RECLAMATION

Managing Water in the West

Record of Decision

Yolo Bypass Salmonid Habitat Restoration and Fish Passage Project

September 2019

U.S. Department of the Interior
Bureau of Reclamation

Mission Statements

The Department of the Interior (DOI) conserves and manages the Nation's natural resources and cultural heritage for the benefit and enjoyment of the American people, provides scientific and other information about natural resources and natural hazards to address societal challenges and create opportunities for the American people, and honors the Nation's trust responsibilities or special commitments to American Indians, Alaska Natives, and affiliated island communities to help them prosper.

The mission of the Bureau of Reclamation is to manage, develop, and protect water and related resources in an environmentally and economically sound manner in the interest of the American public.

Record of Decision

Yolo Bypass Salmonid Habitat Restoration and Fish Passage Project

Recommended:

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Date 9.18.2019

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Date 9/19/2019

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Introduction

The United States Department of the Interior, Bureau of Reclamation (Reclamation), as the Federal lead agency under the National Environmental Policy Act (NEPA), and the California Department of Water Resources (DWR), as the State of California (State) lead agency under the California Environmental Quality Act (CEQA), prepared the Yolo Bypass Salmonid Habitat Restoration and Fish Passage Project (Project) Environmental Impact Statement/Environmental Impact Report (EIS/EIR) to assess impacts of the Project. The Project actions would implement Reasonable and Prudent Alternative (RPA) action I.6.1 and, in part, RPA action I.7, as described in the 2009 National Oceanic and Atmospheric Administration National Marine Fisheries Service (NMFS) *Biological Opinion and Conference Opinion on the Long-Term Operations of the Central Valley Project and State Water Project* (LTO) and the 2012 Yolo Bypass Salmonid Habitat Restoration and Fish Passage Implementation Plan (Reclamation and DWR 2012). Reclamation has committed to the Project in the Reinitiation of Consultation (ROC) on LTO, in part to mitigate the effects of the Tracy Pumping Plant (TPP). This Project has separate environmental compliance from the ROC on LTO.

Background

Substantial modifications have been made to the historical floodplain of California's Central Valley for water supply and flood control purposes. These activities and other environmental stressors have resulted in losses of rearing habitat, migration corridors, and food web production for fish, adversely affecting native fish species that rely on floodplain habitat during their life history.

Reclamation is responsible for operating and maintaining the Central Valley Project (CVP) and DWR is responsible for operating and maintaining the State Water Project (SWP). The CVP and SWP are operated in a coordinated manner to deliver water to agricultural, municipal, and industrial contractors throughout California. The CVP also produces electrical power, offers recreational opportunities, and provides water to restore and protect fish and wildlife and enhance water quality. The NMFS Biological Opinion (BO), issued on June 4, 2009, concluded that, if left unchanged, CVP and SWP operations are likely to jeopardize the continued existence of four anadromous fish species listed under the Federal Endangered Species Act (ESA): Sacramento River winter-run Chinook salmon, Central Valley spring-run Chinook salmon, Central Valley steelhead, and the Southern Distinct Population Segment (DPS) of North American green sturgeon. In addition, the NMFS BO concluded that operations were likely to destroy or adversely modify designated critical habitat for the four anadromous fish species. The NMFS BO sets forth RPA actions that would allow CVP and SWP operations to remain in compliance with the ESA. The Project addresses impacts from CVP and SWP, such as fishery impacts to juvenile salmonids at the TPP, by routing juveniles through the Yolo Bypass which allows them to avoid interior Delta entrainment associated with the TPP. The Project would minimize impacts from the TPP and improve juvenile salmonid migration and survival through the Delta.

The NMFS BO identified activities in RPA actions I.7 and I.6.1 to improve fish passage and restore habitat in the lower Sacramento River basin, including the Yolo Bypass. The Yolo Bypass, which currently experiences at least some flooding in approximately 70 percent of years (Nurmi 2017), retains many characteristics of the historical floodplain habitat that are favorable to various fish species. Implementation of the RPA actions would expand the availability of floodplain rearing habitat in the lower Sacramento River basin and improve fish passage in the Yolo Bypass. The primary function of the Yolo Bypass is flood control, with much of it also managed as agricultural land or wetland waterfowl habitat. Major California restoration planning efforts (e.g., CALFED Bay-Delta Program, the Bay Delta Conservation Plan, and California EcoRestore) have identified the Yolo Bypass, as well as other areas, as a prime area of the Sacramento Valley for enhancement of seasonal floodplain fisheries rearing habitat.

The two RPA actions that formed the basis for alternatives considered for analysis in this EIS/EIR are summarized below:

- RPA Action I.6.1: Restore floodplain rearing habitat for juvenile Sacramento River winter-run Chinook salmon, Central Valley spring-run Chinook salmon, and Central Valley steelhead through increased acreage of seasonal floodplain inundation within the lower Sacramento River basin.
- RPA Action I.7: Reduce migratory delays and loss of salmon, steelhead, and sturgeon at Fremont Weir and other structures in the Yolo Bypass (NMFS 2009).

In addition to the species included in the NMFS BO, two other species designated as California Department of Fish and Wildlife (CDFW) Species of Special Concern may benefit from increased floodplain rearing habitat: Sacramento splittail and Sacramento River fall-run Chinook salmon.

Reclamation does not manage the Sacramento Valley Flood Control System. It does manage several reservoirs for multiple uses including water storage and delivery, flood management, and recreation. Because the implementation of the Project is required to operate the CVP in a way that avoids jeopardizing listed species in compliance with the Endangered Species Act, the CVP authorizations (Rivers and Harbors Act of 1937 and Central Valley Project Improvement Act of 1992, Title XXXIV, Public Law 102-575) serve as the applicable federal authorizations for Reclamation involvement in implementation of these actions.

Purpose and Need

The need for action is to address decreased habitat quality in the Sacramento River and an inadequate ability to access higher quality habitat, which has led to a decline in abundance, spatial distribution, and life history diversity for native ESA-listed and California Endangered Species Act listed fish species. The purpose of the action is to enhance floodplain rearing habitat and fish passage in the Yolo Bypass and/or other suitable areas of the lower Sacramento River basin by implementing RPA action I.6.1 and, in part, RPA action I.7, as described in the NMFS BO, to benefit Sacramento River winter-run Chinook salmon, Central Valley spring-run Chinook salmon, Central Valley steelhead, and the Southern DPS of North American green sturgeon.

The Decision

Reclamation's decision is to implement Alternative 1, East Side Gated Notch. Alternative 1 would allow flows up to 6,000 cfs, depending on Sacramento River elevation, through the gated notch to Tule Pond. More details on Alternative 1 are in Table 1 below. In making this decision, Reclamation reviewed the alternatives evaluated in the EIS/EIR, the results of the physical, environmental, economic, and human resources impact analyses, and comments submitted by federal, state, and local agencies, interested parties, and the public. Alternative 1 was found to:

- Improve access to seasonal habitat through volitional entry
- Increase access to and acreage of seasonal floodplain fisheries rearing habitat
- Reduce stranding and presence of migration barriers
- Increase aquatic primary and secondary biotic production to provide food through an ecosystem approach
- Improve connectivity within the Yolo Bypass for passage of salmonids and green sturgeon
- Improve connectivity between the Sacramento River and the Yolo Bypass to provide safe and timely passage for:
    - Adult Sacramento River winter-run Chinook salmon between mid-November and May when water surface elevations in the Sacramento River are amenable to fish passage
    - Adult Central Valley spring-run Chinook salmon between January and May when elevations in the Sacramento River are amenable to fish passage
    - Adult California Central Valley steelhead in the event their presence overlaps with the defined seasonal window for other target species when elevations in the Sacramento River are amenable to fish passage
    - Adult Southern DPS of North American green sturgeon between February and May when elevations in the Sacramento River are amenable to fish passage

Of the alternatives considered, implementation of Alternative 1 fully meets the purpose and need and balances the ability to achieve the project objectives with environmental effects.

The selected alternative will be managed in accordance with Appendix C of the EIS/EIR.

Alternatives Considered

The No Action Alternative and the range of alternatives for the EIS/EIR were developed to respond to the purpose and need for the action and to comments received during the scoping process and preparation of the Draft and Final EIS/EIR.

No Action Alternative

Under the No Action Alternative, the Yolo Bypass would continue to be inundated from the westside tributaries, overtopping events at Fremont, and flow through Sacramento Weir. Juvenile fish would enter the bypass with overtopping flood flows from Fremont and Sacramento weirs, and the fish would benefit from the rearing opportunities in the Yolo Bypass. Additional flow and fish would not pass through Fremont Weir when the Sacramento River elevation is below the crest of Fremont Weir or Sacramento Weir.

Adult fish may move upstream in Tule Canal in response to tidal influence in Cache Slough, flows over Fremont Weir, or when the westside tributaries attract fish. As under existing conditions, fish would either move downstream and migrate back into the Sacramento River, pass over Fremont Weir, pass through the existing fish passage structure at Fremont Weir, become stranded at Fremont Weir, or move to the Wallace Weir Fish Rescue Facility. Other projects in the Yolo Bypass and Sacramento River region would continue to move forward, including California EcoRestore projects, Battle Creek Salmon and Steelhead Restoration project, Environmental Permitting for Operation and Maintenance of flood facilities, Oroville Facilities Federal Energy Regulatory Commission Relicensing and License Implementation, and Sacramento Regional Wastewater Treatment Plant Upgrade.

Action Alternatives

The measures that moved forward for more detailed analysis in the EIS/EIR were those that responded to the NEPA purpose and need and CEQA objectives, minimized negative effects, were potentially feasible, and represented a range of reasonable alternatives. As a result of initial alternatives screening, six action alternatives were selected to move forward for analysis in the EIS/EIR (in addition to the No Action Alternative). Table 1 summarizes key elements of each alternative carried forward for analysis in the EIS/EIR.

Table 1. Summary of Alternatives

Components	Alternative 1 East Side Gated Notch	Alternative 2 Central Gated Notch	Alternative 3 West Side Gated Notch	Alternative 4 West Side Gated Notch – Managed Flow	Alternative 5 Central Multiple Gated Notches	Alternative 6 West Side Large Gated Notch
Maximum design flow (cubic feet per second [cfs])	6,000	6,000	6,000	3,000	3,400	12,000
Gated notch and channel location	East	Central	West	West	Central (Multiple)	West
Supplemental fish passage	West	West	East	East	West	East
Downstream channel improvements	X	X	X	X		X
Agricultural road crossing 1	X	X	X	X	X	X
Tule Canal water control structures				X		
Tule Canal floodplain improvements (program-level)					X	
Closure date for inundation flows	March 15	March 15	March 15	March 15 or March 7	March 15	March 15

Components Common to Multiple Action Alternative

All the action alternatives would include Agricultural Road Crossing 1 improvements, which would involve removal of the cross-canal berms and road crossing that create a fish passage barrier, construction of a bridge for vehicular traffic, and construction of an inverted siphon beneath the new Tule Canal connection to maintain water deliveries to the agricultural water users in the Elkhorn Area. Except for Alternative 5, all proposed alternatives include an engineered, trapezoidal channel that connects a new gated notch in Fremont Weir to Tule Pond. Alternative 5 varies from the other alternatives because it includes a multi-channel complex that connects to Tule Canal south of Tule Pond (near Agricultural Road Crossing 1).

Alternative 1: East Side Gated Notch

Alternative 1, East Side Gated Notch, would allow increased flow from the Sacramento River to enter the Yolo Bypass through a gated notch on the east side of Fremont Weir. The gated notch would create an opening in Fremont Weir, that is deeper than Fremont Weir, with gates to control water going through the facility into the Yolo Bypass. The invert of the new notch would be at an elevation of 14 feet, which is approximately 18 feet below the existing Fremont Weir

crest. Water would be able to flow through the notch from November 1 through March 15 when the river elevations are not high enough to go over the crest of Fremont Weir (at an elevation of 32 feet).

Alternative 1 would connect the new gated notch to Tule Pond with a channel that parallels the existing east levee of the Yolo Bypass. Alternative 1 would have the shortest and most direct access to the Tule Canal for migrating fish. Alternative 1 would allow flows up to 6,000 cfs, depending on Sacramento River elevation, through the gated notch to provide open channel flow for adult fish passage, juvenile emigration, and floodplain inundation. This alternative would include a supplemental fish passage facility on the west side of Fremont Weir and improvements to allow fish to pass through Agricultural Road Crossing 1 and the channel north of Agricultural Road Crossing 1.

Alternative 2: Central Gated Notch

Alternative 2, Central Gated Notch, would provide a new gated notch through Fremont Weir similar to the notch described for Alternative 1. The primary difference between Alternatives 1 and 2 is the location of the notch; Alternative 2 would site the notch near the center of Fremont Weir. This gated notch would be similar in size to Alternative 1 but would have an invert elevation that is higher (14.8 feet) because the river is higher at this upstream location. This location is on an outside bend of the river. Studies have indicated that juvenile fish may be found in greater numbers on the outside edge of river bends (DWR 2017). Because the bottom of the new gated notch would be at an elevation of 14.8 feet, it would allow flow to pass into the Yolo Bypass from November 1 through March 15 when the river elevations are not high enough to go over the crest of Fremont Weir (at an elevation of 32 feet).

Alternative 2 would include facilities to connect the gated notch to the existing Tule Pond. Alternative 2 would allow flows up to 6,000 cfs, depending on Sacramento River elevation, through the gated notch to provide open channel flow for adult fish passage, juvenile emigration, and floodplain inundation. This alternative would also include a supplemental fish passage facility on the western end of Fremont Weir and improvements to allow fish to pass through Agricultural Road Crossing 1 and the channel north of Agricultural Road Crossing 1.

Alternative 3: West Side Gated Notch

Alternative 3, West Side Gated Notch, would provide a new gated notch through Fremont Weir similar to the notch described for Alternative 1. The primary difference between Alternatives 1 and 3 is the location of the notch; Alternative 3 would site the notch on the western side of Fremont Weir. This gated notch would be similar in size to Alternative 1 but would have an invert elevation that is higher (16.1 feet) because the river is higher at this location. The western location is on the outside of a river bend, similar to Alternative 2, but would be easier to access for operations and maintenance than a central location. The new gated notch would allow flow to pass into the Yolo Bypass from November 1 through March 15 when the river elevations are not high enough to go over the crest of Fremont Weir (at an elevation of 32 feet).

Alternative 3 would include facilities to connect the gated notch to the existing Tule Pond. Alternative 3 would allow small flows up to 6,000 cfs, depending on Sacramento River stage, through the gated notch to provide open channel flow for adult fish passage, juvenile emigration, and floodplain inundation. This alternative would also include a supplemental fish passage facility on the eastern side of Fremont Weir and improvements to allow fish to pass through Agricultural Road Crossing 1 and the channel north of Agricultural Road Crossing 1.

Alternative 4: West Side Gated Notch – Managed Flow

Alternative 4, West Side Gated Notch – Managed Flow, would have a smaller amount of flow entering the Yolo Bypass through the gated notch in Fremont Weir than the other alternatives, but it would incorporate water control structures to maintain inundation in defined areas for longer periods of time within the northern Yolo Bypass. Alternative 4 would include the same gated notch and associated facilities as described for Alternative 3. However, it would be operated to limit the inflow from exceeding 3,000 cfs from November 1 through March 7 or March 15.

Alternative 4 includes two water control structures on Tule Canal to extend periods of inundation locally. A bypass channel would be constructed around each water control structure to provide adult fish passage. The alternative would also provide means for fish passage on the eastern side of Fremont Weir through a supplemental fish passage facility. In addition, improvements to Agricultural Road Crossing 1 and the downstream channel would be implemented under this alternative.

Alternative 5: Central Multiple Gated Notches

Through the strategy of using multiple gates and intake channels at Fremont Weir, Alternative 5, Central Multiple Gated Notches, has the goal of increasing the number of outmigrating juvenile fish that enter the Yolo Bypass. Trapezoidal channels create some limitations for fish passage because they have smaller flows at lower river elevations (because the channel is smaller at this elevation) when winter-run Chinook salmon are outmigrating. Alternative 5 includes multiple gates so that the deeper gate could allow more flow to enter the bypass when the river is at lower elevations. Flows would move to other gates when the river is higher to control inflows while maintaining fish passage conditions.

Alternative 5 incorporates multiple gated notches in the central location on the existing Fremont Weir that would allow combined flows up to 3,400 cfs from November 1 through March 15. The invert elevations at the different sets of gates would be 14, 17, 20, and 23 feet. As the river rises, the deeper gate would close and the next gate would open. This alternative would include a supplemental fish passage facility and improvements to allow fish to pass through Agricultural Road Crossing 1. Alternative 5 also includes floodplain improvements in Tule Canal (analyzed at a program level) that would develop secondary channels and increase inundation area just north of I-80.

Alternative 6: West Side Large Gated Notch

Alternative 6, West Side Large Gated Notch, is a large notch in the western location that would allow flows up to 12,000 cfs to enter the Yolo Bypass from November 1 through March 15. It was designed with the goal of entraining more fish while allowing more flow into the bypass and capturing more fish when the Sacramento River is at lower elevations. Typically, winter-run Chinook salmon move downstream during the first high flow event of the season. This flow event is sometimes not high enough to result in what would be considered substantial flows into the bypass under Alternatives 1 through 5. The gated notch could allow more flow to enter during winter-run Chinook salmon outmigration, potentially maximizing fish entrainment. The gated notch would be at the same invert as Alternatives 4 and 5 (16.1 feet) but would be wider. This alternative would include a supplemental fish passage facility on the eastern side of Fremont Weir and improvements to allow fish passage through Agricultural Road Crossing 1 and the channel north of Agricultural Road Crossing 1.

Environmentally Preferable Alternative

Section 1505.2(b) of the Council on Environmental Quality (CEQ) Regulations requires the NEPA lead agency to identify the environmentally preferable alternative in a Record of Decision. CEQ provides guidance in its 40 Most Asked Questions, answer to question 6a, stating that "the environmentally preferable alternative is the alternative that will promote the national environmental policy as expressed in NEPA's Section 101. Ordinarily, this means the alternative that causes the least damage to the biological and physical environment; it also means the alternative which best protects, preserves, and enhances historic, cultural, and natural resources."

Alternative 1 has been identified as the environmentally preferable alternative because it balances the ability to achieve the project objectives with environmental effects. Many of the environmental resource conditions would be similar under Alternative 1 as under Alternatives 2 through 6. The primary benefits of implementing Alternative 1 as compared to Alternatives 2 through 6 would include:

Air Quality

- Under Alternative 1, emissions would be less than the general conformity *de minimis* thresholds and would not exceed the greenhouse gas emissions significance threshold.

Vegetation and Wildlife

- Lowest construction-related impacts to suitable and occupied habitat.

- Lowest impacts to the Valley Elderberry Longhorn Beetle, Nesting Bird Species, Special-Status Tree-Roosting Bats, and American Badger.

Noise

- Under Alternative 1, noise and vibrations levels would be consistent with the Yolo and Sutter county general plans.

Basis for the Decision

The alternatives were evaluated on how well they met the project's purpose and need and the magnitude of environmental effects.

Alternative 1 meets the purpose and need, enhances natural resources, and is the least damaging. Alternative 1 would allow flows up to 6,000 cfs, depending on Sacramento River elevation, through the gated notch to Tule Pond to provide open channel flow for adult fish passage, juvenile emigration, and floodplain inundation. Alternative 1 would have the shortest and most direct access to the Tule Canal for migrating fish.

As discussed in Chapter 8 of the Final EIS/EIR, Aquatic Resources, Alternative 6 would provide the most benefit to juvenile salmonids by increasing availability of floodplain rearing habitat. However, Alternative 6 would provide less benefit for adult fish passage (and would have significant unavoidable impacts related to fish passage under some conditions). Alternatives 1, 2, and 3 provide the best fish passage for adults, and provide benefits for increased floodplain rearing habitat for juveniles.

While the alternatives considered in the EIS/EIR would result in different impacts for each of the environmental resources, Alternative 1 would have the smallest construction footprint and would therefore minimize potential impacts that are driven by construction or facility size (such as air quality, vegetation and wildlife, wetlands, recreation access, and noise). It would have greater environmental effects than Alternatives 4 and 5 related to agricultural land use and waterfowl hunting; however, the differences between alternatives for these resources are of relatively small magnitude. Overall, Alternative 1 would minimize the environmental effects compared to the other alternatives considered for analysis. Table ES-2 and Table ES-3 in the Executive Summary of the Final EIS/EIR provide a summary of impacts and mitigation measures considered for each alternative for the 19 resource topics evaluated.

The Project area does not include Federal land, and the nearest ITA is approximately 20 miles northeast of the Project area; therefore, there is no potential for Indian Trust Assets or Indian Sacred Sites to be affected by the Project.

Public involvement was considered throughout the process and contributed to the development of alternatives and the decision in this ROD. The scoping process began on March 4, 2013 and comments were used in the development of a reasonable range of alternatives and identification of key issues.

Reclamation released the Draft EIS/EIR on December 28, 2017. As a result of public comments, the EIS/EIR was updated, including NEPA-only mitigation measures to address the adverse social impacts to recreational and educational uses.

The original date considered for the end of inundation operations was April 30 to capture most outmigrating winter-run and spring-run Chinook salmon. Reclamation and DWR have been committed to working with the stakeholder community to identify ways to improve the Project and make it more acceptable, and the stakeholder group suggested that an earlier operations end date would reduce effects to agricultural users and managed wetlands in the Yolo Bypass. Public

comments suggested that the inundation end date should extend to the end of June to continue to provide benefits for fish; however, this proposed extended operation would increase the potential economic effects to agricultural users. Public comments also suggested that the inundation end date should be earlier.

Comments Received on the Final EIS

A Notice of Availability of the Final EIS/EIR was published by the U.S. Environmental Protection Agency (USEPA) on June 7, 2019. The Final EIS/EIR was published on Reclamation's website and a press release was issued by Reclamation on June 7, 2019. Notification of the Final EIS/EIR was sent by Reclamation to interested parties. Reclamation and DWR added errata to Appendices O and N of the Final EIS/EIR files on the website and with EPA to address comments submitted on the Draft EIS/EIR and related responses that were not included on June 7. These comments and associated responses did not alter the analysis already presented in the Final EIS/EIR.

The period for comments on the Final EIS/EIR ended July 8, 2019. Reclamation received comments from 27 individuals or groups. Comments included waterfowl easements and waterfowl hunting opportunities, outreach, impacts to private property, compensation, agriculture, drainage improvements, and recreation.

In connection with waterfowl hunting, landowners commented on the Final EIS/EIR that there is private land used for duck clubs north of Interstate 80. In Appendix O of the Final EIS/EIR, the response to comment NG04-109 states "Reclamation and DWR were unable to identify any formal documentation/maps that locate the private hunting clubs north of Interstate 80." Properties are also used for waterfowl habitat through conservation easements. This does not change the conclusions of the analyses of the project's physical effect on the environment.

A number of comments addressed outreach and transparency. Reclamation and DWR have made an effort to include interested parties throughout the process through web postings, email lists, press releases, and other notifications. More information on public meetings and workshops, as well as background information can be found here:

https://www.usbr.gov/mp/bdo/yolo-bypass.html

Similar to the Draft EIS/EIR, several commenters provided comments on impacts to private property. Impacts under CEQA and NEPA relate to the physical resource of the land itself. NEPA and CEQA look at impacts that have a physical effect on the environment. Impacts relating to compensation for use of a landowner's land are not considered an environmental impact and do not need to be discussed in the EIS/EIR. Discussions relating to just compensation to be paid to specific landowners will take place outside of the CEQA/NEPA process.

DWR and Reclamation recognize these landowners concerns and acknowledge that some properties may be subject to increased inundation from operation of the project. The United States and California Constitutions prohibit the taking of property without just compensation. DWR and Reclamation will work with each individual landowner to determine whether there are

adverse impacts to the property owners and what kind of compensation is appropriate. This is part of the normal right of way activities carried out by these agencies. DWR and Reclamation also recognize that there are existing flood and habitat easements on some of the properties potentially affected.

Following this ROD, Reclamation and DWR will discuss property rights with individual landowners, including farmers, ranchers, duck club owners, and other types of landowners. This is further described in *Master Response 4: Impacts to Landowners and Other Users of Land* in Appendix O of the Final EIS/EIR.

Reclamation and DWR, during design and development, included ways to avoid or minimize adverse impacts to agriculture, such as operational end date. In addition, discussions with landowners will take place as described above.

In connection with recreation, several commenters expressed support for mitigation for recreation and drainage improvements. Mitigation measures for recreation are further described below, including improvements to drainage infrastructure.

Section 7 of the Federal ESA

Reclamation consulted under Section 7 of the ESA with the USFWS and NMFS for this action. All action alternatives evaluated in the EIS/EIR considered impacts to ESA-listed species and impacts to these species were a consideration in comparison with the No Action Alternative.

Reclamation initiated consultation with USFWS and NMFS and submitted a biological assessment on December 10, 2018. USFWS and NMFS completed BOs on April 29, 2019 and May 10, 2019, respectively.

USFWS concurred with Reclamation that the project may affect, but is not likely to adversely affect delta smelt or its critical habitat. USFWS also determined that the project may affect, but is not likely to adversely affect valley elderberry longhorn beetle. The USFWS BO concluded the Project is not likely to jeopardize the continued existence of giant garter snake, yellow-billed cuckoo, and least Bell's vireo. The USFWS BO included measures to minimize take of giant garter snake, yellow-billed cuckoo, and least Bell's vireo.

NMFS concluded that the project is not likely to jeopardize the continued existence of Sacramento River winter-run Chinook salmon, Central Valley spring-run Chinook salmon, Central Valley steelhead, and the Southern DPS of North American green sturgeon, and is not likely to destroy or adversely modify their designated critical habitats. The NMFS BO included measures to minimize take of these species.

Magnuson-Stevens Fishery Conservation and Management Act

As part of the NMFS BO, Reclamation also consulted on essential fish habitat (EFH) provisions in Section 305(b) of the Magnuson-Stevens Fishery Conservation and Management Act (16

U.S.C. 1855(b)). NMFS concluded that the action would adversely affect EFH, however, the project includes adequate measures to avoid, minimize, or otherwise offset the adverse effects to EFH and did not provide EFH Conservation Recommendations.

Section 106 Compliance

Reclamation is responsible for complying with Title 54 USC § 306108, commonly known as Section 106 of the National Historic Preservation Act (NHPA). The U.S. Army Corps of Engineers (Corps) has designated Reclamation as the lead Federal agency for Section 106 compliance on the entirety of the undertaking, which includes Reclamation's funding and the Corps' authorization and permitting actions. Reclamation, in coordination with DWR, initiated historic property identification efforts between 2014 and 2017. Due to access issues, Reclamation determined that effects to historic properties cannot be fully determined prior to approval of the undertaking and, pursuant to 36 CFR § 800.14(b)(1)(ii), has chosen to enter into a Programmatic Agreement (PA) in order to phase the historic property identification efforts. Reclamation, in coordination with DWR, the Corps, and the California State Historic Preservation Officer, developed a PA in fulfillment of NHPA Section 106 requirements. The Yocha Dehe Wintun Nation, the United Auburn Indian Community of Auburn Rancheria, and the Wilton Rancheria have been invited to participate as concurring parties to the PA.

Mitigation Measures

During design and development, Reclamation and DWR have adopted all practicable means to avoid or minimize environmental harm for the Project. In addition, Reclamation and/or DWR identified measures, and are committed to implementing the measures identified in the EIS/EIR, unless otherwise specified. Attachment A to this Record of Decision includes a detailed description of the mitigation measures and discussion of monitoring and enforcement programs where applicable, including Reclamation and DWR responsibilities.

As described in the EIS/EIR, no mitigation measures are necessary for CEQA purposes for recreation. The EIS/EIR, under NEPA, includes mitigation measures to address recreational impacts and refers to such mitigation measures as "NEPA only." Under NEPA, where appropriate mitigation exists for adverse effects, mitigation should be considered, but the Federal lead agency does not have an obligation to implement that mitigation. This ROD describes which measures are adopted, and if not, why. Some measures included in the FEIS/EIR are not included in the ROD because they do not apply to Alternative 1.

The measures for recreation that Reclamation is adopting, subject to available appropriations, and as described in Attachment A, are MM-REC-1 and MM-REC-3. Reclamation will implement mitigation that includes drainage improvement projects (MM-REC-3) in the northwest portion of the YBWA, specifically the entrance and parking Lot A, subject to available appropriations, and up to a total of $2 million. Reclamation is not adopting MM-EJ-1, MM-REC-2 or MM-REC-4, as the measures look at alternative access points to address impacts to recreation, education, or wildlife viewing. Drainage improvement projects in MM-REC-3 provide a more comprehensive and inclusive process to address these impacts.

Attachment A – Mitigation and Monitoring

Table A-1 lists the mitigation measures identified in the EIS/EIR, responsible parties, the time frame for implementation, and the monitoring parties. A column is provided for the monitoring party to sign-off on the implementation of each mitigation measure. Reclamation, as the NEPA lead agency, and DWR, as the CEQA lead agency, are ultimately the agencies responsible to make sure that mitigation measures are implemented. Other parties, including the construction contractor, will have a role in implementation.

Measure No.	Mitigation Measure	Responsible Party	Monitoring Party	Method of Verification	Timing of Verification	Verification of Completion Initials	Date
MM-WQ-1	The Lead Agencies or their construction contractor shall develop and implement a Spill Prevention, Control, and Countermeasure Plan (SPCCP) to minimize the potential for, and effects from, spills of hazardous, toxic, and petroleum substances during construction and maintenance. The SPCCP shall be completed before construction activities begin. Implementation of this measure shall comply with State and Federal water quality regulations. The SPCCP shall describe spill sources and spill pathways in addition to the actions that shall be taken in the event of a spill (e.g., an oil spill from engine refueling shall be cleaned up immediately with oil absorbents) or the exposure of an undocumented hazard. The SPCCP shall outline descriptions of containment facilities and practices such as double-walled tanks, containment berms, emergency shut-offs, drip pans, fueling procedures, and spill response kits. It shall also describe how and when employees are trained in proper handling procedures and spill prevention and response procedures. The Lead Agencies shall review and approve the SPCCP before the onset of construction activities and shall routinely inspect the construction area to verify that the measures specified in the SPCCP are properly implemented and maintained. The Lead Agencies shall notify its contractors immediately if there is a noncompliance issue and shall require compliance. If a spill is reportable, the construction contractor's superintendent shall notify the Lead Agencies, and the Lead Agencies shall take action to contact the appropriate safety and cleanup crews to ensure the SPCCP is followed. A written description of reportable releases shall be submitted to the Central Valley Regional Water Quality Control Board (RWQCB) and the California Department of Toxic Substances Control. This submittal shall contain a description of the release, including the type of material and an estimate of the amount spilled, the date of the release, an explanation of why the spill occurred, and a description of the steps taken to prevent and control future releases. The releases shall be documented on a spill report form.	DWR	Central Valley RWQCB	Documentation on file with DWR	Prior to construction groundbreaking		
MM-WQ-2	Prior to initiating construction and maintenance activities, the construction contractor shall prepare a Stormwater Pollution Prevention Plan (SWPPP) that describes best management practices (BMPs) that shall be implemented to control accelerated erosion, sedimentation, and other pollutants during and after Project construction. Specific BMPs that shall be incorporated into the SWPPP shall be site-specific and shall be prepared in accordance with the regional water board field manual. The SWPPP shall include, but not be limited to, the following standard erosion- and sediment-control BMPs: • Timing of construction. All construction and ongoing operations and maintenance activities shall occur from April 15 through November 1 to avoid ground disturbance in the rainy season. • Stabilize grading spoils. Grading spoils generated during construction may be temporarily stockpiled in staging areas located within two miles of Yolo Bypass. Such staging areas shall not contain native or sensitive vegetation communities and shall not support sensitive plant or animal species. Silt fences, non-monofilament fiber rolls, or similar devices shall be installed around the base of the temporary stockpiles to intercept runoff and sediment during storm events. If necessary, temporary stockpiles may be covered with a geotextile material to increase protection from wind and water erosion. Materials used for stabilizing spoils will be selected to be non-injurious to wildlife • Permanent site stabilization. The construction contractor shall install structural or vegetative methods to permanently stabilize all graded or disturbed areas once construction is complete. Structural methods could include installing biodegradable fiber rolls or erosion-control blankets. Vegetative methods could include applying organic mulch and tackifiers, and/or an erosion-control native seed mix. • Staging of construction equipment and materials. Equipment and materials shall be staged in designated staging areas that meet the requirements identified above regarding stabilizing grading spoils. • Minimize soil and vegetation disturbance. The construction contractor shall minimize ground disturbance and the disturbance and/or destruction of existing vegetation. This shall be accomplished, in part, through establishing designated equipment staging areas, ingress and egress corridors, equipment exclusion zones and protecting existing trees before beginning any grading operations. Install sediment barriers. The construction contractor shall install silt fences, fiber rolls, or similar devices to prevent sediment-laden water from leaving the construction area to the extent feasible in areas where construction is occurring in saturated soils.	DWR	Central Valley RWQCB	Documentation on file with DWR	Prior to construction groundbreaking		
MM-WQ-3	The Basin Plan for the Sacramento River and San Joaquin River basins (Fourth Edition) contains turbidity objectives. Specifically, the plan states that where natural turbidity is between five and 50 nephelometric turbidity units (NTUs), turbidity levels may not be elevated by 20 percent above ambient conditions; where ambient conditions are between 50 and 100 NTUs, conditions may not be increased by more than 10 NTUs; and where natural turbidity is greater than 100 NTUs, increases shall not exceed 10 percent. A sampling plan shall be developed and implemented based on specific site conditions and in consultation with the Central Valley RWQCB. If turbidity limits exceed basin plan standards, construction-related earth-disturbing activities shall slow to a point that would alleviate the problem.	DWR	Central Valley RWQCB	Documentation on file with DWR	Prior to construction groundbreaking		

Measure No.	Mitigation Measure	Responsible Party	Monitoring Party	Method of Verification	Timing of Verification	Verification of Completion Initials	Date
MM-WQ-4	The Lead Agencies shall develop and implement a program to reduce, minimize, or eliminate increases in water quality constituents. This mitigation measure will be focused on mercury and methylmercury since other water quality parameters are not likely to be adversely affected. The program shall develop a monitoring plan, including frequent sampling and reporting, particularly for existing constituents of concern. The Lead Agencies shall coordinate with the implementation of the current total maximum daily loads (TMDLs) to share monitoring information and contribute to the efforts to reduce constituents of concern within the Yolo Bypass. Monitoring efforts could include collection of water quality (through the water column), soil, and fish and invertebrate tissue monitoring within the Yolo Bypass and the Delta. If monitoring levels are found to be above water quality objectives, Lead Agencies will consider means to reduce discharges throughout the bypass region. As an example, monitoring information may identify time periods where increased inundation is associated with sharp increases in methylmercury production. In these cases, operations of the gated notch could be managed to limit the inundation associated with increased methylmercury production.	DWR	Central Valley RWQCB	Documentation on file with DWR	Prior to issuing a construction contract		
MM-FISH-1	As mitigation for loss of riparian and shaded riverine aquatic (SRA) habitat, degraded habitat would be restored or preserved to provide riparian and/or SRA habitat at or near the areas affected by construction of the intake facilities. If sufficient suitable area is not available near the Project Area, then offsite mitigation options will be pursued. Proposed restoration activities would include re-vegetation with native riparian species to provide SRA and/or riparian habitat that would provide instream or overhead cover for fish species of focused evaluation. As a component of SRA habitat, riparian tree species, such as alders, cottonwoods, and willows, would be planted. In addition to habitat restoration actions, due to the importance of instream woody material (IWM) to juvenile fishes in the Sacramento River, any IWM that is moved or altered by construction or maintenance activities would stay on site or be replaced with a functional equivalent to the extent practicable. The specific restoration activities and mitigation ratios would depend on considerations that are not known at this time, including the location and environmental setting of the location where the restoration will occur or if offsite mitigation options are pursued. However, monitoring of restoration actions would be conducted for 15 years to ensure that restored habitat is functioning as intended, and is able to provide the same or increased areal extent of SRA habitat of the same or higher quality than the SRA habitat which was degraded or removed.	DWR	CDFW	Field verification	Restoration: before project operations begin Monitoring: five years		
MM-FISH-2	If an impact pile driver is necessary to construct the cofferdam in the wet, mitigation measures would be implemented to reduce the underwater noise, such as placing a bubble curtain system underwater. This mitigation measure would also include underwater sound monitoring during impact pile-driving activities to minimize the potential for sound levels to exceed those which may adversely affect fish. Because both juvenile and adult life stages of fish species of focused evaluation may be present during pile driving in the Sacramento River, underwater noise thresholds to be applied include a peak level of 206 decibel (dB) and an accumulated SEL of 183 dB.	DWR	CDFW	Field verification	During construction		
MM-FISH-3	Implementation of a Fish Rescue and Salvage Plan would limit the number of fishes that may potentially be entrained and stranded during construction. A Fish Rescue and Salvage Plan would be prepared and approved by the Lead Agencies and implemented before construction to minimize the number of fish stranded within the cofferdam during placement and removal and to minimize fish stranding associated with dewatering activities in the Tule Canal. It also is anticipated that this plan would stipulate that at least one resource agency biologist shall be on site to assist with fish rescue activities and ensure that cofferdam construction and removal procedures have been implemented according to resource agency standards and protocols. A list of approved equipment (e.g., dip nets, seines, backpack electrofishers, fyke nets) will be included in the Fish Rescue and Salvage Plan. Equipment used for the stranding event will be chosen at the discretion of the onsite biologist.	DWR	CDFW	Field verification	Plan: prior to issuing construction contract Monitoring: during construction		
MM-FISH-4	The construction contractor and operations and maintenance personnel shall implement the following general fish-protection measures during construction: • Limit construction and maintenance activities to daylight hours. • Construction activities will occur outside of the flood season (i.e., during April 15 through November 1). • Confine clearing to the minimal area necessary to facilitate construction and maintenance activities. • Clearly delineate the Project area limits by using fencing, flagging, or other means prior to construction activities. • Keep construction equipment and materials as far away from suitable aquatic and riparian habitat as practicable. Retain a qualified biologist (approved by Lead Agencies) to be present or on call during construction and maintenance activities with the potential to affect sensitive biological resources. The biological monitor shall be on site during ground-disturbing activities occurring in the wet or adjacent to potential fish-bearing waterbodies. The biological monitor shall ensure that any construction barrier is maintained and construction activities allow for fish species in the vicinity to move away from the construction area on their own volition.	DWR	CDFW	Field verification	During construction		

Measure No.	Mitigation Measure	Responsible Party	Monitoring Party	Method of Verification	Timing of Verification	Verification of Completion Initials	Date
MM-TERR-1	The Project biologist shall monitor the Project site immediately prior to and during construction to identify the presence of invasive plants (those identified by Cal-IPC as having a moderate or high level of invasiveness or plants considered locally invasive) and recommend measures to avoid their inadvertent spread in association with construction and maintenance. The Project biologist shall prepare an invasive plant management plan based on the results of this field survey. The contractor shall be responsible for implementing the recommendations in the management plan. In addition, the contractor shall implement the following BMPs to prevent the introduction and spread of invasive plant species during construction and maintenance: • All construction and maintenance equipment shall be washed and cleaned of debris prior to entering the Project area to prevent entry of new invasive plant species to the Project area. • Straw bales and other vegetative materials used for erosion control shall be certified weed-free. • All revegetation materials (e.g., seed mixes and mulches) shall consist of native plant species from the Yolo Bypass, certified weed-free, and all seeds and container plants shall be obtained from locally adapted genetic stock that is also free from fungal pathogens (Phytopthora spp.) • In areas requiring weed control, effective methods for removal may vary depending on the species that is being controlled (typical methods include hand removal, mowing, or herbicide application). Herbicides shall be used consistent with Federal, State, and local requirements (including requirements or restrictions on the use of herbicides that are specified by resource agencies to prevent impacts to aquatic habitats, listed plant or wildlife species, or their habitat). All herbicides shall be used under the advisement of a certified Pesticide Control Advisor and shall be applied by an operator with a Qualified Applicator's License. • Insecticides, herbicides, fertilizers, and other chemicals that could harm special-status plant species or plants that provide habitat for special-status wildlife species shall not be used within 100 feet of such species and shall not be used without prior approval from the Lead Agencies. Affected areas shall be replanted with native vegetation approved by the Lead Agencies.	DWR	Cal-IPC	Field verification	During construction		
MM-TERR-2	Prior to the commencement of construction or ongoing maintenance activities, the Lead Agencies shall designate a Project biologist (a person with, at minimum, a bachelor's degree in biology, ecology, or environmental studies with familiarity with particular species with the potential to be impacted by the Project, including valley elderberry longhorn beetle, giant garter snake, western pond turtle, Swainson's Hawk, Least Bell's Vireo, Western Yellow-Billed Cuckoo, and Bank Swallow) who shall be responsible for overseeing compliance with protective measures for terrestrial biological resources during clearing and work activities within and adjacent to areas of sensitive vegetation communities. The Project biologist shall be familiar with the local vegetation communities, plants, and wildlife and shall maintain communications with the contractor to ensure that issues relating to biological resources are appropriately and lawfully managed. The Project biologist may designate qualified biologists or biological monitors to help oversee Project compliance or conduct focused surveys for special-status species. These biologists shall have familiarity with the species for which they would be conducting focused surveys or monitoring construction activities. The Project biologist or qualified biologist shall review final plans, designate areas that need temporary fencing, and monitor construction activities within and adjacent to areas with native vegetation communities or special-status plant and animal species. The qualified biologist shall monitor activities within designated areas during critical times, such as vegetation removal, initial ground-disturbing activities, and the installation of BMPs and fencing to protect native species, and shall ensure that all avoidance and minimization measures are properly constructed and followed. The qualified biologist shall check construction barriers or exclusion fencing and shall provide corrective measures to the contractor to ensure the barriers or fencing are maintained throughout construction. The qualified biologist shall have the authority to stop work if a special-status wildlife species is encountered within the Project area during construction. Construction activities shall cease until the Project or qualified biologist determine(s) that the animal will not be harmed or that it has left the construction area on its own. The appropriate regulatory agency(ies) shall be notified within 24 hours of sighting of a special-status wildlife species. The Project or qualified biologist shall conduct pre-maintenance surveys as needed in sensitive habitat areas or areas that could support special-status plant or animal species.	DWR and Reclamation	CDFW and USFWS	Documentation on file with DWR	Prior to issuing a construction contract		

Measure No.	Mitigation Measure	Responsible Party	Monitoring Party	Method of Verification	Timing of Verification	Verification of Completion Initials	Date
MM-TERR-3	Prior to the start of construction, all Project personnel and contractors who will be on site during construction shall complete mandatory worker environmental awareness program training conducted by the Project biologist or a designated qualified biologist. Any new Project personnel or contractors that come onboard after the initiation of construction shall also be required to complete the mandatory worker environmental awareness before they commence with work. The training shall advise workers of potential impacts to sensitive vegetation communities and special-status plant and wildlife species and the potential penalties for impacts to such habitat and species. At a minimum, the program shall include the following topics: occurrences of the special-status species and sensitive vegetation communities in the Project area (including communities subject to USACE and CDFW jurisdiction), a physical description, life history, habitat requirements, sensitivity to human activities, legal protection and penalties for violations of Federal and State laws, reporting requirements, work features designed to reduce the impacts, and general plant- and wildlife-protection measures. Construction personnel shall be informed of the procedures to follow should a Federally or State-listed species be encountered during construction. Special-status species that should be covered in the training include valley elderberry longhorn beetle, giant garter snake, western pond turtle, special-status birds (Tricolored Blackbird, Bank Swallow, Swainson's Hawk, Least Bell's Vireo, Western Yellow-billed Cuckoo), migratory birds, special status bats, and American badger. Sensitive vegetation communities that should be covered in the training include black willow thickets, box elder forest, California and hardstem bulrush marsh, Fremont cottonwood forest, mixed hardwood forest, sandbar willow thickets, and valley oak woodland. Included in this program shall be color photos of the special-status species and sensitive vegetation communities, which shall be shown to Project personnel. Following the education program, the photos shall be posted in the contractor and resident engineer's office, where the photos shall remain through the duration of construction work. Photos of the habitat in which special-status species are found shall also be posted on site. The contractor shall be required to provide the Lead Agencies with evidence of the employee training (e.g., a sign-in sheet) on request. Project personnel and contractors shall be instructed to immediately notify the Project biologist or designated biologist of any incidents that could affect sensitive vegetation communities or special-status species. Incidents could include fuel leaks or injury to any wildlife. The Project biologist shall be responsible for notifying the appropriate regulatory agency within 72 hours of any similar incident.	DWR and Reclamation	CDFW and USFWS	Documentation on file with DWR	Prior to construction groundbreaking		

MM-TERR-4	The construction contractor and maintenance personnel shall implement the following general wildlife-protection measures during construction and maintenance: • Limit construction and maintenance activities to daylight hours to the extent feasible. If nighttime activities are unavoidable, then workers shall direct all lights for nighttime lighting into the work area and shall minimize the lighting of natural habitat areas adjacent to the work area. Light glare shields shall be used to reduce the extent of illumination into sensitive habitats. If the work area is located near surface waters, the lighting shall be shielded such that it does not shine directly into the water. • Both prior to construction and maintenance, clearing of vegetation, in areas with suitable habitat for special-status bird species shall not be conducted during the nesting season (February 15 through August 31) to avoid impacts on nesting birds, as feasible. If vegetation must be cleared between February 15 and August 31, then pre-construction surveys shall be conducted per MM-TERR-16. • Confine clearing to the minimal area necessary to facilitate construction and maintenance activities. Dispose of cleared vegetation and spoils daily at a permanent offsite spoils location or at a temporary onsite location that will not create habitat for special-status wildlife species. Spoils and dredged material shall be disposed of at an approved site or facility in accordance with all applicable Federal, State, and local regulations. • Maintain equipment to comply with noise standards (e.g., exhaust mufflers, acoustically attenuating shields, shrouds, or enclosures). • Avoid wildlife entrapment by completely covering or providing escape ramps for all excavated steep-walled holes or trenches more than 1 foot deep at the end of each construction work day. The qualified biologist shall inspect open trenches and holes and shall remove or release any trapped wildlife found in the trenches or holes prior to filling by the construction and maintenance contractors. • Special-status wildlife can be attracted to den-like structures such as pipes and may enter stored pipes and become trapped or injured. All construction pipes, culverts, or similar features; construction equipment; or construction debris left overnight in areas that may be occupied by special-status species that could occupy such structures shall be inspected by a qualified biologist prior to being used for construction. Such inspections shall occur at the beginning of each day's activities for those materials to be used or moved that day. If necessary, and under the direct supervision of the biologist, the structure may be moved up to one time to isolate it from construction activities, until the special-status species has moved from the structure of their own volition, has been captured and relocated, or has otherwise been removed from the structure. • Capture and relocation of trapped or injured wildlife listed under ESA or California ESA can only be performed by personnel with appropriate state and/or federal permits. Any sightings and any incidental take shall be reported to the Lead Agencies via email within one working day of the discovery. A follow-up report shall be sent to these agencies, including dates, locations, habitat description, and any corrective measures taken to protect special-status species encountered. For each special-status species encountered, the biologist shall submit a completed California Natural Diversity Database field survey form (or equivalent) to the Lead Agencies no more than 90 days after completing the last field visit to the Project site. • The Lead Agencies shall be notified within one working day of the discovery of, injury to, or mortality of a special-status species that results from Project-related construction activities or is observed at the Project site. Notification shall include the date, time, and location of the incident or of the discovery of an individual special-status species that is dead or injured. For a special-status species that is injured, general information on the type or extent of injury shall be included. The location of the incident shall be clearly indicated on a United States Geological Survey 7.5-minute quadrangle and/or similar map at a scale that will allow others to find the location in the field, or as requested by the Lead Agencies. The biologist is encouraged to include any other pertinent information in the notification. • Minimize the spread of dust from work sites to sensitive natural communities or sensitive species habitats on adjacent lands by use of a water truck. • Prior to the start of construction and maintenance activities each day, the Project biologist or designated biologist shall inspect the work area and any equipment or material left on site overnight for special-status wildlife species. • Observe posted speed limit signs on local roads and observe a 15-mile-per-hour speed limit along ingress and egress routes. Extra caution shall be used on cool days when giant garter snakes may be basking on roads. • Dispose of food-related and other garbage in wildlife-proof containers and remove the garbage from the Project area daily during the construction and maintenance periods. Vehicles carrying trash will be required to have loads covered and secured to prevent trash and debris from falling onto roads and adjacent properties. • To avoid injury or death to wildlife, no firearms will be allowed on the Project site except for those carried by authorized security personnel or local, State, or Federal law enforcement officials. • To prevent harassment, injury, or mortality of sensitive wildlife by dogs or cats, no canine or feline pets will be permitted in the active construction area. • Plastic monofilament netting or similar material will not be used for erosion control because smaller wildlife may become entangled or trapped in it. Acceptable substitutes include coconut coir matting or tackifier hydroseeding compounds. This limitation shall be communicated to the contractor through specifications or special provisions included in the construction bid solicitation package. • Rodenticides and herbicides shall be used in accordance with the manufacturer recommended uses and applications and in such a manner as to prevent primary or secondary poisoning of special-status fish, wildlife, and plant species and depletion of prey populations upon which they depend. All uses of such compounds shall observe label and other restrictions mandated by the USEPA,	DWR and Reclamation	CDFW and USFWS	Field verification	During construction		

Measure No.	Mitigation Measure	Responsible Party	Monitoring Party	Method of Verification	Timing of Verification	Verification of Completion Initials	Date
	the California Department of Pesticide Regulation, and other appropriate State and Federal regulations, as well as additional Project-related restrictions imposed by the Lead Agencies. • Retain a qualified biologist to be present or on call during construction and maintenance activities with the potential to affect sensitive biological resources. The qualified biologist shall conduct monitoring per MM-TERR-2.						

Measure No.	Mitigation Measure	Responsible Party	Monitoring Party	Method of Verification	Timing of Verification	Verification of Completion Initials	Date
MM-TERR-5	All native or sensitive habitat areas outside of and adjacent to the designated Project limits of disturbance shall be designated as Environmentally Sensitive Areas on Project maps. Prior to construction, the Lead Agencies shall delineate the Project limits, including construction, staging, lay-down, and equipment storage areas, and erect the construction boundary, with fencing or flagging, along the perimeter of the identified construction area to protect adjacent sensitive habitats and sensitive plant populations. Environmentally Sensitive Areas shall be clearly delineated with fencing or flagging or other BMPs prior to construction to inform construction personnel where the Environmentally Sensitive Areas are located. The fences and flags shall be marked clearly in the field and confirmed by the Project biologist prior to any clearing, and the marked boundaries shall be maintained throughout the duration of construction work. No personnel, equipment, or debris shall be allowed within the Environmentally Sensitive Areas. Fences and flags shall be installed by the contractor in a manner that does not impact habitats to be avoided and such that it is clearly visible to personnel on foot and operating heavy equipment. Ten days prior to initiating construction, the contractor shall submit to Lead Agencies final plans for initial clearing and grubbing of habitat and Project construction. Temporary construction fences and markers shall be maintained in good repair by the contractor and shall be removed upon completion of Project construction. No work activities, materials, or equipment storage or access shall be permitted outside the Project limits without permission from the Lead Agencies. All parking and equipment storage by the contractor related to the Project shall be confined to the Project limits. Undisturbed areas and sensitive habitat outside and adjacent to the Project limits shall not be used for parking or equipment storage. Project-related vehicle traffic shall be restricted to the Project limits and established roads and construction access points.	DWR and Reclamation	USEPA	Field verification	Prior to and during construction		
MM-TERR-6	All construction-related vehicles and equipment storage shall occur in the designated staging areas. These areas shall not contain native or sensitive vegetation communities and shall not support sensitive plant or wildlife species. Project-related vehicle traffic shall be restricted to established roads and the Project disturbance limits as described above and all motor vehicles operating within the Project limits shall observe a speed limit of 15 miles per hour to avoid striking giant garter snake or other special-status wildlife species. Dirt access roads, haul roads, and spoils areas shall be watered at least twice each day when being used during construction dry periods.	DWR and Reclamation	CDFW and USFWS	Field verification	During construction		
MM-TERR-7	Prior to the start of construction activities, valley elderberry longhorn beetle habitat surveys shall be conducted by a qualified biologist that has been approved by the Lead Agencies in the Project construction area and within 165 feet of the Project construction area. All elderberry shrubs with stems one inch or greater in diameter at ground level shall be recorded, tallied by diameter size class, and designated as to whether the elderberry shrub is in a riparian or non-riparian area. Exit hole surveys are not essential in riparian areas but shall be conducted in non-riparian areas. Elderberry shrubs shall be marked with flags for avoidance during construction, if feasible. Prior to conducting maintenance activities, a qualified biologist shall determine if any elderberry shrubs that are one inch or greater at ground level are present within the maintenance area. If elderberry shrubs smaller than that size are present, they shall be removed or transplanted to an approved off-site mitigation area. If elderberry shrubs one-inch or greater at ground level are present, then the Lead Agencies shall consult with USFWS in accordance with MM-TERR-9 and MM-TERR-10.	DWR and Reclamation	USFWS	Field verification	Prior to construction groundbreaking or maintenance actions		

Measure No.	Mitigation Measure	Responsible Party	Monitoring Party	Method of Verification	Timing of Verification	Verification of Completion Initials	Date
MM-TERR-8	Elderberry shrubs mapped during pre-construction surveys shall be avoided to the extent practicable during construction activities. For all elderberry shrubs identified for avoidance, an avoidance buffer of 165 feet or more shall be established prior to construction activities. The avoidance buffer shall consist of a physical barrier, such as flags, exclusion fences, or K-Rail barriers, and shall be maintained for the duration of Project construction. The following protective measures shall be taken to ensure that elderberry shrubs in the buffer zone are not impacted: • Prior to construction, all buffer areas surrounding elderberry shrubs to be avoided shall be fenced and/or flagged as close to the construction limits as feasible. In areas where encroachment of the 165-foot buffer has been approved by USFWS, a minimum setback of at least 20 feet from the drip-line of each elderberry shrub shall be provided to avoid damaging or killing the plant. A 20-foot avoidance buffer shall be established around all elderberry shrubs with stems one inch or greater in diameter at ground level during maintenance. These areas shall be avoided by all maintenance personnel and maintenance activities. Mowing shall not occur within five feet of any elderberry stem one inch or greater in diameter at ground level. Vegetation within five feet of any elderberry stem one inch or greater in diameter at ground level shall be removed by hand only. • The contractor and all Project personnel and contractors that will be on site during construction shall be briefed regarding the status of the beetle and the need to protect its elderberry host plant, the need to avoid damaging elderberry shrubs and possible penalties for noncompliance with these requirements. • To the extent feasible, all activities within 165 feet of an elderberry shrub shall be conducted outside of the valley elderberry longhorn beetle flight season (March-July). • Signs shall be erected every 50 feet along the edge of the avoidance area 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 shall be clearly readable from 20 feet and must be maintained for the duration of Project construction. • If there is damage within the 165-foot buffer areas, erosion control measures and revegetation with appropriate native plant species shall be conducted with approval from USFWS. • No insecticides, herbicides, fertilizers, or other chemicals that might harm the beetle or its elderberry host plant shall be used in the 165-foot buffer areas. The Lead Agencies shall provide a written description to USFWS regarding how the buffer areas are to be restored, protected, and maintained after construction is completed.	DWR and Reclamation	USFWS	Field verification	Prior to and during construction		
MM-TERR-9	The Lead Agencies shall consult with USFWS prior to any ground disturbance within 165 feet of an elderberry shrub. In areas where encroachment into the 165-foot buffer zone is necessary, a minimum setback of at least 20 feet from the drip-line of the elderberry shrub shall be established per MM-TERR-8. The Lead Agencies shall provide USFWS with a map identifying the avoidance area and a list of proposed avoidance measures.	DWR and Reclamation	USFWS	Field verification	Prior to construction groundbreaking		
MM-TERR-10	The Lead Agencies shall identify measures to relocate (transplant) or replace elderberry shrubs with stems measuring one inch or greater in diameter at ground level if an adequate buffer cannot be provided, if trimming is required, if a shrub cannot be avoided during construction and must be removed, or if indirect effects will result in the death of stems or the entire shrub. The Lead Agencies shall prepare a mitigation plan for impacts to elderberry shrubs. This plan shall include transplantation procedures that comply with USFWS’s *Framework for Assessing Impacts to the Valley Elderberry Longhorn Beetle* (*Desmocerus californicus dimorphus*). These procedures include requirements for a qualified biologist to perform exit-hole surveys prior to transplanting and to monitor elderberry shrub transplantation, information on timing of transplantation during the non-growing season (approximately November through mid-February), the need for compliance with the most current version of the American National Standards Institute A300 (Part 6) guidelines for transplanting (http://www.tcia.org/), and specific methods to follow during transplantation, including how far to cut back stems, how large a hole to excavate, and proper planting and watering techniques to minimize stress and maximize transplantation survival. For unavoidable adverse impacts to valley elderberry longhorn beetle or its habitat, compensatory mitigation will be coordinated with USFWS. General guidelines require transplanting elderberry shrubs to designated mitigation areas at a mitigation ratio determined during consultation with USFWS (typically a minimum of 3:1 for acres of suitable riparian habitat that would be permanently impacted and a minimum of 1:1 for acres of occupied elderberry shrubs in non-riparian habitat). In addition, two credits at a USFWS-approved bank shall be purchased for each impacted shrub in riparian areas, and one credit shall be purchased for each impacted shrub in non-riparian areas. Associated native plant species might need to be planted to provide a more diverse native vegetation community at a mitigation ratio determined during consultation with USFWS. Planted and seeded areas might be subject to monitoring and performance standards. Alternatively, mitigation credits might be purchased from an approved mitigation bank. The mitigation plan must be approved by USFWS during formal consultation and could include, but would not necessarily be limited to, identified locations for transplanted or replacement elderberry shrubs, appropriate replacement ratios, and success standards, monitoring, and reporting requirements (per USFWS 2017 guidelines). Consultation with USFWS shall be completed prior to removal, trimming, or thinning of any elderberry shrubs.	DWR and Reclamation	USFWS	Documentation on file with DWR	Prior to construction groundbreaking		

Measure No.	Mitigation Measure	Responsible Party	Monitoring Party	Method of Verification	Timing of Verification	Verification of Completion Initials	Date
MM-TERR-11	Impacts to sensitive vegetation communities shall be mitigated through the establishment, enhancement, or preservation of habitat either in the FWWA or in the Yolo Bypass at a minimum 1:1 ratio based on either acreage or habitat function (riparian communities will be mitigated at a 3:1 ratio). Sensitive vegetation communities include habitats with potential to support Federally and/or State threatened or endangered species, USACE wetlands, and CDFW riparian areas (open water, temperate freshwater floating mat, water primrose wetlands, California and hardstem bulrush marsh, black willow thickets, box elder forest, Fremont cottonwood forest, mixed hardwood forest, and valley oak woodland). Final mitigation ratios will be determined in consultation with each relevant regulatory agency. USACE wetland habitat and valley oak woodland will require a minimum of 1:1 establishment or substantial restoration to comply with Federal wetland policy and local oak woodland policy. Establishment and enhancement will be provided on site where feasible. If sufficient suitable area is not available near the Project impact area, then offsite mitigation options will be pursued. Offsite options may include in-lieu fee payments or purchase of mitigation credits at a mitigation bank approved by the Lead Agencies, as applicable. A restoration plan shall be prepared for mitigation and onsite restoration of temporary impacts, including detailing of topsoil stockpiling for areas with native vegetation and/or seeds of special-status plants, as feasible. These plans will detail the communities to be restored, locations for restoration, container plant palettes and/or seed mixes, and maintenance and monitoring requirements. Seed mixes shall consist of plant species native to the Project area and shall be free from noxious weed species.	DWR and Reclamation	CDFW, USFWS and USACE	Documentation on file with DWR	Prior to construction groundbreaking		

Measure No.	Mitigation Measure	Responsible Party	Monitoring Party	Method of Verification	Timing of Verification	Verification of Completion Initials	Date
MM-TERR-12	The following measures shall be implemented to avoid or minimize impacts to giant garter snake and its aquatic and upland habitats: • A qualified giant garter snake biologist approved by the Lead Agencies shall be present to monitor construction and maintenance activities in or within 200 feet of suitable giant garter snake aquatic or upland habitat. The qualified biologist shall be present during vegetation removal in giant garter snake habitat and shall walk ahead of the removal of emergent wetland and herbaceous upland vegetation. • Disturbance to suitable aquatic and upland sites in or near the Project footprint shall be avoided to the extent feasible, and the loss of aquatic habitat and grassland vegetation shall be minimized through adjustments to project design, as practicable. • The qualified biologist shall conduct pre-construction surveys in suitable giant garter snake habitat for a period of three days prior to the installation of all SWPPP BMPs, vegetation clearing within or adjacent to aquatic habitat, and the establishment of staging areas within 200 feet of aquatic habitat. Within the Project footprint where burrows are present in upland habitat within 200 feet of suitable aquatic habitat, all burrows shall be avoided until the qualified biologist has conducted burrow monitoring for a period of three days and cleared the area. To the extent practicable, construction activities shall be avoided within 200 feet of the banks of giant garter snake aquatic habitat. Ground disturbance shall be confined to the minimal area necessary to facilitate construction activities. To the maximum extent feasible, movement of heavy equipment shall be confined to existing roads. • The qualified biologist shall conduct giant garter snake surveys if construction activities stop for a period of two weeks or more. • To the extent practicable, all construction activity in suitable giant garter snake habitat shall be conducted during the giant garter snake active period (May 1 to October 1) to lessen the risk of direct mortality. Only construction or maintenance activities within 200 feet of suitable giant garter snake habitat that have started prior to October 1 shall continue outside the active season, with Lead Agency approval. No new construction or maintenance work activities within 200 feet of suitable giant garter snake habitat shall be started after October 1. • Prior to the start of construction activities and during the active period for giant garter snakes (beginning May 1), the qualified biologist shall determine where exclusion fencing will be installed to protect giant garter snake habitat adjacent to the defined Project footprint and minimize the potential for giant garter snakes to enter the construction work area. The construction contractor shall install exclusion fences along the edges of construction areas that are within 200 feet of suitable giant garter snake aquatic habitat. Avoided habitat shall be designated as Environmentally Sensitive Areas on final construction plans. The exclusion fencing shall consist of a material that snakes cannot get through or become entangled in. The exclusion fence shall be buried at least six inches below ground to prevent animals from entering below the fence, with at least 20 inches exposed above ground. The fence shall be inspected daily prior to Project activity for maintenance and shall remain in place throughout the construction period. Maintenance shall include removal of vegetation and debris material that can be used to traverse the fence, patching any holes within the fence, ensuring the fence is intact and upright, and filling new burrows that go under the fence once a qualified biologist has inspected such burrows to ensure no special-status wildlife species are occupying them. Any necessary repairs shall be immediately addressed. If work extends beyond October 1, the exclusion fencing shall be maintained to prevent giant garter snakes from entering the construction limits and utilizing upland areas for overwintering. • If exclusion fencing is found to be compromised, the qualified biologist shall conduct a survey immediately preceding construction activity that occurs in designated giant garter snake habitat or in advance of any activity that may result in take of the species. The biologist shall search along exclusion fences and in pipes and beneath vehicles before they are moved. • If a giant garter snake is observed in the construction area, all construction activities shall cease and a qualified biologist shall be notified immediately. If possible, the snake should be allowed to leave on its own and activities shall not resume until the snake has moved out of the area on its own. Alternatively, the qualified biologist may capture and relocate the snake unharmed to suitable aquatic habitat a minimum of 200 feet outside of the work area in a location that is identified by the qualified biologist prior to commencement of construction. If the snake does not leave on its own and cannot be relocated unharmed, construction activities within 200 feet of the snake shall stop to prevent harm to the snake. The Lead Agencies shall be notified by telephone or email within 24 hours of a giant garter snake observation during construction activities. • A qualified biologist shall be available on an on-call basis during maintenance activities with the potential to affect giant garter snake. If needed, a qualified biologist shall be maintained on site during maintenance activities to ensure protection of giant garter snake. The biologist shall have the authority to stop work if a giant garter snake is encountered within the maintenance area. If a giant garter snake is observed in the maintenance area, all activities within 200 feet of the snake will stop to prevent harm to the snake. After April 15, any dewatered habitat shall be allowed to dry (no standing water) for at least 15 consecutive days prior to excavating or filling of the dewatered habitat.	DWR and Reclamation	CDFW and USFWS	Field verification	Prior to and during construction		

Measure No.	Mitigation Measure	Responsible Party	Monitoring Party	Method of Verification	Timing of Verification	Verification of Completion Initials	Date
MM-TERR-13	After completion of construction activities, the construction contractor shall remove any temporary fill, construction debris, and stockpiled materials. Giant garter snake aquatic and upland habitat subject to temporary disturbance shall be recontoured to pre-Project conditions as feasible, upland areas (grassland, riparian scrub, riparian forest, and riparian woodland) shall be reseeded with native seed mixes and/or container plant palettes approved by the Lead Agencies, and aquatic vegetation shall be allowed to recolonize. This restoration effort will require maintenance, monitoring, and achievement of success criteria per MM-TERR-11.	DWR and Reclamation	CDFW and USFWS	Field verification	During construction		
MM-TERR-14	The permanent loss of giant garter snake aquatic and upland habitat resulting from Project construction shall be compensated for through a combination of onsite and/or offsite restoration, enhancement, and/or purchase of mitigation credits at a conservation bank approved by the Lead Agencies. A qualified biologist familiar with giant garter snake and its habitat that has been approved by the Lead Agencies shall conduct focused habitat assessment surveys in the Project area when final plans and specifications have been completed for the selected alternative. The biologist shall conduct an assessment of the suitability of the habitat to support giant garter snake, including an evaluation of habitat suitability for burrows and foraging. The functions and values of the affected area shall also be evaluated to establish appropriate performance standards for the mitigation site, which shall be documented in a final habitat mitigation plan.	DWR and Reclamation	CDFW and USFWS	Documentation on file with DWR	Prior to construction groundbreaking		
MM-TERR-15	A qualified biologist shall conduct surveys for western pond turtle in suitable upland and aquatic habitat within 48 hours prior to the start of construction or maintenance activities. If there is a lapse in construction or maintenance activities of two weeks or more, the area shall be resurveyed within 24 hours prior to the recommencement of work. If western pond turtles are observed in the Project area during construction, construction activities in the vicinity shall cease until protective measures are implemented or a qualified biologist has determined that western pond turtles will not be harmed. A qualified biologist may move the western pond turtle(s) to a suitable location outside of the Project footprint. The Lead Agencies shall be notified if any western pond turtles are relocated. If western pond turtles are observed in the Project area during maintenance, activities shall be postponed until the turtles have left the work area on their own accord or until a qualified biologist has relocated it to a suitable location outside the work area or determined the turtle will not be disturbed by maintenance activities.	DWR	CDFW	Field verification	Prior to construction groundbreaking or maintenance activities		
MM-TERR-16	Preconstruction nesting bird surveys shall be conducted by a qualified avian biologist within 14 days prior to construction or maintenance activities in all suitable nesting habitats in the Project area if such activities will take place between February 1 and September 30. Nesting surveys shall be conducted in accordance with the recommended timing, methodology, and or/protocol for each Federally and/or State-listed bird species. A qualified biologist that has been approved by the Lead Agencies shall conduct passive surveys within 500 feet of proposed construction activities to determine the presence of Western Yellow-Billed Cuckoo, Least Bell's Vireo, Bank Swallow, and other nesting birds protected by the Migratory Bird Treaty Act or pursuant to Fish and Game Code 3503.5 during the nesting season. Surveys shall also include a 0.5-mile radius outside the Project area for Swainson's Hawk. If there is a break in construction of one week or more, surveys shall be conducted prior to the re-initiation of construction. Nesting birds and offspring shall not be disturbed or killed, and nests and eggs shall not be destroyed. If nesting birds are found, the qualified avian biologist shall establish suitable buffers (no less than 500 feet from an active raptor nest or nest of a Federally or State-listed species and no less than 300 feet from other active special-status bird nests) prior to construction or maintenance activities to minimize indirect impacts. To prevent encroachment, the established buffer(s) shall be clearly marked by high visibility material. The precise buffer distance shall be determined based on the species, type of construction activities, and line of sight to the work area.. No work shall be conducted within the buffer. The established buffer(s) shall remain in effect until the young have fledged and are independent or the nest has been abandoned as confirmed by the qualified avian biologist. If non-listed special-status birds are showing signs of agitation within the established buffer(s) due to noise or other effects, the buffer(s) shall be expanded to prevent birds from abandoning their nest. The biologist shall have the authority to halt work if there are any signs of distress or disturbance that may lead to nest abandonment. Work will not resume until corrective measures have been taken or it is determined that continued activity would not adversely affect nest success. No construction or maintenance activities, including tree removal, shall occur in the buffer zone until the young have fledged or the nest is no longer active, as confirmed by the qualified biologist. If active Western Yellow-billed Cuckoo or Least Bell's Vireo nests are identified within 500 feet of noise-generating construction or maintenance activities and noise is in excess of 60 A-weighted decibel (dBA) hourly Leq (equivalent continuous noise level), or if noise is in excess of ambient noise levels if ambient noise levels exceed 60 dBA hourly Leq, measures will be implemented to reduce noise levels to 60 dBA hourly Leq or to ambient noise levels if ambient noise levels exceed 60 dBA hourly Leq at the nest location. Noise monitoring shall occur during the breeding season and shall be reported daily to the USFWS. A qualified biologist shall ensure that avoidance and minimization measures are implemented such that adverse effects to Western Yellow-billed Cuckoo and Least Bell's Vireo do not occur because of the adjacent construction activities (e.g., noise and lighting). If the qualified biologist suspects that avoidance and minimization measures are ineffective and Project activities may adversely affect Western Yellow-billed Cuckoo or Least Bell's Vireo, culpable activities will be suspended within 500 feet of active nesting territories until nesting activity is completed and fledglings are no longer in the area or until effective avoidance and minimization measures can be identified, implemented, and demonstrated to be effective. If measures cannot be identified, implemented, and demonstrated to be effective to avoid adverse effects to these species, then Project construction shall stop until consultation with the USFWS to address unanticipated impacts to these species has been completed.	DWR and Reclamation	CDFW and USFWS	Documentation on file with DWR	Prior to construction groundbreaking		

Measure No.	Mitigation Measure	Responsible Party	Monitoring Party	Method of Verification	Timing of Verification	Verification of Completion Initials	Date
MM-TERR-17	Surveys for roosting special-status bats (including pallid bat, western red bat, and other native bat species) shall be conducted in the Project area by a qualified bat biologist where suitable habitat that might be removed, altered, or indirectly impacted during construction or maintenance is present. A qualified biologist shall conduct a habitat assessment for potentially suitable bat habitat within six months prior to construction activities and tree removal. In addition, focused bat surveys shall be conducted within 48 hours prior to the start of construction activities, irrespective of the time of year construction is to start. If there is a lapse in construction activities of two weeks or greater, the area shall be resurveyed within 24 hours prior to recommencement of work. Surveys shall also be conducted within 48 hours prior to the start of maintenance activities. Locations with potential for roosting or that are suitable as a maternity roost shall be surveyed by a qualified bat biologist using an appropriate combination of structure inspection, exit counts, acoustic surveys, or other methods. Surveys shall be conducted during the appropriate season and time of the day or night to ensure detection of day- and night-roosting bats (i.e., preferably one daytime and one nighttime survey shall be conducted at each location with suitable roosting habitat during the maternity season, April 15 through August 31, if feasible). If a bat roost is present in the Project area in a tree that does not need to be removed, a no-disturbance buffer (typically 300 feet) shall be established and maintained throughout construction or during maintenance. If a maternity roost is identified, a no-disturbance buffer shall be established and maintained until a qualified biologist determines that the roost is no longer active. If a bat roost is detected in a tree that needs to be removed, passive exclusion shall include monitoring the roost for three days to determine whether the roost is active. If the roost is determined by a qualified biologist to support a reproductive female with young, the roost shall be avoided until it is no longer active. If the roost remains active during the three monitoring days and observations confirm it is not a maternity colony, a temporary bat exclusion device shall be installed under the supervision of a qualified bat biologist. At the discretion of the qualified bat biologist, an alternative roosting structure(s) might be constructed and installed prior to installation of exclusion devices. Exclusion shall be conducted between August 31 and October 15 to avoid trapping flightless young inside during the summer months or torpid (overwintering) individuals during the winter. If it cannot be determined by a qualified biologist whether an active roost site supports a maternity colony, the roost site shall not be disturbed, and construction within 300 feet shall be postponed or halted until the roost is vacated and the young are able to fly. Exclusion efforts shall be monitored on a weekly basis, continued for the duration of Project construction, and removed when no longer necessary. The following measures are also proposed to further reduce the potential for impacts to roosting and foraging special-status bats, including pallid bat and western red bat, and other native bat species, if present: • All construction or maintenance work conducted near active roosts shall take place during the day to the extent feasible. If this is not feasible, impacts will be minimized by directing lighting and noise away from night roosting and foraging areas to the extent feasible. • Combustion equipment (such as generators, pumps, and vehicles) shall not be parked or operated near an active roost. Construction and maintenance personnel shall not be present directly under a roosting colony. In addition, care will be taken to ensure that construction and maintenance activities do not severely restrict airspace access to the roosts. • Tree trimming and/or tree removal associated with construction or maintenance in areas with suitable bat habitat shall only be conducted during seasonal periods of bat activity (from August 31 through October 15, a period prior to hibernation when young are self-sufficiently volant, and from March 1 to April 15 to avoid hibernating bats and prior to formation of maternity colonies), as feasible, under supervision of a qualified biologist. • Trees shall be trimmed and/or removed in a two-phased removal system conducted over two consecutive days under the supervision of a qualified biologist. Prior to tree removal or trimming, each tree shall be shaken gently, and several minutes shall pass before felling trees or limbs to allow bats time to arouse and leave the tree. The biologist shall search downed vegetation for dead or injured bats and report any dead or injured special-status bats to the Lead Agencies. On the first day (in the afternoon), limbs and branches shall be removed by a tree cutter using chainsaws only. Limbs with cavities, crevices, or deep bark fissures shall be avoided, and only branches or limbs without those features shall be removed. On the second day, the entire tree shall be removed. • Project proponents shall consult with a qualified bat biologist to determine suitable buffers around roost and/or hibernaculum sites. Buffers may vary depending on species and Project activity being performed. If bats are showing signs of distress, construction and maintenance activities shall be modified to prevent bats from abandoning their roost or altering their feeding behavior, as determined by a qualified biologist. At any time, the qualified biologist shall have the authority to stop work if there are any signs of distress or disturbance that could lead to roost abandonment. Construction and maintenance work shall not continue until corrective measures have been taken or it is determined by a qualified biologist that continued activity would not adversely affect roost success.	DWR	CDFW	Documentation on file with DWR	Prior to construction groundbreaking		
MM-TERR-18	A qualified biologist shall conduct pre-construction surveys for American badger and badger dens in suitable habitat at least 48 hours prior to the start of construction activities. If there is a lapse in construction activities of two weeks or greater, the area shall be resurveyed within 24 hours prior to the recommencement of work. If a potential American badger den is identified in the Project area, an appropriate avoidance buffer shall be established and Project activities shall avoid American badger dens and associated habitat. If avoidance is not possible, then den exclusion shall take place between September 1 and January 1. The Project shall mitigate for the loss of habitat by preserving in perpetuity existing occupied habitat at a 1:1 ratio.	DWR	CDFW	Documentation on file with DWR	Prior to construction groundbreaking		

Measure No.	Mitigation Measure	Responsible Party	Monitoring Party	Method of Verification	Timing of Verification	Verification of Completion Initials	Date
MM-TERR-19	A qualified biologist shall conduct pre-construction surveys for special-status plant species with the potential to occur in the alkaline grassland portions of the Project construction area (heartscale, San Joaquin spearscale, Heckard's pepper grass, California alkali grass, and saline clover). Surveys shall be conducted during the flowering period for each special-status plant species. If one or more special-status plant species are detected, then a qualified biologist shall flag populations that can be avoided, monitor activities near special-status plant species populations during construction, monitor collection of seeds from populations that cannot be avoided, monitor topsoil collection in areas with special-status plants (where feasible), and monitor replacement of topsoil and/or seeding of special-status plant species after construction is completed.	DWR and Reclamation	CDFW and USFWS	Documentation on file with DWR	Prior to construction groundbreaking		
MM-CULT-1	The Lead Agencies will prepare a treatment plan that provides measures for the management of identified "historic properties," "historical resources," and "unique archaeological resources" and potentially unevaluated cultural resources which cannot be avoided during Project-related ground-disturbances or other construction activities. The purpose of the treatment plan will be to establish a research design, methods, and guidelines for evaluations of unevaluated resources for potential listing on the National Register of Historic Places (NRHP) and/or California Register of Historical Resources (CRHR), and for mitigation of Project-related adverse effects and significant impacts to historic properties and historical resources located within the area of potential affects (APE). The treatment plan will also describe a process of consultation with appropriate state and federal agencies, as well as with Native Americans who may have interests in historic properties and historical resources within the APE. Preservation in place, through methods such as redesign of relevant facilities to avoid destruction or damage to eligible cultural resources, capping resources with fill, or deeding resources into conservation easements, shall be the preferred method of mitigation where feasible. If these options are not feasible, the measures that are developed in the treatment plan will be followed.	DWR and Reclamation	California Office of Historic Preservation	Documentation on file with DWR	Prior to construction groundbreaking		
MM-CULT-2	Prior to ground-disturbing construction, the Lead Agencies will implement the following mitigation measures: • The Lead Agencies will ensure that a cultural resources inventory is conducted that encompasses the entirety of the APE. • The Lead Agencies will ensure that the inventory scope of work is developed prior to any Project-related ground-disturbances and includes methods for pedestrian surveys, reviews of historic maps, documentation of identified resources, and other appropriate sampling methods. The survey methods, results, and recommendations will be detailed in a technical report of findings. • For all identified resources, DWR and/or the appropriate Federal agencies will evaluate the resources to determine whether they are any of the following: o Historical resources [State CEQA Guidelines Section 15064.5(a)] o Unique archaeological resources under CEQA [California PRC Section 21083.2(g)] o Historic properties (36 CFR 60.4) o Resources eligible for other local registers as may be appropriate • The results of the evaluations will be documented in an evaluation report that provides an assessment of CRHR and/or NRHP-eligible resources requiring treatment to mitigate adverse effects and significant impacts. The Lead Agencies will make such a determination if project construction would involve any of the following consequences: o Demolish or materially alter the qualities that make the resource eligible for listing in the CRHR [State CEQA Guidelines Section 15064.5(b)(2)(A)(C)] o Demolish or materially alter the qualities that justify the inclusion of the resource on a local register or its identification in a historical resources survey meeting the requirements of California Public Resources Code (PRC) Section 5024.1(g) unless the Lead Agencies establish by a preponderance of evidence that the resource is not historically or culturally significant [State CEQA Guidelines Section 15064.5(b)(2)(B)] o Alter, directly or indirectly, the qualities that make a resource eligible for listing in the NRHP [36 CFR 800.5(a)(1)] o Demolish or materially impair the qualities that allow a resource to qualify as a unique archaeological site (California PRC Section 21083.2) • For all resources qualifying as unique archaeological resources, historical resources, or historic properties that would be subject to significant impacts, the Lead Agencies would develop and implement a treatment plan, as described above in Mitigation Measure MM-CULT-1. All technical work will be led or supervised by professional cultural resources specialists who meet the Secretary of the Interior's qualification standards for archaeology, history, and/or architectural history/architecture as appropriate (per 36 Code of Federal Regulations 61).	DWR and Reclamation	California Office of Historic Preservation	Documentation on file with DWR	Prior to construction groundbreaking		

Measure No.	Mitigation Measure	Responsible Party	Monitoring Party	Method of Verification	Timing of Verification	Verification of Completion Initials	Date
MM-CULT-3	Prior to ground-disturbing construction, the Lead Agencies will include a cultural resources discovery plan in the contract conditions of the construction contractor, incorporating the following actions to be taken in the event of the inadvertent discovery of archaeological resources. • An archaeological monitor will be present to observe construction at geographic locations that are sensitive for unidentified cultural resources. Such locations consist of construction near identified sites (within a 100-foot radius around the known boundaries of identified resources) and where ground-disturbing construction would occur within 500 feet of major water features. Areas that are considered for unidentified archaeological resources may also include tribal monitor(s) from the applicable Native American tribe. • In the event of an archaeological resources discovery, work will cease in the immediate vicinity of the find (typically 100 feet), based on the direction of the archaeological monitor or the apparent distribution of archaeological resources if no monitor is present. A qualified archaeologist will assess the significance of the find and make recommendations for further evaluation and treatment as necessary. • Discovered resources will be mapped and described on California Department of Parks of Recreation 523 forms. Mapping will be performed by recording data points with global positioning system hardware that can be imported and managed digitally. If it is determined that the discovery requires evaluation for the NRHP and/or CRHR or treatment to mitigate adverse effects or significant impacts, the mitigation measures to develop a treatment plan discussed above in MM-CULT-1 will be followed.	DWR and Reclamation	California Office of Historic Preservation	Documentation on file with DWR	Prior to construction groundbreaking		
MM-CULT-4	The Lead Agencies shall provide preconstruction training for all construction personnel engaged in construction that have the potential to affect archaeological resources. This training will provide instruction on how to identify resources in the field and appropriate measures to be taken if a discovery or potential discovery occurs. The Lead Agencies will include a list of cultural resources staff that can respond to cultural resource discoveries, provide management direction following discoveries in the construction training materials, and provide this list and these discovery requirements to the supervisory field staff for the construction workers. Construction worker trainings in the form of tailgate meetings would be implemented to familiarize workers with common types of artifacts (stone flakes, charmstones, and historic debris-like bottles) and the procedures to follow in the event of a buried discovery as well as cultural awareness and tribal sensitivity training.	DWR and Reclamation	DWR	Documentation on file with DWR	Prior to construction groundbreaking		
MM-CULT-5	If human remains are discovered as part of a larger cultural deposit, the Lead Agencies and the construction contractors will coordinate with the county coroner and Native American Heritage Commission (NAHC) to make the determinations and perform the management steps prescribed in California Health and Safety Code Section 7050.5 and California PRC Section 5097.98. The provisions of these State laws apply unless discoveries occur on land owned or controlled by the Federal government. For discoveries on Federal land, the bulleted procedures for Native American Graves Protection and Repatriation Act provided below shall be followed. Compliance with State law for discoveries occurring on private or State lands requires the following steps: • Notification of the county coroner so the coroner may determine whether an investigation regarding the cause of death is required. If the coroner determines the remains are of prehistoric Native American origin, the coroner would notify the NAHC. Upon notification, the NAHC would identify the most likely descendent (MLD), and the MLD would be given the opportunity to reinter the remains with appropriate dignity. If the NAHC fails to identify the MLD or if the parties cannot reach agreement as to how to reinter the remains as described in California PRC Section 5097.98(e), the landowner would reinter the remains at a location not subject to further disturbance. The Project proponents would ensure the protections prescribed in California PRC Section 5097.98(e) are performed such as using conservation easements and recording the location with the relevant county and an information center of the California Historical Resources Information System.	DWR and Reclamation	NAHC	Field verification	During construction		
MM-AGR-1	The following activities will be implemented where feasible to minimize negative effects on existing Prime Farmland, Unique Farmland, and Farmland of Statewide Importance in production and limit the extent of the lands in these three categories that would be converted to non-agricultural uses. • When selecting locations for staging areas and spoils sites, minimize the fragmentation of lands that are to remain in agricultural use and retain contiguous parcels of agricultural land of sufficient size to support their efficient use for continued agricultural production. Purchase property interests in agricultural lands (e.g., conservation easements), requiring the preservation and/or enhancement of other land of similar agricultural quality and acreage, either directly or indirectly, to mitigate for permanently converted Prime Farmland, Unique Farmland, and Farmland of Statewide Importance. Where feasible, the agricultural conservation easements should be acquired in the county in which the conversions would take place, Yolo County. If there is not a sufficient supply of similar Prime Farmland, Unique Farmland, or Farmland of Statewide Importance in the county where the conversions would occur, the agricultural conservation easements may be obtained in a different county.	DWR	United States Department of Agriculture, Natural Resources Conservation Service	Documentation on file with DWR	Prior to construction groundbreaking		
MM-REC-1	During construction, FWWA will remain open to the public for recreational uses, but the lands under construction will be closed to recreational uses. The construction contractor shall post and distribute notifications at the main public access areas. The construction contractor shall notify the CDFW FWWA manager of any scheduled closure of FWWA lands or features at least 30 days in advance of the construction work. Further, the construction contractor shall coordinate with the CDFW FWWA manager at least 1 week prior to construction and weekly during construction periods so that the manager can provide website notifications related to any access restrictions or area closures. Additionally, the construction contractor, in coordination with DWR, shall make a good faith effort to notify any affected private-	Reclamation	CDFW	Documentation on file with Reclamation	Prior to construction work		

Measure No.	Mitigation Measure	Responsible Party	Monitoring Party	Method of Verification	Timing of Verification	Verification of Completion Initials	Date
	property owners or lessees if there will be a closure or other conditions imposed on entry of their respective private property near Project activities. The construction contractor shall construct and maintain a temporary no-hunting boundary extending 150 yards away from the construction area. The construction contractor will mark the boundary with fencing and provide "No Hunting" signs around the buffer, stating the periods of construction and associated hunting restrictions. Internal route closures and detours (service roads and trails) shall be established by the construction contractor during construction at Fremont Weir and Agricultural Road Crossing 1, as necessary during heavy traffic periods, to ensure public and worker safety. The construction contractor shall construct a detour around the fish passage facility construction area to redirect users traveling along the Fremont Weir to travel south around the construction site.						
MM-REC-3	DWR and Reclamation will identify and develop drainage improvements within or adjacent to CDFW's YBWA to enhance the drainage of the managed areas of during the descending limb of the hydrograph. Improvements will be designed to provide improved public and operations and maintenance access to YBWA lands sooner after inundation events under Alternative 1.	Reclamation	Reclamation	Documentation on file with Reclamation	Prior to construction groundbreaking		
MM-VIS-1	All new structures, including the headworks structure and bridges to be constructed over the new notch in the Fremont Weir would not be elevated much higher than the elevation of the existing weir. These structures will be screened to soften the views of the facilities. Screening will be utilized to the extent possible and could include landscaping with shrubs, ground cover, vegetated berms, and floodplain restoration, which will make new crossing structures and facilities less visible from a distance. Natural colors and materials with low reflectivity also will be used to minimize the visual impact of these structures and, to the extent feasible, make them consistent with the existing character of the region. These new structures will be constructed and landscaped in such a manner as to match the existing character of the artificial structures that already exist in the area and surrounding landscape.	DWR	CDFW	Field verification	During construction		
MM-TRAN-1	Periodically review and inspect roadway conditions along haul and construction vehicle routes, particularly unpaved roadways. Limited repairs will be made should roadway conditions deteriorate, including degradation such as aggregate loss along unpaved roads or roadway rutting.	DWR	Caltrans	Field verification	During construction		
MM-TRAN-2	Create a road repair agreement with Yolo County and its Public Works Division prior to initiating project construction. This agreement will establish a formal understanding regarding restoration of county roadways to pre-project conditions should the Project cause impacts in excess of typical wear and tear on roadways used by construction vehicles. Pre-project conditions will be recorded and documented before Project construction starts to establish baseline roadway conditions that repairs will be expected to meet during post-construction restoration. Road repair measures may include, but not be limited to, chip sealing and reconstruction of any disturbed road shoulders.	DWR	Yolo County, Public Works Division	Documentation on file with DWR	Prior to construction groundbreaking		
MM-TRAN-3	Identify potential scheduling solutions to limit peak period travel on nearby highways or reduce the number of daily and hourly regional truck trips. These alternatives include: scheduling truck trips to occur during off-peak travel periods such as the middle of the day when traffic volumes are generally lower than the peak a.m. and p.m. periods; extending the truck haul schedule to reduce the riprap and RSP volume, and therefore the number of truck trips, being delivered daily to the construction site; and/or consideration of round-the-clock, extended weekend, or early delivery of material to allow for fewer daily truck trips to occur during the project schedule timeline. Following coordination efforts, when the contractor has identified their preferred scheduling alternative, the proposed solution shall be implemented and reviewed on a regular basis to ensure that fewer than 50 truck trips per hour are to be generated by Project construction activities, especially during peak a.m. and p.m. travel periods (typically 7 a.m. to 9 a.m. and 4 p.m. to 6 p.m.).	DWR	Caltrans	Field verification	Prior to and during construction		
MM-AQ-1	All unpaved roads from the construction areas to offsite sediment disposal areas will be covered with gravel to reduce fugitive dust emissions. Watering will also be maintained to adequately reduce emissions.	DWR	Feather River AQMD and Yolo-Solano AQMD	Field verification	During construction		
MM-AQ-2	Impacts on air quality from construction and maintenance activities will be reduced by using Tier 4 construction equipment instead of the fleet average for the Sacramento Valley Air Basin.	DWR	Feather River AQMD and Yolo-Solano AQMD	Field verification	During construction		
MM-AQ-3	Applicable to both construction and maintenance activities, all haul trucks, vendor trucks, or other vehicles operating on site with on-road engines will meet model year 2010 or better emission standards.	DWR	Feather River AQMD and Yolo-Solano AQMD	Field verification	During construction		
MM-AQ-4	As required by the Feather River Air Quality Management District (AQMD), if construction emissions exceed the significance thresholds provided in Table 18-13, then the project must apply the following best available mitigation measures for the construction phase: 1. All grading operations on a project shall be suspended when winds exceed 20 miles per hour or when winds carry dust beyond the property line despite implementation of all feasible dust control measures. 2. Construction sites shall be watered as directed by the Department of Public Works or Feather River AQMD as necessary to prevent fugitive dust violations.	DWR	Feather River AQMD	Field verification	During construction		

Measure No.	Mitigation Measure	Responsible Party	Monitoring Party	Method of Verification	Timing of Verification	Verification of Completion Initials	Date
	3. An operational water truck shall be available at all times. Apply water to control dust as needed to prevent visible emissions violations and offsite dust impacts. 4. Onsite dirt piles or other stockpiled particulate matter shall be covered, wind breaks installed, and water and/or soil stabilizers employed to reduce windblown dust emissions. Incorporate the use of approved non-toxic soil stabilizers per manufacturer's specifications to all inactive construction areas. 5. All transfer processes involving a free fall of soil or other particulate matter shall be operated in such a manner as to minimize the free fall distance and fugitive dust emissions. 6. Apply approved chemical soil stabilizers per the manufacturers' specifications to all-inactive construction areas (previously graded areas that remain inactive for 96 hours), including unpaved roads. 7. To prevent track-out, wheel washers shall be installed where project vehicles and/or equipment exit onto paved streets from unpaved roads. Vehicles and/or equipment shall be washed prior to each trip. Alternatively, a gravel bed may be installed as appropriate at vehicle and equipment site exit points to effectively remove soil buildup on tires and tracks to prevent or diminish track-out. 8. Paved streets shall be swept frequently (water sweeper with reclaimed water recommended; wet broom) if soil material has been carried onto adjacent paved, public thoroughfares from the Project site. 9. Provide temporary traffic control as needed during all phases of construction to improve traffic flow, as deemed appropriate by the Department of Public Works and/or California Department of Transportation, and reduce vehicle dust emissions. An effective measure is to enforce vehicle traffic speeds at or below 15 mph. 10. Reduce traffic speeds on all unpaved surfaces to 15 mph or less and reduce unnecessary vehicle traffic by restricting access. Provide appropriate training, onsite enforcement, and signage. 11. Reestablish ground cover on the construction site as soon as possible and prior to final occupancy through seeding and watering. Prohibit disposal by burning. Open burning is yet another source of fugitive gas and particulate emissions and shall be prohibited at the project site. No open burning of vegetative waste (natural plant growth wastes) or other legal, or illegal, burn materials (e.g., trash or demolition debris) may be conducted at the Project site. Vegetative wastes shall be chipped or delivered as waste to energy facilities (permitted biomass facilities), mulched, composted, or used for firewood. It is unlawful to haul waste materials off site for disposal by open burning.						
MM-HAZ-1	The Lead Agencies and the contractor will prepare a Construction Risk Management Plan (CRMP) that will include procedures to follow to identify soil contamination during excavation activities and the handling and disposal of any contaminated soil. The CRMP will also require DWR to obtain an opinion through the California Department of Conservation, Division of Oil, Gas, and Geothermal Resources Well Review Program prior to working near the sites. The CRMP will also identify procedures to follow for removal, handling, and disposal if underground storage tanks or other hazardous materials are found during construction of the site. The CRMP will be included in the final plans and specifications for project implementation.	DWR	California Department of Conservation, Division of Oil, Gas, and Geothermal Resources	Documentation on file with DWR	Prior to construction groundbreaking		
MM-HAZ-2	In all construction contracts, the Lead Agencies will require the use of spark arrestors on all construction equipment and safety procedures when working near power lines to avoid accidental contact of construction equipment with the power line. The contract shall also include requirements for the contractor to educate all construction workers about the risk of starting a wildfire, how to avoid it, and who to contact in case a wildfire is started.	DWR	California Governor's Office of Emergency Services	Documentation on file with DWR	Prior to issuing a construction contract		
MM-HAZ-3	The Lead Agencies will meet with PG&E or appropriate owner to determine the exact location of the pipeline and include the location on the plans. Safety measures will be included within the specifications. These measures will be included within the CRMP.	DWR	PG&E or appropriate owner	Documentation on file with DWR	Prior to issuing a construction contract		
MM-NOI-1	A Noise and Vibration Control Plan (NVCP) will be developed by the construction and maintenance contractor prior to the start of any construction activities to address increased noise and vibration levels associated with Project implementation. The NVCP will identify the procedures for predicting construction and maintenance noise levels at sensitive receptors and describe the reduction measures and best management practices required to minimize construction noise. The NVCP noise mitigation measures will include but not be limited to: • All construction equipment shall be stored in a designated staging area during the construction phase to eliminate daily heavy-duty truck trips on local roadways. • To achieve an hourly average noise level below 60 dBA, speed limits and limits on the number of passbys per hour shall be established and enforced for construction vehicle traffic on local roads adjacent to sensitive receptors to minimize traffic noise.	DWR	Yolo County	Documentation on file with DWR	Prior to construction groundbreaking or maintenance activities		

Measure No.	Mitigation Measure	Responsible Party	Monitoring Party	Method of Verification	Timing of Verification	Verification of Completion Initials	Date
	• Sound attenuation will be used or constructed to minimize noise levels. Potential sound attenuation measures could include but are not limited to stationary barriers placed between the source(s) of construction noise and noise-sensitive receptors. The feasible measures will be determined by the construction contractor based on an initial evaluation of each construction site. • Contractor will be responsible for maintaining equipment to comply with noise standards (e.g., exhaust mufflers, acoustically attenuating shields, shrouds, or enclosures). • The public will be kept informed of the construction hours and days. • The contractor will provide contact information for filing complaints and respond to noise and vibration complaints. The contact information will be posted on the exterior of any sound barriers. • A pre-construction meeting will be held with contractors and project managers to confirm that noise mitigation procedures are in place. All mitigation requirements will be included in bid documents and construction contracts.						