beetle* (FWS 1999) online at: http://www.fws.gov/sacramento/ES/Survey-Protocols-Guidelines/Documents/velb_conservation.pdf
- Prior to any groundbreaking activities for the Mid-Valley project, the Corps [contractor] would develop a detailed Service-approved conservation and monitoring plan for the beetle. The plan would include, but not be limited to (1) a description of how and when transplanted elderberry shrubs would be moved from the project site to a Service-approved compensation site;(2) a description of how plantings would be established and the establishment period, as discussed in the Guidelines; (3) a description of the irrigation system; (4) a description of the amount and type of fertilizer each plant would receive each year and the timing of each application; and (5) a description of the monitoring period, as directed by the Guidelines.
- The Corps [contractor] would acquire a suitable site for the transplanted shrubs and other plantings and would maintain this site for the beetle in perpetuity as set forth in the Guidelines. No ground-breaking activities would occur until the site is approved by the Service.
- No more than 36 elderberry shrubs, consisting of no more than 251 stems measuring 1 inch or greater in diameter at ground level, would be transplanted from the construction site to the compensation site. Shrubs would be transplanted when the plants are dormant. Transplanting outside the dormant season would require additional Service-approved conservation measures.
- The Corps [contractor] would also plant 512 elderberry seedlings and 576 associated native plants along with the transplanted elderberry clumps. The plantings would be spaced in accordance with the Guidelines.

<u>Swainson's Hawk</u>

Conduct surveys for Swainson's hawks in the vicinity of the Contract Area 3 in accordance with CDFG (2000) guidelines prior to the start of construction. These surveys would occur within one-quarter mile of all six levee construction sites, including staging areas, and borrow sites.

If hawks with active nests are found within the one-quarter mile radius of the worksite, the Corps would implement appropriate mitigation measures to be defined by CDFG. Measures could include a

moratorium on construction in the area where the nest(s) is/are located until the newly hatched young have exited the nest (usually May through August 1 depending upon how early nesting activity started)."

Water Quality and Wetlands (pp. 25-26): "…the wetland impacts would be mitigated onsite and would total 7.33 acres through the excavation of a wider wetland ditch or pond and other wider wetland ditches totaling 6.48 acres at site 12 and a new wider wetland ditch at Site 13 that would provide 0.85 acres of wetlands.

Under Section 401 of the Clean Water Act, the projects at Sites 12, 12A, and 13 are subject to the conditions of certification to be issued by the State Water Resources Control Board. Since there would be no other work in any wetlands or waters, the work at Sites 9, 10, and 11 would not require Section 401 certification.

However, each of the project areas (Sites 9, 10 and 11 and Sites 12, 12A, and 13) would be subject to additional Clean Water Act (CWA) regulations, such as the National Pollutant Discharge Elimination System (NPDES) pursuant to Section 402 of the CWA. Similar to previous work on the flood control project, the Section 401 and 402 approvals require the implementation of numerous BMPs to reduce any potential adverse effects to water quality…

Erosion control and sediment detention devices such as using straw bales, fencing, sandbags, and/or similar devices would be incorporated into the project and implemented at the time of the project action. These devices would be in place during the project action, and after if necessary, for the purpose of minimizing fine sediment/water slurry input to flowing water. The devices would be placed at all locations where the likelihood of sediment input exists.

The contractor would prepare and implement (1) an erosion and sediment control plan for minimizing the potential for sediment input into the river or Knights Landing Ridge Cut, (2) a toxic material control and spill response plan for preventing toxic material spills, (3) a soil management plan that provides criteria for classifying wastes in soil and managing soils possibly contaminated by toxics, and (4) a hazardous and toxic materials contingency plan in the event that unlisted hazardous and toxic sites are uncovered during construction.

Dewatering of work areas, such as pumping the wetland ditches dry, would be conducted in accordance with all regulatory requirements to avoid or minimize any effects on water quality.

No haul roads or any staging areas would occur on the waterside

All fill and rock materials would be non-toxic. Any combination of wood, plastic, concrete, or steel is acceptable, provided that there are no toxic coatings, chemical anti-fouling products, or other treatments that could leach into the surrounding environment."

Air Quality and Climate Change (pp 32-34): **"**To reduce the temporary increase to emissions, best management practices (BMPs) would be implemented by the Corps construction contractor at each repair site. These include dust and PM_{10} abatement by watering, limiting on-site idling time of heavy equipment, and ensuring that all internal combustion engine equipment is properly tuned to the manufacturer's specification. These practices would result in limiting emissions during the construction period and would be sufficiently effective to avoid exceeding significance thresholds.

Measures to be Implemented

Standard construction practices at the erosion sites would ensure that exhaust emissions from all off-road diesel-powered equipment used on the sites do not exceed 20% opacity for more than three minutes in any one hour. Any equipment found to exceed 20% opacity (or Ringelmann 2.0) would be repaired immediately. The Corps and/or the appropriate local air quality agency would be notified within 48 hours of identification of non-compliant equipment.

However, the project applicant or representative would provide a plan for approval by the Yolo Solano Air Quality Management District (YSAQMD) and the USACE or CVFPB demonstrating that the construction activities would not exceed YSAQMD thresholds. The plan would demonstrate that heavy-duty (>50 horsepower) off-road vehicles to be used in the construction project, including owned, leased, and subcontractor vehicles, would achieve a project-wide fleet-average 20 percent NO_x reduction and 45 percent particulate reduction compared to the most recent California Air Resources Board (CARB) fleet average at time of construction. To reduce emissions for this project, the applicant may employ one or more of the following measures:

- Require injection timing retard of two degrees on all diesel vehicles, where applicable.
- Install high pressure injectors on all vehicles, where feasible.
- Encourage the use of reformulated diesel fuel.
- Electrify equipment, where feasible.
- Maintain equipment in tune with manufacturer's specifications.
- Install catalytic converters on gasoline-powered equipment.
- Substitute gasoline-powered for diesel-powered equipment where feasible.
- Use compressed natural gas or on-site propane mobile equipment instead of diesel-powered equipment, where feasible.
- Consider the use of a combination of CARB verified technologies and or later model off-road equipment meeting CARB's newer Tier levels or equivalent (Tier 2 or cleaner).
- Limit idling of all vehicles and equipment to no more than 5 minutes.
- Encourage workers to carpool to and from work.

The contractor would submit to USACE, CVFPB, and YSAQMD a comprehensive inventory of all off-road construction equipment equal to or greater than 50 horsepower that would be used an aggregate of 40 or more hours during any portion of the construction project. The inventory would include the horsepower rating, engine production year, and projected hours of use or fuel throughput for each piece of equipment. The inventory would be updated and submitted monthly throughout the duration of construction activities, except that an inventory would not be required for any 30-day period in which no construction activity occurs. At least 48 hours prior to the use of subject heavy-duty off-road equipment, the contractor would provide the YSAQMD with the anticipated construction timeline, including start date and the name and phone number of the project manager and on-site foreman. The local air quality district and/or other officials may conduct periodic site inspections to determine compliance. Nothing in this section would supersede YSAQMD or State rules or regulations. Portable diesel fueled equipment greater than 50 horsepower, such as generators or pumps, must be registered with either the Air Resources Board's Portable Equipment Registration Program (http://www.arb.ca.gov/perp/perp.htm) or with YSAQMD."

Traffic and circulation (pp. 39-40): "Implementation of the following mitigation measures would reduce potential traffic- and circulation-related effects to less-than-significant levels. These measures would be incorporated as appropriate in construction plans and specifications.

Transportation Management Plan (TMP)

a. The construction contractor would prepare and implement a TMP that addresses conditions at each site. The plan(s) would be approved by the Yolo County Department of Public Works,

the Town of Knights Landing if their city streets would be used, and Caltrans, as applicable, prior to the initiation of construction activities. The TMP would include measures to (1) reduce, to the extent practicable, the number of vehicles (construction-related and other) on the roadways adjacent to the sites; (2) reduce, to the extent practicable, the interaction between construction equipment and other vehicles; and (3) promote public safety through actions aimed at driver and road safety. The TMP would also include a: 1) Trip Generation Table showing the volume of trucks to be used; 2) Trip distribution Diagram to identify the daily and peak hour trip generation and distribution, and 3) a Construction Traffic Impact Study, if found to be needed. The TMP would be prepared in accordance with the Caltrans "Manual on Uniform Traffic Control Devices."

b. Prior to implementation of construction activities, the contractor would verify that all roads, bridges, culverts, and other infrastructure along the access routes can support expected vehicle loads.

c. The TMP would identify all intended haul routes, locations of signage, locations of flaggers, approved permits, documentation of coordination with local and State agencies, and locations of potential delays to vehicle and pedestrian traffic. Construction vehicles would follow established truck routes to the greatest extent practicable.

Travel Flow and Access

a. The contractor would maintain travel traffic on all roads adjacent to the site and on all affected public roads during the construction period. Measures for the protection and diversion of traffic, including the provision of watchmen and flagmen, erection of barricades, placing of lights around and in front of equipment and the work, and the erection and maintenance of adequate warning, danger, and direction signs, would be as required by State and local authorities having jurisdiction.

b. The traveling public would be protected from construction and work damage to person and property. The contractor's traffic on roads selected for hauling material to and from the site would interfere as little as possible with public traffic.

c. Traffic controls on major roads and collectors would include flag-persons wearing safety vests and using "stop/slow" paddles to direct drivers.

d. Detour and road closure signs would be placed on both ends of County Road 116B during construction activities on Site 11.

e. Through access for emergency vehicles would be provided at all times.

f. Access to public transit would be maintained, and movement of public transit vehicles would not be impeded as a result of construction activities.

g. Access to driveways and private roads would be maintained.

1.1.1.1 Construction-Related Traffic Measures

a. Construction parking would be restricted to the designated staging areas.

b. During peak periods, construction-generated traffic would avoid roadway segments or intersections that are at, or approaching, a level of service that exceeds local standards.

c. The speed of all construction vehicles would be limited to a maximum of 10 miles per hour on the levee access roads. The contractor would provide a minimum of four construction speed limit signs large enough to be visible by the passing traffic. The

speed limit signs would be in English units and posted on the levee and on each of the access roads. Signs would be posted for both incoming and outgoing traffic.

d. Construction warning signs would be posted in accordance with the local standards or those set forth in the *Manual on Uniform Traffic Control Devices* (FHWA 2012) in advance of the construction area and at any intersection that provides access to the construction area.

e. A sign, at least one square yard in size, would be posted at all active construction sites that gives the name and telephone number or email address to contact with complaints regarding construction traffic.

f. Measures would be implemented as needed to reduce erosion of temporary roadbeds by construction traffic, especially during wet weather. The construction contractor would minimize the amount of mud transported onto paved public roads by vehicles or runoff.

g. Rock, dirt, and/or other fill materials would be prevented from being accidently dropped from trucks traveling on highways to and from the erosion sites.

h. Any damage to roads caused by construction operations would be repaired to pre-project conditions.

Cultural Resources (p. 44): "if archeological deposits are found during project activities, work would be stopped pursuant to 36 CFR 800.13(b), Discoveries without Prior Planning, to determine the significance of the find and, if necessary, complete appropriate discovery procedures."