Appendix H3

Mitigation Measures for the Revised Proposed Plan Amendments

Appendix H3
Mitigation Measures for the Revised Proposed Plan Amendments

This appendix presents the mitigation measures identified to avoid or reduce the potentially significant impacts that may occur under the revised proposed Plan amendments, including reasonably foreseeable compliance measures and response actions. Mitigation is identified for impacts related to changes in hydrology and water supply, habitat restoration and other ecosystem projects, and new or modified facilities.

H3.1 Mitigation Measures – Changes in Hydrology and Water Supply

This section presents mitigation measures to reduce or avoid potentially significant impacts from changes in hydrology and water supply. Changes in hydrology include changes in streamflows and reservoir storage levels. Changes in water supply include reduced Sacramento/Delta supplies for agriculture, municipal, and wildlife refuge uses, as well as potential changes in groundwater levels and use, including increased groundwater pumping in response to reduced Sacramento/Delta supply. Also, in response to reduced Sacramento/Delta supply, entities may implement other water management actions including groundwater storage and recovery, water transfers, water recycling, and water conservation.

For some impact mechanisms, the impact significance conclusion may differ between the voluntary agreement (VA) pathway and regulatory pathway. For some potentially significant impact conclusions, mitigation measures may not be required for both pathways. Mitigation measures that apply only to the regulatory pathway and not the VA pathway are identified by superscript "1". Mitigation measures that apply only to the VA pathway and not the regulatory pathway are identified by superscript "2".

H3.1.1 Aesthetics

MM-AES-a–c: Mitigate impacts of the project that could have a substantial adverse effect on a scenic vista or could substantially damage a scenic resource or degrade the existing visual character or quality of the site and its surroundings

1. **Reservoir Management**:

    i. Reservoir owners and operators will consider impacts on aesthetics from changes in reservoir levels and include measures to avoid or reduce any impacts on aesthetics in their long-term strategy and annual operation plans submitted for cold water habitat objective implementation.

    ii. All reservoir owners and operators are subject to existing regulatory requirements that protect water quality in reservoirs and streams below reservoirs, including export reservoirs. In exercising its regulatory authorities, the State Water Board will consider

aesthetics and ensure that any aesthetics impacts are avoided or reduced. (Mitigation Measure MM-AQUA-a,d: 1.i-ii).

2. **Measures to Mitigate Conversion of Agricultural Land:** Implement Mitigation Measure MM-AG-a,e to reduce impacts of agricultural land conversion.

H3.1.2 Agriculture and Forest Resources

Mitigation Measure MM-AG-a,e: Mitigate impacts related to the conversion of Prime and Unique Farmland and Farmland of Statewide Importance (important farmland) to nonagricultural use

1. **Diversify Water Portfolios:** Water users can and should diversify their water supply portfolios to the extent possible, in an environmentally responsible manner and in accordance with the law. This includes sustainable conjunctive use of groundwater and surface water, water recycling, water conservation and efficiency upgrades, and water transfers.

    i. **Groundwater Storage and Recovery:** The State Water Board will continue efforts to encourage and promote environmentally sound recharge projects that use surplus surface water, including prioritizing the processing of temporary and long-term water right permits for projects that enhance the ability of a local or state agency to capture high runoff events for local storage or recharge.

    ii. **Water Recycling:** The State Water Board will continue efforts to encourage and promote water recycling projects, including projects that involve use of recycled water for groundwater recharge, through expediting permit processes and funding efforts.

    iii. **Water Conservation:** Water conservation reduces runoff of wastewater, which, in turn, reduces the overall amount of irrigation water needed because the water applied to the crops would have fewer losses to deep percolation and surface runoff. The conserved water would then be available for application to additional acreage, thus reducing the likelihood of conversion to nonagricultural use.

        - Pursuant to Water Code section 10826 et seq., agricultural suppliers that provide water to 10,000 acres or more are required to develop and implement agricultural water management plans that describe agricultural efficient water management practices that should result in reduced water supply demands. Efficient water management practices include, but are not limited to, improvements to on-farm irrigation systems and water supplier delivery systems, such as installation of integrated supervisory control and data acquisition (SCADA) systems and canal automation; increased use of pressurized, drip, or micro-spray irrigation methods; and lining canals.

        - Grant programs, including the Agricultural Water Use Efficiency Program and State Water Efficiency and Enhancement Program provide for the enhancement of agricultural water use efficiency and water conservation efforts that should reduce water supply demands. These programs provide grants for on-farm improvements to address: (1) agricultural water use efficiency, conservation, and reduced demands; (2) greenhouse gas emission reductions; (3) groundwater protection; and (4) sustainability of agricultural operations and food production. Where appropriate

in funding water conservation-related activities, including for agriculture, the State Water Board will consider, and other agencies should consider, measures that would dedicate a portion of the conserved water to instream flows.

2. **Increase Efficiency of Agricultural Water Use:**

   i. **State Jurisdiction:** The State Water Board will continue to pursue various efforts that increase water use efficiency and conservation to maximize the beneficial use of Sacramento/Delta supplies. The following water efficiency measures will reduce agricultural impacts from reduced water supplies.

   - All agricultural water users have an obligation to maximize water efficiency and utilize conservation to the extent possible in conformance with the prohibition against waste and unreasonable use in the California Constitution. As directed by the Governor's Executive Order B-40-17 (April 7, 2017), the State Water Board is currently conducting a rulemaking process to prohibit wasteful water use practices. The State Water Board may implement the prohibition on waste and unreasonable use in exercising its discretionary authorities in its water right and water quality decision-making processes.
   - The State Water Board, California Department of Water Resources (DWR), California Public Utilities Commission (CPUC), California Department of Food and Agriculture, and the California Energy Commission (CEC) will continue to implement their April 2017 response plan to the Governor's Executive Orders B-37-16 (May 9, 2016) and B-40-17 (April 7, 2017). The response plan includes actions and an implementation timeline to (1) use water more wisely; (2) eliminate water waste; (3) strengthen local drought resistance; and (4) improve agricultural water use efficiency and drought planning.
   - As appropriate, the State Water Board will include provisions for water use efficiency and conservation when providing funding for water supply–related projects.

   ii. **Local Jurisdiction:** Local water suppliers, regional groundwater management agencies, and irrigation districts can and should reduce potential conversion of agricultural land due to reduced surface water availability by requiring existing agricultural practices to be modified to increase irrigation efficiency in conformance with state law (see 2.i). Increasing irrigation efficiency could be accomplished with the following methods.

   - Increase the use of irrigation management services, including audits of efficiency and soil surveys, to better determine how much water is needed by a crop in the present soil type and when to apply it.
   - Convert less efficient irrigation systems (e.g., surface irrigation) to more efficient ones (e.g., drip or micro-irrigation) or combine the use of different systems at different plant lifecycle stages. Manage systems appropriately to realize efficiency gains.
   - Increase the capability of irrigation water suppliers to provide delivery flexibility, such as the use of irrigation district regulating reservoirs, to allow flexible delivery durations, scheduling, and flow rates to better match each individual farm's needs.

3. **Impose Conditions on Land Use Changes or Other Discretionary Approvals:** Agencies that grant use approvals that would convert agricultural land to nonagricultural uses can and should impose conditions on such approvals to provide the permanent protection of an area of farmland equal to the converted area. Such conditions could include the following.
    i. The grant or purchase of a conservation easement protecting farmland that is not protected at the time of approval.
    ii. The payment of in-lieu fees sufficient to purchase an easement or land, into a fund committed to such purchases.
4. **Reduce Impacts on Groundwater:** Implementation of Mitigation Measure MM-GW-b will reduce potential impacts of lowered groundwater levels on agriculture.
5. **Oversight and Approval of Water Transfers:**
    i. When processing petitions for transfers, the State Water Board will ensure, to the extent possible, that the transfer would not result in conversion of farmland to nonagricultural uses.
    ii. When processing transfers, DWR, U.S. Bureau of Reclamation (Reclamation), and other agencies involved in approving transfers should require transferors to show that the transfer would not result in conversion of farmland to nonagricultural uses.
6. **Ensure Effectiveness of Diversion Intakes:**[1] Entities can ensure that river and stream elevations are sufficient for diversion at intake structures by taking one or more of the following actions.
    i. Monitor flow conditions on relevant rivers and streams.
    ii. Adjust water releases from reservoirs to ensure that adequate flows are present on the watercourse to maintain diversions.
    iii. Coordinate the timing of diversions to avoid diversion spikes and associated significant dips in flows in the river.
    iv. Modify intake structures when necessary.
7. **Minimize Disruptions to Agriculture in the Sutter and Yolo Bypasses from Increased Floodplain Inundation:**[1] Federal, state, and local agencies, landowners, and water users should continue and expand collaborative efforts to achieve flood protection, agricultural sustainability, ecosystem protection, and other benefits in the Sutter and Yolo Bypasses. To reduce or avoid disruptions to agricultural operations and associated land use conversions associated with floodplain inundation, these entities should continue and expand efforts related to monitoring, planning, and implementing projects in the Sutter and Yolo Bypasses. These efforts should include the following.
    i. Monitoring flow conditions and collaborating on other planning efforts to predict floodplain inundation to inform crop planting and other land management decisions in advance.
    ii. Coordinating restoration projects and other implementation activities to maximize fish and wildlife beneficial uses while minimizing disruptions to agricultural operations associated with floodplain inundation to the extent feasible.

H3.1.3 Air Quality

MM-AQ-a–c: Mitigate impacts from criteria air pollutant emissions from groundwater pumping

Water users who utilize increased use of groundwater pumping to replace surface water supplies and conduct groundwater storage and recovery operations should consider energy-efficient pumps and other equipment, including using alternatives to diesel-fueled pumps. Specific measures may include the following.

- Where feasible, use diesel pumps with engines meeting U.S. Environmental Protection Agency (USEPA) Tier 4 Final or better.
- Use electric, compressed natural gas, or other alternatively fueled pumps instead of the diesel counterparts, where available.

H3.1.4 Terrestrial Biological Resources

MM-TER-a: Mitigate impacts on special-status species

1. **Minimize Impacts on Sutter and Yolo Bypass Agricultural Lands:**[1] Implement Mitigation Measure MM-AG-a,e: 3 and Mitigation Measure MM-AG-a,e: 7 to reduce potential effects on Sutter and Yolo Bypass agricultural habitat from changes in hydrology.
2. **Habitat Protection and Restoration Actions:**
    i. **Habitat Restoration Actions:** The revised proposed Plan amendments include actions that other entities should take to restore habitat, including as part of EcoRestore and other efforts. Habitat restoration in the Sacramento/Delta and areas that receive Sacramento/Delta water supplies will reduce potential impacts on terrestrial species associated with reduced Sacramento/Delta water supplies to agriculture and wildlife refuges and wildlife areas.
    ii. **Refuge Management Activities:** Managed wetlands provide habitat for numerous waterfowl and shorebirds and for several special-status wildlife species. Refuge managing agencies can and should continue to enhance and maintain habitat at wildlife refuges for special-status terrestrial species, including giant gartersnake, Swainson's hawk, greater sandhill crane, and tricolored blackbird.
    iii. **Prioritize Wildlife Refuge Water Supplies:** [1] The program of implementation includes a wildlife refuge provision that would provide for the Executive Director of the State Water Board to approve exceptions to curtailment for Central Valley Project Improvement Act (CVPIA) and other wildlife refuges in implementing the numeric flow requirements.
    iv. **Species Recovery Plans:** State and federal resource agencies and other appropriate entities should continue and expand management efforts for special-status aquatic and terrestrial species. State and federal resource agencies should continue to develop, refine, and implement species recovery plans to protect special-status terrestrial species, including giant gartersnake, Swainson's hawk, greater sandhill crane, tricolored blackbird, and California black rail. In addition, the program of implementation includes a provision for terrestrial species management that specify the State Water Board's

support for species management efforts and federal and state species recovery actions as appropriate and will exercise its discretionary authorities to minimize and avoid possible redirected impacts on special-status terrestrial species from actions to implement the Bay-Delta Plan and other actions within the State Water Board's purview, to the extent possible.

v. **Funding:** The State Water Board will consult and coordinate with state and federal resource agencies and other appropriate entities to secure and distribute funding to support habitat restoration activities that would benefit terrestrial biological resources, including but not limited to, giant gartersnake, Swainson's hawk, greater sandhill crane, tricolored blackbird, California black rail, and other special-status terrestrial species.

3. **Special-Status Species Management Measures:** Agricultural water providers and users and land managers should develop and implement management actions (e.g., best management practices) to minimize, and where possible, avoid impacts on special-status species on or near agricultural lands.

   i. To protect giant gartersnake, agricultural water users and suppliers and land managers should develop and implement appropriate management measures such as the following.

      - Avoiding or minimizing crop idling or conversion of rice fields to other uses near areas likely to support giant gartersnake populations.
      - When fallowing rice fields, using an alternating "checkerboard" pattern to minimize impacts on giant gartersnakes (USFWS 2010).
      - Maintaining adequate water in major irrigation and drainage canals that can serve as movement corridors for giant gartersnake and other wildlife; and in smaller drains and conveyance infrastructure that can support giant gartersnake, maintaining habitat attributes such as emergent vegetation for escape cover and foraging habitat (USFWS 2010).
      - Incorporating measures into agricultural management plans that minimize impacts on giant gartersnake.

   ii. To protect Swainson's hawk, agricultural water users and suppliers and land managers should develop and implement appropriate management measures such as the following.

      - Incorporating measures into agricultural management plans that minimize impacts on Swainson's hawks.
      - Avoiding or minimizing crop idling or conversion of agricultural lands used by Swainson's hawk to other uses near areas likely to support Swainson's hawk populations.
      - Minimize the conversion of suitable crops for Swainson's hawk foraging (e.g., alfalfa) to unsuitable crops (e.g., vineyards).

   iii. To protect greater sandhill crane, agricultural water users and suppliers and land managers should develop and implement appropriate management measures such as the following.

- Minimizing conversion of grasslands and cereal grain fields to other uses near areas likely to support greater sandhill cranes.
- Incorporating measures into agricultural management plans that minimize impacts on greater sandhill cranes.

iv. To protect tricolored blackbird, agricultural water users and suppliers and land managers should develop and implement appropriate management measures such as the following.

- Delaying harvesting fields that support or are located near tricolored blackbird breeding colonies until the end of the tricolored blackbird breeding season (CDFW 2015a).
- Avoiding intensive disturbances (e.g., heavy equipment operation associated with crop harvesting) near tricolored blackbird breeding colonies (CDFW 2015b).
- Developing and implementing long-term solutions to manage tricolored blackbird colonies located on or near agricultural lands.

v. To protect California black rails, agricultural water users and suppliers and land managers should take appropriate management measures such as the following.

- Minimizing disturbances to Sierra Nevada wetland vegetation associated with clearing, burning, or overgrazing (Richmond et al. 2010).
- Incorporating measures into agricultural management plans that minimize impacts on California black rails.

4. **Diversify Water Portfolios:** Water users can and should diversify their water supply portfolios to the extent possible, in an environmentally responsible manner and in accordance with the law, to mitigate potential impacts on terrestrial resources from reduced water supplies for agricultural uses. This includes sustainable conjunctive use of groundwater and surface water, water transfers, water conservation and efficiency upgrades, and increased use of recycled water.
5. **Regulation of Waste Discharges to Streams:**[1] Implement Mitigation Measure MM-SW-a,f: 1 to reduce potential effects on streamflow and water quality from changes in municipal supply, water recycling, and indoor water conservation that affect WWTP effluent discharge.
6. **Support and Approval of Water Recycling:** The State Water Board will continue efforts to encourage and promote water recycling projects, including projects that involve use of recycled water for groundwater recharge, through expediting permit processes and funding efforts. When processing wastewater change petitions pursuant to Water Code section 1211, the State Water Board will ensure that the change in wastewater discharge does not diminish ecological benefits of instream flows, especially in dry seasons and in low-flow conditions where the stream is dependent on wastewater discharges.
7. **Support and Approval of Groundwater Storage and Recovery:** The State Water Board will continue efforts to encourage and promote environmentally sound recharge projects that use surplus surface water, including prioritizing the processing of temporary and long-term water right permits for projects that enhance the ability of a local or state agency to capture high runoff events for local storage or recharge (Governor's Executive Order No. B-39-17 [April 6, 2017]). In processing water right applications that involve groundwater

storage, the State Water Board will consider the need to preserve ecological functions of high-flow events and other relevant factors in accordance with the Water Code to ensure that enough flow remains instream to protect ecological benefits, including for terrestrial species and wetland and riparian habitat.

8. **Oversight and Approval of Water Transfers:**

    i. When processing petitions for transfers based on cropland idling, specifically crop types that are important to giant gartersnake, Swainson's hawk, greater sandhill crane, and tricolored blackbird, the State Water Board will ensure that the transfer would not result in diminished habitat for these special-status terrestrial species.

    ii. When processing transfers based on cropland idling, specifically crop types that are important to giant gartersnake, Swainson's hawk, greater sandhill crane, and tricolored blackbird, DWR, Reclamation, and other agencies involved in approving transfers should require transferors to show that the transfer would not result in diminished habitat for these special-status terrestrial species.

MM-TER-b,c: Mitigate impacts on riparian habitats or other sensitive natural communities, including wetlands

1. **Reservoir Management:**

    i. Reservoir owners and operators will consider impacts on riparian and wetland habitat and any associated special-status species from changes in reservoir levels and include measures to avoid or minimize these impacts in their long-term strategy and annual operations plans submitted for cold water habitat objective implementation.

    ii. All reservoir owners and operators are subject to existing regulatory requirements that protect water quality in reservoirs and streams below reservoirs, including export reservoirs. In exercising its regulatory authorities, the State Water Board will consider terrestrial biological resources and ensure that any impacts on riparian habitat and wetlands and associated special-status species are avoided or minimized. (Mitigation Measure MM-AQUA-a,d: 1.i-ii).

2. **Reduce Impacts on Groundwater-Dependent Ecosystems:** Implementation of Mitigation Measures MM-GW-b: 1 through 6 will reduce impacts of lowered groundwater levels on riparian habitat and sensitive natural communities, including wetlands.

3. **Agricultural Drainage Control:** [1] Implementation of Mitigation Measure MM-SW-a,f: 7 will reduce impacts associated with poor-quality agricultural discharges on riparian habitat and sensitive natural communities, including wetlands.

4. Implement the following Mitigation Measure MM-TER-a elements to mitigate impacts of other water management actions on riparian habitats or other sensitive natural communities, including wetlands.

    - Habitat Protection and Restoration Actions (MM-TER-a: 2)
    - Regulation of Waste Discharges to Streams (MM-TER-a: 5)
    - Support and Approval of Water Recycling (MM-TER-a: 6)
    - Support and Approval of Groundwater Storage and Recovery (MM-TER-a: 7)

- Oversight and Approval of Water Transfers (MM-TER-a: 8)

MM-TER-d: Mitigate impacts on wildlife movement or wildlife nurseries

Implement Mitigation Measure MM-TER-a and Mitigation Measure MM-TER-b,c elements to mitigate impacts on the movement of native resident or migratory fish or wildlife species, migratory wildlife corridors, and native wildlife nursery sites.

- Habitat Protection and Restoration Actions (MM-TER-a: 2)[1]
- Oversight and Approval of Water Transfers (MM-TER-a: 8)
- Reduce Impacts on Groundwater-Dependent Ecosystems (MM-TER-b,c: 2)

H3.1.5 Aquatic Biological Resources

MM-AQUA-a,d: Mitigate impacts on aquatic special-status species and wildlife movement or wildlife nurseries

1. **Implement Existing Laws that Protect and Mitigate Impacts from Dams and Diversions**

   i. **Existing Regulatory Requirements:** Reservoir owners and operators are subject to existing regulatory requirements intended to protect water quality in reservoirs and streams below reservoirs. Consistent with California Fish and Game Code section 5937, cold water flows from reservoirs should be maintained and timed to provide for downstream temperatures at critical times of the year to ensure that fish below dams are kept in good condition. Additional regulatory authorities that protect cold water habitat include Federal Energy Regulatory Commission (FERC) license requirements, National Marine Fisheries Service (NMFS) biological opinion requirements, regional water quality control board (regional water board) basin plan requirements for the protection of beneficial uses, and State Water Board public trust authority.

   ii. **State Water Board Regulatory Authorities:** In exercising its regulatory authorities, the State Water Board will consider temperature needs and ensure that any temperature impacts are avoided or reduced. In addition, the State Water Board will consider aesthetics, terrestrial biological species, cultural, surface water, energy, and recreation resources and ensure that any impacts are avoided or reduced. The proposed program of implementation indicates that upon receipt of information indicating that there are temperature management issues in reservoirs, the State Water Board will investigate and take measures, as appropriate, under its authorities to address temperature concerns to protect fish and wildlife. Specifically, the State Water Board may hold a public trust hearing in response to notification by the California Department of Wildlife (CDFW), a valid public trust complaint, or other relevant evidence indicating problematic reservoir operations.

   iii. **Species Recovery Plans:** The NMFS Salmon and Steelhead Recovery Plan identifies temperature management as a high priority action that is needed to recover salmon and steelhead. Actions identified in the recovery plan include minimum reservoir storage levels, instream flow management, planning for temperature management, physical modifications to control temperatures, upstream passage to cold water habitat,

monitoring, and other measures. Implement applicable recovery plans for streams below export reservoirs.

2. **Habitat Protection and Restoration Actions:**

    i. **Habitat Restoration Actions:** The revised proposed Plan amendments include actions that other entities should take to restore habitat, including as part of California EcoRestore and other efforts.

    ii. **Species Recovery Plans:** State and federal resource agencies and other appropriate entities should also continue and expand management efforts for special-status aquatic and terrestrial species. State and federal resource agencies should continue to develop, refine, and implement species recovery plans to protect aquatic biological resources, including special-status fish species, and the instream flows they require.

    iii. **Funding:** The State Water Board will consult and coordinate with state and federal resource agencies and other appropriate entities to secure and distribute funding to support habitat restoration activities that would benefit aquatic biological resources, including special-status fish species.

3. **Special-Status Species Management Measures:** To minimize and avoid impacts on aquatic special-status species (e.g., desert pupfish), water providers and users and land managers should develop and implement appropriate management measures (i.e., best management practices) to encourage the protection, restoration, and management of habitat, such as conducting hydrologic studies for water quality and quantity; monitoring, managing, or and restoring habitat; conducting fish presence surveys; and monitoring for contaminants.

4. **Regulation of Waste Discharges to Streams:** [1] Implement Mitigation Measure MM-SW-a,f: 1 to reduce potential effects on streamflow and water quality from changes in municipal supply, water recycling, and indoor water conservation that affect wastewater treatment plant (WWTP) effluent discharge.

5. **Support and Approval of Recycled Water:** The State Water Board will continue efforts to encourage and promote recycled water projects, including projects that involve use of recycled water for groundwater recharge, through expedited permit processes and funding efforts. When processing wastewater change petitions pursuant to Water Code section 1211, the State Water Board will ensure that the change in wastewater discharge does not diminish ecological benefits of instream flows or impact water quality (including cold water for special-status fish species), especially in dry seasons and in low flow conditions where the stream is dependent on wastewater discharges.

6. **Reduce Impacts on Groundwater:**

    i. **Implement Mitigation Measures MM-GW-b:** 1 through 6 to reduce potential impacts of lowered groundwater levels on surface water quality and aquatic resources.

    ii. The State Water Board may take action to protect aquatic biological resources, including special-status fish species, from impacts of groundwater diversions. These authorities include the authority to prevent waste, unreasonable use, unreasonable method of use, and unreasonable method of diversion of water. The State Water Board could also act under its public trust authority to regulate depletion of interconnected surface water by groundwater pumping.

7. **Diversify Water Portfolios:** Water users can and should diversify their water supply portfolios to the extent possible in an environmentally responsible manner and in accordance with the law to reduce reliance on the Sacramento/Delta and groundwater overdraft. This includes sustainable conjunctive use, groundwater storage and recovery, water transfers, water recycling, and water conservation and efficiency upgrades.

8. **Support and Approval of Groundwater Storage and Recovery:** The State Water Board will continue efforts to encourage and promote environmentally sound groundwater recharge projects that use surplus surface water, including prioritizing the processing of temporary and long-term water right permits for projects that enhance the ability of a local or state agency to capture high runoff events for local storage or recovery (Governor's Executive Order No. B-39-17 [April 6, 2017]). In processing water right applications that involve groundwater storage, the State Water Board will consider the need to preserve ecological functions of high-flow events and other relevant factors in accordance with the Water Code to ensure that enough flow remains instream to protect ecological benefits.

9. **Oversight and Approval of Water Transfers:**

    i. When processing petitions for transfers, the State Water Board will ensure that the transfer would not result in unreasonable effects on fish and wildlife or other instream beneficial uses.

    ii. When processing transfers, DWR and Reclamation should require the transferor to show that the transfer would not result in unreasonable effects on fish and wildlife or other instream beneficial uses in the source area or the area receiving the transfer.

10. **Implement Existing Laws to Protect and Mitigate Fisheries Impacts from Changes in Interior Delta Flows:**

    i. Existing Regulatory Requirements: Central Valley Project (CVP) and State Water Project (SWP) operations are subject to existing regulatory requirements that are intended to avoid jeopardy to species listed under the federal Endangered Species Act (ESA) and California Endangered Species Act (CESA). Consistent with existing incidental take permit (ITP) and biological opinion (BiOp) requirements, it is expected that limits on negative Old and Middle River (OMR) flows will continue to be implemented to reduce impacts on listed species. In addition, CDFW, NMFS, and the U.S. Fish and Wildlife Service (USFWS), may consider additional actions as needed to protect native fish species migrating through or inhabiting the Delta from potential changes in interior Delta flows.

    ii. State Water Board Regulatory Authorities: The State Water Board may develop and require specific water right proceedings to implement the narrative interior Delta flows objective to ensure protection of native fish species, including non-listed species, if it is determined that additional actions are needed.

H3.1.6 Cultural Resources

MM-CUL-a,b: Mitigate impacts of project that could cause a substantial adverse change in the significance of a historical or archaeological resource

1. **Reservoir Management:**
    i. Reservoir owners and operators will consider impacts on cultural resources from changes in reservoir levels and include measures to avoid or reduce any impacts on cultural resources in their long-term strategy and annual operation plans submitted for cold water habitat objective implementation.
    ii. All reservoir owners and operators are subject to existing regulatory requirements that protect water quality in reservoirs and streams below reservoirs, including export reservoirs. In exercising its regulatory authorities, the State Water Board will consider cultural resources and ensure that any cultural resources impacts are avoided or reduced. (Mitigation Measure MM-AQUA-a,d: 1.i-ii).
2. **Implement or Adhere to Cultural Resource Management Measures for Lands Surrounding Reservoirs**
    i. Implement any relevant general plan (private lands) or resource management plan (public lands), including provisions for inventory, evaluation, research, and interpretation of cultural resources. Plans typically contain site management measures, training for all operations and maintenance staff, and routine monitoring of known cultural resources.
    ii. Implement any relevant Historic Properties Management Plan (HPMP) or Cultural Resources Management Plan to meet the requirements of section 106 of the National Historic Preservation Act of 1966 (NHPA), and to coordinate historic preservation in conjunction with other aspects of a project.
3. **Unanticipated Discoveries**
    i. Implement standard unanticipated discovery and treatment measures should any previously unknown cultural resources, including human remains, be discovered during continued operation of the reservoirs.
    ii. If human remains become exposed, follow procedures under Health and Safety Code, section 7050.5, and Public Resources Code, section 5097.9. If the human remains occur on lands owned and administered by a federal agency, the provisions of the Native American Graves Protection and Repatriation Act will apply. Compliance with state law for discoveries occurring on private or state lands requires notification of the county coroner so the coroner may determine whether an investigation regarding the cause of death is required. If the coroner determines that the remains are of early Native American origin, the coroner will notify the California Native American Heritage Commission (NAHC).

MM-CUL-d: Mitigate impacts of project that could disturb any human remains, including those interred outside of dedicated cemeteries

Implement Mitigation Measures MM-CUL-a,b to minimize the potential for disturbance of human remains that could exist in areas previously inundated at reservoirs.

H3.1.7 Energy

MM-EN-a–e: Mitigate the project effects on energy resources[1]

1. **Reservoir Management**

    i. Reservoir owners and operators in the plan area will consider impacts on hydropower from changes in reservoir operations and include measures to avoid or reduce any impacts on hydropower in their long-term strategy and annual operation plans submitted for cold water habitat objective implementation.

    ii. In exercising its regulatory authorities, the State Water Board will consider hydropower generation to ensure that any impacts on hydropower are avoided or minimized (Mitigation Measure MM-AQUA-a,d: 1.ii)

2. **Coordination with Existing Requirements:** With the exception of federal facilities, reservoirs with hydropower operations are subject to regulation by FERC and have independent obligations to meet temperature and other instream flow requirements pursuant to FERC licenses and associated water quality certifications. Many reservoirs are also subject to other ESA and CESA requirements, including biological opinion provisions that include requirements that may dictate reservoir storage levels that affect hydropower production. To the extent possible, the revised proposed Plan amendments are proposed to be integrated with existing and new FERC licenses and associated water quality certification by the State Water Board as well as ESA, CESA, and other requirements. These requirements may help reduce impacts on hydropower production by coordinating regulatory requirements to the extent possible.

3. **Diversify Water Portfolios:** Water users can and should diversify their water supply portfolios to the extent possible, in an environmentally responsible manner and in accordance with the law. This includes sustainable conjunctive use of groundwater and surface water, water transfers, water conservation and efficiency upgrades, and increased use of recycled water. Water users and providers should consider the energy efficiency of other water supplies and pursue options that require less energy to the extent possible.

    i. Groundwater Pumping: Water users who utilize increased use of groundwater pumping to replace Sacramento/Delta water supplies should consider energy-efficient pumps and other equipment, including using energy from renewable sources.

    ii. Groundwater Storage and Recovery: The State Water Board will continue efforts to encourage and promote environmentally sound recharge projects that use surplus surface water, including prioritizing the processing of temporary and long-term water right permits for projects that enhance the ability of a local or state agency to capture high runoff events for local storage or recharge. In processing water right applications that involve groundwater storage, the State Water Board will include conditions as appropriate to provide for the inclusion of energy efficiency measures in those projects.

    iii. Water Recycling: The State Water Board will continue efforts to encourage and promote recycled water projects, including projects that involve use of recycled water for groundwater recharge, through expediting permit processes and funding efforts. When processing wastewater change petitions pursuant to Water Code section 1211, the State Water Board will include conditions as appropriate to provide for the inclusion of energy efficiency measures in those projects.

iv. Water Conservation: Water use is energy intensive because it requires energy for movement, heating, and treating. Water conservation measures help reduce energy associated with water use. For example, some urban conservation such as low-flow appliances are also more energy efficient by reducing hot water usage, thereby also saving energy. The following conservation measures will reduce water use and associated energy use.

- Pursuant to Water Code section 10826 et seq., agricultural suppliers that provide water to 10,000 acres or more are required to develop and implement agricultural water management plans that describe agricultural efficient water management practices that should result in reduced water supply demands and associated energy demands. Efficient water management practices include but are not limited to improvements to on-farm irrigation systems and water supplier delivery systems, such as installation of integrated SCADA systems and canal automation; increased use of pressurized, drip, or microspray irrigation methods; and lining of canals.
- Grant programs, including the Agricultural Water Use Efficiency Program and State Water Efficiency and Enhancement Program provide for the enhancement of agricultural water use efficiency and water conservation efforts that should reduce water supply demands and associated energy demands. These programs provide grants for on-farm improvements to address: (1) agricultural water use efficiency, conservation, and reduced demands; (2) greenhouse gas emission reductions; (3) groundwater protection; and (4) sustainability of agricultural operations and food production. Where appropriate, when funding water conservation–related activities, including for agriculture, the State Water Board will consider and other agencies should consider measures that would dedicate a portion of the conserved water to instream flows.
- Pursuant to the Urban Water Management Planning Act, municipal water suppliers are required to develop and implement urban water management plans every 5 years that include water conservation measures, programs, and incentives that prevent the waste of water and promote the reasonable and efficient use and reuse of available supplies that should result in reduced water supply demands and associated energy demands. Measures to increase water use efficiency and associated energy conservation include but are not limited to demand management measures; plumbing codes requiring more efficient fixtures; the Model Water Efficient Landscape Ordinance advances in irrigation technology; new technologies in the commercial, institutional, and industrial sectors; and mandates requiring that unmetered connections become metered.

4. **Increase Water Use Efficiency:** The State Water Board will continue to pursue various efforts that increase water use efficiency and conservation in order to maximize the beneficial use of Sacramento/Delta supplies. The following water efficiency measures will reduce water use and associated energy use.

i. All municipal water suppliers and agricultural water users have an obligation to maximize water use efficiency and utilize conservation to the extent possible in conformance with the prohibition against waste and unreasonable use in the California Constitution. As directed by the Governor's Executive Order B-40-17 (April 7, 2017), the State Water Board is currently conducting a rulemaking process to prohibit wasteful

water use practices. In addition, the State Water Board may implement the prohibition on waste and unreasonable use in exercising its discretionary authorities in its water right and water quality decision-making processes.

ii. The State Water Board, DWR, CPUC, California Department of Food and Agriculture, and CEC will continue to implement their April 2017 response plan to the Governor's Executive Orders B-37-16 (May 9, 2016) and B-40-17 (April 7, 2017). The response plan includes actions and an implementation timeline to (1) use water more wisely, (2) eliminate water waste, (3) strengthen local drought resistance, and (4) improve agricultural water use efficiency and drought planning.

iii. The State Water Board will continue to implement its 2024 regulation, *Making Water Conservation a California Way of Life*, which established budget-based water conservation targets for the over 400 large municipal water suppliers. DWR, Reclamation, and other water agencies should implement measures to design, construct, and refurbish water diversion infrastructure to increase energy efficiency.

iv. As appropriate, the State Water Board will include provisions for water use efficiency and conservation when providing funding for water supply–related projects.

5. **Promote the Use of Renewable Energy:** The following renewable energy measures will help increase the degree to which the revised proposed Plan amendments comport with statewide energy standards, including goals for renewable energy use. In addition, renewable energy measures will reduce impacts associated with energy production and use.

   i. Energy providers are required to comply with existing and future state and local regulations and mandates requiring increased use of electricity from renewable energy resources and zero-carbon resources. Specifically, the 100 Percent Clean Energy Act of 2018 mandates achievement of a minimum quantity of 50 percent of electricity products from renewable resources by December 31, 2026, and a minimum of 60 percent by December 31, 2030.

   ii. DWR, Reclamation, and other water providers should take actions to support and increase the use of renewable energy (OP-3 Renewable Energy Procurement Plan) (DWR 2020).

   iii. Implementation of Assembly Bill (AB) 2514 (Skinner), Statutes of 2010, amending Public Utilities Code section 9620 to promote the use of energy storage systems, requires the development of targets for energy storage that will enable increased use of renewable energy.

6. **Implement Greenhouse Gas Emissions Mitigation:** Implementation of Mitigation Measures MM-GHG-a and MM-GHG-b will reduce energy impacts associated with other water supplies.

H3.1.8 Geology and Soils

MM-GEO-c: Mitigate impacts associated with unstable soils and steep slopes (landslide, lateral spreading, subsidence, liquefaction, or collapse)

1. **Actions to Reduce Subsidence:**

   i. Continue implementation of existing groundwater basin management plans.

ii. Implement groundwater sustainability plans pursuant to the Sustainable Groundwater Management Act (SGMA).

iii. Implement other actions that can increase groundwater levels, including percolation ponds, reduction in groundwater use, appointment of water masters to address conflicting water use needs, or creation of groundwater banks.

2. **Reduce Impacts on Groundwater:** Implementation of Mitigation Measure MM-GW-b will reduce impacts of lowered groundwater levels that could contribute to subsidence.

H3.1.9 Greenhouse Gas Emissions

MM-GHG-a: Mitigate impacts from greenhouse gas emissions

1. **Water Use Efficiency:**

   i. Increase water use efficiency to reduce water demand related to agricultural uses.

   ii. Create water-efficient landscapes (e.g., by reducing lawn sizes; planting vegetation with minimal water needs, such as California native species; choosing vegetation appropriate for the climate of the project site; and choosing complementary plants with similar water needs or the ability to provide each other with shade and/or water).

   iii. Install water-efficient irrigation systems and devices, such as soil moisture–based irrigation controls.

2. **Water Conservation:**

   i. Devise a comprehensive water conservation strategy appropriate for the project and location. The strategy may include the water use efficiency practices listed in Mitigation Measure MM-GHG-a: 1, plus other innovative measures that are appropriate to the specific project.

   ii. Provide education about water conservation, such as through an "informative" water bill that goes beyond basic information used to calculate the bill based on usage and rates. Comparisons to previous bills and topics on water conservation would be incorporated.

   iii. Implement integrated resource management on both the supply side (e.g., source-water protection strategies to conserve water resources and avoid costly new supplies) and the demand side (e.g., comprehensive end-use audits).

   iv. Use graywater for non-potable uses instead of new potable water supplies.

   v. Use reclaimed water instead of new potable water supplies.

3. **Energy Efficiency:**

   i. Increase energy efficiency of pumps (e.g., solar) and turbines throughout the SWP system through design, construction, and refurbishment methods.

   ii. Increase water system energy efficiency to reduce energy consumption related to irrigation deliveries.

   iii. Improve efficiency of water system operations, such as by installing SCADA software, which can increase the efficiency of process monitoring and operating control.

iv. Increase efficiency of existing hydropower facilities and operations.

v. Increase the proportion of energy used to run the SWP with energy supplies from renewable sources.

vi. Use locally sourced water supplies or water from less energy-intensive sources instead of imported water or other sources of water that have high energy intensities.

4. **Irrigation Systems:**

   i. Increase the use of irrigation management services to better determine how much water is needed by crops and when to apply it.

   ii. Convert current inefficient irrigation systems (e.g., surface irrigation) to more efficient ones (e.g., use of micro-irrigation).

   iii. Increase the capability of irrigation water suppliers to provide delivery flexibility, such as the use of regulating reservoirs to allow flexible delivery durations, scheduling, and flow rates.

   iv. Reduce turf in landscapes and lawns.

5. **Restoration, Pricing Strategies, and Mitigation Credits:**

   i. Implement environmental restoration activities that have the potential to improve sequestration of carbon by natural processes.

   ii. Implement water pricing, such as metered rates, non-promotional rates, block rates, time-of-day pricing, water surcharges, and seasonal rates.

   iii. Purchase mitigation credits or offsets.

6. **Implement Energy Mitigation:** Implementation of Mitigation Measure MM-EN-a–e: 1 through 5 will reduce energy impacts of other water management actions, including any associated greenhouse gas (GHG) emissions.

7. Implement Mitigation Measure MM-GHG-b, Comply with applicable greenhouse gas emissions reduction plans, policies, or regulations, to minimize GHG emissions from groundwater pumping and other water management actions.

MM-GHG-b: Comply with applicable greenhouse gas emissions reduction plans, policies, or regulations

1. **Implement Air Quality Plans and Programs:** All power facilities and infrastructure required to increase production of energy due to reductions in hydropower production, or associated with other water management actions in response to reduced Sacramento/Delta supply, must comply with all applicable plans, programs, rules, and regulations, including but not limited to, emissions standards and targets in California Air Resources Board's (CARB's) most recent *California's 2017 Climate Change Scoping Plan*, Executive Orders, and emissions standards adopted by air quality management and air pollution control districts for the reduction of GHG emissions.

2. **Renewable Energy:**

   i. DWR will continue to implement its Renewable Energy Procurement Plan to meet Executive Order S-3-05 per DWR's Climate Action Plan (CAP).

ii. Any reduction in hydropower production that requires increased power from other sources will acquire and/or use power from renewable energy sources, including but not limited to, solar and wind power, as defined in CARB's *California's 2017 Climate Change Scoping Plan*.

3. Implement Mitigation Measure MM-GHG-a, Mitigate impacts from greenhouse gas emissions, to ensure increased use of diesel groundwater pumps complies with Senate Bill (SB) 32 and AB 1279 GHG reduction goals.

H3.1.10 Hydrology and Water Quality—Surface Water

MM-SW-a,f: Avoid or reduce violations of water quality standards or waste discharge requirements, and/or degradations of water quality

1. **Water Quality Contaminants and Regulation of Waste Discharges:**

   i. The State Water Board and regional water boards will continue regulation of waste discharges through a variety of programs, including but not limited to the following.

   - Storm water regulatory programs and the Strategy to Optimize Resource Management of Storm Water.
   - Irrigated Lands Regulatory Program.
   - Individual National Pollutant Discharge Elimination System (NPDES) and waste discharge requirements (WDR) permitting.

   ii. The State Water Board and regional water boards will implement existing total maximum daily loads (TMDLs) for contaminants and continue to update the 303(d) list of water quality-impaired waterbodies.

   iii. The State Water Board will continue to implement funding programs that provide loans and grants for capital improvements to WWTPs.

2. **Minimize Mercury Impacts:**

   i. Mercury Control Program for Reservoirs: Reservoir owners and operators in the plan area will describe participation in any adopted mercury control program for reservoirs, and if applicable, incorporate mercury measures into long-term strategy and annual operations plans. Proposed actions include efforts to understand and control sources of methylmercury and to address fish consumption concerns.

   ii. The State Water Board will work with regional water boards to ensure that the Central Valley Regional Water Quality Control Board (Central Valley Water Board) and San Francisco Bay Regional Water Quality Control Board (San Francisco Bay Regional Water Board) mercury TMDLs are implemented.

   iii. The State Water Board will coordinate with U.S. Army Corps of Engineers (USACE), DWR, and other appropriate agencies to ensure that implementation of flow requirements does not interfere with the functioning of the Cache Creek settling basin in reducing mercury inputs to the Sacramento/Delta.[1]

   iv. Continued implementation of water quality standards for mercury and the Office of Environmental Health hazard Assessment (OEHHA) fish consumption advisories in

California. These fish consumption advisories are guidelines that recommend how often an individual can safely eat fish caught from waterbodies in California. Most of these fish consumption advisories are issued due to mercury. OEHHA has issued over 100 site-specific advisories throughout the state, as well as statewide advisories for lakes and reservoirs, rivers, streams, and creeks without site-specific advisories. OEHHA provides separate guidelines in their fish advisories for the following two groups: (1) women 18–49 years old and children 1–17 years old (sensitive populations); and (2) women 50 years and older and men 18 years and older. These recommendations apply to all fish consumers, including tribal and subsistence fisherpersons who typically consume fish at higher rates (e.g., grams of fish per day) than recreational fisherpersons. Water quality standards and OEHHA fish consumption advisories would continue to be implemented for the consumption of study area fish, which would serve to protect people against overconsumption of fish with increased body burdens of mercury.

3. **Reservoir Management:**

   i. All reservoir owners and operators are subject to existing regulatory requirements that protect water quality in reservoirs and streams below reservoirs, including export reservoirs. In exercising its regulatory authorities, the State Water Board will consider surface water and ensure that any surface water impacts are avoided or reduced. (Mitigation Measure MM-AQUA-a,d: 1.i-ii).

4. **Avoid or Reduce Harmful Algal Blooms and Invasive Aquatic Weeds:**

   i. The State Water Board will continue to monitor harmful algal blooms (HABs) under the Surface Water Ambient Monitoring Program (SWAMP). The State Water Board and the regional water boards will work with other water managers to monitor HABs, communicate HAB concerns with other agencies and the public, and take appropriate response actions to manage and control HABs. With the passage of AB 834 in 2019, the Freshwater and Estuarine Harmful Algal Bloom (FHAB) Program was provided with funding and given six responsibilities: event response, statewide assessment and monitoring, risk assessment, research, outreach and education, and reporting. SWAMP has developed a framework and a strategy to develop and implement a FHAB Monitoring Program for California (Smith et al. 2021).

   ii. The regional water boards will continue to require monitoring through permitting for some nutrients, such as nitrate and ammonia, which contribute to conditions favorable to HAB and invasive aquatic weed formation. The regional water boards will continue to identify waterbodies that are impaired by elevated levels of nutrients and develop and implement TMDLs and associated NPDES permit and WDR conditions to implement narrative and numeric water quality objectives. Specifically, the Central Valley Regional Water Board will continue to implement the Irrigated Lands Regulatory Program, which regulates waste discharge, including fertilizers, from irrigated lands to prevent discharges from causing or contributing to exceedances of water quality objectives. In addition, implementation of the Delta Nutrient Research Plan is leading to new information for determining whether numeric water quality objectives for nutrients are needed to address specific water quality issues in the Delta, including HABs and associated toxins and nuisance compounds, excess aquatic plant growth, low abundance of phytoplankton species that support the food web, and low dissolved oxygen in some waterways.

iii. Develop and Adopt HAB and Cyanotoxin Water Quality Objectives: The State Water Board Division of Water Quality is developing for Board consideration statewide water quality objectives for HABs and cyanotoxins and a program of implementation for inland surface waters, enclosed bays, and estuaries throughout California. The objectives and program of implementation would be established as both a statewide plan and a policy for water quality control. This project includes efforts to evaluate existing cyanotoxin advisory action levels and determine if they can be adapted or updated for protection of the water contact recreation (REC-1) and municipal drinking water (MUN) beneficial uses. Efforts to help determine what information is necessary to perform a risk assessment to adapt the recreational advisory action levels to protect Tribal Tradition and Culture (CUL) beneficial uses are also underway as part of a separate but related project.

iv. HAB Management: Technologies for preventing and mitigating HABs are being developed and tested by other agencies (e.g., USACE) that could be promising for managing HABs in the Delta. Prevention measures such as gene-silencing agents could reduce biomass or toxicity of HABs; chemical management measures like algaecides could reduce HAB biomass and toxins; and rapid detection technologies may also improve HAB monitoring. In addition, the California Division of Boating and Waterways (CDBW) has an Aquatic Invasive Species Program that is responsible for monitoring, managing, and controlling invasive aquatic plants in the Delta. Under this program, CDBW uses chemical, mechanical, and biological control measures, as well as hand picking when needed, to control problematic aquatic weeds in the Delta.

5. **Protect Municipal Water Quality:**

   i. The State Water Board and the Division of Drinking Water (DDW) will continue to require public water systems to comply with regulations to implement the Safe Drinking Water Act, including applicable permit conditions. DDW will continue to inspect water systems, track and monitor for compliance, and take appropriate enforcement action if needed.

   ii. The State Water Board will continue to implement funding programs for various types of assistance projects that (1) provide interim access to safe water sources; (2) contract with or provide a grant to an administrator to address or prevent failure to provide safe and affordable drinking water; (3) improve water delivery infrastructure; (4) provide technical assistance to disadvantaged communities; (5) consolidate systems; and (6) fund operation and maintenance for disadvantaged and low-income communities.

   iii. Service providers should modify water treatment procedures or mix water sources to retain adequate drinking water quality and to comply with their drinking water permits.

6. **Reduce Impacts on Groundwater:** Implementation of groundwater Mitigation Measure MM-GW-b will reduce potential impacts of lowered groundwater levels on surface water quality.

7. **Agricultural Drainage Control:** The Central Valley Water Board will continue to implement the Irrigated Lands Regulatory Program. In addition, the State Water Board and Central Valley Water Board will continue efforts of the Central Valley Salinity Alternatives for Long-Term Sustainability Program to develop and implement long-term solutions to salinity and nitrate water quality concerns in the Central Valley, including source control, best

management practices (BMPs) to reduce the introduction of new salts, farmland retirement, and desalination, among others.

8. **Diversify Water Portfolios:** Water users can and should diversify their water supply portfolios to the extent possible in an environmentally responsible manner and in accordance with the law to mitigate potential impacts on water quality from reduced water supplies to agricultural and municipal uses. Water supply diversification includes sustainable conjunctive use of groundwater and surface water, groundwater storage and recovery, water transfers, water recycling, and water conservation and efficiency upgrades.

9. **Support and Approval of Groundwater Storage and Recovery:** The State Water Board will continue efforts to encourage and promote environmentally sound recharge projects that use surplus surface water, including prioritizing the processing of temporary and long-term water right permits for projects that enhance the ability of a local or state agency to capture high- runoff events for local storage or recharge. In processing water right applications that involve groundwater storage, the State Water Board will ensure that enough flow remains instream to protect water quality.

10. **Oversight and Approval of Water Transfers:**

    i. When processing petitions for transfers, the State Water Board will ensure that the transfer would not result in water quality impacts.

    ii. When processing transfers, DWR, Reclamation, and other agencies involved in approving transfers should require the transferor to show that the transfer would not result in water quality impacts in the source area or the area receiving the transfer.

11. **Support and Approval of Water Recycling:** The State Water Board will continue efforts to encourage and promote water recycling projects, including projects that involve use of recycled water for groundwater recharge. The State Water Board will continue to support the goals of the Recycled Water Policy, the statewide streamlined process for permitting of non-potable water recycling projects, and the Water Recycling Funding Program (currently funded by Proposition 1 and the Clean Water State Revolving Fund [CWSRF] Program). When processing wastewater change petitions pursuant to Water Code section 1211, the State Water Board will ensure that the change in wastewater discharge does not affect water quality, especially in dry seasons and in low-flow conditions where the stream is dependent on wastewater discharges.

12. **Water Quality Monitoring and Management in Putah Creek Creek:**[2] Prior to releasing any Cache Creek surface water or banked groundwater into Putah Creek, the Yolo County Flood Control and Water Conservation District (YCFCWCD) will develop in consultation with State Water Board and Central Valley Water Board staff, a monitoring plan to inform whether releases would result in adverse water quality effects in Putah Creek. The monitoring plan is subject to approval by the Executive Director of the State Water Board, including any conditions of approval. Once approved, YCFCWCD will conduct monitoring in accordance with that approved plan. The monitoring must include provisions to evaluate effects related to boron, nitrates, HABs, and mercury and include monitoring of Cache Creek water quality and banked groundwater quality prior to diversion into Putah Creek, and Putah Creek water quality before releases of Cache Creek water or banked groundwater into Putah Creek. If monitoring shows no expected adverse effects to Putah Creek water quality, YCFCWCD will continue to monitor Putah Creek during and after releasing Cache Creek

water or banked groundwater into Putah Creek. If monitoring information indicates possible significant adverse effects to Putah Creek water quality, YCFCWCD will notify the State Water Board and Central Valley Water Board immediately and cease releasing water into Putah Creek until the State Water Board Executive Director in coordination with Central Valley Water Board staff determine that significant adverse effects to water quality in Putah Creek are no longer expected.

MM-SW-i: Avoid or Reduce Exposure of People or Structures to Flood Risk on Clear Creek:[1]

State Water Board staff, in coordination with DWR's Division of Flood Management, Reclamation (owner of Whiskeytown Lake), and local flood management authorities, would develop a flow cap that would activate floodplain habitat while maintaining public safety and protecting property.

H3.1.11 Hydrology and Water Quality—Groundwater

MM-GW-b: Mitigate the substantial depletion of groundwater supplies or the substantial interference with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level

1. **Implement the Sustainable Groundwater Management Act (SGMA):** Local SGMA implementation will help mitigate the effects of the revised proposed Plan amendments by minimizing groundwater overdraft, protecting drinking water supplies and other high-quality water from contamination by plume migration, and protecting interconnected surface water from stream depletion caused by groundwater pumping. Groundwater sustainability agencies (GSAs) in high- and medium-priority basins must develop and implement groundwater sustainability plans (GSPs) that achieve groundwater sustainability within 20 years of GSP adoption. SGMA required that critically overdrafted high- and medium-priority basins adopt GSPs by January 31, 2020, and that all other high- or medium-priority basins adopt GSPs by January 31, 2022 (Wat. Code, § 10720.7). Each GSP also must include measurable objectives, as well as milestones in increments of 5 years, to achieve the sustainability goal in the basin within 20 years of the implementation of the GSP. (Wat. Code, § 10727.2.) Under a GSA's SGMA authority, GSAs can and should manage groundwater subbasins to prevent overpumping and groundwater quality degradation from migrating contaminants.

   In developing and implementing a GSP, GSAs are required to avoid unreasonable results, including significant and unreasonable seawater intrusion, land subsidence that substantially interferes with surface land uses, and depletions of interconnected surface water that have significant and unreasonable adverse impacts on beneficial uses of the surface water.

   GSPs must include elements detailed in Water Code section 10727.2, including a description of the physical setting and characteristics of the aquifer system underlying the basin, measurable objectives, and a description of how the plan helps meet each objective and how each objective is intended to achieve the sustainability goal for the basin for long-term beneficial uses of groundwater. The GSPs must specifically include monitoring, mitigation of

overdraft, and identification of potential recharge areas in the basin and areas that contribute to the replenishment of the groundwater basin.

DWR is responsible for establishing requirements and reviewing GSPs and must make a determination whether the GSP is likely to achieve the sustainability goal for the basin (Wat. Code, § 10733). In evaluating a GSP under SGMA, DWR will ensure that the GSP is likely to prevent undesirable results and ensure that the basin is operated within its sustainable yield. The assessment may include recommended corrective actions to address deficiencies identified by the Department (Wat. Code, § 10733.4). DWR is required to review plans and issue an assessment of the plan every 5 years following submittal to DWR (Wat. Code, § 10733.8).

2. **SGMA Oversight:** A number of triggers could result in the referral of a SGMA-applicable groundwater basin to the State Water Board for additional management actions, including failure to submit a GSP or a DWR finding that a GSP is inadequate or unlikely to meet the sustainability goal (Wat. Code, § 10735.2). The State Water Board ultimately may design an interim plan for a basin that may include restrictions on groundwater extraction, a physical solution to groundwater extraction, and principles and guidelines for administration of rights to surface waters that are connected to the basin.

   SGMA oversight will help ensure that GSPs are adequate and sufficient, and consequently will mitigate potentially significant effects of the revised proposed Plan amendments associated with groundwater depletion and associated water quality concerns. The administration of a basin by the State Water Board will directly address declining groundwater levels and degraded water quality, likely through reduced groundwater extractions.

   In areas outside of SGMA jurisdictions, local governments should use their authorities to manage groundwater extraction and overdraft, and to protect groundwater quality. For example, a county could implement a well installation moratorium, require programmatic California Environmental Quality Act (CEQA) level review of new well installations, require setbacks between wells and surface waters, and other actions that could effectively minimize the rate or magnitude of decreasing groundwater elevations. The same actions also would be effective in minimizing the effect of contaminant plume migration.

3. **Diversify Water Portfolios:** Water users can and should diversify their water supply portfolios in an environmentally responsible manner and in accordance with the law, to mitigate groundwater impacts. This includes sustainable use of groundwater and groundwater storage and recovery and conjunctive use, water recycling, water transfers, and water conservation and efficiency upgrades. While water conservation does not generate new water, it can extend the utility of existing supplies and therefore is considered another source of supply. Water conservation measures, such as increased efficiency for municipal uses or conversion of irrigated landscapes to vegetation that requires less water, can reduce groundwater pumping.

4. **Support and Approval of Groundwater Storage and Recovery:**

   i. The State Water Board will continue efforts to encourage and promote environmentally sound groundwater recharge projects that use surplus surface water, including prioritizing the processing of temporary and long-term water right permits for projects that enhance the ability of local and state agencies to capture high-runoff events for

groundwater storage and recharge. In processing water right applications that involve groundwater storage, the State Water Board will consider the need to preserve ecological functions of high-flow events and other relevant factors in accordance with the Water Code.

ii. The State Water Board will consider adding a generally applicable provision to the Declaration of Fully Appropriated Streams (State Water Board Order WR 98-08) to specify conditions under which water right applications may be accepted to allow for capture of flood flows for groundwater recharge.

iii. Water used for groundwater recharge will comply with water quality parameters set by the regional water board for groundwater replenishment, which require treatment, retention, blending, and other measures.

5. **Support and Approval of Water Recycling Projects:** The State Water Board will continue efforts to encourage and promote water recycling projects, including projects that involve use of recycled water for groundwater recharge, through expediting permit processes and funding efforts.

6. **Oversight and Approval of Water Transfers:** In processing petitions for transfers that involve groundwater substitution, the State Water Board will require petitioners to show that subsequent groundwater use resulting from the transfer is consistent with implementation of SGMA or other local groundwater management efforts and plans to ensure that transfers do not contribute to groundwater-related impacts.

   In processing transfers that involve groundwater substitution, DWR, Reclamation, and other entities should require transferors to show that subsequent groundwater use resulting from the transfer is consistent with implementation of SGMA or other local groundwater management efforts and plans to ensure that transfers do not contribute to groundwater-related impacts.

   Water users proposing to export groundwater from the "combined Sacramento and Delta-Central Sierra basin" must comply with the provisions of Water Code section 1220 where the groundwater pumping was initiated after January 1, 1985. Water Code section 1220 prohibits the export of groundwater from these basins unless (1) the pumping is in compliance with an adopted groundwater management plan; and (2) the plan is approved by a vote in the county or portions of counties that overlie the groundwater basin.

MM-GW-a,f: Mitigate impacts on groundwater quality from depletion of groundwater supplies or the substantial interference with groundwater recharge

1. **Drinking Water Programs:**

   i. Drinking Water Standards: Municipal water suppliers are required to take actions to ensure that water supplies meet relevant drinking water standards before that water is delivered to the public, including supplies that come from groundwater. Wellhead treatment, wellhead protection efforts, and well relocation/deepening will mitigate the effect of degraded groundwater quality on residents that rely on public water systems for their drinking water. The Safe and Affordable Drinking Water Fund established under SB 200 will enable the State Water Board to provide critical ongoing operations and maintenance support for small community water systems that are unable to meet safe drinking water standards.

ii. Human Right to Water: The State Water Board will continue its commitment to the human right to water through financial assistance, technical assistance, consolidations, and other means, including for communities that may be affected by reduced groundwater supplies or groundwater quality concerns. The LIRA program provides rate relief for low-income ratepayers of water utilities. The program offers cost-effective methods of assistance to low-income water customers besides rate assistance, including billing alternatives, installation of water conservation devices, and leak repair. The Drinking Water State Revolving Fund and Proposition 1 can provide funding for projects to assist publicly owned water systems (e.g., counties, cities, districts), privately owned community water systems (e.g., for-profit water utilities, nonprofit mutual water companies), and nonprofit or publicly owned noncommunity water systems (e.g., public school districts) with planning, design, and construction of drinking water infrastructure projects that will improve communities' water efficiency and ensure a drought-resilient water supply, including for communities that may be affected by reduced groundwater supplies or groundwater quality concerns. In addition, the Safe and Affordable Drinking Water Fund will enable the State Water Board to provide crucial ongoing operations and maintenance support so once-struggling community water systems can provide a sustainable source of safe drinking water.

iii. Consolidation of Public Water Systems: SB 88 authorizes the State Water Board to require public water systems that consistently fail to meet standards to consolidate with, or obtain service from, a public water system, including for communities that may be affected by reduced groundwater supplies or groundwater quality concerns. Consolidating public water systems and extending service from existing public water systems to communities and areas, such as DACs, that currently rely on under-performing or small, failing water systems, as well as domestic wells, can reduce costs and improve reliability.

iv. Funding: The State Water Board will promote and support funding sources for replacement of wells or for treatment of poor water quality in private domestic wells as appropriate.

v. Cleanup and Abatement Orders: Pursuant to Water Code section 13304, the State or regional water board may issue a cleanup and abatement order requiring a discharger to clean up and abate waste, "where the discharger has caused or permitted waste to be discharged or deposited where it is or probably will be discharged into waters of the State and creates or threatens to create a condition of pollution or nuisance." A cleanup and abatement order may require replacement water for domestic wells affected by pollution.

2. **Implement the State and Regional Board's Irrigated Lands Regulatory Program:** Implementation of the Irrigated Lands Regulatory Program will help manage long-term nutrient loading to groundwater and, over time, will help mitigate water quality issues associated with lower groundwater levels primarily by controlling salt and nutrient accumulation in soils that could be carried into shallow groundwater.

3. **Reduce Impacts on Groundwater:** Implement Mitigation Measures GW-b to reduce impacts of lowered groundwater levels on groundwater quality.

H3.1.12 Noise

MM-NOI-a,c,d: Mitigate exposure of persons to or generation of noise levels in excess of established standards and to substantial permanent or temporary increases in ambient noise levels in the project vicinity

1. **Applicable Policies and Regulations:** Entities that implement actions requiring increased operation of existing stationary source equipment (e.g., groundwater pumps) will comply with all applicable local policies and regulations regarding noise.
2. **Noise-Reduction Consideration in Operations:** Entities that implement actions requiring increased operation of existing stationary source equipment (e.g., groundwater pumps) in the vicinity of noise-sensitive receptors will prepare an acoustical study and include noise-reduction measures such that operational noise from stationary equipment does not exceed applicable local noise standards or limits specified in the applicable county or city ordinances and general plan noise elements. Such noise-reduction measures may include the following.
    i. Maximize the distance between noise-generating equipment and nearby noise-sensitive receptors.
    ii. Utilize quiet technology.
    iii. Enclose pumps and other noise-generating machinery in buildings that reduce the operating noise.
    iv. Provide local barriers between equipment and noise-sensitive receptors to provide acoustical shielding.
    v. Utilize noise-reduction devices, such as mufflers or silencers, on mechanical equipment where applicable and when feasible.
    vi. Incorporate dense landscaping to reduce operational noise sources.
    vii. Restrict noise-producing operational activities conducted near noise-sensitive land uses to daytime hours.

H3.1.13 Recreation

MM-REC-a: Mitigate recreation impacts associated with reservoir level changes

1. **Reservoir Management:**[1]
    i. Reservoir owners and operators will consider impacts on recreation from changes in reservoir levels and include measures to avoid or reduce any impacts on recreation in their long-term strategy and annual operation plans submitted for cold water habitat objective implementation.
    ii. All reservoir owners and operators are subject to existing regulatory requirements that protect water quality in reservoirs and streams below reservoirs, including export reservoirs. In exercising its regulatory authorities, the State Water Board will consider recreation and ensure that any recreation impacts are avoided or reduced. (Mitigation Measure MM-AQUA-a,d: 1.i-ii).

2. **Recreation Management Measures:**[1] Owners and operators of reservoirs and other recreational facilities should implement management actions to avoid or minimize substantial temporary or permanent impairment, degradation, or elimination of recreational facilities that causes users to be directed toward other existing facilities.
    i. Coordinate with affected public and private recreation providers to direct displaced users to under-utilized recreational facilities.
    ii. Provide additional operations and maintenance of existing facilities to prevent deterioration of these facilities.
    iii. If possible, provide temporary replacement facilities.
    iv. If the increase in use is temporary, once use returns to existing conditions, rehabilitate or restore degraded facilities.
    v. Where impacts on existing facilities are unavoidable, compensate for impacts through mitigation, restoration, or preservation of off-site facilities or creation of additional permanent new replacement facilities.
3. **Protect Water Quality and Avoid or Reduce Harmful Algal Blooms and Invasive Aquatic Weeds:** Implement Mitigation Measures MM-SW-a,f: 1 and 3 through 5 to reduce potential impacts of changes in hydrology that could result in incremental increases in harmful algal bloom formation and affect recreation.

MM-REC-b: Mitigate impacts from construction or expansion of recreational facilities (boat ramps)[1]

1. Implement MM-REC-a to avoid or reduce potential for recreation impacts associated with changes in reservoir levels.
2. If construction of new or modified boat ramps is necessary, implementation of mitigation measures described in Section H3.3, *Mitigation Measures – New or Modified Facilities*, will reduce or avoid construction-related impacts.

H3.1.14 Utilities and Service Systems

MM-UT-a: Avoid or reduce potential to exceed wastewater treatment requirements

1. **Water Quality Contaminants and Regulation of Waste Discharges:**[1]
    i. The State Water Board and regional water boards will continue regulation of waste discharges from WWTPs under individual NPDES and WDR permitting.
    ii. The State Water Board will continue to implement funding programs that provide loans and grants for capital improvements to WWTPs.
2. **Protect Municipal Water Quality:**[1]
    i. The State Water Board and its DDW will continue to require public water systems to comply with regulations to implement the Safe Drinking Water Act, including applicable permit conditions. DDW will also continue to inspect water systems, track and monitor for compliance, and take appropriate enforcement action if needed.

ii. The State Water Board will continue to implement funding programs for various types of assistance projects that (1) provide interim access to safe water sources; (2) contract or provide a grant to an administrator to address or prevent failure to provide safe and affordable drinking water; (3) improve water delivery infrastructure; (4) provide technical assistance to disadvantaged communities; (5) consolidate systems; and (6) fund operation and maintenance for disadvantaged and low-income communities.

iii. Service providers should modify water treatment procedures or mix water sources to retain adequate drinking water quality and to comply with their drinking water permits.

3. **Increased Coordination between Water Suppliers and Wastewater Agencies:**[1] Municipal water suppliers should communicate with agencies that provide wastewater service in their areas about water demand management strategies being planned or implemented, including projected indoor water conservation and the anticipated changes in wastewater influent volume and water quality that could result from implementation. This would help wastewater agencies become better prepared for short- and long-term changes in WWTP influent characteristics. DWR and the State Water Board should help facilitate better exchange of information and provide guidance for integrating water supply and wastewater planning. This facilitation would include development of measures in water conservation regulations that would ensure coordination among drinking water and wastewater agencies. The State Water Board will also require coordination among drinking water and wastewater agencies as part of the funding approval process for public water system improvements.

4. **Minimize Surface Water Quality Effects on Wastewater Treatment Plants:**[1] Implement Mitigation Measure MM-SW-a,f to avoid or reduce violations of water quality standards or waste discharge requirements, and/or degradation of water quality.

5. **Minimize Groundwater Quality Effects on Wastewater Treatment Plants:** Implement Mitigation Measure MM-GW-a,f to avoid or minimize impacts on groundwater quality from depletion of groundwater supplies or substantial interference with groundwater recharge.

MM-UT-b: Avoid or reduce impacts from the construction of new water or wastewater treatment facilities or expansion of existing facilities[1]

1. Implement Mitigation Measure MM-UT-a to avoid or reduce potential for exceedances of WWTP requirements.

2. If construction of new water or wastewater treatment facilities or expansion of existing facilities is necessary, implementation of mitigation measures described in Section H3.3, *Mitigation Measures – New or Modified Facilities*, will reduce or avoid construction-related impacts.

MM-UT-d: Avoid or reduce impacts on municipal supplies

1. **Diversify Water Portfolios:** Water users can and should diversify their water supply portfolios to the extent possible, in an environmentally responsible manner and in accordance with the law. This includes sustainable conjunctive use of groundwater and surface water, water transfers, water conservation and efficiency upgrades, and increased use of recycled water.

i. Groundwater Storage and Recovery: The State Water Board will continue efforts to encourage and promote environmentally sound recharge projects that use surplus surface water, including prioritizing the processing of temporary and long-term water right permits for projects that enhance the ability of a local or state agency to capture high runoff events for local storage or recharge.

ii. Recycled Water: The State Water Board will continue efforts to encourage and promote recycled water projects, including projects that involve use of recycled water for groundwater recharge, through expediting permit processes and funding efforts.

iii. Water Conservation: While water conservation does not generate new water, it can extend the utility of existing supplies and mitigate impacts from reduced deliveries of Sacramento/Delta supply for municipal use. Municipal suppliers have an obligation to continue implementing urban water management plans that include water conservation measures, programs, and incentives that prevent the waste of water and promote the reasonable and efficient use and reuse of available supplies, and to update such plans every 5 years. There are a number of demand reduction measures to address shortage levels, including public education and outreach campaigns, watering and other outdoor use restrictions, and rate structure changes. Other demand reduction actions, such as infrastructure improvements or installation of water-efficient appliances and fixtures would be implemented over a longer-term. Municipal suppliers can and should implement measures to increased water use efficiency and associated energy conservation, including but not limited to, demand management measures; plumbing codes requiring more efficient fixtures; the Model Water Efficient Landscape Ordinance; advances in irrigation technology; new technologies in the commercial, institutional, and industrial sectors; and mandates requiring that unmetered connections become metered.

2. **Increase Water Use Efficiency:** The State Water Board will continue to pursue various efforts that increase water use efficiency and conservation to maximize the beneficial use of Sacramento/Delta supply. The following water efficiency measures will reduce water use.

   i. All municipal water suppliers and agricultural water users have an obligation to maximize water use efficiency and utilize conservation to the extent possible in conformance with the prohibition against waste and unreasonable use in the California Constitution. As directed by the Governor's Executive Order B-40-17 (April 7, 2017), the State Water Board is currently conducting a rulemaking process to prohibit wasteful water use practices. In addition, the State Water Board may implement the prohibition on waste and unreasonable use in exercising its discretionary authorities in its water right and water quality decision-making processes.

   ii. The State Water Board, DWR, CPUC, California Department of Food and Agriculture and CEC will continue to implement their April 2017 response plan to the Governor's Executive Orders B-37-16 (May 9, 2016) and B-40-17 (April 7, 2017). The response plan includes recommendations and an implementation timeline to (1) use water more wisely (including adoption of municipal retail water use efficiency standards and methods for quantifying water use objectives); (2) eliminate water waste; (3) strengthen local drought resistance; and (4) improve agricultural water use efficiency and drought planning.

iii. The State Water Board will continue to implement its 2024 regulation *Making Conservation a California Way of Life*, which established budget-based water conservation targets for the over 400 large municipal water suppliers. The State Water Board will continue to pursue the development of programs that increase water use efficiency and conservation in order to maximize the beneficial use of Sacramento/Delta supplies.

iv. The State Water Board will implement within loan and grant programs for water use projects a requirement to include water use efficiency plans to help achieve mandated water conservation targets as one of the conditions of funding approval.

3. **Human Health and Safety Provision:**[1]The State Water Board will develop appropriate provisions to address human health and safety needs and other possible reasons for short-term and long-term exceptions to curtailments associated with implementation of the Bay-Delta Plan for specific purposes. Those purposes include provisions to allow continued diversions for minimum human health and safety water supplies where alternate supplies are not available. Those provisions may be informed by other relevant regulatory efforts in order to provide for consistency as appropriate.

4. **Prioritize Water Supplies for Health and Safety:** Entities that are already implementing local water shortage policies should prioritize water supplies for health and safety, if not already doing so.

5. **Reduce Impacts on Groundwater:** Implement Mitigation Measure MM-GW-b to reduce impacts of lower groundwater levels and associated impacts from increased municipal use of groundwater.

6. **Protect Municipal Water Supplies:**[1] Implement Mitigation Measure MM-UT-a to protect municipal use and water quality.

7. **Ensure Effectiveness of Diversion Intakes:**[1] Implementation of Mitigation Measure MM-AG-a,e: 6 will reduce potential impacts of lowered stream flow and lowered reservoir levels on the effectiveness of diversion intake operations.

H3.2 Mitigation Measures – Habitat Restoration and Other Ecosystem Projects

The proposed program of implementation identifies actions that other entities should take to address other ecosystem stressors and provides a framework to incorporate both flow and complementary ecosystem projects such as physical habitat restoration into local cooperative solutions. In addition, some complementary ecosystem projects may also serve as an implementation mechanism for the proposed cold water habitat objective. The VA pathway includes implementation of non-flow habitat restoration actions targeted at improving spawning and rearing capacity for juvenile salmonids, estuarine species, and other native fish and wildlife on a portion of the Sacramento/Delta tributaries for an initial 8 years (with the possibility to extend the term). Finally, the designation of new CUL beneficial use could result in habitat restoration as a result of enforcement actions, voluntary permit actions, and non-regulatory actions. Habitat restoration and other ecosystem projects evaluated collectively include physical habitat restoration (in-Delta and upstream tributary), fish passage improvements (screens, fishways, water

temperature control devices [TCDs], dam removal), predatory fish control, and aquatic invasive species control.

Mitigation measures to avoid or reduce potentially significant impacts from construction and operation of habitat restoration and other ecosystem projects from implementation of the revised proposed Plan amendments, including HRL non-flow habitat commitments, are presented below.

H3.2.1 Aesthetics

7.21 MM-AES-a–d: Mitigate impacts on visual resources

Entities or agencies designing and/or approving habitat restoration or other ecosystem projects will implement or require the following.

A. Construction AES Mitigation Measures (CMM-AES-a–d)

1. **Project Siting and Design:** Design the site or facilities to blend with surrounding land uses. Design will comply with applicable local plans (e.g., city/county general plans) and ordinances, as well as with applicable resource management plans for projects on public land.

   Design-related measures to reduce impacts on visual resources could include the following.

   i. Develop design form and materials to achieve aesthetic visual character instead of a strictly utilitarian objective. Use cast natural form elements or natural materials for facing to create texture and color compatible with the adjacent landscape.

   ii. Retain the existing topographic features, to the extent feasible, to lessen the degree of visual impact.

   iii. Avoid or minimize the removal of trees, shrubs, and other mature vegetation.

   iv. Design grading to blend with surrounding landforms.

   v. Minimize the vertical profile of proposed structures. Use landscaped berms instead of walls to mask views of structures from high-visibility sites.

   vi. Install any infrastructure (e.g., transmission lines) underground in areas with high visibility and high public use, to the extent feasible.

   vii. Use compatible colors for proposed structural features. Use earth-toned paints and stains with low levels of reflectivity.

   viii. Implement revegetation and landscaping that includes landscape planting and restoration of areas that were disturbed by construction activities to enhance the appearance of the new facilities or to screen negative visual elements. Specific requirements include replacement of scenic resources, including revegetation, tree planting (particularly if trees were removed), and installation of new native landscaping, to enhance the appearance of the new facilities or to screen negative visual elements.

   ix. For projects that involve any new or relocated roads, develop aesthetically pleasing landscaping for new/relocated roads at the shoulders, intersections, and on- and off-

ramps from highways. Design turnouts and scenic vista points where appropriate with high visibility and high public use.

2. **Screen Construction Areas:** Screen construction areas from public view.
3. **Spoil Disposal Areas:** Round the tops and bottoms of spoil disposal areas and contour the faces of slopes to create more natural-looking landforms. Create visual diversity by planting vegetation with diverse growth forms on the spoil disposal areas. Vegetation will not be limited to grasses.
4. **Dust Control Measures** (CMM-AQ-a–e: 3)
5. **Waste Management and Material Control Measures** (CMM-WQ-a–j: 4)
6. **Light and Glare Minimization:** Minimize new sources of substantial light or glare that would adversely affect day or nighttime views in the area:
    i. Limit construction activities to daylight hours, to the extent feasible.
    ii. When construction lighting is required, direct lighting away from residential and roadway areas where sensitive receptors may be present. Use shields for lighting, and direct lighting downward and inward toward the construction site.
    iii. Where lighting may be required for site security, use automatic motion-sensor lighting to reduce light emissions.
    iv. Use construction equipment and temporary, construction-related facilities with low levels of reflectivity.
    v. Permanent lighting will be downcast, cut-off type fixtures with non-glare finishes and controlled by photocells and motion sensors, depending on the location. Lighting will be of minimum intensity with adequate strength for security, safety, and access.
    vi. Follow applicable county and local jurisdiction lighting guidelines and requirements relevant to the proposed project site or area, which may include ensuring that project design incorporates outdoor lighting configurations and operational practices that minimize creation of obtrusive misdirected, excessive, or unnecessary lighting and reduce potential for light pollution.
7. **Construction BIO Mitigation Measures: Avoid Vegetation Disturbance** (CMM-BIO-a–f: 9), **Revegetation Plan** (CMM-BIO-a–f: 11), and **Revegetation Monitoring and Reporting** (CMM-BIO-a–f: 12)

B. Physical Habitat Restoration AES Mitigation Measures

1. **Project Design:** Design restoration projects to blend with surrounding scenery. Use natural vegetation for bank stabilization. Blend or screen any structures. For projects that involve gravel augmentation, locate gravel stockpiles in areas that minimize obstruction of public views and recontour gravel extraction sites.
2. **Physical Habitat Restoration BIO Mitigation Measures** (7.21 MM-BIO-a–f: C)

C. Dam Removal AES Mitigation Measures

1. **Project Planning:** Preproject planning for dam removal will include the consideration of a wide variety of technical, environmental, social, political, and economic issues, including

environmental feasibility. In feasibility studies, consider opportunities for aesthetic design when determining structural removal limits and other project features. Incorporate aesthetic design in any postconstruction interpretive features.

2. **Dam Removal BIO Mitigation Measures** (7.21 MM-BIO-a–f: E)

3. **Revegetation Plan:** Develop and implement a revegetation plan for areas that were exposed by reservoir drawdown and dam removal activities. The plan must provide for the recontouring and revegetation of the formerly inundated area and any disturbed areas, including structure sites, construction staging areas, temporary access roads, and waste disposal sites, to match the preinundation contour and appearance. The plan must further provide for the replacement of scenic resources, including revegetation and tree planting and installation of new landscaping, to enhance the appearance of the new facilities or to screen negative visual elements and complement the surrounding landscape.

H3.2.2 Agriculture and Forest Resources

7.21 MM-AG-a–e: Mitigate impacts on agriculture and forest resources

Entities or agencies designing and/or approving habitat restoration or other ecosystem projects will implement or require the following.

A. Construction AG Mitigation Measures (CMM-AG-a–e)

1. **Project Siting and Design:** Design and site projects to avoid or minimize impacts on farmland.

    i. Design project to avoid or minimize construction-related impacts on agriculture, particularly Prime Farmland, Unique Farmland, and Farmland of Statewide Importance.

    ii. Establish buffer areas between project construction zones and adjacent agricultural land that are sufficient to protect and maintain land capability and agricultural operation flexibility.

    iii. Redesign project features to minimize fragmenting or isolating farmland. Where a project involves acquiring land or easements, ensure that the remaining nonproject area is of a size sufficient to allow economically viable farming operations.

    iv. Site and/or design project to avoid land protected by agricultural zoning or a Williamson Act contract. Project proponents will take into account agricultural value when selecting a project site, preferring unprotected sites to protected sites and lower value sites (as quantified by the California Agricultural Land Evaluation and Site Assessment [LESA] model) to higher value and Williamson Act–protected lands.

2. **Invasive Species Control Measures:** Manage project construction activities to minimize the introduction of invasive species or weeds that may affect agricultural production on adjacent agricultural land. (See also CMM-BIO-a–f: 8.)

3. **Postconstruction Best Management Practices:** Following the completion of construction activities on agricultural land, implement postconstruction BMPs to return the land to preproject conditions. These measures may include but not necessarily be limited to the following.

i. Reconnect utilities or infrastructure that serve agriculture uses, as necessary, if these facilities are disturbed by project construction. If a project temporarily or permanently cuts off roadway access or removes utility lines, irrigation features, or other infrastructure, the project proponents will be responsible for restoring access as necessary to ensure that economically viable farming operations are not interrupted.

ii. Where underground infrastructure has been installed as part of the project, backfill to preproject contours to allow agricultural use to resume.

4. **Protect Agricultural Soils:** To protect agricultural soils, the following BMPs will be implemented.

   i. Protect exposed agricultural soils with mulches, geotextiles, and vegetative ground covers during and after project construction to minimize soil loss.

   ii. Depending on the thickness of the topsoil, topsoil may be salvaged from construction work areas, stockpiled, and then applied over the surface of spoil and borrow areas or other areas temporarily disturbed during construction (e.g., due to trenching) to the maximum extent practicable.

   iii. For staging areas and similar areas in which topsoil will not be excavated or overcovered, soil will be decompacted or otherwise remediated after demobilization.

5. **Agricultural Mitigation Consistent with County and Local Jurisdiction Requirements:** To offset the conversion of agricultural land to nonagricultural uses, comply with applicable county and local jurisdiction requirements, which may include, for example, purchase of a conservation easement on agricultural land at least equal to the number of acres converted to nonagricultural use (1:1 ratio) or the payment of the appropriate agricultural mitigation fee for converted acreages of agricultural land.

6. **Avoid or Minimize Impacts on Forest and Timberland:**

   i. Design the construction plan to avoid or minimize construction-related impacts on lands zoned for timber production and on forest land. Where construction occurs on or near forest land, avoid and preserve on-site trees.

   ii. Restrict ground-disturbing mechanical operations around forest land and timberland.

   iii. Develop and implement a reforestation plan in the event that forest land conversion cannot be avoided during construction. Preserve in perpetuity other forest land through a conservation easement or by acquiring lands or contributing funds to a land trust or other agency (at a ratio of 1:1 to compensate for permanent loss). If there is an existing forest land mitigation program for construction-related impacts on forest land, comply with that program to the extent required by law.

   iv. If applicable, obtain and comply with a timberland conversion permit from the California Department of Forestry and Fire Protection (CAL FIRE).

B. Physical Habitat Restoration AG Mitigation Measures

1. **Project Siting and Design:** Design and site projects to avoid or minimize impacts on agricultural lands (Prime Farmland, Unique Farmland, and Farmland of Statewide Importance).

Focus habitat restoration efforts on restoring existing habitat or developing new habitat on public lands before converting agricultural land. If public lands are not available for restoration efforts, focus restoration efforts on acquiring lands that can meet ecosystem restoration goals from willing sellers where at least part of the reason to sell is an economic hardship (for example, land that floods frequently or where levees are too expensive to maintain).

2. **Agricultural Land Easements:** Obtain easements on existing agricultural land for minor changes in agricultural practices (such as flooding rice fields after harvest) that would increase the value of the agricultural crop(s) to wildlife.
3. **Compatible Agricultural Practices:** Include provisions in floodplain habitat restoration efforts for compatible agricultural practices.
4. **Monitor for Seepage:** Agricultural land areas that may be subject to seepage caused by habitat restoration will be monitored and evaluated on a site-specific basis prior to construction to identify baseline groundwater conditions. Seepage monitoring in these areas will continue during and after project implementation. Monitoring will include placement of piezometers and/or periodic field checks to assess local groundwater levels and salinity and associated impacts on agricultural field conditions. In areas where it is determined that seepage impacts on adjacent parcels will occur, feasible mitigation measures will be developed and implemented in consultation with affected landowners. These measures may include installation or improvement of subsurface agricultural drainage or an equivalent drainage measure, as well as pumping to provide suitable field conditions (groundwater levels near preproject levels). Such measures will ensure that the drainage characteristics of affected areas will be maintained to the level existing prior to project construction.
5. **Consistency with Local and Regional Land Use Plans:** Implement features that are consistent with local and regional land use plans. Involve all affected parties, especially landowners and local communities, in developing appropriate configurations to achieve the optimal balance between resource impacts and benefits.
6. **Invasive Aquatic Vegetation Control BIO Mitigation Measures** (7.21 MM-BIO-a–f: G2): Control the application of herbicides.

C. Dam Removal AG Mitigation Measure

1. **Dam Removal WQ Mitigation Measures** (7.21 MM-WQ-a–j: G), including project planning, regulatory compliance, and a sediment management and monitoring plan, to ensure that the project includes any necessary special accommodations for existing legal users of water and other infrastructure.

D. Invasive Aquatic Vegetation Control AG Mitigation Measure

1. **Invasive Aquatic Vegetation Control BIO Mitigation Measures:** Implement chemical-control methods (7.21 MM-BIO-a–f: G2) to maximize containment of plant fragments and to ensure that herbicide applications do not inadvertently affect irrigation water or drift to agricultural crops.

H3.2.3 Air Quality

7.21 MM-AQ-a–e: Mitigate impacts on air quality

Entities or agencies designing and/or approving habitat restoration or other ecosystem projects will implement or require the following.

A. Construction AQ Mitigation Measures (CMM-AQ-a–e)

1. **Regulatory Compliance:**
   i. Comply with all applicable CARB regulations and standards.
   ii. Adhere to all applicable air district rules and regulations with jurisdiction in the project area.
   iii. Comply with all applicable general plan policies and ordinances relating to air quality.
2. **Emission Reduction Measures:**
   i. Locate staging areas at least 1,000 feet away from sensitive receptors.
   ii. Minimize idling time from both on-road and off-road diesel-powered equipment either by shutting equipment off when not in use or reducing the time of idling to 5 minutes (Cal. Code Regs., tit. 13, §2485). Provide clear signage that posts this requirement for workers at the entrances to the site.
   iii. Maintain all construction equipment in proper working condition according to manufacturer's specifications. The equipment must be checked by a certified mechanic and determined to be running in proper condition before it is operated.
   iv. Use equipment and vehicles that comply with the CARB requirements and emissions standards for on-road and off-road fleets and engines.
   v. Install diesel particulate filters and utilize diesel oxidation catalysts on off-road equipment and vehicles.
   vi. Discontinue all construction activities during first-stage smog alerts and first-stage ozone alerts and/or curtail construction during periods of high ambient pollutant concentrations.
   vii. Produce concrete on site if determined to be less emissive than transporting ready mix.
   viii. Lead agencies proposing projects will require their contractors, as a condition of contract, to reduce construction-related fugitive reactive organic gas emissions by ensuring that low–volatile organic compound (VOC) coatings are used during construction. The project applicant will submit evidence of the use of low-VOC coatings prior to the start of construction.
   ix. Use locally sourced or recycled materials for construction materials, to the greatest extent feasible.
   x. Implement reasonably available emission-control technology (i.e., USEPA Tier 4), including equipment and vehicles with zero-emission or lower-emission engines.
   xi. Use low/zero carbon or alternative fuels, such as B20 biodiesel or renewable diesel.

3. **Dust Control Measures:**

   i. Water exposed soil surfaces (e.g., access roads, staging areas) with adequate frequency for continued moist soil. Do not overwater to the extent that sediment flows off the site.

   ii. Cover exposed stockpiles (e.g., dirt, sand) and/or water or stabilize them with nontoxic soil binders.

   iii. Cover all trucks being utilized for transport and disposal of excavated material immediately after loading and throughout the transportation and disposal of excavated material. The cover must be installed in such a way to prevent wind from entering over the leading edge of the trailer rim.

   iv. Install a rock pad or a construction mud mat at the project site's exit/entrance to protect streets and public rights-of-way. Design mats and rock pads to support the heaviest and widest equipment entering the project site.

   v. Wash off all trucks and equipment, including their tires, prior to leaving the site.

   vi. Use wet power vacuum street sweepers to remove any visible trackout mud or dirt on adjacent public roads at least once a day. Avoid use of dry power sweeping.

   vii. Limit vehicle speeds on unpaved roads to 15 miles per hour.

   viii. Complete all roadways, driveways, sidewalks, and parking lots to be paved as soon as possible. In addition, lay building pads as soon as possible after grading unless seeding or soil binders are used.

   ix. Suspend excavation and grading activity when winds (instantaneous gusts) exceed 20 miles per hour.

   x. Initiate landscaping and revegetation as soon as construction tasks allow in order to minimize wind erosion.

   xi. Post a publicly visible sign with the telephone number and person to contact at the lead agency regarding dust complaints. This person will respond and take corrective action within 48 hours. The local air district's or districts' phone number(s) will also be posted in a visible location.

   xii. Implement erosion control, sedimentation control, and soil stabilization measures (CMM-WQ-a–j: 3) to prevent silt runoff to public roadways from sites with a slope greater than 1 percent.

4. **Valley Fever Control Measures:**

   i. Dust Control Measures (CMM-AQ-a–e: 3)

   ii. Erosion Control, Sedimentation Control, and Soil Stabilization Measures (CMM-WQ-a–j: 3)

   iii. Valley Fever Management Plan: In areas endemic for *Coccidioides* fungus, prior to starting construction, the project applicant will consult with the County Health Department to develop a Valley fever management plan that includes specific measures to reduce the potential for exposure to Valley fever. The Valley fever management plan will include a program to evaluate the potential for exposure to Valley fever from construction activities and to identify appropriate dust management and safety

procedures that will be implemented, as needed, to minimize personnel and public exposure to potential Valley fever–containing dust. Measures in the Valley fever management plan, which will be implemented as applicable, may include the following.

- Provide high efficiency particulate air–filtered air-conditioned enclosed cabs on heavy equipment, and train workers on proper use of cabs, such as turning on air conditioning prior to using the equipment.
- Require National Institute for Occupational Safety and Health–approved half-face respirators equipped with N-100 or P-100 filters to be used during any surface-disturbing activities if determined to be necessary based on a job hazard analysis. Require employees to wear respirators when working near earth-moving machinery if determined to be warranted after conducting a job hazard analysis.
- To the maximum extent practicable, phase work efforts to ensure that site preparation work involving significant surface disturbance (i.e., grading, filling, trenching) and work that does not involve significant surface disturbance are not collocated so that dust potentially generated by high winds coupled with disturbed soil instability will not affect workers or other receptors.
- Workers that are required to use respirators as determined by a job hazard analysis will be medically evaluated, fit-tested, and properly trained on the use of the respirators, and a respiratory protection program will be implemented in accordance with the applicable California Division of Occupational Safety and Health (Cal/OSHA) Respiratory Protection Standard (Cal. Code Regs., tit. 8, § 5144). To the maximum extent practicable, ensure that areas involving significant surface disturbance are stabilized as soon as ground-disturbing activities are completed.

5. **Asbestos Control Measures:**

   i. Comply with the Asbestos National Emission Standards for Hazardous Air Pollutants (40 C.F.R. Part 61, Subpart M) for asbestos removal and disposal for demolitions operations.

   ii. When performing construction activities in areas where naturally occurring asbestos or serpentine or ultramafic rock is present, the lead agency will coordinate with the applicable air pollution control or air pollution management district and implement the appropriate dust abatement measures according to the area of potential disturbance and the type of construction activity (e.g., road construction and maintenance, construction and grading operations) (Cal. Code Regs., tit. 17, § 93105).

6. **Health Risk Assessment:** Lead agencies proposing construction projects within 1,000 feet of existing sensitive receptors will prepare a site-specific construction and operational health risk assessment (HRA). If the HRA demonstrates that the health risk exposures for adjacent receptors will be less than applicable thresholds, then additional mitigation would be unnecessary. However, if the HRA demonstrates that health risks would exceed applicable project-level thresholds, additional feasible on- and off-site mitigation will be analyzed by the applicant to reduce risks, to the greatest extent practicable.

7. **Minimize Construction-Related Traffic and Equipment Use:** Construction-related traffic and large equipment use will be minimized. The following measures will be implemented toward this goal to reduce construction-related emissions.

i. Reduce the number of large pieces of equipment operating simultaneously during peak construction periods.

ii. Schedule vendor and haul truck trips to occur during nonpeak hours.

iii. Establish dedicated construction parking areas to encourage carpooling and efficiently accommodate construction vehicles.

iv. Identify alternative routes to reduce congestion during peak activities.

v. Develop a project-specific ride share program to encourage carpools, shuttle vans, transit passes, and/or secure bicycle parking for construction worker commutes.

vi. Implement measures to reduce vehicle trips.

8. **Blasting Operations and Safety Plan** (CMM-GEO-a–e: 7) for fugitive dust control.

B. Odor Control Measure: Develop and implement a project-specific odor management plan to reduce odor-related impacts. Incorporate odor control measures into this plan, including protocols for monitoring, reporting, and responding to odor events, as well as odor control technologies and BMPs to minimize odor releases, such as vegetation management and sediment removal at wetland restoration sites.

C. Dam Removal AQ Mitigation Measures

1. **Site-Specific Dust Control Plan:** Develop and implement a site-specific dust control plan to minimize generation and duration of dust emissions associated with demolition of dams and appurtenant facilities (including blasting) and desiccation and exposure of the former lakebed sediment. Dust control measures will be developed in compliance with applicable air pollution control regulations.
2. **Revegetation Plan** (7.21 MM-BIO-a–f: E3)
3. **Odor Control Measures** (7.21 MM-AQ-a–e: B)

H3.2.4 Biological Resources

7.21 MM-BIO-a–f: Mitigate impacts on biological resources

Entities or agencies designing and/or approving habitat restoration or other ecosystem projects will implement or require the following.

A. Construction BIO Mitigation Measures (CMM-BIO-a–f):

1. **Regulatory Compliance:** Develop a mitigation and management plan in coordination with fish and wildlife agencies to implement all appropriate measures as required by ESA section 7 consultation and to satisfy any other local, state, and federal requirements for achieving no net loss of wetlands, riparian habitat, or other critical habitat or take of wildlife species of concern. The plan should be submitted to the local city/county environmental planning department, USACE, USFWS, CDFW, NMFS, applicable state or regional water board (e.g., as part of a Clean Water Act section 401 (33 U.S.C. § 1341) water quality certification application), and/or other oversight agencies as applicable for approval prior to its implementation if an impact on special-status species population(s) is determined to occur based on the biological assessment and evaluation of the final project site and design.
2. **Preconstruction Surveys:** Conduct preconstruction surveys (by a qualified biologist) for special-status species in accordance with USFWS, NMFS, and CDFW (as applicable) survey methodologies and appropriate timing to determine presence and locations of any special-status species and their habitats and to avoid, minimize, or compensate for impacts on special-status species in coordination with the appropriate resource agencies; demarcate the boundaries of construction buffers around sensitive habitats; and submit survey reports for approval according to applicable federal, state, and local agency guidelines. This may include hiring a qualified biologist to identify riparian and other sensitive natural communities, including wetlands, and/or habitat for special-status plants and animals. As part of preconstruction surveys, evaluate potential impacts on trees or other biological resources protected by local policies and ordinances and observe any permit requirements associated with these policies and ordinances. In addition, conduct a delineation of affected aquatic resources areas to determine the acreage of loss in accordance with current USACE methods.
3. **Avoid, Minimize, or Compensate for Impacts on Sensitive Natural Communities:** The following measures will be implemented to reduce impacts on sensitive natural communities.

    i. Avoid, minimize, or compensate for reduction in area and/or habitat quality of sensitive natural communities through implementation of the following.

    - Select project site(s) that would avoid sensitive natural communities.
    - Design, to the maximum extent practicable, project elements to avoid effects on sensitive natural communities.
    - Establish temporary construction buffers for wetlands, vernal pools, and other sensitive natural communities that could be affected by construction activities. A qualified biologist will determine the location of the buffer(s) prior to the start of construction. The outer edge of the buffer zones will be demarcated using flagging or temporary orange mesh construction fencing before initiation of construction activities and based on site-specific conditions, seasonal restrictions for wildlife, local planning department specifications, and resource agency requirements.
    - Replace, restore, or enhance on a “no net loss” basis, in accordance with USACE and the applicable regional water quality control board, wetlands and other waters of the United States and waters of the state that would be removed, lost, or degraded. In coordination with USACE and the regional water quality control board, a wetland

mitigation and monitoring plan will be developed before any groundbreaking activity commences. Once the mitigation and monitoring plan is approved and implemented, mitigation monitoring will continue for a minimum of 5 years from completion of mitigation, or human intervention (including recontouring and grading), or until the performance standards identified in the approved mitigation and monitoring plan have been met, whichever is longer. Prior to commencement of any construction activities that could result in the permanent loss of wetlands, conduct a delineation of affected aquatic resources areas to determine the acreage of loss in accordance with current USACE and regional water board methods.

- Compensate for unavoidable impacts on sensitive natural communities (other than waters of the United States or state) by restoring and/or preserving in-kind sensitive natural communities on site or off site at a nearby site, or by purchasing in-kind restoration or preservation credits from a mitigation bank that services the project site and that is approved by the appropriate agencies, in consultation with applicable regulatory agencies (at ratios that offset temporal loss of habitat value).

4. **Avoid, Minimize, or Compensate for Impacts on Special-Status Species:** The following measures should be implemented to reduce impacts on special-status species.

   i. Project Siting and Design: Site and design the project, in general, and construction footprint, in particular, to avoid, when possible, or otherwise minimize, impacts on special-status species and habitat occupied by special-status species (particularly critical habitat). Select project site(s) that would avoid habitats of special-status species (which may include foraging, sheltering, migration, and rearing habitat in addition to breeding or spawning habitat), and to the maximum extent practicable, (re)design project elements to avoid effects on such species.

   ii. Construction Schedule: To the extent feasible, schedule construction to avoid special-status species' breeding, spawning, or migration locations during the seasons or active periods that these activities occur. Construction will be allowed only if authorized by the appropriate state and federal resource agencies, and additional construction timing restrictions could be imposed by these agencies, to protect specific species. For example, all in-water construction activities where special-status species have the potential or are known to occur would be conducted during the allowable in-water work periods established by NMFS, USFWS, and CDFW.

   iii. Buffers: Establish buffers around special-status species habitats to exclude effects of construction activities. A qualified biologist will determine the location of the buffer(s) prior to the start of construction. The size of the buffer will be in accordance with USFWS, CDFW, and NMFS protocols, as applicable, for the applicable special-status species.

   iv. Nest Trees: Nest trees for special-status bird species will not be removed unless avoidance measures (e.g., establishing buffers between construction activities and active nests) are determined to be infeasible. If nest tree removal is necessary, remove the tree only after the nest is no longer active, as determined by a qualified biologist.

   v. Relocation of Special-Status Plants and Animals: As appropriate, relocate special-status plant and animal species (excluding state Fully Protected species, which cannot be authorized for relocation and must be fully avoided) or their habitats from project sites

following USFWS, NMFS, and CDFW protocols (e.g., for special-status plant species, elderberry shrubs).

vi. Compensation: Where impacts on special-status species are unavoidable, compensate for impacts by restoring or preserving in-kind suitable habitat on site or off site, or by purchasing restoration or preservation credits (in compliance with CESA and the ESA) for affected state- or federally listed species from a mitigation bank that serves the project site and that is approved by the appropriate agencies, in consultation with the appropriate regulatory agencies (at ratios that offset the temporary loss of habitat value).

5. **Environmental Awareness Training:** Prior to the start of construction activities, all personnel will participate in mandatory worker environmental awareness training conducted by an agency-approved biologist or resource specialist. Construction personnel will be informed about the identification, potential presence, legal protections, avoidance and minimization measures, and applicable general protection measures for state- and federally listed species and associated habitats with potential to occur within or immediately adjacent to the project site. Construction personnel will be informed of the procedures to follow if these biological resources are disturbed during construction activities. For projects where the agency-approved biologist or resource specialist is not regularly on the project site, training may be provided via online/web-based meeting. For projects that may continue over an extended duration and require a large number of training events, a training video developed under the supervision of a qualified biologist or resource specialist may be used to train new personnel, as long as a biologist or resource specialist is available via phone to answer questions about the training or that may arise during construction.

6. **Incorporate Protection Measures for In-Water Construction:** Design in-water construction projects to avoid or minimize stranding of and direct injury to special-status aquatic species.

   i. Dewatering/Diversion: Any area to be dewatered will encompass the minimum area and time necessary to perform construction activities. Develop and implement a dewatering plan that describes proposed dewatering structures, design guidelines for contractors, and appropriate types of BMPs for the installation, operation, maintenance, and removal of those structures. Dewatering/diversion will be designed to avoid direct and preventable indirect mortality of fish and other aquatic species. Where feasible, dewatering/diversion will occur via gravity-driven systems. When pumping is necessary to dewater a work site, a temporary siltation basin and/or silt bags will be used to prevent sediment from reentering the wetted channel. Pump intakes will be covered with mesh per the requirements of current fish screening criteria to prevent potential entrainment of fish or other aquatic species that could not be removed from the area to be dewatered. Diverted flows must be of sufficient quality and quantity, and of appropriate temperature, to support existing fish and other aquatic life both above and below the diversion.

   ii. Cofferdams: Cofferdams may be installed if necessary to isolate the extent of the work areas. When feasible, construction of cofferdams will begin in the upstream area and continue in a downstream direction, allowing water to drain and fish and aquatic wildlife species to leave (under their own volition) from the area being isolated by the

cofferdam, prior to closure. If pile driving (sheet piles) is required, vibratory hammers will be used, and use of impact hammers will be avoided. When cofferdams with bypass pipes are installed, debris racks will be placed at the bypass pipe inlet in a manner that minimizes the potential for fish impingement and/or entrapment. All dewatering/diversion facilities will be installed such that natural flow is maintained upstream and downstream of project areas.

iii. Fish and Aquatic Species Exclusion: Fish and other aquatic species will be excluded from occupying the area to be dewatered by blocking the stream channel above and below the area to be dewatered with fine-meshed block nets or screens while cofferdams and other diversion structures are being installed. Block net mesh will be sized to ensure that aquatic species upstream or downstream do not enter the areas proposed for dewatering. Mesh will be no greater than 1/8-inch diameter. The bottom of the net must be completely secured to the channel bed. Block nets or screens will be placed and maintained throughout the dewatering period at the upper and lower extent of the areas where aquatic species will be removed.

iv. Fish Capture and Relocation: Where potential in-water construction effects may result in take of special-status fish species, capture fish from the affected areas and relocate them to areas that would support their growth and development. Captured fish would be temporarily held in aerated coolers for transport to relocation sites. A fish capture and relocation plan will be developed and implemented for review and approval by appropriate agencies (e.g., CDFW, NMFS, USFWS, as applicable). The plan will describe the biologist qualifications, capture methods, capture and relocation work areas, and reporting requirements. Fish capture operations will occur at any project site where dewatering and resulting isolation of fish may occur; for example, when dewatering creates pools within the stream channel or when an enclosed area within a cofferdam is dewatered. Collection of fish from areas isolated by dewatering may occur by electrofishing, seine, dip net, throw net, minnow trap, and hand capture, or a combination of these. The appropriate collection method will be determined based on site conditions. If capture and relocation are not feasible or would not be the most protective approach to managing fish in the work area (e.g., dewatering not needed or appropriate; large, unconfined waterbody), other methods to protect covered fish species (e.g., timing restrictions around season and tide, bubble curtains) will be detailed in a plan and submitted for approval by the appropriate resource agencies.

v. Removal of Diversion and Barriers to Flow: Upon completion of in-channel construction activities, any diversions or barriers to flow will be removed in a manner that will allow flow to resume with the least disturbance to the substrate. Alteration of creek beds will be minimized; any imported material that is not part of the project design will be removed from streambeds upon completion of the project. When appropriate, cofferdams will be removed so surface elevations of water impounded above the cofferdam will not be reduced at a rate greater than 1 inch per hour. Cofferdams in tidal waters will be removed during the lowest possible tide and in slack water to minimize disturbance and turbidity. Preproject flows must be restored to the affected surface waterbody upon completion of work at that location.

vi. In-Water Pile Driving: Develop a plan for pile-driving activities to minimize impacts on special-status species and submit it to relevant agencies for approval prior to the start of in-water pile-driving activities. The plan will describe the method with the least impacts

on aquatic organisms and will identify the number, type, and size of piles; estimated sound levels caused by the driving; the number of piles that will be driven each day; qualifications of monitors; any other relevant details on the nature of the pile-driving activity; and the measures that will be implemented to minimize underwater sound pressure to levels below fish thresholds for peak pressure and accumulated sound exposure levels. Threshold levels for special-status fish under NMFS jurisdiction are established in the Fisheries Hydroacoustic Working Group's *Agreement in Principle for Interim Criteria for Injury to Fish from Pile Driving Activities* (FHWG 2008) and may be used as a guideline for special-status fish. Pile driving will also follow the criteria outlined in the most recent version of the California Department of Transportation's *Technical Guidance for Assessment and Mitigation of the Hydroacoustic Effects of Pile Driving on Fish* (Caltrans 2020). If thresholds are exceeded, sound dampening or attenuation devices will be implemented to reduce levels.

An agency-approved biologist will be on site during pile-driving activities to minimize effects on special-status species that could be present. If any stranding, injury, or mortality of special-status species is observed, federal and state wildlife agencies will be notified in writing (e.g., via email) within 24 hours, and in-water pile driving will cease until the applicable federal and/or state agencies provide guidance on how to proceed.

A silt curtain will prevent the release of a turbidity plume and trap sediment that may become suspended as a result of the pile driving. The silt curtain must restrict the surface-visible turbidity plume to the area of pile construction and must control and contain the migration of resuspended sediments at the water surface and at depth.

7. **Avoid or Minimize Impeding Access to Established Native Resident or Migratory Wildlife Corridors or Native Wildlife Nurseries for Fish or Wildlife Species during Construction:** Site the construction footprint to avoid or otherwise minimize impeding access to established native wildlife movement corridors or native wildlife nurseries. If impeding access cannot be avoided, provide alternative access to these areas through such means as culverts, overpasses, or underpasses, for example.

8. **Invasive Species Control Measures:**

    i. Follow guidelines in the CDFW *California Aquatic Invasive Species Management Plan* (CDFW 2008), *Aquatic Invasive Species Disinfection/Decontamination Protocols* (CDFW 2013), and/or *Preventing the Spread of Invasive Plants: Best Management Practices for Land Managers* (Cal-IPC 2012) , where relevant. Construction supervisors and managers will be educated on weed identification and the importance of controlling and preventing the spread of noxious weeds.

    ii. Construction material to be used in (or immediately adjacent to) streams and wetlands, such as seed mixes, mulch topsoil, sand, gravel, crushed stone, and rock, brought on the project site from an outside source will be free of invasive plant material.

    iii. Avoid the spread of aquatic invasive species (e.g., zebra/quagga mussels, New Zealand mudsnails, chytrid fungus) to and from the project area according to the current aquatic invasive species disinfection/decontamination protocols, such as *Aquatic Invasive Species Disinfection/Decontamination Protocols* (CDFW 2013), *Aquatic Invasive Species Disinfection/Decontamination Protocols (Northern Region)* (CDFW 2016a), or other similar protocols.

iv. Consult with CDFW and local experts, such as the University of California Extension, county agricultural commissioners, representatives of county weed management areas, California Invasive Plant Council, and California Department of Food and Agriculture, to ensure that invasive plant species and populations are kept below preconstruction abundance and distribution levels.

v. Wash down all major construction equipment prior to entry into the project site in a manner that limits runoff, away from areas proximate to any stream/wetland resources.

vi. If invasive species are encountered, conduct appropriate treatment and removal methods. The preferred method is removal by hand followed by proper disposal. If hand removal is not effective, then herbicide/pesticide treatment may be necessary. Any herbicide spot treatment will be applied in accordance with approved herbicide treatment measures. Chemical use is restricted in accordance with approved application methods and BMPs designed to prevent exposure to nontarget areas and organisms. The use of any chemical considered for control of invasive species must be approved for use in California, adhere to all California Department of Pesticide Regulation (DPR) regulations, and be applied by a licensed applicator under all necessary state and local permits. A pest control advisor can ensure that legal, appropriate, and effective chemicals are used with appropriate methodologies. Aquatic pesticides will be applied in compliance with NPDES order(s), where applicable.

vii. Monitor the site for invasive plants after all construction activities have been completed and implement additional control activities, if necessary.

9. **Avoid Vegetation Disturbance:** Minimize the amount of soil, terrestrial vegetation, emergent vegetation, and submerged vegetation (e.g., eelgrass and kelp in marine areas, submerged aquatic vegetation in brackish and freshwater areas) disturbed during project construction and completion. Disturbance to existing grades and native vegetation, the number of access routes, the size of staging areas, and the total area disturbed by the project will be limited to the extent of all temporary and permanent impacts as defined by the final project design. All roads, staging areas, and other facilities will be placed to avoid and limit disturbance to waters of the state and other aquatic habitats (e.g., streambank or stream channel, riparian habitat). When possible, existing ingress or egress points will be used, and/or work will be performed from the top of streambanks, from barges on the waterside of the stream or levee bank, or from dry gravel beds. Existing native vegetation will be retained as practicable, emphasizing the retention of shade-producing and bank-stabilizing trees and brush with greater than 6-inch diameter branches or trunks. Remove temporary access roads and decompact soils as necessary to support desired revegetation. Minimize vegetation disturbance and soil compaction by using low ground-pressure equipment with a greater reach or that exerts less pressure per square inch on the ground than other equipment.

10. **Staging Areas:** Where appropriate and practical, barges will be used to stage equipment and construct the project, while reducing noise, traffic disturbances, and effects on terrestrial vegetation. When barge use is not practical, construction equipment and project materials may be staged in designated upland staging areas. Existing staging sites, maintenance toe roads, and crown roads will be used if available for project staging and access to avoid affecting previously undisturbed areas. For projects that involve in-water work for which boats and/or temporary floating work platforms are necessary, buoys will

be installed so moored vessels will not beach on the shoreline and anchor lines will not drag. Moored vessels and buoys will not be located within 25 feet of vegetated shallow waters.

11. **Revegetation Plan:** Develop and implement a revegetation plan if vegetation will be disturbed during construction. The revegetation plan will specify sites where revegetation will be implemented. Site contours will be returned to preconstruction conditions or designed to provide increased biological and hydrological functions. All temporarily disturbed areas will be decompacted and seeded/planted with the planting stock appropriate for the area; appropriate designs (e.g., plant arrangements that, when mature, replicate the natural structure and species composition of similar habitats); and appropriate planting techniques, monitoring frequency, and success criteria (e.g., sapling trees no longer require active management). Where natural communities have been disturbed during construction, restore to similar or improved function. If an irrigation system is necessary for plant establishment, install and ensure that the system is operational prior to installation of plantings, or prior to any periods where the weather forecast may jeopardize successful establishment of plants. If erosion control fabrics are used in revegetated areas, they will be slit in appropriate locations as necessary to allow for plant root growth. Only non-monofilament, wildlife-safe fabrics will be used. All plastic exclusion netting placed around plantings will be removed after 2 years or sooner if practicable.
12. **Revegetation Monitoring and Reporting:** All revegetated areas will be maintained and monitored for a minimum of 2 years after replanting is complete and until success criteria are met to ensure that the revegetation effort is successful. The standard for success is 60 percent absolute cover compared to an intact local reference site. If an appropriate reference site cannot be identified, success criteria will be developed for review and approval by the authorizing regional water board on a project-by-project basis based on the specific habitat affected and known recovery times for that habitat and geography. The project permittee will prepare a summary report of the monitoring results and recommendations at the conclusion of each monitoring year.
13. **Compliance with Habitat Conservation Plans and Natural Community Conservation Plans:**
    i. If the project site is within the planning area for any adopted habitat conservation plan (HCP), natural community conservation plan (NCCP), or similar conservation plan, consult CDFW and/or USFWS, as applicable, to identify any potential conflicts with the plan's goals, objectives, or conservation measures. Seek input regarding potential design features, conservation measures, or other mitigation strategies to avoid potential conflicts and achieve substantial conformance with the objectives of the HCP, NCCP, or similar conservation plan.
    ii. Comply with measures contained within an adopted HCP or NCCP, as applicable. Consult with biologists who have training and are knowledgeable about HCPs or NCCPs in the region where the project is located.
14. **Construction WQ Mitigation Measures** (CMM-WQ-a–j)
15. **Avoid or Minimize Lighting and Glare Effects:** Minimize nighttime construction site lighting to minimize impacts on wildlife. If nighttime construction is necessary, all project lighting (e.g., staging areas, equipment storage sites, roadway, construction footprint) will be selectively placed and directed onto the roadway or construction site and away from

aquatic habitats. Light glare shields will be used to reduce the extent of illumination into aquatic habitats. If the work area is located near surface waters, the lighting will be shielded such that it does not shine directly into the water. (See also CMM-AES-a–d: 6 for additional mitigation for light and glare during construction and operation.)

16. **Dust Control Measures** (CMM-AQ-a–e: 3)
17. **Construction NOI Mitigation Measures: Noise-Reduction Measures** (CMM-NOI-a,b,d–f: 2) and **Vibration-Reduction Measures** (CMM-NOI-a,b,d–f: 3)
18. **Blasting Operations and Safety Plan** (CMM-GEO-a–e: 7) to reduce potential harm to special-status species from blast and pressure waves.

B. Approval by State and Federal Fisheries Agencies: Habitat restoration and other ecosystem projects must be developed and implemented in consultation with and subject to approval from applicable state and federal fisheries agencies, including CDFW, NMFS, and USFWS. Projects will conform to the following guidance documents, as applicable.

- NMFS' programmatic restoration biological opinion to facilitate implementation of restoration projects in the Central Valley (NMFS 2018).
- CDFW's *California Salmonid Stream Habitat Restoration Manual* (Flosi et al. 2010).
- NMFS' *Guidelines for Salmonid Passage at Stream Crossings* (NMFS 2023).
- NMFS' *Fish Screening Criteria for Anadromous Salmonids* (NMFS 1997).
- NMFS' *Science Base and Tools for Evaluating Stream Engineering, Management, and Restoration Proposals* (Skidmore et al. 2011).

C. Physical Habitat Restoration BIO Mitigation Measures: Ensure that ecosystem restoration benefits for fish species are maximized, while minimizing the potential for adverse effects on native fish species from habitat creation.

1. **Restoration Strategy:** Design and implement habitat restoration projects to work with existing and augmented flows, including guidelines articulated in A Delta Renewed (e.g., reestablish connections between tidal and stream floodplains, restore fluvial processes along streams, connect riparian areas to fluvial processes). Design restoration projects that consider the multiple interactions of physical, chemical, and biological processes over a wide variety of spatial and temporal scales and to confirm that the project will be effective and appropriate given the physical setting.
2. **Adaptive Management:** To address uncertainties in the ecological process governing habitat formation and maintenance at selected sites, monitor and guide the progress toward achieving the objectives or optimizing the benefits of these projects through an adaptive management process. Restoration projects submitted as part of a local cooperative solution are subject to approval by the State Water Board.
3. **Biological Goals:** If appropriate, apply biological goals to inform management actions, adaptive methods, and to assess effectiveness of physical habitat restoration projects.
4. **Avoid Fish Stranding:** Design projects to prevent fish stranding by ensuring entrance and exit to the restoration area. A project should not create habitats that could attract fish that then become isolated from the stream without providing an opportunity to return to the

stream. Any off-channel features should be designed so that they slope toward and drain to the primary stream habitat as streamflow subsides. Fish passage and/or screening needs should be addressed with the installation of any new structures.

5. **Vegetation Management:** Design species palette for revegetation based on the species that naturally or historically occur in the project area, have the best chance of survival considering current site conditions, and can provide required habitat elements for special-status species. Revegetation that is not dependent on irrigation systems is generally preferred; however, there can be instances where irrigation is desirable. If an irrigation system is necessary for plant reestablishment, install and have the system operational prior to installation of planting or prior to any periods where the weather forecast may jeopardize successful establishment of plants. Acquire native seed or plant sources as close to the project site as possible.
6. **Physical Habitat Restoration WQ Mitigation Measures** (7.21 MM-WQ-a–j: E).
7. **Invasive Species Control:** Design projects to avoid creation of predation by invasive species and minimize conditions that would allow for the proliferation of invasive nonnative plant species, such as water hyacinth. Implement invasive aquatic vegetation control BIO mitigation measures to control any application of herbicides and pesticides (7.21 MM-BIO-a–f: G2).
8. **Gravel Augmentation BIO Mitigation Measures:**
    i. Avoid gravel augmentation during the period that could affect spawning spring-run and fall-run Chinook salmon, coho salmon, steelhead, or their embryos once in the gravel (late-summer, low-flow conditions).
    ii. Limit gravel augmentation to locations where the natural supply has either been eliminated, significantly reduced through anthropogenic disruptions, or where it can be used to initiate gravel accumulations in conjunction with other projects, such as simulated logjams and debris flows.
    iii. Size gravel with the proper gradation for the stream, using nonangular rock. When possible, use gravel of the same lithology as found in the watershed.
    iv. Do not mine gravel from the floodplain at elevations above bank-full in a manner that would cause stranding during future flood events. Avoid use of crushed rock.
    v. Use imported gravel that is free of invasive species and nonnative seeds.
    vi. Place gravel directly into the stream channel, at tributary junctions, or other areas in a manner that mimics natural debris flows and erosion.
    vii. Gravel Augmentation WQ Mitigation Measures (7.21 MM-WQ-a–j: E8).
9. **Approval by State and Federal Fisheries Agencies** (7.21 MM-BIO-a–f: B)

D. Fish Passage BIO Mitigation Measures

1. **Consultation with Fish and Wildlife Agencies:** Fish screen and fishway projects must be developed in consultation with NMFS, USFWS, and CDFW in accordance with established design, operational, and maintenance criteria and guidelines.

i. Fishway projects should conduct watershed and reach scale analysis of the hydrograph, sediment and large woody debris supply and transport, and streambed and bank dynamics (e.g., is the channel actively incising or aggrading) to confirm that the proposed design is appropriate and expected to function as designed over the lifetime of the project (20 to 30 years).

ii. Fishway design should be based on target species, level of maintenance, and monitoring requirements to ensure reliable fish passage.

iii. Where appropriate, design fishways considering passage for other aquatic wildlife species (e.g., amphibians) in addition to that of salmonids, sturgeon, and other native fish species. For example, providing rounded corners, resting areas, or a natural stream channel (stream simulation) or wetted ramp for passage over the impediment have been effective in facilitating passage of other aquatic wildlife.

iv. Design fishway projects to avoid creation of predator hotspots and avoid introducing invasive species upstream of the barrier.

2. **Temperature Control Device Design:** Design TCDs to ensure sufficient temperature and dissolved oxygen conditions to support special-status species above and below the reservoir.

3. **Approval by State and Federal Fisheries Agencies** (7.21 MM-BIO-a-f: B)

E. Dam Removal BIO Mitigation Measures

1. **Project Planning:** Utilize *Guidelines for Dam Decommissioning Projects* or other appropriate planning guidance to help in the development and execution of the project from preliminary investigation to design and implementation.

   i. Feasibility Studies: Collect data, including biological surveys for threatened and endangered species and their habitats. Conduct a feasibility study to evaluate the potential impacts from the erosion, transport, and deposition of reservoir sediment. Proceed with project if feasibility analysis verifies that constructing or operating a project will not result in unacceptable environmental consequences to endangered species.

   ii. Structural Removal Limits: Develop structure removal limits that satisfy the restoration project goals and objectives, such as fish passage, connectivity, sustainability, restoration of natural riverine processes, and floodplain function and capacity.

   iii. Engineering and Construction Design: Incorporate into engineering designs and construction any special accommodations for terrestrial species, such as bat roosts and wildlife crossings. The final design specifications should include any potential schedule constraints, including key fish spawning, bird nesting, or winter hibernation periods of sensitive species that could be affected by the project. Site clearing prior to construction may be limited to nonnesting periods for migratory birds or require special hazing procedures to prevent nesting of sensitive species.

2. **Regulatory Compliance:** Actions affecting threatened and endangered species (under the ESA) will involve USFWS and NMFS. Changes to the waterway may involve a state fish and wildlife agency, such as CDFW for a streambed alteration (section 1602) permit within the state of California. Proposed actions affecting Native American interests, including fishing

rights and cultural resources, will involve the affected tribal governments and the Bureau of Indian Affairs. If the project involves any modifications to a hydropower facility licensed by FERC, the FERC license must either be amended or surrendered.

3. **Revegetation Plan:** Develop and implement a revegetation plan for areas that were exposed by reservoir drawdown and dam removal activities. The plan must provide for the recontouring and revegetation of the formerly inundated area and any disturbed areas, including structure sites, construction staging areas, temporary access roads, and waste disposal sites. The revegetation plan may include manual revegetation or other methods and should consider appropriate revegetation methods, such as hydroseeding. Various types of vegetation may be required, depending on the ability of the areas to sustain growth, the nature and composition of the sediments, and the purposes intended for the vegetation. If possible, use only native species. Special erosion control provisions (such as BMPs) may be necessary until the new vegetated areas take hold. Treatment for invasive plant species (or weeds) may also be required.
4. **Dam Removal WQ Mitigation Measures** (7.21 MM-WQ a–j: G)

F. Predatory Fish Control BIO Mitigation Measures

1. **Regulatory Compliance:** A scientific collecting permit (SCP), memorandum of understanding (MOU), and federal authorization may be required to conduct scientific, education, propagation, and management activities associated with predatory fish control through capture methods. Comply with California sportfishing regulations that define unlawful take and set general fishing provisions and conditions.
2. **BMPs for Hook-and-Line Sampling:** For active and passive capture methods, appropriate BMPs for hook-and-line sampling must be implemented to minimize impacts on special-status species.
3. **Selective Capture:** Implement predatory fish capture methods that select large predatory fish rather than juvenile salmonids. For example, capture of most juvenile salmonids could be avoided by using large hooks or selecting a trap mesh that allows escape of small fish. Electrofishing equipment should be set to target the appropriate fish size.
4. **Fish Handling:** In the case of inadvertent capture (bycatch) or disorientation of native fish, handle fish carefully to avoid injury and, if necessary, hold fish in a bucket of water until they have recovered and then release.

G. Invasive Aquatic Vegetation Control BIO Mitigation Measures

1. **Physical-Control Methods:** Apply BMPs for physical harvesting of invasive aquatic vegetation, including but not limited to:
    i. Follow environmental compliance measures for species avoidance, equipment operation, and spoiling when conducting mechanical harvesting operations.
    ii. Collect plant fragments during and immediately following treatments. To maximize containment of plant fragments, crews will collect plant fragments that are released from physical/mechanical treatments. Collected plants will be disposed of in approved locations away from the water's edge and sensitive habitats, typically on nearby farm fields. Crews will also be trained on the importance of minimizing fragment escape.

iii. Conduct handpicking and herding only as required. Limit handpicking and herding activities for water hyacinth primarily to winter months when water hyacinth is dormant.

2. **Chemical-Control Methods:**

i. Enroll and implement NPDES Permit for Residual Aquatic Pesticide Discharges to Waters of the United States from Algae and Aquatic Weed Control Applications (Water Quality Order 2013-0002-DWQ) and any updated permit.

ii. Prior to the start of an invasive aquatic plant control herbicide or pesticide treatment effort, conduct environmental awareness training for all field crew members. Environmental awareness training should include species identification and impact avoidance guidelines; protocol for identification and protection of elderberry shrubs and other special-status plants as appropriate; protocol for identification and protection of Delta smelt, Chinook salmon, steelhead, green sturgeon, and other special-status species and habitats as appropriate; protocol for take of protected species; and use and calibration of equipment.

iii. Develop an aquatic pesticide application plan, including BMPs (e.g., following herbicide label instructions, using the largest size spray droplets and the lowest spray pressure that would be effective, not spraying in windy conditions). Maintain a pesticide application log, including specific information on each application. Develop and implement a quality assurance project plan for chemical residue and toxicity monitoring, describing procedures and protocols for data collection and analysis. Develop an annual report describing permit compliance and program findings and conclusions.

iv. To the extent feasible, avoid and minimize herbicide and pesticide treatment for invasive aquatic species control near special-status species, sensitive riparian and wetland habitat, and other biologically important resources. Specific measures that can be taken to reduce incidental impacts related to herbicide and pesticide use include but are not limited to the following.

- Adhere to timing restrictions based on outmigration of juvenile salmonids at specific sites (e.g., no treatment before June 1 at sites with juvenile outmigration, no treatment from October 16 to March 31).
- Survey for elderberry shrubs (*Sambucus* ssp.) and treat at low tide if any elderberry shrubs are within 100 feet of the water's edge.
- Follow application window restrictions on timing between repeat applications for water hyacinth.
- To minimize the potential for drift when applying herbicides, in addition to complying with the label application requirements, to the degree possible, schedule herbicide applications to occur at high tide or at a point in the tidal cycle determined by the field supervisor to provide the least nontarget impact at a particular site. In general, treatment at high tide will allow for better spray accuracy and access and will provide for greater dilution volume of herbicides. Change nozzle type and spray pressures whenever conditions warrant, limiting the amount of herbicide that may inadvertently contact nontarget species or enter the water.

v. Conduct monitoring and monthly reporting of the following.

- Pretreatment and posttreatment measurements of chemical residue.
- pH, turbidity levels, water temperature, and dissolved oxygen at selected sites.
- Water temperature and dissolved oxygen changes resulting from treatment activities.
- Amounts, types, and dates of herbicide application at each site.
- Visual assessment of pretreatment and posttreatment conditions of treated sites to determine efficacy of treatment and any effects of chemical drift.
- Operational status of equipment and vessels.

H3.2.5 Cultural Resources

7.21 MM-CUL-a–d: Mitigate impacts on cultural resources

Entities or agencies designing and/or approving habitat restoration or other ecosystem projects will implement or require the following.

A. Construction CUL Mitigation Measures (CMM-CUL-a–d)

1. **Regulatory Compliance:** Conduct construction activities in compliance with all applicable federal, state, and local laws and regulations, including but not limited to, the NHPA (54 U.S.C. § 300101 et seq.), Antiquities Act (16 U.S.C. §§ 431–433), Archaeological Resources Protection Act (16 U.S.C. §§ 470ee–470mm), Native American Graves Protection and Repatriation Act (25 U.S.C. § 3001 et seq.), CEQA and the State CEQA Guidelines (Pub. Resources Code, § 2100 et seq., §§ 21083.2–21084.1; Cal. Code Regs., tit. 14, § 1500 et seq.), Public Resources Code sections 5020–5029 and 5097 et. seq., Health and Safety Code section 7050 et seq., and any relevant local general plan.
2. **Preconstruction Surveys for Historical, Archaeological, and Paleontological Resources, Cultural Landscapes, and Traditional Cultural Properties:** Conduct cultural resources surveys, subsurface investigations, and other research to determine whether early Native American and post-contact-era archaeological resources, cultural landscapes, or traditional cultural properties in the project area are eligible for listing in the California Register of Historical Resources (CRHR).
3. **Cultural Resources Management Plan:** Prior to the start of any ground-disturbing activities, a qualified archaeologist will be retained (per the Secretary of the Interior's Professional Qualification Standards) to prepare a comprehensive site-specific cultural resources management plan (CRMP). The purpose of the CRMP is to document the actions and procedures to be followed to ensure avoidance or minimization of impacts on cultural resources consistent with State CEQA Guidelines section 15126.4(b) and to develop a detailed program of mitigation for direct and indirect impacts on cultural resources during project implementation.

The CRMP will include, but is not limited to, the following measures.

i. A description of the roles and responsibilities of cultural resources personnel and the reporting relationships between project construction management and the mitigation and monitoring team, including lines of communication and notification procedures.

ii. Prescribed actions to be taken in the event that cultural resources are inadvertently discovered during construction or known resources are affected in an unanticipated manner.

iii. Specific measures to be taken to avoid impacts on significant cultural resources, such as the designation of environmentally sensitive areas.

iv. Artifact collection, retention/disposal, and curation policies, including a statement that all cultural materials retained will be prepared in accordance with the requirements of an identified, qualified curatorial facility.

v. Conform to the Secretary of the Interior's Standards for Rehabilitation and Guidelines for Rehabilitating Historic Buildings (36 C.F.R. pt. 67) in the event of relocation. If any historic buildings, structures, or levees are relocated or altered, the lead agency must ensure that any changes to significant buildings or structures conform to these standards.

vi. If eligible or significant resources cannot be avoided and would be affected by a project, complete appropriate documentation, archival practices, and communication with the NAHC and Native American community, depending on project-specific circumstances.

4. **Unanticipated Discovery Measures:** Construction will stop within a 50-foot radius of any archeological, paleontological, or historical resources discovered during construction activities, and treatment measures will be devised as needed. A qualified archaeologist or other qualified cultural or paleontological resources specialist will be brought on site within 24 hours of the discovery. If the specialist determines the find is significant, a full archaeological survey will take place. Construction activities in the area would resume once the survey is completed.

   If human remains are discovered and become exposed, follow procedures under Health and Safety Code section 7050.5 and Pub. Resources Code section 5097.9. If the human remains occur on lands owned and administered by a federal agency, the provisions of the Native American Graves Protection and Repatriation Act will apply.

5. **Oversight and Monitoring of Construction Activities:** Require a qualified professional cultural or paleontological resources specialist (per the Secretary of the Interior's Professional Qualification Standards) trained to identify paleontological, archaeological, and built environment resources in a construction setting to be present during project ground-disturbing activities if significant cultural or paleontological resources are known to exist on the project site or if there is a high probability for significant cultural or paleontological resources to exist.

6. **Worker Cultural Resources Sensitivity Training:** A worker cultural resources sensitivity program will be implemented for the project. Prior to any ground-disturbing activity, an initial sensitivity training session will be provided to all project employees, contractors, subcontractors, and other professionals prior to their involvement in any ground-disturbing activities. The sensitivity program will address the cultural (Native American,

archaeological, and paleontological) sensitivity of the project site; and a tutorial will provide information on how to identify these types of resources, appropriate behavior, worker access routes and restrictions, specific procedures to be followed in the event of an inadvertent discovery per the CRMP, and consequences in the event of noncompliance.

7. **Dust Control Measures** (CMM-AQ-a–e: 3)
8. **Construction NOI Mitigation Measures: Noise-Reduction Measures** (CMM-NOI-a,b,d–f: 2) and **Vibration-Reduction Measures** (CMM-NOI-a,b,d–f: 3)
9. **Construction Site Security Measures** (CMM-HAZ-a–h: 7)
10. **Construction AES Mitigation Measures: Project Siting and Design (**CMM-AES-a–d: 1) and **Screen Construction Areas** (CMM-AES-a–d: 2)

B. Fish Passage CUL Mitigation Measures

1. **Historic Dams and Structures:** For temperature control device and dam removal projects, determine whether the dam is eligible for listing in the CRHR treatment of historic dams and structures under Pub. Resources Code section 21084.1 and California Code of Regulations section 15064.5 subdivision (a). A cultural resource management strategy for recording and evaluating dams or structures will be conducted prior to any modifications. This includes a records search of the area; a field recordation of the dam and any associated historical structures on California Department of Parks and Recreation series 523 forms, specifically 523B (building, structure, or object) and/or 523E (linear resource); and submission of these materials and any nominating materials to the State Historical Resources Commission of the California Office of Historic Preservation.
2. **Project Planning:** Preproject planning for dam removal requires consideration of a wide variety of technical, environmental, social, political, and economic issues, including environmental feasibility. A project design may provide opportunities for historic preservation such as leaving portions of the structure, such as a stone masonry abutment or a concrete thrust block. Consider postconstruction interpretive features to educate the public on the cultural and historical aspects of the project.
3. **Cultural Resources Management Plan:** For dam removal projects, develop and implement a CRMP to address potential exposure of cultural resources after drawdown of the reservoir. The plan must incorporate procedures to ensure compliance with all applicable federal, state, and local laws and regulations, including but not limited to, NHPA (54 U.S.C. § 300101 et seq.), Antiquities Act (16 U.S.C. §§ 431–433), Archaeological Resources Protection Act (16 U.S.C. §§ 470ee–470mm), Native American Graves Protection and Repatriation Act (25 U.S.C. § 3001 et seq.), CEQA and the State CEQA Guidelines (Pub. Resources Code, § 2100 et seq., §§ 21083.2–21084.1; Cal. Code Regs., tit. 14, § 1500 et seq.), Public Resources Code sections 5020 through 5029 and 5097 et seq., Health and Safety Code section 7050 et seq., and any relevant local general plan.
4. **Coordination with General or Resource Management Plan:** Coordinate with relevant general (private land) or resource management plan (public land), including provisions for inventory, evaluation, research, and interpretation of cultural resources. Plans should contain site management measures, training for all operations and maintenance staff, and routine monitoring of known cultural resources. Implement any relevant historic properties management plan or CRMP to meet the requirements of section 106 of the NHPA for

projects on federal lands and to coordinate historic preservation reviews in conjunction with other aspects of a project.

5. **Human Remains:** If human remains become exposed in areas previously inundated at reservoirs, follow procedures under Health and Safety Code section 7050.5 and Public Resources Code section 5097.9. If the human remains occur on lands owned and administered by a federal agency, the provisions of the Native American Graves Protection and Repatriation Act will apply.

H3.2.6 Energy and Greenhouse Gas Emissions

7.21 MM-EN-a,b/GHG-a,b: Mitigate energy and GHG emissions impacts

Entities or agencies designing and/or approving habitat restoration or other ecosystem projects will implement or require the following.

A. Construction EN/GHG Mitigation Measures (CMM-EN-b/GHG-a,b)

1. **Regulatory Compliance:** Comply with the legislative mandates of the State of California for the reduction in statewide GHG emissions, including SB 32 and Executive Order S-3-05 and Executive Order B-55-18. Comply with any relevant regional or local plan, policy, or ordinance addressing GHG emissions.
2. **GHG Emission Reduction Measures:** Construction BMPs and onsite measures to reduce GHG emissions will be implemented and will include, but not be limited to, the following.
    i. Preserve known GHG sinks to the extent feasible and limit GHG sources as a component of project design.
    ii. Implement the most recent applicable air quality management district guidance and local air district controls to reduce criteria pollutant emissions and to minimize GHG emissions.
    iii. Use electric or hybrid-electric off-road construction equipment and vehicles instead of diesel-powered. Use vehicles that use alternative fuels.
    iv. Design and construct the project to be energy-efficient according to Cal. Code Regs., title 24, Part 6 (*Energy Efficiency Standards for Residential and Nonresidential Buildings*).
    v. Use at least 10 percent of building materials that are locally manufactured.
    vi. Divert and recycle or salvage non-hazardous construction and demolition waste.
    vii. Minimize the amount of concrete for paved surfaces and use a low-carbon concrete option.
    viii. Minimize tree removal and mitigate indirect GHG emissions increases that occur due to vegetation removal, loss of sequestration, and soil. When onsite preservation is not feasible, replace onsite trees, or contribute to a mitigation program providing carbon storage. Implement a tree-planting program to sequester an amount of GHG emissions equal to direct emissions produced during construction. Develop the program per the principles of CARB's *Compliance Offset Protocol Urban Forest Projects* (CalEPA and CARB 2011).

ix. When generators must be used, consider use of alternative fuels, such as propane or solar.

x. Minimize idling time by requiring that equipment be shut down after 5 minutes when not in use (Cal. Code Regs, tit. 13, § 2485). Provide clear signage that posts this requirement for workers at the entrances to the site.

xi. Maintain all construction equipment in proper working condition and perform all preventive maintenance. Required maintenance includes compliance with all manufacturer's recommendations, proper upkeep and replacement of filters and mufflers, and maintenance of all engine and emissions systems in proper operating condition. Maintenance schedules will be detailed and clearly posted for workers prior to commencement of construction.

xii. Implement a tire inflation program on each jobsite to ensure that equipment tires are correctly inflated. Check tire inflation when equipment arrives onsite and every 2 weeks for equipment that remains onsite. Check vehicles used for hauling materials offsite weekly for correct tire inflation.

xiii. Develop a project-specific ride share program to encourage carpools, shuttle vans, transit passes, and/or secure bicycle parking for construction worker commutes.

xiv. Reduce electricity use in temporary construction offices by using high-efficiency lighting and requiring that heating and cooling units be Energy Star compliant. Require that all contractors implement procedures for turning off computers, lights, air conditioners, heaters, and other equipment each day at close of business, wherever feasible.

3. **Construction AQ Mitigation Measures: Regulatory Compliance** (CMM-AQ-a–e: 1), **Emission Reduction Measures** (CMM-AQ-a–e: 2), and **Minimize Construction-Related Traffic and Equipment Use** (CMM-AQ-a–e: 7)

B. Dam Removal EN/GHG Measures: For projects that may require the dismantling of existing hydropower facilities, appropriate measures should be taken to minimize the loss of renewable energy production.

1. **Feasibility Studies:** Proceed with project only if feasibility analysis verifies that the project will not result in unacceptable impacts on the reliability of California's energy grid.
2. **Renewable Energy**: Replace lost power with renewable energy sources such as solar or wind energy or hydropower generation at existing or new facilities to the extent feasible.
3. **Increase Power Generation**: If increased renewable energy sources cannot be used in the short term to replace reduction in hydropower production (e.g., due to limited ability to store solar or wind energy), increase power generation at existing or new facilities to a degree that ensures grid reliability.

H3.2.7 Geology and Soils

7.21 MM-GEO-a–e: Mitigate geology and soils impacts

Entities or agencies designing and/or approving habitat restoration or other ecosystem projects will implement or require the following.

A. Construction GEO Mitigation Measures (CMM-GEO-a–e)

1. **Regulatory Compliance:** Comply with existing federal, state, and local geotechnical regulations; water quality regulations; building codes (including the current approved version of the International Building Code and the California Building Standards Code); standards; specifications; zoning; and the site-specific recommendations of a geotechnical study prepared for the project.
2. **Project Siting and Design:**
    i. Locate projects away from areas with unsuitable soils or steep slopes.
    ii. During preliminary project design, a detailed site-specific geotechnical investigation of the project area will be performed/prepared by a certified engineer. The geotechnical investigation will include, but not necessarily be limited to, assessment of liquefaction potential, bearing strength of soils, and seismic hazards (including fault displacement). Based on results from the geotechnical investigation, project design measures will be developed and incorporated into the final project design to address any adverse geologic, seismic, and/or soil conditions (e.g., expansive soils). The geotechnical investigation will follow industry standard of practice and use American Society for Testing and Materials standards, where applicable. Design measures will conform to applicable design codes, guidelines, and standards. At a minimum, the investigation will evaluate the soil potential for expansion, lateral spreading, subsidence, liquefaction, or collapse.
    iii. The lead agency will ensure that findings/recommended design measures from the site-specific geotechnical investigation are incorporated into project design and siting to avoid potential adverse seismic effects and adverse soil conditions. The lead agency will ensure that the design specifications are properly executed during construction.
3. **Assurance of No Fault Traces:** A licensed practitioner will certify that no fault traces are present within the footprint of any building intended for human occupancy to be constructed within the Alquist-Priolo Special Studies Zone.
4. **Geology and Soils Management Measures:** Design, implement, and maintain site-specific measures as recommended by a qualified geotechnical professional in areas susceptible to landslides, lateral spreading, subsidence, liquefaction, or collapse.
    i. Implement ground improvements such as soil compaction and excavation and disposal of liquefiable soils.
    ii. Implement structural improvements, such as berms or dikes, to prevent large lateral spreading.
    iii. Stabilize areas susceptible to landslides with buttress fills or other appropriate measures.
    iv. Install special drainage devices and water injection wells.
    v. Monitor groundwater level to ensure stable soil conditions.
5. **Construction WQ Mitigation Measures: Regulatory Compliance** (CMM-WQ-a–j: 1) and **Erosion Control, Sedimentation Control, and Soil Stabilization Measures** (CMM-WQ-a–j: 3)

6. **Septic System Management Measures:** Mitigate impacts associated with soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of wastewater.

    i. Comply with all provisions of the state's *Water Quality Control Policy for Siting, Design, Operation, and Maintenance of Onsite Wastewater Treatment Systems* (SWRCB 2012), as implemented by the applicable regional water board or local county agency in which construction and operation of a septic system is proposed. The design, site evaluation, siting, construction, installation, and operation of the on-site wastewater treatment system (OWTS) will be required to comply with all applicable minimum standards.

    ii. Comply with all provisions of the applicable codes for the county or counties in which construction and operation of a septic system is proposed, including the design and installation of septic systems.

    iii. Comply with Health and Safety Code sections 117400–117450 and any other applicable county code regarding cleaning septic tanks, chemical toilets, cesspools, and seepage pits.

7. **Blasting Operations and Safety Plan:** Prior to construction, a blasting operations and safety plan will be prepared and will identify BMPs to be implemented prior to, during, and following any blasting activities to minimize the potential for blasting-related hazards. These BMPs include the following.

    i. The transport and use of explosives for blasting will be conducted according to applicable regulations (e.g., Cal. Code Regs, title 8, article 115, *Transportation of Explosives*, and article 116, *Handling and Use of Explosive Materials in Blasting Operations*) and permits.

    ii. Implement measures to avoid potential hazards related to flyrock, such as the following.

        - Accurately measure the burden for each blast hole and be aware of the true burden for each hole along the free faces.
        - Use adequate stemming and stem through incompetent zones. Use crushed stone for stemming.
        - Place primer lower in the hole, increase delays between rows, reduce burden in back rows.

    iii. Implement measures to minimize fugitive dust due to blasting operations, such as the following**.**

        - Conduct blasting on calm days when wind conditions are suitable (e.g., no strong winds blowing toward sensitive receptors). Wind direction with respect to the nearby residences and other receptors will be considered.
        - Wet ground prior to blasting.
        - Install wind fence(s) for control of windblown dust.

    iv. Implement safety measures to prevent personal injury and fire related to the use of explosives. At a minimum, these measures will include the following.

        - Limit blasting activities to daylight hours.

- Notify occupants of nearby buildings, stores, residences, places of business, and places of public gathering at least 48 hours in advance of blasting.
- Use a signaling system to alert workers of an impending blast.
- Do not locate explosive materials where they may be exposed to flame, excessive heat, sparks, or impact.
- Conduct all blasting work in compliance with all pertinent fire prevention laws.

v. Avoid blasting in potential rockslide/landslide areas and consult with a geologist prior to blasting in such areas.

vi. Implement BMPs to reduce short-term noise and vibration impacts.

8. **Protect Agricultural Soils** (CMM-AG-a–e: 4)

B. Physical Habitat Restoration GEO Mitigation Measure: Where intended levee breaches and/or setback levees are proposed, design, maintain, and repair levees consistent with federal and state levee design criteria and guidelines for levee maintenance and repair to prevent or minimize erosion.

C. Dam Removal GEO Mitigation Measures

1. **Feasibility Studies:** Evaluate geologic site conditions, including slope stability of the abutments and upstream embankment slopes; streambank stability; determination of the erosion resistance of the dam abutments and foundation for flood flows; subsurface explorations for the design of potential diversion channels or tunnels; and estimation of foundation permeability and groundwater levels for dewatering the site excavations. Incorporate into engineering designs and construction any special accommodations for geological resources and worker safety. Design the reservoir drawdown rate to avoid inducing any potential landslides along the reservoir margins or a slope failure of an embankment dam. Proceed with project if feasibility analysis verifies that constructing or operating a project will not result in unacceptable consequences.
2. **Sediment Management and Monitoring Plan:** A sediment management and monitoring plan (7.21 MM-WQ-a–j: G3) will be required to provide for the natural erosion, or handling and disposal, of both coarse- and fine-grained materials where the impoundment contains large quantities of sediment. During and for an appropriate period following reservoir drawdown, potentially unstable areas within a reservoir footprint should be visually monitored for slope instability. If slope failure is observed, an exclusion zone should be established around the unstable area, and the areas should be monitored. Slope stabilization measures should be implemented as appropriate. Potential impacts can be offset through appropriate actions, such as engineering structural slope improvements (e.g., drilled shafts or other structural elements that could be installed to resist slope movement) and revegetation of affected areas. The plan must provide for removal and/or remediation of unstable or expansive soils, as appropriate.

H3.2.8 Hazards and Hazardous Materials

7.21 MM-HAZ-a–h: Mitigate hazards and hazardous materials impacts

Entities or agencies designing and/or approving habitat restoration or other ecosystem projects will implement or require the following.

A. Construction HAZ Mitigation Measures (CMM-HAZ-a–h)

1. **Measures for Transport, Use, or Disposal of Hazardous Materials:**

    i. Regulatory Compliance: Comply with all federal, state, and local plans, policies, ordinances, and permit requirements related to the handling, storage, transport, disposal, and accidental spill response for hazardous materials, including the Hazardous Waste Control Law, Cal/OSHA, and Asbestos National Emission Standards for Hazardous Air Pollutants for asbestos removal and disposal for demolition operations.

    ii. Hazardous Materials Storage: All hazardous materials will be stored in secondary containment in a clearly identified and protected area, and all hazardous materials brought on site will have a Material Safety Data Sheet that will be made readily available to employees and other personnel at the construction site.

    iii. Spill Prevention and Response Plan: Develop and implement a spill prevention and response plan that will comply with all governmental approvals and applicable local, state, and federal laws and regulations. The plan will include detailed procedures to prevent and respond to hazardous materials spills during construction of the project. At a minimum, the plan will include provisions for immediate response, containment, and cleanup of a spill, including excavation and disposal of contaminated soil at an approved disposal site, and notification responsibilities. Materials needed for potential cleanup activities will be kept on site.

    iv. Procedures for Hazardous Waste Generation and Disposal: Hazardous waste generated at work sites, such as contaminated soil, will be segregated from other construction spoils and properly handled, hauled, and disposed of at an approved disposal facility by a licensed hazardous waste hauler in accordance with state and local regulations. The contractor will obtain permits required for such disposal. The accumulation and temporary storage of hazardous waste will not exceed 90 days. Asbestos encountered as part of demolition activities will be disposed of according to the requirements of both the federal Clean Air Act and Cal/OSHA (Cal. Code Regs., tit. 8, subch. 4, art. 4, § 1529).

    v. Procedures for Hazardous Materials Use near Streams: Storage, use, or transfer of hazardous materials in or near wet or dry streams will be consistent with Fish and Game Code section 5650 and/or with the permission of CDFW.

    vi. Waste management and material control measures (CMM-WQ-a–j: 4).

2. **Project Siting:**

    i. Avoid locating project construction areas within 0.25 mile of an existing or proposed school whenever feasible. If not feasible, provide preconstruction notification to schools within 0.25 mile of construction sites, alerting them of potential uses of hazardous materials and anticipated construction schedule.

ii. Avoid locating projects on potentially contaminated sites and hazardous materials sites (including sites on the most recent Hazardous Waste and Substances Sites [Cortese] List).

iii. Prior to beginning construction, project proponents will confirm utility/ infrastructure locations through consultation with utility service providers, preconstruction field surveys, and services such as Underground Service Alert to ensure that underground utilities are not affected.

3. **Demolition Measures:**

   i. Characterize and separate hazardous materials from structures before demolition and ensure that such materials are disposed of at an approved disposal site according to applicable regulations. Implement proper handling and disposal procedures for potentially hazardous materials, such as solvents and household or industrial-strength maintenance chemicals and cleaners in buildings to be demolished.

   ii. As applicable, a Cal/OSHA-certified lead-based paint contractor will prepare a site-specific lead hazard control plan with recommendations for the containment of lead-based paint materials during demolition activities for appropriate disposal methods and locations. Containers suspected of, or confirmed as, containing lead-based paint will be separated from other building materials during the demolition process. Separated paint will be classified as a hazardous waste if the lead content exceeds 1,000 parts per million and will be disposed of in accordance with applicable regulations.

   iii. Hazardous waste, including contaminated soil, generated at demolition sites will be handled, hauled, and disposed of at an appropriately licensed disposal facility under appropriate manifest by a licensed hazardous waste hauler.

4. **Herbicide and Pesticide Use:** Any chemical considered for control of invasive species must adhere to all regulations, be approved for use in California, adhere to all regulations per DPR, and be applied by a licensed applicator under all necessary state and local permits. A pest control advisor can ensure that legal, appropriate, and effective chemicals are used with appropriate methodologies. Aquatic pesticides will be applied in compliance with NPDES order(s), where applicable.

5. **Hazardous Materials and Work Site Safety Training:** Provide hazardous materials and work site safety training for construction workers in accordance with local, state, and federal requirements, including but not limited to the Occupational Safety and Health Act, title 9 of the Code of Federal Regulations and California Code of Regulations title 8.

6. **Emergency Response Plan:** The project proponent will develop and implement an emergency response plan. The emergency response plan will include descriptions of procedures to be implemented to help prevent emergency incidents, to ensure preparedness if these incidents occur and to provide a systematic and orderly response to emergencies through coordination with emergency response agencies. The emergency response plan will be posted and readily accessible on site and will be coordinated, as applicable, with a traffic management plan (CMM-TRA-a,b,d–f: 2), fire prevention and management plan (CMM-HAZ-a–h: 9), and spill prevention and response plan (CMM-HAZ-a–h: 1iii).

7. **Construction Site Security:** To ensure adequate construction site security where equipment, chemicals, or hazardous conditions may be present, implement the following.
    i. Fence project construction site and install and enable motion-detecting lights.
    ii. Provide 24-hour on-site security personnel. Security personnel will serve as the first line of defense against criminal activities and nuisances at construction sites. Private patrol security operators hired to provide site security will have the appropriate licenses from the California Bureau of Security and Investigative Services. Individual security personnel will have, at a minimum, a security guard registration license that meets the California Bureau of Security and Investigative Services requirements for training and continuation training as required for that license. All security personnel will also receive environmental training similar to that of on-site construction workers so that they understand the environmental conditions and issues (e.g., hazardous conditions, cultural resources present) associated with the various areas for which they are responsible at a given time. At a minimum, the project construction site will be fenced**.**
8. **Construction near Airports:** Where construction occurs within an airport land use plan area, within 2 miles of a public airport or public use airport, or within the vicinity of a private airstrip, the following BMPs will be implemented, at a minimum, to avoid safety hazards for people residing or working in the project area.
    i. Follow applicable requirements of any relevant airport land use compatibility plan relevant to the proposed project site or area.
    ii. If proposed construction is within 2 miles of a private airstrip, coordinate with that airport to ensure that construction activities do not introduce air safety hazards.
9. **Fire Prevention and Management Plan:** A fire prevention and management plan will be developed to address fire prevention and response methods, including fire prevention and management/suppression measures. Coordinate with local, state, and federal fire suppression agencies, as applicable, in development of the plan. The fire prevention and management plan will, at a minimum, require the following BMPs be implemented.
    i. Identify and adhere to local laws, ordinances, and building codes related to fire prevention and protection, burning, welding, and other potentially hazardous activities that could increase the potential for fires in general and for wildland fires; obtain any necessary permits; and adhere to permit conditions.
    ii. Clear or wet areas of construction and demolition (as applicable) containing dried vegetation to prevent wildfires in high-risk areas.
    iii. Prohibit smoking, open flames, or welding in on-site refueling or service areas.
    iv. Maintain an adequate number of fire extinguishers and other tools and equipment that can be used for fighting fire on site and ensure that personnel are trained in their use.
    v. If refueling is done on site, turn off vehicle engines during refueling.
    vi. Equip all construction vehicles and machinery with functional spark arresters and/or mufflers, where applicable.
    vii. Maintain a water tender during extensive welding and cutting operations.

viii. If the project includes blasting activities, include special precautions to minimize the risk of fire related to any explosive materials on the project site.

10. **Asbestos Control Measures** (CMM-AQ-a–e: 5)
11. **Valley Fever Control Measures** (CMM-AQ-a–e: 4)
12. **Blasting Operations and Safety Plan** (CMM-GEO-a–e: 7)
13. **Septic System Management Measures** (CMM-GEO-a–e: 6)
14. **Mosquito Control Measures:** Eliminate standing water to reduce mosquitoes at a construction site. Avoid leaving containers that can accumulate water in an uncovered or upright position. This includes wheelbarrows, drums, buckets, cans, tarps, and other containers. Create holes to drain water from containers. Fill in potholes and other areas where water is likely to accumulate. Routinely remove garbage and other debris. Implement CMM-HAZ-a–h: 4 if pesticide is applied.
15. **Installation and Operation of Underground and Aboveground Storage Tanks:** Conduct design, siting, construction, and operations activities in compliance with all applicable federal, state, and local laws and regulations, including but not limited to, International Fire Code, National Fire Protection Association (NFPA) codes (NFPA 30, 30A, 303), Uniform Fire Code (Articles 52 and 79), California Fire Code (Cal. Code Regs., tit. 19, div. 1), NPDES (40 C.F.R. pt. 122), U.S. Coast Guard requirements for transferring oil or hazardous materials (33 C.F.R. pt. 154), and USEPA spill prevention control and countermeasure plan requirements (40 C.F.R. pt. 112).
16. **Installation and Maintenance of Plumbing in Public Restrooms:**

    i. Design, site, and construct restroom facilities in compliance with all applicable state and local laws and regulations, including but not limited to, California Plumbing Code (Cal. Code Regs., tit. 24, pt. 5) and applicable municipal code related to sanitary sewer connections.

    ii. Public restrooms and associated infrastructure will be regularly maintained to ensure that toilets and sewage lines are functioning properly at all times.

B. Physical Habitat Restoration HAZ Mitigation Measures

1. **Herbicide Application Control Measures:** Implement BMPs for herbicide use, including the following.

    i. Comply with applicable regulations and permits for the use and storage of herbicides.

    ii. During all project activities, herbicides will be used only by a licensed applicator in accordance with all product label requirements and restrictions.

    iii. Herbicides will be applied only to target plants.

    iv. Minimize public exposure to herbicide-treated water by posting notices adjacent to treatment areas and at public access points for the day of treatment and through the end of the restricted use period. Send advance notice to adjacent property owners.

    A licensed applicator will minimize potential for drift when applying herbicides.

v. A licensed applicator will implement BMPs to minimize the risk of and/or potential impacts of an herbicide spill, including the following.

- Locating areas for mixing and loading of herbicides where accidental spills to nearby waterbodies cannot occur.
- Reporting spills immediately to appropriate state and local agencies.
- Immediately stopping movement of land spills using absorbent materials.
- Marking and monitoring spills in surface water for herbicide residues and environmental impacts, if appropriate.

vi. Implement an adaptive management approach to minimize the use of herbicides in the long term.

2. **Mosquito Abatement Control Measures:** For restoration projects that result in standing water and are located near populated areas, design projects to achieve the following.

i. Freshwater habitat management will include management of water control structures, vegetation management, mosquito predator management, drainage improvements, and other BMPs. The agency implementing the restoration project will coordinate with CDFW and local mosquito and vector control agencies regarding these strategies and specific techniques to minimize mosquito production.

ii. Permanent ponds will be maintained to increase the diversity of waterfowl yet decrease the introduction of vectors through constant circulation of water, vegetation control, and periodic draining.

iii. The project will avoid ponding in tidal marsh habitat or in areas within the waterside of setback levees. Restoration projects will be designed to minimize standing water; and other mosquito control methods, such as stocking of mosquitofish, will be used to reduce mosquito breeding.

iv. Pesticide use for mosquito abatement must be conducted by a trained and certified vector control pesticide applicator. Only pesticides approved by both USEPA and DPR may be used by a California vector control agency.

v. Minimize public exposure to pesticide-treated areas by posting notices adjacent to treatment areas and at public access points for the day of treatment.

3. **Mitigate Potential Impacts on Air Traffic Safety:** For restoration projects located near an airport, implement the following.

i. Follow applicable requirements of any applicable airport land use compatibility plan.

ii. Implement measures to reduce wildlife attractants near airports and private airstrips, including the following.

- Avoid creating hazardous wildlife attractants within a distance of 10,000 feet of an Airport Operations Area.
- Maintain a distance of 5 statute miles between the farthest edge of the Airport Operations Area and hazardous wildlife attractants.

4. **Wildfire Prevention Plan:** For restoration projects located in areas designated as Very High or High Fire Hazard Severity Zones where public access is granted and encouraged (i.e.,

public viewing platforms, interpretive facilities), prepare and implement a site-specific wildfire prevention plan that, at a minimum, includes the following measures.

i. Install and maintain fire restriction and fire danger signage in locations visible to the public.

ii. Restrict parking to cleared areas away from dry vegetation.

iii. Perform regular vegetation clearance in critical locations to reduce wildfire intensity and rate of spread.

iv. Provide site operations and maintenance staff with access to a fire extinguisher and other tools and equipment that can be used for fighting fire on site and train them in the use proper use of firefighting equipment.

5. **Roadway Detour Plan** (7.21 MM-TRA-a,b,d–f: B1)

6. **Physical Habitat Restoration WQ Mitigation Measures** (7.21 MM-WQ-a–j: E) to reduce water quality impacts and flood risks and to protect infrastructure.

C. Fish Passage Improvements HAZ Mitigation Measure

1. **Signage and Buoys for Temperature Control Curtains:** Warning signs and lighted buoys noting the presence of a temperature control curtain will be placed where fully visible, around the curtain, and an area of at least 10 feet from the curtain will be maintained as a restricted area to all but reservoir staff.

D. Dam Removal HAZ Mitigation Measures

1. **Project Planning:** For feasibility studies, collect data for all structures within the impoundment, as well as all upstream and downstream structures that may be affected by removal of the dam, such as mechanical and electrical equipment and impounded items. Incorporate into engineering designs and construction any special accommodations for hazardous materials. Develop structural design limits to ensure public safety. Some structures, or portions of structures, may remain in place, so long as no hazard potential remains. Any retained portions of the dam must be stable and may have to accommodate fish passage for a certain range of flows. Identify alternative water sources (e.g., dip ponds, river pools suitable for helicopter drafting, dry hydrants) for both ground and helicopter crews for wildfire protection. Proceed with project if feasibility analysis verifies that constructing or operating a project will not result in unacceptable hazard risks.

2. **Hazardous Materials Management Plan:** Conduct an inventory of all hazardous materials on and around the site. If it is determined that a fish passage barrier and/or associated facility or facilities considered for removal may contain hazardous materials (e.g., asbestos, lead-based paint) a hazardous materials management plan (HMMP) will be developed and implemented prior to, during, and following construction, as applicable. The HMMP will include an inventory of all hazardous materials on site. Implementation of the HMMP will ensure that all hazardous materials removed from the project site will be managed and disposed of at an approved hazardous waste facility. Transformer oils would be tested for polychlorinated biphenyls (PCBs) if no data exist. Any tanks that contain hazardous materials would be decontaminated prior to disposal. Universal hazardous waste (e.g., lighting ballasts, mercury switches, batteries) would be handled per applicable federal and state universal waste regulations. The HMMP is required to comply with Health and Safety

Code, title 27, division 20, chapter 6.95, sections 25500–25545, and California Code of Regulations title 19, division 2, chapter 4.

3. **Dam Removal WQ Mitigation Measures** (7.21 MM-WQ-a–j: G)
4. **Fire Management Plan:** A post–dam removal fire management plan will be developed in consultation with CAL FIRE. The fire management plan will, at a minimum, include the following.
    i. Identify long-term water sources for helicopter and ground crews (including construction and use of proposed dry hydrants, dip ponds, or other alternatives). After reaching agreement on the fire management plan with CAL FIRE, the project lead will submit the final fire management plan to CAL FIRE and implement any portions of the plan for which the project lead has identified responsibilities.
    ii. In coordination with CAL FIRE, monitor vegetation around the former reservoir shoreline annually and remove any dead or dying vegetation that could serve as wildfire fuel.

E. Predatory Fish Control HAZ Mitigation Measures

1. **Electrofishing Safety Best Management Practices:** To minimize the potential that electrofishing would affect public safety, implement the following electrofishing safety BMPs.
    i. All personnel involved in electrofishing operations will have received recent training on safe electrofishing practices and techniques. The equipment will be kept in good working order, and all personnel will wear appropriate protective gear.
    ii. A temporary sign will be posted at the reach being electrofished, warning people to stay out of the creek in that location (the electrical field extends only a few feet from the anode). The sign will include a brief explanation of the project.
    iii. Electrofishing will not be performed near bystanders, pets, or livestock that are in or near the water.
    iv. The electrofishing crew leader and, at minimum, one other crewmember must be trained in cardiopulmonary resuscitation, as well as in automated external defibrillator procedures if the crew is equipped with an automated external defibrillator.
    v. A first aid kit will be maintained and immediately available as part of the electrofishing team's basic equipment.

F. Invasive Aquatic Vegetation Control BIO Mitigation Measures for chemical control (7.21 MM-BIO-a–f: G2)

H3.2.9 Hydrology and Water Quality

7.21 MM-WQ-a–j: Mitigate impacts on hydrology and water quality

Entities or agencies designing and/or approving habitat restoration or other ecosystem projects will implement or require the following.

A. Construction WQ Mitigation Measures (CMM-WQ-a–j)

1. **Regulatory Compliance:**

    i. Obtain and comply with all necessary permits and regulations related to waste discharge, including but not limited to, regional water board waste discharge requirements. For construction and land disturbance activities on sites larger than 1 acre, comply with State Water Board Order No. 2022-0057-DWQ (Construction General Permit), which regulates stormwater discharges from construction sites. This permit requires development of a stormwater pollution prevention plan (SWPPP), which includes preconstruction and postconstruction BMPs to limit the discharge of pollutants in stormwater runoff. The BMPs would address all land- and water-based construction activities; excavation, grading, placement/removal of in-channel material; hazardous materials and waste containment and disposal procedures; and spill prevention, response, and cleanup procedures. The plan also would describe BMP inspection, monitoring, and maintenance procedures.

    ii. Obtain Clean Water Act section 404 permit and 401 water quality certifications, if necessary.

    iii. Obtain a dewatering permit from the regional water board, if necessary. Implement other BMPs as determined necessary by the regulating entity (city, county, or other state agency).

    iv. Water use must be pursuant to a valid water right.

    v. Comply with California Building Code or other applicable state and local regulations to adhere to building standards.

2. **Project Siting and Design:**

    i. Preproject assessment, planning, and design activities could include geomorphic surveys and topographic/bathymetric surveys (including evaluation of susceptibility to mudflow).

    ii. Locate projects away from areas with unsuitable soils or steep slopes.

    iii. Avoid siting roads and other permanent features near streams. New road construction will be outside of waters of the state.

    iv. Avoid locating structures in a 100-year flood hazard area, to the extent feasible. If structures must be placed in a 100-year flood hazard area, perform analysis to determine whether the structure could substantially impede or redirect flood flows. If so, determine whether redesign could improve flood conveyance. To mitigate exposure to loss due to flooding, purchase flood insurance and strengthen levees if appropriate (e.g., if nearby levees are weak, or project work will directly affect a levee).

    v. Avoid locating projects in areas subject to seiche or tsunami.

    vi. Limit any construction activities within a floodplain but above the ordinary high-water line to those actions that can adequately withstand high river flows without resulting in inundation of and entrainment of materials in flood flows.

3. **Erosion Control, Sedimentation Control, and Soil Stabilization Measures:**

i. Minimize Potential for Erosion through Project Design: Evaluate the project site and upgradient and downgradient areas for erosion potential. Locate projects away from areas with unsuitable soils or steep slopes. During construction, maintain vegetation to minimize or prevent loss of topsoil. Remove vegetation only when necessary and make every effort to conserve topsoil for reuse in revegetation of disturbed areas.

ii. Stabilize and Revegetate Disturbed Soil: Stabilize and revegetate all disturbed soil surfaces before the beginning of the rainy season. Establish native and annual grasses or other vegetative cover on construction sites immediately upon completion of work causing disturbance.

iii. Erosion Control BMPs: Implement measures to prevent soil or sediment loss. Implement general erosion control measures, such as use of hydraulic mulch, straw, polyacrylamide, temporary and permanent seeding, soil stabilizers, binders, fiber rolls or blankets, temporary vegetation, earth dikes, drainage swales, and velocity dissipation devices. Other standard measures include prevention of runoff from construction equipment wash-down areas; installation of sediment basins and traps in conjunction with grading operations; development of slope drains; stabilization of streambanks; and installation of silt fences, gravel bag berms, sandbag barriers, storm drain inlet protection, and check dams. Monitor measures for effectiveness and maintain measures throughout the construction operations and between construction seasons.

iv. Perimeter Controls: Implement erosion control measures for the construction site perimeter, installing silt fences or placing straw wattles below slopes. Place gravel bags, silt fences, and other erosion containment along the edge of all work areas to contain particulates prior to contact with receiving waters.

v. Turbidity BMPs: Apply BMPs to minimize turbidity for construction activities in or adjacent to channels, such as the use of silt curtains, cofferdams, environmental dredges, erosion control on all inward levee slopes, and various levee-stabilization techniques—including revegetation for long-term construction sites. Apply bank stabilization BMPs, as needed, for any in-channel construction, such as maintenance of a 100-foot vegetative or engineered buffer between the construction zone and surface waterbody. Implement turbidity monitoring during construction to maintain compliance with basin plan water quality objectives.

vi. Construction Timing: Limit any construction activities within an area of the ordinary high-water line of drainages and lakes to the dry season.

4. **Waste Management and Material Control Measures:**

i. Staging and Stockpile Management: Staging, storage, and stockpiling will occur on access roads or other previously disturbed upland areas, such as developed areas, paved areas, parking lots, areas with bare ground or gravel, and areas clear of vegetation, to avoid aquatic habitats and limit disturbance to surrounding habitats. Construction stockpiles will be covered to prevent blow-off or runoff during weather events, and concrete and scrap drywall and stucco materials will be covered when stored outside and potentially exposed to rain.

ii. Equipment Maintenance and Materials Storage: Vehicle traffic will be confined to existing roads and the proposed access route(s). All machinery must be in good working condition, showing no signs of fuel or oil leaks. Oil, grease, or other fluids will be washed

off at designated wash stations, prior to equipment entering the construction site. Inspect and evaluate daily during construction for the potential of fluid leakage. No equipment refueling or fuel storage will take place within 100 feet of a body of water. All fuel and chemical storage, servicing, and refueling will be done in an upland staging area or other suitable location (e.g., barges) with secondary containment to prevent spills from traveling to surface water or drains. Project proponents will establish staging areas for equipment storage and maintenance, construction materials, fuels, lubricants, solvents, and other possible contaminants in coordination with resource agencies. Staging areas will have a stabilized entrance and exit and will be located in upland areas and at least 100 feet from bodies of water as site-specific circumstances allow. Fluids will be stored in appropriate containers with covers and properly recycled or disposed of offsite. Machinery stored on site will have pans or absorbent mats placed underneath potential leak areas.

iii. Hazardous Materials Management and Spill Response Plan: Prepare and implement a hazardous materials management and spill response plan to ensure that any hazardous materials are stored at the staging area(s) with an impermeable membrane between the ground and hazardous material and that the staging area is designed in such a way as to prevent the discharge of pollutants to groundwater and runoff water. Use and store hazardous materials, such as vehicle fuels and lubricants, in designated staging areas located away from stream channels and wetlands according to local, state, and federal regulations, as applicable. Contaminated sediments would need to be contained and transported to a waste disposal facility engineered and permitted for contaminated sediment. In the event of an accidental spill of hazardous materials, stop work, follow the spill response plan, and arrange for repair and cleanup by qualified individuals of any fuel or hazardous waste leaks or spills. (Wat. Code, § 13271.) Notify regulatory agencies within 24 hours of any leaks or spills. Properly contain and dispose of any unused or leftover hazardous products off site. Implement measures for transport, use, or disposal of hazardous materials (CMM-HAZ-a–h: 1).

iv. pH Control for In-Water Concrete Use: A dewatering plan, if applicable, will be submitted and approved by State and/or regional water boards for in-water concrete use. Avoid concrete pours during rainy weather and treat pH-impaired stormwater from construction sites in a filter or settling pond or basin, with additional natural or chemical treatment if necessary. Poured concrete will be excluded from contact with surface water or groundwater during initial curing. Confine concrete washing and spoils dumping to a designated location.

v. Trash: All refuse, debris, unused materials, and supplies that cannot reasonably be secured will be removed daily from the project work area and deposited at an appropriate disposal or storage site. All construction debris will be removed from the project work area immediately upon project completion. During project activities, all trash will be properly contained within sealed containers, removed from the work site, and disposed of daily.

vi. Handling, Storage, and Disposal of Dredged Material: For construction involving dredging, handling, storage, and disposal of dredged materials in accordance with permit requirements. Dredge permits are issued pursuant to several acts and regulations, including section 10 of the Rivers and Harbors Act of 1899 (33 U.S.C. § 401 et seq.) and section 404 of the Clean Water Act. Permits are issued by the regional water

board, California State Lands Commission, CDFW, USACE, and USEPA. Other agencies that may participate in the permit process include NMFS and USFWS. Measures will include sediment sampling and testing prior to dredging to assess sediment quality to determine whether any additional precautions are needed for dredging operations, disposal, or beneficial reuse due to the presence of contaminants. Permits will incorporate mitigation strategies to prevent release of contaminants that could degrade water quality.

5. **In-Water Placement of Materials, Structures, and Operation of Equipment:** Material used for bank stabilization will minimize discharge sediment or other forms of waste to waters of the state. Where feasible, construction will occur from the top of the streambank or on a ground protection mat underlain with filter fabric. All materials placed in streams, rivers, or other waters will be nontoxic. Any combination of wood, plastic, cured concrete, steel pilings, or other materials used for in-channel structures will not contain coatings or treatments or consist of substances toxic to aquatic organisms (e.g., zinc, arsenic, creosote, copper, other metals, pesticides, petroleum-based products) that may leach into the surrounding environment in amounts harmful to aquatic organisms.
6. **Stream-Crossing, Culvert, and Bridge Projects:** Design stream-crossing, culvert, and bridge projects to avoid or minimize water quality impacts. Design guidelines may include but not be limited to the following.
    i. Stream-crossing projects will consider storm-proofing measures presented in the *Handbook for Forest, Ranch, and Rural Roads: a Guide for Planning, Designing, Constructing, Reconstructing, Upgrading, Maintaining, and Closing Wildland Roads* (Weaver et al. 2015) and any subsequent editions.
    ii. Bridges and culverts will be designed to adequately convey flow and materials (e.g., 100-year flood). Culverts will conform to design guidelines for conveyance of the 100-year peak flow and associated sediment and wood loads. If a bridge/culvert is designed to convey less than the 100-year design flow, the project will demonstrate how the smaller culvert avoids excessive erosion/ sedimentation, headcutting, or habitat impacts.
    iii. Road and stream-crossing structures will comply with current NMFS and CDFW fish passage guidelines and utilize stream simulations following NMFS Stream Simulation Design to inform project design. Structures will be designed to provide passage for all life stages of native fish species.
    iv. Avoid placement of rock slope protection within the bankfull width of the stream except for the minimum necessary for protection of bridge abutments and pilings, culverts, and other stream-crossing infrastructure.
    v. Drivable wet crossings will be appropriately armored on the downstream side to reduce potential for scouring.
7. **Groundwater Protection Measures:** During construction of any project that requires dewatering of groundwater resulting in a negative effect on nearby well yields, implement the following measures.
    i. Install sheet piles to reduce the area influenced by shallow groundwater level declines.

ii. If sheet piles are not an option and domestic well fields are affected temporarily, truck in water to satisfy the well-user's needs.

iii. If sheet piles are not effective and the impact on the well yield is substantial such that trucking in water is not economically feasible, deepen the affected well or install a new, deeper well.

iv. Water used for construction must be pursuant to a valid water right, and recycled water will be used during construction where available (CMM-UT-a,f,g: 2).

8. **Drainage and Flood Protection Measures:**

i. Prepare a drainage or hydrology and hydraulic study for the design of drainage-related features, such as new on-site drainage systems or new cross drainage facilities. Prepare the study in accordance with applicable standards of the Federal Emergency Management Agency (FEMA), USACE, DWR, and the appropriate reclamation district, flood control agency(ies), county, and city. Design subsequent drainage features in accordance with the final study and with the applicable standards of the FEMA, USACE, DWR, and applicable flood protection agency. Based on the results of the study, design considerations could include arranging the length of any stockpiles or other construction features in the direction of the floodplain flow to maximize surface flows under flood flow conditions.

ii. Provide cross drainage, replacement drainage paths and facilities, and enlarged flow paths to reroute drainage around, under, or over the project facilities and to restore the function of any affected existing drainage or flow paths and facilities.

iii. Incorporate measures into overall drainage design that maximize infiltration/permeability and trap sediment and pollutants in stormwater runoff.

iv. Provide temporary drainage bypass facilities to reroute drainage around, along, or over the facilities and construction sites. Design the temporary bypass facilities in accordance with the results and recommendations of a drainage or hydrology and hydraulic study; temporary facilities will be in place and fully functional until long-term facilities are completed.

v. Provide on-site stormwater detention storage at construction and project facility sites to reduce project-caused short- or long-term increases in drainage runoff. Design the storage space placement and capacity based on the drainage or hydrology and hydraulic study.

vi. At instream construction sites that might reduce channel capacity, perform hydraulic studies to evaluate channel capacity and the likelihood of flooding. If necessary, modify project design or install setback levees or bypass channels to maintain channel capacity and to mitigate hydraulic impacts. Where low channel velocities might result from construction, implement a sediment management program to maintain channel capacity.

9. **Construction GEO Mitigation Measures: Blasting Operations and Safety Plan** (CMM–GEO-a–e: 7) to reduce discharges of fugitive dust, soil, and other matter into surface waters and **Septic System Management Measures** (CMM-GEO-a–e: 6).

10. **Construction BIO Mitigation Measures** (CMM-BIO-a–f)

11. **Construction HAZ Mitigation Measures: Herbicide and Pesticide Use** (CMM-HAZ-a–h: 4), **Installation and Operation of Underground and Aboveground Storage Tanks** (CMM-HAZ-a–h: 15), and **Installation and Maintenance of Plumbing in Public Restrooms** (CMM-HAZ-a–h: 16).

B. Approval by State and Federal Fisheries, Flood-Control, and Water Resources Agencies: Habitat restoration and other complementary ecosystem projects must be developed and implemented in consultation with and subject to approval from applicable state and federal fisheries agencies, including CDFW, NMFS, and USFWS (7.21 MM-BIO-a–f: B). Comply with the requirements of USACE and the Central Valley Flood Protection Board to avoid increased flood potential. Restoration projects submitted as part of a local cooperative solution are subject to approval by the State Water Board. Projects must be operated pursuant to a valid water right, if applicable.

C. Project Siting and Design of Habitat Restoration and Other Ecosystem Projects: Preproject assessment, planning, and design activities could include geomorphic surveys, topographic/bathymetric surveys (including evaluation of susceptibility to mudflow), sediment sampling and testing, and/or collection and evaluation of water temperature and flow data. Prior to implementing habitat restoration or other ecosystem projects, perform modeling of hydrodynamic or hydraulic conditions, groundwater, sediment transport, salinity, water temperature, or other constituents or fish habitat features as applicable. This analysis could include investigation of water surface elevations, flow, and velocities. Based on this analysis, develop design criteria to minimize impacts. For example, design the project so any channels built or modified as part of a project have adequate capacity to convey the 100-year design flow.

D. Waste Discharge Requirements: In issuing waste discharge requirements and/or water quality certification, the State Water Board or regional water board will require that water quality objectives be achieved within the shortest amount of time possible and that all applicable BMPs and mitigation measures are incorporated into the project to minimize soil erosion, surface runoff, and other potential adverse environmental impacts, including cumulative impacts. Turbidity would be monitored to maintain compliance with basin plan water quality objectives.

E. Physical Habitat Restoration WQ Mitigation Measures: Ensure that ecosystem restoration benefits for fish species are maximized, while minimizing the potential for adverse effects on water quality from habitat creation.

1. **Restoration Strategy:** Design and implement habitat restoration projects to work with existing and augmented flows, including guidelines articulated in A Delta Renewed (e.g., reestablish connections between tidal and stream floodplains, restore fluvial processes along streams, connect riparian areas to fluvial processes) (SFEI-ASC 2016). Design restoration projects that consider the multiple interactions of physical, chemical, and biological processes over a wide variety of spatial and temporal scales and to confirm that the project will be effective and appropriate given the physical setting. Implement measures to avoid fish stranding (7.21 MM-BIO-a–f: C4), manage vegetation (7.21 MM-BIO-a–f: C5), and control invasive species (7.21 MM-BIO-a–f: C7).
2. **Adaptive Management:** To address uncertainties in the ecological process governing habitat formation and maintenance at selected sites, progress toward achieving the

objectives or optimizing the benefits of these projects must be monitored and guided through an adaptive management process. Restoration projects submitted as part of a local cooperative solution are subject to approval by the State Water Board.

3. **Levee Protection:** Conduct applicable hydrologic studies or models to determine the likelihood of levee overtopping. If it is determined that there would be a significant likelihood of levee overtopping that would adversely affect water quality, construct levee structures/enhancements as part of the project. The design of the structures/ enhancements must include considerations for sea level rise. Levee improvements must be approved by FEMA, applicable reclamation districts, and USACE.
4. **Dredging Plan:** For habitat restoration projects that involve dredging, develop and implement a dredging plan to ensure that contaminated sediments are contained to the extent feasible and transported to a waste disposal facility engineered and equipped to receive contaminated sediment. In some cases, dredged material may be suitable for beneficial reuse, including wetland and setback levee creation and maintenance. In the San Francisco Bay and its marshes and creeks, the State Water Board and its state and federal partners manage dredging under the *Long-Term Management Strategy for the Placement of Dredged Materials in the San Francisco Bay Region*. This program is part of the Bay Area Basin Plan Implementation Program. (See also CMM-WQ-a–j: 4vi.)
5. **Minimize Impacts on Infrastructure:** Design projects to avoid or minimize impacts on infrastructure from increased sedimentation and hydrological changes. This includes accommodations for adverse changes in water quality that may affect municipal drinking water intakes. In some cases, infrastructure and site topography may need to be modified or upgraded.
6. **Contaminant Evaluation:** Evaluate future floodplain or marsh sediments for suspected contaminants (e.g., pesticides on agricultural lands). If levels are extremely high, avoid site, remove contaminated sediment, and/or stop or reduce actions that cause the contamination. If feasible, avoid creating wetlands in areas with exceptionally high concentrations of mercury. Require wetland design features or management practices to minimize methylation. For example, permanent inundation may result in generation of less methylmercury than an annual cycling of wet and dry phases. Depending on site ecosystem characteristics, chemical additions to a wetland could reduce methylation, and creation of clear open water could enhance photodegradation of methylmercury.
7. **Monitor Groundwater Levels:** Monitor local groundwater levels to ensure that adjacent properties and infrastructure are not inundated and that there are no agricultural effects. If high groundwater level infringes on beneficial uses, initiate groundwater pumping or install tile drains. Implement measures to monitor and control seepage (7.21 MM-AG-a–e: B4).
8. **Gravel Augmentation WQ Mitigation Measures:**
    i. Gravels must be composed of washed, spawning-sized gravels from a local basin source. Gravel must be washed to remove any silts, sand, clay, and organic matter and will be free of contaminants, such as petroleum products.
    ii. Recontour extraction site.
    iii. Gravel Augmentation BIO Mitigation Measures (7.21 MM-BIO-a–f: C8).

9. **Harmful Algal Bloom Mitigation:** Develop design criteria for restoration areas to minimize planktonic and benthic cyanobacteria blooms. This can be accomplished by maintaining adequate flushing while also maintaining the benefits of habitat restoration (i.e., zooplankton production, fish food quality, fish feeding success). Water residence time considerations, for both phytoplankton and cyanobacteria, will be incorporated into restoration area site design using best available science at the time of design.
10. Approval by State and Federal Fisheries, Flood-Control, and Water Resources Agencies (7.21 MM-WQ-a–j: B)
11. Project Siting and Design of Habitat Restoration and Other Ecosystem Projects (7.21 MM-WQ-a–j: C)
12. Waste Discharge Requirements (7.21 MM-WQ-a–j: D)

F. Fish Passage WQ Mitigation Measures

1. **Consultation with Fish and Wildlife Agencies:** Fish screen and fishway projects must be developed in consultation with NMFS, USFWS, and CDFW in accordance with established design, operational, and maintenance criteria and guidelines.
2. **Fish Passage BIO Mitigation Measures** (7.21 MM-BIO-a–f: D)
3. **Approval by State and Federal Fisheries, Flood-Control, and Water Resources Agencies** (7.21 MM-WQ-a-j: B)
4. **Project Siting and Design of Habitat Restoration and other Ecosystem Projects** (7.21 MM-WQ-a-j: C)
5. **Waste Discharge Requirements** (7.21 MM-WQ-a-j: D)

G. Dam Removal WQ Mitigation Measures

1. **Project Planning:** Utilize *Guidelines for Dam Decommissioning Projects* or other appropriate planning guidance to help in the development and execution of dam removal, from project planning, including stakeholder identification, through design and implementation.
    i. **Feasibility Studies:** Conduct feasibility studies to evaluate the potential impacts from the erosion, transport, and deposition of reservoir sediment. Collect data for all structures within the impoundment, as well as all upstream and downstream structures that may be affected by removal of the dam, such as bridges, pipelines, groundwater wells, and transmission lines. Hydrologic analysis is typically necessary to define the range of flood events that can be reasonably expected during dam removal. Proceed with project if analyses verify that constructing or operating a project will not result in unacceptable environmental consequences to water quality and legal users of water.
    ii. **Structural Removal Limits:** Structure removal limits will be based on minimizing public safety and liability issues, type of dam and appurtenant structures, fish passage, sediment management issues, geomorphology, presence of hazardous materials, and other factors. For partial dam removal, any retained portions of the dam must be stable and accommodate fish passage for a certain range of flows.
    iii. **Engineering and Construction Designs:** Incorporate into engineering designs and construction any special accommodations for existing legal users of water and other

infrastructure. Final design specifications will include any potential schedule constraints such as reservoir drawdown rate limitations, construction sequence requirements, additional hazardous material assessments and sediment characterization, protection of existing structures and utilities, and any environmental constraints, such as in-water work periods.

2. **Regulatory Compliance:** Dam removal projects will require multiple permits from state, federal, and local agencies to ensure that the removal minimizes short- and long-term environmental impacts. At a minimum, dam removal projects require a Clean Water Act section 404 dredge and fill permit from USACE and a Clean Water Act section 401 Water Quality Certification from the State Water Board. In addition, if the dam is part of a hydropower facility, a FERC License Surrender Approval may also be required. ESA consultations may be required if endangered species occur near the removal project. CEQA/National Environmental Policy Act (NEPA) requirements and other state and municipal permits may also be required prior to the dam removal project.
3. **Sediment Management and Monitoring Plan:** Prior to implementation of a barrier removal project identified as potentially resulting in a substantial release of sediment to downstream waterways, a sediment management and monitoring plan will be developed to provide for the natural erosion, or handling and disposal, of both coarse- and fine-grained material. The plan must be developed in consultation with staff from the State Water Board, Central Valley Water Board, and state and federal resource agencies and describe actions to be taken to minimize the potential impacts of the release of sediment on water quality. At a minimum, the sediment management and monitoring plan should include:
    i. Sediment transport modeling results to inform construction plans, including whether a staged or gradual dam removal or an instantaneous dam removal project is required to minimize turbidity impacts on instream beneficial uses.
    ii. Testing must include the surrounding soils and impounded reservoir sediments for possible contamination, with respect to future sediment transport and disposal of sediments and soils excavated as part of the project. Evaluate the volume, grain size distribution, and hazardous material composition (e.g., mercury, pesticides) of the sediment accumulated behind the dam. Develop a site-specific plan for treatment, stabilization, removal, or release of this sediment to downstream riverine habitat to reduce potential impacts during drawdown and during and after dam removal.
    iii. The plan must provide for the treatment, stabilization, removal, or downstream release of the accumulated sediment, as well as plans for revegetation and sediment tracking. Include contingency planning in performance monitoring and adaptive management (up to 5 years) after removal is complete.
    iv. The plan will account for associated maintenance activities (e.g., dredging of reservoir sediment) to reduce the volume of reservoir sediment that would be released to downstream waterways.
    v. Where large barriers or dams are removed, monitor downstream sediment accumulation; for increases greater than 0.5 foot relative to baseline conditions, implement channel restoration to remove sediment.
    vi. Potential turbidity effects on fish may require the establishment of “fish windows” during which time no reservoir drawdown producing elevated turbidity levels from the

release of sediments would be allowed. Other related activities that could minimize turbidity impacts on downstream aquatic resources could be incorporated as a component of the sediment management and monitoring plan, such as a fish relocation plan.

4. **Revegetation Plan:** Develop and implement a revegetation plan for areas that were exposed by reservoir drawdown and dam removal activities. The plan must provide for the recontouring and revegetation of the formerly inundated area and any disturbed areas, including structure sites, construction staging areas, temporary access roads, and waste disposal sites. This will stabilize the sediment and reduce the potential for short-term and long-term elevated suspended sediment concentrations downstream of the dam removal site after vegetation begins to grow and establish. The revegetation plan may include manual revegetation or other methods and should consider appropriate revegetation methods, such as hydroseeding. Various types of vegetation may be required, depending on the ability of the areas to sustain growth, the nature and composition of the sediments, and the purposes intended for the vegetation. If possible, use only native species. Special erosion control provisions (such as BMPs) may be necessary until the new vegetated areas take hold. Treatment for invasive plant species (or weeds) may also be required. Include monitoring of new plant growth after reservoir drawdown over a period of 2 to 5 years.
5. **Dam Removal BIO Mitigation Measures** (7.21 MM-BIO-a–f: E)
6. **Dam Removal HAZ Mitigation Measures** (7.21 MM-HAZ-a–h: D)
7. **Dam Removal GEO Mitigation Measures** (7.21 MM-GEO-a–e: C)
8. **Control Concrete Dust:** Implement site-specific dust control plan (7.21 MM-AQ-a–e: C1) to limit or prevent concrete dust from entering the water.
9. **Flood Control Measures:**
    i. The rate of reservoir drawdown needs to be slow enough so as not to exceed the safe downstream channel capacity or exceed the permissible rate for increasing downstream flow to ensure public safety. Some form of flow control will be provided for the diversion facilities to control the rate of reservoir drawdown for sediment management and to limit downstream releases, which could exceed the safe downstream channel capacity.
    ii. Dam removal projects should generally be scheduled around the permissible in-water work period for the site. Required work outside of the stream channel, such as for site clearing and access, can be performed early to facilitate the dam removal process. Instream work should normally not be scheduled during periods that could be interrupted by high flows, as defined by river stage or by flow rate, unless necessary to meet project requirements. The potential risks associated with high flows must be considered in the project plan, and emergency action plans should be developed accordingly.
    iii. Structures prone to flood damage, especially habitable structures, will be moved or elevated before dam removal, where feasible, to reduce the risks of exposing people and/or structures to damage, loss, injury, or death due to flooding. This action can be based on preproject flow modeling, although final determination of the 100-year flood hazard area after dam removal will be made by FEMA. Comparison of modeled flows to

levee and channel capacities will indicate if levees need to be strengthened, raised, or set back. Monitoring for accumulation of sediment or scour may be necessary after high-flow events to ensure that channel conveyance capacity or levee integrity is not substantially reduced.

iv. Implement applicable hydrologic studies or models to determine the likelihood of levee overtopping. If it is determined that there would be a significant likelihood of levee overtopping that would adversely affect water quality, construct levee structures/enhancements as part of the project. Levee improvements must be approved by FEMA, applicable reclamation districts, and USACE.

10. **Performance Monitoring and Adaptive Management:** Conduct performance monitoring and adaptive management to detect and avoid future significant impacts related to flooding, water quality, and sediment deposition once removal is completed. Monitoring can continue for periodic intervals after dam removal (often at 1, 2, and 5 years) until the reservoir sediments have either fully eroded or stabilized. Long-term monitoring could result in the construction of additional flood control levees or dikes and other facilities. Impacts and mitigation measures would be the same as those already described.
11. **Approval by State and Federal Fisheries, Flood-Control, and Water Resources Agencies** (7.21 MM-WQ-a-j: B)
12. **Project Siting and Design of Habitat Restoration and other Ecosystem Projects** (7.21 MM-WQ-a-j: C)
13. **Waste Discharge Requirements** (7.21 MM-WQ-a-j: D)

H. Invasive Aquatic Vegetation Control WQ Mitigation Measures

1. **Reduce Dead Vegetation in Channel:** The volume of dead vegetation in channels prone to low dissolved oxygen will be reduced either through mechanical removal of the vegetation from the channel (either before or after decay has begun) or through a reduction in herbicide application. Other options include increasing flow through an area of localized low dissolved oxygen or installation of aeration devices.
2. **Limit Herbicide Use in Water:** Implement Aquatic Invasive Plant Control Program (AIPCP) mitigation measures to minimize or reduce potential impacts on water quality. Comply with the most recent State Water Board NPDES General Permit for Residual Aquatic Pesticide Discharges to Waters of the United States from Algae and Aquatic Weed Control Applications.

H3.2.10 Land Use and Planning

7.21 MM-LU-a,b: Mitigate land use impacts

Entities or agencies designing and/or approving habitat restoration or other ecosystem projects will implement or require the following.

A. Construction LU Mitigation Measures (CMM-LU-a–c)

1. **Regulatory Compliance:** Projects must comply with applicable city and county general plans and other local policies and ordinances. Implement CMM-BIO-a–f: 13 (*Compliance with*

HCPs and NCCPs), if applicable. If a project is located on public land, comply with any applicable resource management plan. If a project is located in the Delta, pursuant to the Delta Reform Act, the lead agency will ensure project compliance with the Delta Plan, as applicable (i.e., if the project is a "covered action" as defined by Wat. Code, § 85057.5(a)).

2. **Project Siting and Design:** Site and design projects to avoid or minimize physical division of existing or established communities or residential areas by designing construction facilities and infrastructure to be located underground or with sufficient points of visual and physical access. Examples of methods of minimizing physical division include but are not limited to the following actions.

    i. Bury or visually mask construction infrastructure or facilities.

    ii. Restore disturbed landscapes to preconstruction conditions.

    iii. Implement other feasible mitigation to reduce the disturbance to a community's physical composition, visual character, or other features integral to the community's identity.

    iv. Notify all affected persons (e.g., residents, property owners, school officials, business owners) in the project vicinity of the construction plans and schedules. This could include arranging schedules for road detours with residents and businesses to maintain access to homes, schools, and businesses, as well as providing protection, relocation, or temporary disconnection of utility services.

    v. Minimize the amount of permanent easement required for construction of facilities and consult with property owners to select easement locations that would lessen property disruption and fragmentation, if applicable.

    vi. Relocate roads prior to project construction to ensure continued access through the project vicinity.

3. Traffic Management Plan (CMM-TRA-a,b,d–f: 3)

B. Physical Habitat Restoration LU Mitigation Measures

1. **Project Siting and Design:** Design and site project consistent with local and regional land use plans and any applicable HCP or NCCP. Involve all affected parties, especially landowners and local communities, in developing appropriate habitat configurations to achieve the optimal balance between resource impacts and benefits. Minimize design features that would preclude or inhibit access between communities and services.

2. **Develop New Habitat on Public Lands:** Focus habitat restoration efforts on developing new habitat on public lands. If public lands are not available for restoration efforts, focus restoration efforts on acquiring lands that can meet ecosystem restoration goals from willing sellers where at least part of the reason to sell is an economic hardship (e.g., land that floods frequently, where levees are too expensive to maintain).

3. **Compensate for Loss or Reduction in Environmental Value:** Where habitat restoration projects take place on land with inconsistent land uses, compensate for the loss or reduction in environmental values protected by the subject land use plan, policy, or regulation. For example, if the project would result in conversion of agricultural land to a nonagricultural use, potential mitigation actions could include recording a deed restriction that ensures permanent conservation and mitigation on other property of equal or greater

environmental mitigation value. See also physical habitat restoration Agricultural and Forest Resources mitigation measures (7.21 MM-AG-a–e: B).

C. Dam Removal LU Mitigation Measures

1. **Feasibility Study:** Land use impacts from dam removal must be considered and addressed in the feasibility study, including consideration of existing and future land use designations once the dam is removed. The impacts on structures such as bridges and roads affected by dam removal must be addressed in the feasibility study, and the project must not result in the physical division of an established community.
2. **Minimize Community Disruption Due to Hauling/Disposing of Construction Waste:** Identify off-site locations and haul distances for backfill materials and for disposal of waste materials to avoid or minimize disruptions to communities near the project construction site.
3. **Dam Removal TRA Mitigation Measures** (7.21 MM-TRA-a,b,d–f: C)
4. **Dam Removal REC Mitigation Measures** (7.21 MM-REC-a,b: C)

H3.2.11 Mineral Resources

7.21 MM-MIN-a,b: Mitigate impacts on mineral resources

Entities or agencies designing and/or approving habitat restoration or other ecosystem projects will implement or require the following.

A. Construction MIN Mitigation Measures (CMM-MIN-a,b)

1. **Project Siting and Design:**
    i. Design and locate projects to avoid displacement of and maintain access to active oil and gas wells or aggregate resource sites, to the extent feasible.
    ii. Avoid siting projects on land designated for ongoing or potential mineral extraction, either on a California Geological Survey Mineral Land Classification Map as Mineral Resource Zone (MRZ)-2 or -3 or zoned in a general plan for mining.
    iii. Ensure land use compatibility between existing mineral resource extraction activities and projects, activities, or actions that may be implemented.
    iv. If the project is located in the vicinity of designated MRZ-2 sectors, maintain adequate buffer distance.
    v. Establish designated work areas to ensure that they are not located within a state- or locally designated mineral resource area. Confine construction traffic to designated access roads and staging areas.
2. **Aggregate Use:**
    i. Limit use of construction aggregate to local sources with sufficient capacity to meet both project and future local development needs.
    ii. Use recycled aggregate, where possible, to decrease the demand for new aggregate.

3. **Access to Extraction Sites:** Ensure that access is maintained to existing active mineral resource extraction sites during project construction.
4. **Implement the California Department of Conservation's Geologic Energy Management Division's (CalGEM) Recommendations:** Implement recommendations identified in CalGEM's Construction Site Well Review Program in coordination with the local CalGEM district office.

H3.2.12 Noise

7.21 MM-NOI-a,b,d–f: Mitigate noise and vibration impacts

Entities or agencies designing and/or approving habitat restoration or other ecosystem projects will implement or require the following.

A. Construction NOI Mitigation Measures (CMM-NOI-a,b,d–f)

1. **Regulatory Compliance:** Comply with applicable state and local noise policies and regulations. Comply with Cal/OSHA standards related to occupational noise exposure (Cal. Code Regs., tit. 8, § 5096).
2. **Noise-Reduction Measures:** Implement noise-reducing construction measures such that noise from construction does not exceed applicable local noise standards or limits specified in the applicable county or city ordinances and general plan noise elements. Such measures may include the following.
    i. Restrict construction activities near noise-sensitive (e.g., residential) land uses to daytime hours on weekdays.
    ii. Prior to construction, the contractor will identify noise-sensitive receptors near a project site. At least 2 weeks prior to the start of construction, the contractor will notify all property owners within 1,000 feet of the project site that construction activities are scheduled to commence.
    iii. Where construction occurs near residences, the contractor will provide local residents with a noise complaint hotline phone number, and noise complaints will be promptly addressed.
    iv. Maintain construction equipment to manufacturers' recommended specifications, equip all construction vehicles and equipment with appropriate mufflers and other approved noise-control devices, and/or use newer equipment with improved noise muffling. Ensure that all equipment items have the manufacturers' recommended noise abatement measures (e.g., mufflers, engine covers, engine vibration isolators) intact and operational. Newer equipment will generally be quieter in operation than older equipment. Inspect all installation equipment at periodic intervals to ensure proper maintenance and presence of noise-control devices (e.g., mufflers, shrouding).
    v. Shroud or shield all impact tools, to the extent feasible.
    vi. Locate all stationary noise-generating equipment (e.g., compressors) as far as possible from adjacent occupied offices, residents, or sensitive habitats (if they are adjacent to the project site).

vii. Limit idling of construction equipment to reduce the time that noise is emitted.

viii. Use temporary noise barriers or curtains along construction boundaries or partial enclosures around continuously operating stationary equipment.

ix. Use the shortest possible routes from construction sites to local freeways for truck delivery routes, except when selecting routes to avoid going through residential neighborhoods.

x. Establish an active community liaison program that notifies landowners within 300 feet of construction areas of the construction schedule, in writing, prior to construction to keep them informed of schedule changes; designate a disturbance coordinator for the construction site.

xi. Monitor construction noise and vibrations and modify and/or reschedule construction activities if monitoring determines that maximum limits set by local or regional noise ordinances are exceeded.

xii. Conduct individual traffic noise analysis of identified haul routes and provide mitigation at locations where noise standards cannot be maintained for sensitive receptors.

3. **Vibration-Reduction Measures:** Measures to limit or minimize exposure of persons to or generation of excessive groundborne vibration or groundborne noise may include the following.

   i. Design projects to limit vibration from construction equipment to comply with the applicable local standards or commonly accepted thresholds.

   ii. Conduct a preliminary groundborne vibration analysis report to determine future construction-related groundborne vibration levels based on, but not limited to, a detailed equipment list, hours of operation, and distances to sensitive receptors located within 500 feet of project sites. If preliminary analysis determines that groundborne vibration would expose sensitive receptors to significant impacts in excess of local standards, implement the following actions.

      - Designate a complaint coordinator and post this person's contact information in a location near construction areas where it is clearly visible to the nearby receptors most likely to be affected.
      - Conduct vibration monitoring before and during vibration-generating operations occurring within 100 feet of historic structures. Make every attempt to limit construction-generated vibration levels during pile driving and other groundborne noise- and vibration-generating activities near the historic structures.
      - Cover or shore adjacent historic features, as necessary, for protection from vibrations, in consultation with the appropriate local or state cultural resources authority.
      - For pile driving required within a 50-foot radius of residences, use alternative installation methods where feasible.
      - Conduct any pile-driving activities close to sensitive receptors only during daytime hours.

- Use small equipment that generates less vibration when equipment must be used close to sensitive uses.

4. **Blasting Operations and Safety Plan (CMM-GEO-a–e: 7)**: Implement BMPs to reduce short-term noise and vibration impacts.
5. **Construction near Airports (CMM-HAZ-a–h: 8):** Implement BMPs to avoid safety hazards for people residing or working in the project area.

H3.2.13 Population and Housing – No Potentially Significant Impacts

H3.2.14 Public Services – No Potentially Significant Impacts

H3.2.15 Recreation

7.21 MM-REC-a,b: Mitigate impacts on recreation

Entities or agencies designing and/or approving habitat restoration or other ecosystem projects will implement or require the following.

A. Construction REC Mitigation Measures (CMM-REC-a,b)

1. **Project Siting and Design:** Site and design construction project to minimize disturbances to or losses of existing recreational areas and associated facilities.
2. **Maintain Access to Existing Recreational Facilities during Construction:** If feasible, maintain access to the affected recreational site/facilities by providing appropriate signage for route relocations, including as appropriate, river markers. Provide additional operations and maintenance of existing recreational facilities to prevent deterioration.
3. **Coordinate with Public and Private Recreation Providers:** If substantial temporary or permanent impairment, degradation, or elimination of recreational facilities causes recreationists to be directed toward other existing facilities, the project proponent will coordinate with affected public and private recreation providers to direct displaced users to underutilized recreational facilities. Provide temporary replacement facilities of equal capacity and quality.
4. **Rehabilitate or Restore Degraded Recreational Facilities or Provide Replacement Recreational Facilities:** Where impacts on existing facilities are unavoidable, compensate for impacts through mitigation, restoration, or preservation off site or creation of additional permanent replacement facilities. For construction of new recreational facilities, site the project in area that would have minimal adverse physical effects on the environment. If modification of existing facilities or construction of new facilities is required, implement all construction mitigation measures identified in this section. Facilities with fueling stations or restroom facilities must implement additional construction and operational mitigation measures.
5. **Construction AES Mitigation Measures** (CMM-AES-a–d)
6. **Construction AQ Mitigation Measures** (CMM-AQ-a–e)

7. **Construction WQ Mitigation Measures** (CMM-WQ-a–j)
8. **Construction NOI Mitigation Measures** (CMM-NOI-a,b,d–f)
9. **Construction TRA Mitigation Measures** (CMM-TRA-a,b,d–f)

B. Physical Habitat Restoration REC Mitigation Measures

1. **Project Siting and Design:** Site and design restoration areas to minimize disturbances to or losses of existing recreational areas and associated facilities (e.g., campgrounds, parks, marinas) and consider methods to maintain access to adjacent areas or to recreational areas that could be affected as a result of restoration.
2. **Compensation for Unavoidable Long-Term Impacts:** Where long-term impacts on existing facilities are unavoidable, the project proponent will compensate for impacts through mitigation, restoration, or creation of additional new permanent replacement facilities. Facilities with fueling stations or restroom facilities must implement additional construction and operational mitigation measures.

C. Dam Removal REC Mitigation Measures

1. **Project Planning:** The impacts on recreation by dam removal must be considered and addressed in a feasibility study. Include contingency planning for recreation in performance monitoring and adaptive management (up to 5 years) after removal is complete and consider transportation impacts and needs associated with recreation facilities.
2. **Coordination with Public Recreation Providers:** For reservoir dam removal projects that would displace recreationists to other similar facilities (e.g., lakes, reservoirs) such that substantial deterioration or accelerated deterioration of those facilities may occur, the project proponent will coordinate with affected public recreation providers to direct displaced users to underutilized recreational facilities, provide additional operations and maintenance of existing recreational facilities, or otherwise compensate the provider to prevent deterioration or accelerated deterioration of affected facilities.
3. **Compensate for Impacts on Recreational Facilities:** Where long-term impacts on existing facilities are unavoidable, the project proponent will compensate for impacts through mitigation, restoration, or creation of additional new permanent replacement facilities. Facilities with fueling stations or restroom facilities must implement additional construction and operational mitigation measures.

H3.2.16 Transportation and Traffic

7.21 MM-TRA-a,b,d–f: Mitigate transportation impacts

Entities or agencies designing and/or approving habitat restoration or other ecosystem projects will implement or require the following.

A. Construction TRA Mitigation Measures (CMM-TRA-a,b,d–f)

1. **Regulatory Compliance:** Comply with all applicable federal, state, and local transportation regulatory requirements, including but not limited to, 23 U.S. Code section 109 and 23 C.F.R. part 630, subpart J, *Federal Work Zone Safety and Mobility Regulations*.

2. **Avoid and Minimize Interference with Transportation Networks:** Avoid modifications to federal, state, and county highways; local roadways; and bridges that may reduce vehicle capacity. Avoid and minimize impacts on bicycle and pedestrian circulation by minimizing closures of paths and providing for temporary or permanent relocation of the facility. Consult with the appropriate public works department to determine the most feasible alignment for facility relocation.

3. **Traffic Management Plan:** Prior to construction and in coordination with applicable transportation entities (California Department of Transportation [Caltrans] Permit Department, local jurisdictions, and the California Highway Patrol), prepare a traffic management plan (TMP) to provide safe and efficient traffic flow during construction. The TMP will identify the project's effects on the surrounding road network, including any necessary closures, diversion routes for traffic and pedestrians, traffic management measures, waiting/loading restrictions, and emergency services access.

   Coordinate the TMP, as applicable, with the project's emergency response plan (CMM-HAZ-a–h: 6), fire prevention and management plan (CMM-HAZ-a–h: 9), and spill prevention and response plan (CMM-HAZ-a–h: 1iii).

   The TMP could include the following measures.

   i. Identify elements (e.g., warning and detour signage) to address traffic control for any street closure, detour, or other disruption to traffic circulation.

   ii. Identify routes that construction vehicles will use to access the site, construction detour routes, and vehicle weight and speed limits on local roads used to access the construction site.

   iii. Locate informational signs along roads directly adjacent to or approaching construction work zones to direct construction traffic regarding ingress and egress points.

   iv. Use signage, striping, fencing, barricades, and other physical structures to minimize pedestrian or bicyclist accidents or disruption of pedestrian or bicycle traffic and to prevent bicyclists and pedestrians from entering the construction area.

   v. Provide notice to transit operators, emergency service providers, businesses, and residences of construction work of any anticipated delays, traffic control measures, temporary road closures, and emergency and evacuation routes.

   vi. Identify appropriate emergency access routes and equipment that provide adequate response time.

4. **Restore Damaged Transportation Facilities:** Restore damaged roads and roadway shoulders, public transit facilities, bicycle lanes, or pedestrian facilities to preproject or better conditions during (as needed for public safety) and upon completion of construction.

5. **Waterway Traffic Control Plan:** Prepare and implement a waterway traffic control plan to ensure safe and efficient vessel navigation during construction in or over waterways. The plan will identify vessel traffic control measures to minimize congestion and navigation hazards. Include the following components as appropriate for the project.

   i. Barricade or guard construction areas in the waterway with readily visible barriers or other effective means to warn boaters and to restrict access.

ii. Where temporary partial channel closure is necessary, identify and implement alternate detour routing and procedures for notifying boaters of construction and partial closures, including coordination with the U.S. Coast Guard, local boating organizations, and marinas.

iii. Ensure safe boat access to public launch and docking facilities, businesses, and residences, to the extent feasible.

6. **Road and Bridge Design:** Road and bridge projects will be constructed consistent with the latest version of the Caltrans *Highway Design Manual* (7th Edition [Caltrans 2022]) or equivalent and will not conflict with any applicable plan, ordinance, or policy related to performance of the transportation system, traffic safety, and/or congestion management of the area in which the project is implemented.

B. Physical Habitat Restoration TRA Mitigation Measures

1. **Roadway Detour Plan:** For roads that will be flooded during floodplain or other habitat restoration operations, prepare and implement a roadway detour plan, as necessary, prior to inundation. Provide convenient and parallel vehicular traffic detours for routes closed because of inundation. The detour plan will be prepared and implemented in accordance with current Caltrans Standard Plans and Specifications. The detour plan will include an assessment of existing roadway conditions, whether paved or unpaved, and provisions for repair and maintenance if the roadway conditions are substantially degraded from increased use. After the detour route is identified and before flood flows are released that would overtop roads, the condition of the detour road surface will be assessed and documented. The documentation will be submitted to the local agency responsible for maintenance of the road. After the detour is no longer needed, the condition of the road surface will be assessed and documented. The documentation will identify substantial changes in the condition of the road surface, such as potholing or rutting. Repair and maintenance actions needed to restore the road surface to pre-detour conditions will be identified. In coordination with the local maintenance agency, the repair and maintenance actions may be conducted by the agency conducting the floodplain operations or by the local maintenance agency to be proportionately reimbursed by the flood management authority.

2. **Protection of Rail Lines:** Design restoration projects to avoid or minimize impacts on rail lines.

C. Dam Removal TRA Mitigation Measures

1. **Project Planning:** Preproject planning for dam removal requires consideration of a wide variety of technical, environmental, social, political, and economic issues, including environmental feasibility. A project design must take into consideration traffic management during and after construction to minimize impacts on transportation in and around the project site.

2. **Road Design:** Any new or relocated roads or existing access roads that remain once the dam is removed must be constructed in conformance with applicable road design standards and regulations to avoid hazards (e.g., sharp curves, dangerous intersections) or incompatible uses.

3. **Dam Removal WQ Mitigation Measures**, including incorporation of any special accommodations for road infrastructure into engineering designs (7.21 MM-WQ-a–j: G1)

4. **Dam Removal LU Mitigation Measures**, including the consideration of transportation in feasibility studies on existing and future land use designations once the dam is removed (7.21 MM-LU-a,b: C1)
5. **Dam Removal REC Mitigation Measures**, including the consideration of transportation impacts and needs associated with recreation facilities (7.21 MM-REC-a,b: C)

H3.2.17 Utilities and Service Systems

7.21 MM-UT-a,f,g: Mitigate impacts on utilities and service systems

Entities or agencies designing and/or approving habitat restoration or other ecosystem projects will implement or require the following.

A. Construction UT Mitigation Measure (CMM-UT-a,f,g)

1. **Wastewater Control Measures:**
    i. Obtain and comply with all necessary permits and regulations related to discharging wastewater, including but not limited to, regional water board waste discharge requirements and State Water Board Order No. 2022-0057-DWQ (Construction General Permit), which requires the applicant to address such items as employee wastewater generated during construction and spill containment and cleanup.
    ii. Water quality regulatory compliance measures (CMM-WQ-a–j: 1)
    iii. Place portable chemical toilets for the duration of construction. Wastewater will be pumped from these portable toilets and then hauled to and disposed of at permitted facilities in accordance with both county and state regulations.
2. **Water Supply:** Water used for construction must be pursuant to a valid water right or contract with a water provider. If a source of recycled water is available, use recycled water for nonpotable construction demand.
3. **Nonhazardous Solid Waste Disposal:**
    i. Regulatory Compliance: Comply with the California Integrated Waste Management Act (AB 939 [Sher], Statutes of 1989, as amended; Pub. Resources Code, § 41780) for the disposal of nonhazardous solid waste.
    ii. Construction Waste Recycling Plan: Prepare and implement a construction waste recycling plan for reuse/recycling of construction waste. The plan will identify the type of recyclable construction and demolition debris to be recycled (e.g., concrete, steel/metals, cardboard), the method of on-site handling of this debris, and the diversion facility that will receive this recyclable debris. The plan will emphasize source reduction measures, followed by recycling and composting methods, to ensure that construction and demolition waste generated by the project is managed consistent with applicable statutes and regulations. In accordance with the California Green Building Standards Code and local regulations, the plan will specify that all trees, stumps, rocks, and associated vegetation and soils and 50 percent of all other nonhazardous construction and demolition waste be diverted from landfill disposal. The plan will be prepared in coordination with the applicable local waste management district.

4. **Utility Services:** Mitigate impacts of construction that could result in the interruption of utility services.
    i. Coordinate Planned Power Outages: Coordinate any planned power outages, as necessary, and notify potentially affected utility users of temporary loss of electricity.
    ii. Identify Existing Underground Utilities and Telecommunication Lines prior to Excavation. Coordinate with the area utility or service provider to identify existing underground utilities and telecommunication lines at excavation sites prior to construction and avoid or relocate them. Relocate utilities prior to project construction to ensure continued access and utility service through the project area and vicinity. Restore any interrupted/disconnected utility services promptly.

B. Dam Removal UT Mitigation Measures

1. **Feasibility Study:** Potential impacts on utility infrastructure affected by dam removal must be considered and addressed prior to dam removal in a feasibility study. The feasibility study will identify locations of utility infrastructure that would be affected by dam removal. In addition, project proponents will confirm utility infrastructure locations through consultation with utility service providers and predemolition field surveys.
2. **Dam Removal WQ Mitigation Measures** (7.21 MM-WQ-a–j: G)
3. **Solid Waste Disposal:**
    i. Identify off-site locations and haul distances for backfill materials and for disposal of waste materials.
    ii. Implement procedures for hazardous waste generation and disposal (CMM-HAZ-a–h: 1).
    iii. Implement a construction waste recycling plan (CMM-UT-a,f,g: 3). Where feasible, concrete from dam removal will be reused or disposed of on site.

H3.3 Mitigation Measures – New or Modified Facilities

In response to reduced Sacramento/Delta water supply, water users may take actions that would involve construction to modify or build new facilities and infrastructure to supplement or conserve surface water supplies. Projects may include new or modified dams/reservoirs and points of diversion; groundwater wells and groundwater storage and recovery projects; and new or modified drinking water treatment plants, including desalination plants and wastewater treatment plants (WWTPs). The designation of TBUs could result in new water quality objectives or site-specific discharge requirements that also could result in the new construction or modification of WWTPs. Additionally, entities may undertake other construction projects in response to changes in hydrology and water supply under the revised proposed Plan amendments, including new or modified boat ramps, streamflow or temperature monitoring devices, and water conservation projects such as canal lining.

Mitigation measures to avoid or reduce potentially significant impacts from construction and operation of new or modified facilities from implementation of the revised proposed Plan amendments are presented below.

H3.3.1 Aesthetics

7.22 MM-AES-a–d: Mitigate impacts on visual resources

Entities or agencies designing and/or approving new or modified facilities will implement or require the following.

A. Construction AES Mitigation Measures (CMM-AES-a–d)

1. **Project Siting and** Design: Design the site or facilities to blend with surrounding land uses. Design will comply with applicable local plans (e.g., city/county general plans) and ordinances, as well as with applicable resource management plans for projects on public land.

   Design-related measures to reduce impacts on visual resources could include the following.

   i. Develop design form and materials to achieve aesthetic visual character instead of a strictly utilitarian objective. Use cast natural form elements or natural materials for facing to create texture and color compatible with the adjacent landscape.

   ii. Retain the existing topographic features, to the extent feasible, to lessen the degree of visual impact.

   iii. Avoid or minimize the removal of trees, shrubs, and other mature vegetation.

   iv. Design grading to blend with surrounding landforms.

   v. Minimize the vertical profile of proposed structures. Use landscaped berms instead of walls to mask views of structures from high-visibility sites.

   vi. Install any infrastructure (e.g., transmission lines) underground in areas with high visibility and high public use, to the extent feasible.

   vii. Use compatible colors for proposed structural features. Use earth tone paints and stains with low levels of reflectivity.

   viii. Implement revegetation and landscaping that includes landscape planting and restoration of areas that were disturbed by construction activities to enhance the appearance of the new facilities or to screen negative visual elements. Specific requirements include replacement of scenic resources, including revegetation, tree planting (particularly if trees were removed), and installation of new native landscaping to enhance the appearance of the new facilities or to screen negative visual elements.

   ix. For projects that involve any new or relocated roads, develop aesthetically pleasing landscaping for new/relocated roads at the shoulders, intersections, and on- and off-ramps from highways. Design turnouts and scenic vista points where appropriate with high visibility and high public use.

2. **Screen Construction Areas:** Screen construction areas from public view.

3. **Spoil Disposal Areas:** Round the tops and bottoms of spoil disposal areas and contour the faces of slopes to create more natural-looking landforms. Create visual diversity by planting vegetation with diverse growth forms on the spoil disposal areas. Vegetation will not be limited to grasses.

4. **Dust Control Measures** (CMM-AQ-a–e: 3)

5. **Waste Management and Material Control Measures** (CMM-WQ-a–j: 4)
6. **Light and Glare Minimization:** Minimize new sources of substantial light or glare that would adversely affect day or nighttime views in the area:
    i. Limit construction activities to daylight hours, to the extent feasible.
    ii. When construction lighting is required, direct lighting away from residential and roadway areas where sensitive receptors may be present. Use shields for lighting and direct lighting downward and inward toward the construction site.
    iii. Where lighting may be required for site security, use automatic motion-sensor lighting to reduce light emissions.
    iv. Use construction equipment and temporary, construction-related facilities with low levels of reflectivity.
    v. Permanent lighting will be downcast, cut-off type fixtures with non-glare finishes and controlled by photocells and motion sensors, depending on the location. Lighting will be of minimum intensity with adequate strength for security, safety, and access.
    vi. Follow applicable county and local jurisdiction lighting guidelines and requirements relevant to the proposed project site or area, which may include, ensuring that project design incorporates outdoor lighting configurations and operational practices that minimize creation of obtrusive misdirected, excessive, or unnecessary lighting and reduce potential for light pollution.
7. **Construction BIO Mitigation Measures:** Avoid Vegetation Disturbance (CMM-BIO-a–f: 9), Revegetation Plan (CMM-BIO-a–f: 11) and Revegetation Monitoring and Reporting (CMM-BIO-a–f: 12)

B. Reservoirs and Points of Diversion AES Mitigation Measures

1. **Project Planning:** Preproject planning for new or modified reservoirs and points of diversion projects will include consideration of a wide variety of technical, environmental, social, political, and economic issues, including environmental feasibility.
2. **Project Siting:** Locate projects to avoid or minimize changes to the visual character and quality of the surrounding area. Avoid siting projects on or near rivers designated as a National Wild and Scenic River.
3. **Project Design:** Consider opportunities for aesthetic design when determining structural elements and other project features. Incorporate aesthetic design in any post construction features.

C. Water Treatment Facilities AES Mitigation Measures

1. **Project Planning:** Preproject planning for water treatment facilities (including desalination plants) will include consideration of a wide variety of technical, environmental, social, political, and economic issues, including environmental feasibility.
2. **Project Siting:** Locate projects to avoid or minimize changes to the visual character and quality of the surrounding area.

3. **Project Design:** Consider opportunities for aesthetic design when determining structural elements and other project features. Incorporate aesthetic design in any postconstruction features.

    i. For applicable desalination facilities, ensure that project complies with the California Coastal Act, including consistency with relevant local coastal program and review and approval by the California Coastal Commission, if applicable.

    ii. Buildings should match the buildings in the surrounding neighborhood both architecturally and in materials selection.

    iii. Fencing should be made of wrought iron or other suitable material compatible with the surrounding community.

    iv. Structures should be offset, rotated, and separated to provide a more open appearance. If possible, avoid industrial look where structures are laid out in straight lines and pushed together.

    v. Build infrastructure below grade and bury pipelines and other infrastructure where possible.

    vi. Apply landscaping, including trees and natural vegetation, to enhance the appearance of the treatment facility and neighborhood. Avoid removal of mature vegetation to the extent that it would aid in screening the treatment facilities, including outside storage areas.

    vii. Screen from view on all sides visible to the public exterior mechanical equipment and other facilities (e.g., tanks, heating, air conditioning, refrigeration equipment, plumbing lines, duct work and transformers, chemical storage tanks). The design and material used for screening will be architecturally compatible with the building.

    viii. Lighting should be soft and must not produce glare. Light should point downward, not outward. Use bollards with lights along walkways about 3 feet in height.

H3.3.2 Agriculture and Forest Resources Mitigation Measures

7.22 MM-AG-a–e: Mitigate impacts on agriculture and forest resources

Entities or agencies designing and/or approving new or modified facilities will implement or require the following.

A. Construction AG Mitigation Measures (CMM-AG-a–e)

1. **Project Siting and Design**: Design and site projects to avoid or minimize impacts on farmland.

    i. Design project to avoid or minimize construction-related impacts on agriculture, particularly Prime Farmland, Unique Farmland and Farmland of Statewide Importance.

    ii. Establish buffer areas between project construction zones and adjacent agricultural land that are sufficient to protect and maintain land capability and agricultural operation flexibility.

iii. Redesign project features to minimize fragmenting or isolating Farmland. Where a project involves acquiring land or easements, ensure that the remaining nonproject area is of a size sufficient to allow economically viable farming operations.

iv. Site and/or design project to avoid land protected by agricultural zoning or a Williamson Act contract. Project proponents will take into account agricultural value when selecting a project site, preferring unprotected sites to protected sites and lower value sites (as quantified by the California Agricultural LESA) model to higher value and Williamson Act–protected lands.

2. **Invasive Species Control Measures:** Manage project construction activities to minimize the introduction of invasive species or weeds that may affect agricultural production on adjacent agricultural land. (See also CMM-BIO-a-f: 8.)

3. **Postconstruction Best Management Practices:** Following the completion of construction activities on agricultural land, implement postconstruction best management practices to return the land to preproject conditions. These measures may include, but not necessarily be limited to the following.

   i. Reconnect utilities or infrastructure that serve agriculture uses, as necessary, if these facilities are disturbed by project construction. If a project temporarily or permanently cuts off roadway access or removes utility lines, irrigation features, or other infrastructure, the project proponents will be responsible for restoring access as necessary to ensure that economically viable farming operations are not interrupted.

   ii. Where underground infrastructure has been installed as part of the project, backfill to preproject contours to allow agricultural use to resume.

4. **Protect Agricultural Soils:** To protect agricultural soils the following BMPs will be implemented.

   i. Protect exposed agricultural soils with mulches, geotextiles, and vegetative ground covers during and after project construction to minimize soil loss.

   ii. Depending on the thickness of the topsoil, topsoil may be salvaged from construction work areas, stockpiled, and then applied over the surface of spoil and borrow areas, or other areas temporarily disturbed during construction (e.g., due to trenching) to the maximum extent practicable.

   iii. For staging areas and similar areas in which topsoil will not be excavated or overcovered, the soil will be decompacted or otherwise remediated after demobilization.

5. **Agricultural Mitigation Consistent with County and Local Jurisdiction Requirements:** To offset the conversion of agricultural land to nonagricultural uses, comply with applicable county and local jurisdiction requirements, which may include, for example, purchase of a conservation easement on agricultural land at least equal to the number of acres converted to nonagricultural use (1:1 ratio), or the payment of the appropriate agricultural mitigation fee for converted acreages of agricultural land.

6. **Avoid or Minimize Impacts on Forest and Timberland:**

i. Design the construction plan to avoid or minimize construction-related impacts on lands zoned for timber production and on forest land. Where construction occurs on or near forest land, avoid and preserve onsite trees.

ii. Restrict ground-disturbing mechanical operations around forest land and timber land.

iii. Develop and implement a reforestation plan in the event that forest land conversion cannot be avoided during construction. Preserve in perpetuity other forest land through a conservation easement or by acquiring lands or contributing funds to a land trust or other agency (at a ratio of 1:1 to compensate for permanent loss). If there is an existing forest land mitigation program for construction-related impacts on forest land, comply with that program to the extent required by law.

iv. If applicable, obtain and comply with timberland conversion permit from the California Department of Forestry and Fire Protection (CAL FIRE).

H3.3.3 Air Quality Mitigation Measures

7.22 MM-AQ-a–e: Mitigate impacts on air quality

Entities or agencies designing and/or approving new or modified facilities will implement or require the following.

A. Construction AQ Mitigation Measures (CMM-AQ-a–e)

1. **Regulatory Compliance:**

   i. Comply with all applicable CARB regulations and standards.

   ii. Adhere to all applicable air district rules and regulations with jurisdiction in the project area.

   iii. Comply with all applicable general plan policies and ordinances relating to air quality.

2. **Emission Reduction Measures:**

   iv. Locate staging areas at least 1,000 feet away from sensitive receptors.

   v. Minimize idling time from both on-road and off-road diesel-powered equipment either by shutting equipment off when not in use or reducing the time of idling to 5 minutes (Cal. Code Regs, tit. 13, §2485). Provide clear signage that posts this requirement for workers at the entrances to the site.

   vi. Maintain all construction equipment in proper working condition according to manufacturer's specifications. The equipment must be checked by a certified mechanic and determined to be running in proper condition before it is operated.

   vii. Use equipment and vehicles that comply with the CARB requirements and emissions standards for on-road and off-road fleets and engines.

   viii. Install diesel particulate filters and utilize diesel oxidation catalysts on off-road equipment and vehicles.

   ix. Discontinue all construction activities during first stage smog alerts and first stage ozone alerts and/or curtail construction during periods of high ambient pollutant concentrations.

x. Produce concrete on site if determined to be less emissive than transporting ready mix.

xi. Lead agencies proposing projects will require their contractors, as a condition of contract, to reduce construction-related fugitive reactive organic gas emissions by ensuring that low-VOC coatings are used during construction. The project applicant will submit evidence of the use of low-VOC coatings prior to the start of construction.

xii. Use locally sourced or recycled materials for construction materials, to the greatest extent feasible.

xiii. Implement reasonably available emission-control technology (i.e., USEPA Tier 4), including equipment and vehicles with zero-emission or lower-emission engines.

xiv. Use low/zero carbon or alternative fuels, such as B20 biodiesel or renewable diesel.

3. **Dust Control Measures:**

i. Water exposed soil surfaces (e.g., access roads, staging areas) with adequate frequency for continued moist soil. Do not overwater to the extent that sediment flows off the site.

ii. Cover exposed stockpiles (e.g., dirt, sand) and/or water or stabilize them with nontoxic soil binders.

iii. Cover all trucks being utilized for transport and disposal of excavated material immediately after loading and throughout the transportation and disposal of excavated material. The cover must be installed in such a way to prevent wind from entering over the leading edge of the trailer rim.

iv. Install a rock pad or a construction mud mat at the project site's exit/entrance to protect streets and public rights-of-way. Design mats and rock pads to support the heaviest and widest equipment entering the project site.

v. Wash off all trucks and equipment, including their tires, prior to leaving the site.

vi. Use wet power vacuum street sweepers to remove any visible trackout mud or dirt on adjacent public roads at least once a day. Avoid use of dry power sweeping.

vii. Limit vehicle speeds on unpaved roads to 15 miles per hour.

viii. Complete all roadways, driveways, sidewalks, and parking lots to be paved as soon as possible. In addition, lay building pads as soon as possible after grading unless seeding or soil binders are used.

ix. Suspend excavation and grading activity when winds (instantaneous gusts) exceed 20 miles per hour.

x. Initiate landscaping and revegetation as soon as construction tasks allow in order to minimize wind erosion.

xi. Post a publicly visible sign with the telephone number and person to contact at the lead agency regarding dust complaints. This person will respond and take corrective action within 48 hours. The local air district's or districts' phone number(s) will also be posted in a visible location.

xii. Implement erosion control, sedimentation control, and soil stabilization measures (CMM-WQ-a–j: 3) to prevent silt runoff to public roadways from sites with a slope greater than 1 percent.

4. **Valley Fever Control Measures:**

   i. Dust Control Measures (CMM-AQ-a–e: 3)

   ii. Erosion Control, Sedimentation Control, and Soil Stabilization Measures (CMM-WQ-a–j: 3)

   iii. Valley Fever Management Plan: In areas endemic for *Coccidioides* fungus, prior to starting construction the project applicant will consult with the County Health Department to develop a Valley fever management plan that includes specific measures to reduce the potential for exposure to Valley fever. The Valley fever management plan will include a program to evaluate the potential for exposure to Valley fever from construction activities and to identify appropriate dust management and safety procedures that will be implemented, as needed, to minimize personnel and public exposure to potential Valley fever–containing dust. Measures in the Valley fever management plan, which will be implemented as applicable, may include the following.

   - Provide high efficiency particulate air–filtered air-conditioned enclosed cabs on heavy equipment, and train workers on proper use of cabs, such as turning on air conditioning prior to using the equipment.
   - Require National Institute for Occupational Safety and Health–approved half-face respirators equipped with N-100 or P-100 filters to be used during any surface-disturbing activities if determined to be necessary based on a job hazard analysis. Require employees to wear respirators when working near earth-moving machinery if determined to be warranted after conducting a job hazard analysis.
   - To the maximum extent practicable, phase work efforts to ensure that site preparation work involving significant surface disturbance (i.e., grading, filling, trenching) and work that does not involve significant surface disturbance are not collocated so that dust potentially generated by high winds coupled with disturbed soil instability will not affect workers or other receptors.
   - Workers that are required to use respirators as determined by a job hazard analysis will be medically evaluated, fit-tested, and properly trained on the use of the respirators, and a respiratory protection program will be implemented in accordance with the applicable Cal/OSHA Respiratory Protection Standard (Cal. Code Regs., tit. 8, § 5144). To the maximum extent practicable, ensure that areas involving significant surface disturbance are stabilized as soon as ground-disturbing activities are completed.

5. **Asbestos Control Measures:**

   i. Comply with the Asbestos National Emission Standards for Hazardous Air Pollutants (40 C.F.R. Part 61, Subpart M) for asbestos removal and disposal for demolitions operations.

   ii. When performing construction activities in areas where naturally occurring asbestos, serpentine or ultramafic rock is present, the lead agency will coordinate with the applicable air pollution control or air pollution management district and implement the appropriate dust abatement measures according to the area of potential disturbance and the type of construction activity (e.g., road construction and maintenance, construction and grading operations) (Cal. Code Regs., tit. 17, § 93105).

6. **Health Risk Assessment:** Lead agencies proposing construction projects within 1,000 feet of existing sensitive receptors will prepare a site-specific construction and operational HRA. If the HRA demonstrates that the health risk exposures for adjacent receptors will be less than applicable thresholds, then additional mitigation would be unnecessary. However, if the HRA demonstrates that health risks would exceed applicable project-level thresholds, additional feasible on- and off-site mitigation will be analyzed by the applicant to reduce risks to the greatest extent practicable.
7. **Minimize Construction-Related Traffic and Equipment Use:** Construction-related traffic and large equipment use will be minimized. The following measures will be implemented toward this goal to reduce construction-related emissions:
    i. Reduce the number of large pieces of equipment operating simultaneously during peak construction periods.
    ii. Schedule vendor and haul truck trips to occur during non-peak hours.
    iii. Establish dedicated construction parking areas to encourage carpooling and efficiently accommodate construction vehicles.
    iv. Identify alternative routes to reduce congestion during peak activities.
    v. Develop a project-specific ride share program to encourage carpools, shuttle vans, transit passes, and/or secure bicycle parking for construction worker commutes.
    vi. Implement measures to reduce vehicle trips.
8. **Blasting Operations and Safety Plan** (CMM-GEO-a–e: 7) for fugitive dust control.

B. Reservoirs and Points of Diversion AQ Mitigation Measures

1. **Site-Specific Dust Control Plan:** Develop and implement a site-specific dust control plan to minimize generation and duration of dust emissions associated with construction (including blasting). Dust control measures will be developed in compliance with applicable air pollution control regulations.
2. **Recreational Boat Emissions Minimization Plan:** To reduce emissions from recreational boats at a new reservoir, develop and implement an emissions reduction plan, which will include strategies to reduce boat emissions. Strategies to be implemented could include:
    i. Post signage near launch areas encouraging boaters to turn off engines when not in use.
    ii. Provide free or reduced launch feels for low-emitting or electric boats.
    iii. Track boat usage and type (i.e., motorized, electric, nonmotorized) annually by maintaining records of the number and types of boats operated at the reservoir. To maintain these records, operate staffed kiosks at the reservoir, and require boat users to check in at these kiosks prior to launching their boats. Emissions from boat usage will be quantified based on these records, and the effectiveness of the emissions minimization plan will be assessed based on the quantification results and relative to the applicable air district threshold at the time of operations.
3. **Offset Criteria Pollutant Emissions Generated from Recreational Boating**: As applicable, enter into a memorandum of understanding with the appropriate air district to reduce criteria pollutant or pollutants from gasoline-powered recreational boats emitted in

excess of applicable emissions threshold(s). Per 7.22 MM-AQ-a–e: B2, recreational boat emissions at the reservoir will be quantified and the emissions in excess of applicable air district threshold will be offset to the extent possible.

C. Water Treatment Facilities AQ Mitigation Measures

1. **Regulatory Compliance** (7.22 MM-WQ-a–j: D1) for recycled water use.
2. **Odor Management Plan:** Develop and implement a project-specific odor management plan to reduce odor-related impacts. Incorporate odor control measures into this plan, including protocols for monitoring, reporting, and responding to odor complaints from the public, as well as odor control technologies and BMPs to minimize odor releases.

H3.3.4 Biological Resources Mitigation Measures

7.22 MM-BIO-a–f: Mitigate impacts on biological resources

Entities or agencies designing and/or approving new or modified facilities will implement or require the following.

A. Construction BIO Mitigation Measures (CMM-BIO-a–f)

1. **Regulatory Compliance:** Develop a mitigation and management plan in coordination with fish and wildlife agencies to implement all appropriate measures as required by ESA section 7 consultation and to satisfy any other local, state, and federal requirements for achieving no net loss of wetlands, riparian habitat, or other critical habitat or take of wildlife species of concern. The plan should be submitted to the local city/county environmental planning department, USACE, USFWS, CDFW, NMFS, applicable state or regional water board (e.g., as part of a Clean Water Act section 401 (33 U.S.C. § 1341) water quality certification application), and/or other oversight agencies as applicable for approval prior to its implementation if an impact on special-status species population(s) is determined to occur based on the biological assessment and evaluation of the final project site and design.
2. **Preconstruction Surveys:** Conduct preconstruction surveys (by a qualified biologist) for special- status species in accordance with USFWS, NMFS and CDFW (as applicable) survey methodologies and appropriate timing to determine presence and locations of any special-status species and their habitats and to avoid, minimize, or compensate for impacts on special-status species in coordination with the appropriate resource agencies; demarcate the boundaries of construction buffers around sensitive habitats; and submit survey reports for approval according to applicable federal, state, and local agency guidelines. This may include hiring a qualified biologist to identify riparian and other sensitive natural communities, including wetlands, and/or habitat for special-status plants and animals. As part of preconstruction surveys, evaluate potential impacts on trees or other biological resources protected by local policies and ordinances and observe any permit requirements associated with these policies and ordinances. In addition, conduct a delineation of affected aquatic resource areas to determine the acreage of loss in accordance with current USACE methods.
3. **Avoid, Minimize, or Compensate for Impacts on Sensitive Natural Communities**: The following measures will be implemented to reduce impacts on sensitive natural communities.

i. Avoid, minimize, or compensate for reduction in area and/or habitat quality of sensitive natural communities through implementation of the following.

- Select project site(s) that would avoid sensitive natural communities.
- Design, to the maximum extent practicable, project elements to avoid effects on sensitive natural communities.
- Establish temporary construction buffers for wetlands, vernal pools, and other sensitive natural communities that could be affected by construction activities. A qualified biologist will determine the location of the buffer(s) prior to the start of construction. The outer edge of the buffer zones will be demarcated using flagging or temporary orange mesh construction fencing before initiation of construction activities and based on site-specific conditions, seasonal restrictions for wildlife, local planning department specifications, and resource agency requirements.
- Replace, restore, or enhance on a "no net loss" basis, in accordance with USACE and the applicable regional water quality control board, wetlands and other waters of the United States and waters of the state that would be removed, lost, or degraded. In coordination with USACE and the regional water quality control board, a wetland mitigation and monitoring plan will be developed before any groundbreaking activity commences. Once the mitigation and monitoring plan is approved and implemented, mitigation monitoring will continue for a minimum of 5 years from completion of mitigation, or human intervention (including recontouring and grading), or until the performance standards identified in the approved mitigation and monitoring plan have been met, whichever is longer. Prior to commencement of any construction activities that could result in the permanent loss of wetlands, conduct a delineation of affected aquatic resources areas to determine the acreage of loss in accordance with current USACE and regional water board methods.
- Compensate for unavoidable impacts to sensitive natural communities (other than waters of the United States or state) by restoring and/or preserving in-kind sensitive natural communities on site, or off site at a nearby site, or by purchasing in-kind restoration or preservation credits from a mitigation bank that services the project site and that is approved by the appropriate agencies, in consultation with applicable regulatory agencies (at ratios that offset temporal loss of habitat value).

4. **Avoid, Minimize, or Compensate for Impacts on Special-Status Species:** The following measures should be implemented to reduce impacts on special-status species.

i. Project Siting and Design: Site and design the project, in general, and construction footprint, in particular, to avoid, when possible, or otherwise minimize, impacts on special-status species and habitat occupied by special-status species (particularly critical habitat). Select project site(s) that would avoid habitats of special-status species (which may include foraging, sheltering, migration, and rearing habitat in addition to breeding or spawning habitat), and to the maximum extent practicable, (re)design project elements to avoid effects on such species.

ii. Construction Schedule: To the extent feasible, schedule construction to avoid special-status species' breeding, spawning, or migration locations during the seasons or active periods that these activities occur. Construction will be allowed only if authorized by the appropriate state and federal resource agencies, and additional construction timing

restrictions could be imposed by these agencies, to protect specific species. For example, all in-water construction activities where special-status species have the potential or are known to occur would be conducted during the allowable in-water work periods established by NMFS, USFWS, and CDFW.

iii. Buffers: Establish buffers around special-status species habitats to exclude effects of construction activities. A qualified biologist will determine the location of the buffer(s) prior to the start of construction. The size of the buffer will be in accordance with USFWS, CDFW, and NMFS protocols, as applicable, for the applicable special-status species.

iv. Nest Trees: Nest trees for special-status bird species will not be removed unless avoidance measures (e.g., establishing buffers between construction activities and active nests) are determined to be infeasible. If nest tree removal is necessary, remove the tree only after the nest is no longer active, as determined by a qualified biologist.

v. Relocation of Special-Status Plants and Animals: As appropriate, relocate special-status plant and animal species (excluding state Fully Protected species, which cannot be authorized for relocation and must be fully avoided) or their habitats from project sites following USFWS, NMFS, and CDFW protocols (e.g., for special-status plant species, elderberry shrubs).

vi. Compensation: Where impacts to special-status species are unavoidable, compensate for impacts by restoring or preserving in-kind suitable habitat on site, or off site, or by purchasing restoration or preservation credits (in compliance with CESA and the ESA) for affected state- or federally listed species from a mitigation bank that serves the project site and that is approved by the appropriate agencies, in consultation with the appropriate regulatory agencies (at ratios that offset the temporary loss of habitat value).

5. **Environmental Awareness Training:** Prior to the start of construction activities, all personnel will participate in mandatory worker environmental awareness training conducted by an agency-approved biologist or resource specialist. Construction personnel will be informed about the identification, potential presence, legal protections, avoidance and minimization measures, and applicable general protection measures for state- and federally listed species and associated habitats with potential to occur within or immediately adjacent to the project site. Construction personnel will be informed of the procedures to follow if these biological resources are disturbed during construction activities. For projects where the agency-approved biologist or resource specialist is not regularly on the project site, training may be provided via online/web-based meeting. For projects that may continue over an extended duration and require a large number of training events, a training video developed under the supervision of a qualified biologist or resource specialist may be used to train new personnel, as long as a biologist or resource specialist is available via phone to answer questions about the training or that may arise during construction.

6. **Incorporate Protection Measures for In-Water Construction:** Design in-water construction projects to avoid or minimize stranding of and direct injury to special-status aquatic species.

i. Dewatering/Diversion: Any area to be dewatered will encompass the minimum area and time necessary to perform construction activities. Develop and implement a dewatering plan that describes proposed dewatering structures, design guidelines for contractors, and appropriate types of BMPs for the installation, operation, maintenance, and removal of those structures. Dewatering/diversion will be designed to avoid direct and preventable indirect mortality of fish and other aquatic species. Where feasible, dewatering/diversion will occur via gravity-driven systems. When pumping is necessary to dewater a work site, a temporary siltation basin and/or silt bags will be used to prevent sediment from reentering the wetted channel. Pump intakes will be covered with mesh per the requirements of current fish screening criteria to prevent potential entrainment of fish or other aquatic species that could not be removed from the area to be dewatered. Diverted flows must be of sufficient quality and quantity, and of appropriate temperature, to support existing fish and other aquatic life both above and below the diversion.

ii. Cofferdams: Cofferdams may be installed if necessary to isolate the extent of the work areas. When feasible, construction of cofferdams will begin in the upstream area and continue in a downstream direction, allowing water to drain and fish and aquatic wildlife species to leave (under their own volition) from the area being isolated by the cofferdam, prior to closure. If pile driving (sheet piles) is required, vibratory hammers will be used, and use of impact hammers will be avoided. When cofferdams with bypass pipes are installed, debris racks will be placed at the bypass pipe inlet in a manner that minimizes the potential for fish impingement and/or entrapment. All dewatering/diversion facilities will be installed such that natural flow is maintained upstream and downstream of project areas.

iii. Fish and Aquatic Species Exclusion: Fish and other aquatic species will be excluded from occupying the area to be dewatered by blocking the stream channel above and below the area to be dewatered with fine-meshed block nets or screens while cofferdams and other diversion structures are being installed. Block net mesh will be sized to ensure that aquatic species upstream or downstream do not enter the areas proposed for dewatering. Mesh will be no greater than 1/8-inch diameter. The bottom of the net must be completely secured to the channel bed. Block nets or screens will be placed and maintained throughout the dewatering period at the upper and lower extent of the areas where aquatic species will be removed.

iv. Fish Capture and Relocation: Where potential in-water construction effects may result in take of special-status fish species, capture fish from the affected areas and relocate them to areas that would support their growth and development. Captured fish would be temporarily held in aerated coolers for transport to relocation sites. A fish capture and relocation plan will be developed and implemented for review and approval by appropriate agencies (e.g., CDFW, NMFS, USFWS, as applicable). The plan will describe the biologist qualifications, capture methods, capture and relocation work areas, and reporting requirements. Fish capture operations will occur at any project site where dewatering and resulting isolation of fish may occur; for example, when dewatering creates pools within the stream channel or when an enclosed area within a cofferdam is dewatered. Collection of fish from areas isolated by dewatering may occur by electrofishing, seine, dip net, throw net, minnow trap, and hand capture, or a combination of these. The appropriate collection method will be determined based on

site conditions. If capture and relocation are not feasible or would not be the most protective approach to managing fish in the work area (e.g., dewatering not needed or appropriate; large, unconfined waterbody), other methods to protect covered fish species (e.g., timing restrictions around season and tide, bubble curtains) will be detailed in a plan and submitted for approval by the appropriate resource agencies.

v. Removal of Diversion and Barriers to Flow: Upon completion of in-channel construction activities, any diversions or barriers to flow will be removed in a manner that will allow flow to resume with the least disturbance to the substrate. Alteration of creek beds will be minimized; any imported material that is not part of the project design will be removed from streambeds upon completion of the project. When appropriate, cofferdams will be removed so surface elevations of water impounded above the cofferdam will not be reduced at a rate greater than 1 inch per hour. Cofferdams in tidal waters will be removed during the lowest possible tide and in slack water to minimize disturbance and turbidity. Preproject flows must be restored to the affected surface waterbody upon completion of work at that location.

vi. In-Water Pile Driving: Develop a plan for pile-driving activities to minimize impacts on special-status species and submit it to relevant agencies for approval prior to the start of in-water pile-driving activities. The plan will describe the method with the least impacts on aquatic organisms and will identify the number, type, and size of piles; estimated sound levels caused by the driving; the number of piles that will be driven each day; qualifications of monitors; any other relevant details on the nature of the pile-driving activity; and the measures that will be implemented to minimize underwater sound pressure to levels below fish thresholds for peak pressure and accumulated sound exposure levels. Threshold levels for special-status fish under NMFS jurisdiction are established in the Fisheries Hydroacoustic Working Group's *Agreement in Principle for Interim Criteria for Injury to Fish from Pile Driving Activities* (FHWG 2008) and may be used as a guideline for special-status fish. Pile driving will also follow the criteria outlined in the most recent version of the California Department of Transportation's *Technical Guidance for Assessment and Mitigation of the Hydroacoustic Effects of Pile Driving on Fish* (Caltrans 2020). If thresholds are exceeded, sound dampening or attenuation devices will be implemented to reduce levels.

An agency-approved biologist will be on site during pile-driving activities to minimize effects on special-status species that could be present. If any stranding, injury, or mortality of special-status species is observed, federal and state wildlife agencies will be notified in writing (e.g., via email) within 24 hours, and in-water pile driving will cease until the applicable federal and/or state agencies provide guidance on how to proceed.

A silt curtain will prevent the release of a turbidity plume and trap sediment that may become suspended as a result of the pile driving. The silt curtain must restrict the surface-visible turbidity plume to the area of pile construction and must control and contain the migration of resuspended sediments at the water surface and at depth.

7. **Avoid or Minimize Impeding Access to Established Native Resident or Migratory Wildlife Corridors or Native Wildlife Nurseries for Fish or Wildlife Species during Construction:** Site the construction footprint to avoid or otherwise minimize impeding access to established native wildlife movement corridors or native wildlife nurseries. If

impeding access cannot be avoided, provide alternative access to these areas through such means as culverts, overpasses, or underpasses, for example.

8. **Invasive Species Control Measures:**

   i. Follow guidelines in the CDFW *California Aquatic Invasive Species Management Plan* (CDFW 2008), *Aquatic Invasive Species Disinfection/Decontamination Protocols* (CDFW 2013), and/or *Preventing the Spread of Invasive Plants: Best Management Practices for Land Managers* (Cal-IPC 2012), where relevant. Construction supervisors and managers will be educated on weed identification and the importance of controlling and preventing the spread of noxious weeds.

   ii. Construction material to be used in (or immediately adjacent to) streams and wetlands, such as seed mixes, mulch topsoil, sand, gravel, crushed stone, and rock, brought on the project site from an outside source will be free of invasive plant material.

   iii. Avoid the spread of aquatic invasive species (e.g., zebra/quagga mussels, New Zealand mudsnails, chytrid fungus) to and from the project area according to the current aquatic invasive species disinfection/decontamination protocols, such as *Aquatic Invasive Species Disinfection/Decontamination Protocols* (CDFW 2013), *Aquatic Invasive Species Disinfection/Decontamination Protocols (Northern Region)* (CDFW 2016a), or other similar protocols.

   iv. Consult with CDFW and local experts, such as the University of California Extension, county agricultural commissioners, representatives of county weed management areas, California Invasive Plant Council, and California Department of Food and Agriculture, to ensure that invasive plant species and populations are kept below preconstruction abundance and distribution levels.

   v. Wash down all major construction equipment prior to entry into the project site in a manner that limits runoff, away from areas proximate to any stream/wetland resources.

   vi. If invasive species are encountered, conduct appropriate treatment and removal methods. The preferred method is removal by hand followed by proper disposal. If hand removal is not effective, then herbicide/pesticide treatment may be necessary. Any herbicide spot treatment will be applied in accordance with approved herbicide treatment measures. Chemical use is restricted in accordance with approved application methods and BMPs designed to prevent exposure to nontarget areas and organisms. The use of any chemical considered for control of invasive species must be approved for use in California, adhere to all California Environmental Protection Agency DPR regulations, and be applied by a licensed applicator under all necessary state and local permits. A pest control advisor can ensure that legal, appropriate, and effective chemicals are used with appropriate methodologies. Aquatic pesticides will be applied in compliance with NPDES order(s), where applicable.

   vii. Monitor the site for invasive plants after all construction activities have been completed and implement additional control activities if necessary.

9. **Avoid Vegetation Disturbance:** Minimize the amount of soil, terrestrial vegetation, emergent vegetation, and submerged vegetation (e.g., eelgrass and kelp in marine areas, submerged aquatic vegetation in brackish and freshwater areas) disturbed during project construction and completion. Disturbance to existing grades and native vegetation, the

number of access routes, the size of staging areas, and the total area disturbed by the project will be limited to the extent of all temporary and permanent impacts as defined by the final project design. All roads, staging areas, and other facilities will be placed to avoid and limit disturbance to waters of the state and other aquatic habitats (e.g., streambank or stream channel, riparian habitat). When possible, existing ingress or egress points will be used, and/or work will be performed from the top of streambanks, from barges on the waterside of the stream or levee bank, or from dry gravel beds. Existing native vegetation will be retained as practicable, emphasizing the retention of shade-producing and bank-stabilizing trees and brush with greater than 6-inch diameter branches or trunks. Remove temporary access roads and decompact soils as necessary to support desired revegetation. Minimize vegetation disturbance and soil compaction by using low ground-pressure equipment with a greater reach or that exerts less pressure per square inch on the ground than other equipment.

10. **Staging Areas:** Where appropriate and practical, barges will be used to stage equipment and construct the project, while reducing noise, traffic disturbances, and effects on terrestrial vegetation. When barge use is not practical, construction equipment and project materials may be staged in designated upland staging areas. Existing staging sites, maintenance toe roads, and crown roads will be used for project staging and access to avoid affecting previously undisturbed areas. For projects that involve in-water work for which boats and/or temporary floating work platforms are necessary, buoys will be installed so moored vessels will not beach on the shoreline and anchor lines will not drag. Moored vessels and buoys will not be located within 25 feet of vegetated shallow waters.
11. **Revegetation Plan:** Develop and implement a revegetation plan if vegetation will be disturbed during construction. The revegetation plan will specify sites where revegetation will be implemented. Site contours will be returned to preconstruction conditions or designed to provide increased biological and hydrological functions. All temporarily disturbed areas will be decompacted and seeded/planted with the planting stock appropriate for the area, appropriate designs (e.g., plant arrangements that, when mature, replicate the natural structure and species composition of similar habitats), planting techniques, monitoring frequency, and success criteria (e.g., sapling trees no longer require active management). Where natural communities have been disturbed during construction, restore to similar or improved function. If an irrigation system is necessary for plant establishment, install and ensure that the system is operational prior to installation of plantings, or prior to any periods where the weather forecast may jeopardize successful establishment of plants. If erosion control fabrics are used in revegetated areas, they will be slit in appropriate locations as necessary to allow for plant root growth. Only non-monofilament, wildlife-safe fabrics will be used. All plastic exclusion netting placed around plantings will be removed after 2 years or sooner if practicable.
12. **Revegetation Monitoring and Reporting:** All revegetated areas will be maintained and monitored for a minimum of 2 years after replanting is complete and until success criteria are met to ensure the revegetation effort is successful. The standard for success is 60 percent absolute cover compared to an intact local reference site. If an appropriate reference site cannot be identified, success criteria will be developed for review and approval by the authorizing regional water board on a project-by-project basis based on the specific habitat affected and known recovery times for that habitat and geography. The

project permittee will prepare a summary report of the monitoring results and recommendations at the conclusion of each monitoring year.

13. **Compliance with Habitat Conservation Plans and Natural Community Conservation Plans**:

    i. If the project site is within the planning area for any adopted HCP, NCCP, or similar conservation plan, consult CDFW and/or USFWS, as applicable, to identify any potential conflicts with the plan's goals, objectives, or conservation measures. Seek input regarding potential design features, conservation measures, or other mitigation strategies to avoid potential conflicts and achieve substantial conformance with the objectives of the HCP, NCCP, or similar conservation plan.

    ii. Comply with measures contained within an HCP or NCCP, as applicable. Consult with biologists who have training and are knowledgeable about HCPs or NCCPs in the region where the project is located.

14. **Construction WQ Mitigation Measures** (CMM-WQ-a–j)

15. **Avoid or Minimize Lighting and Glare Effects**: Minimize nighttime construction site lighting to minimize impacts on wildlife. If nighttime construction is necessary, all project lighting (e.g., staging areas, equipment storage sites, roadway, construction footprint) will be selectively placed and directed onto the roadway or construction site and away from aquatic habitats. Light glare shields will be used to reduce the extent of illumination into aquatic habitats. If the work area is located near surface waters, the lighting will be shielded such that it does not shine directly into the water. (See also CMM-AES-a–d: 6 for additional mitigation for light and glare during construction and operation.)

16. **Dust Control Measures** (CMM-AQ-a–e: 3)

17. **Construction NOI Mitigation Measures: Noise-Reduction Measures** (CMM-NOI-a,b,d–f: 2) and **Vibration-Reduction Measures** (CMM-NOI-a,b,d–f: 3)

18. **Blasting Operations and Safety Plan** (CMM-GEO-a–e: 7) to reduce potential harm to special-status species from blast and pressure waves.

B. Reservoirs and Points of Diversion BIO Mitigation Measures

1. **Regulatory Compliance:** Consistent with California Fish and Game Code section 5937, cold water flows from reservoirs should be maintained and timed to provide for downstream temperatures at critical times of the year to ensure that fish below dams are kept in good condition. Additional regulatory authorities that protect cold water habitat include FERC license requirements, NMFS Biological Opinion requirements, regional water board basin plan requirements for the protection of beneficial uses, and State Water Board public trust authority. The project-specific environmental document will include an evaluation of a range of operating criteria that are consistent with updates to the Bay-Delta Plan. A water right application to appropriate water by permit with the State Water Board is required.

2. **Project Planning and Design**: Any new or modified reservoir and point of diversion would undergo extensive hydrologic modeling of operations and analysis of impacts on the aquatic ecosystem and fish species. Conduct feasibility studies to evaluate economic justification, environmental compliance, and technical standards. For a new reservoir, study alternatives including off-stream locations to avoid or minimize ecosystem disruptions (e.g., blocking

migration and exchange of sediment and nutrients in the stream). Conduct and implement predation studies at intakes and other locations to provide information on predatory fish and predation rate to inform the project plan and design to avoid or reduce inadvertently creating habitat for species that prey on, compete with, or displace special-status species. The final design specifications will include any potential schedule constraints, including key fish spawning, bird nesting, or winter hibernation periods of species that could be affected by the project—particularly construction.

3. **Reservoirs and Points of Diversion WQ Mitigation Measures** (7.22 MM-WQ-a–j: B)

4. **Avoid or Minimize Impeding Access to Established Native Resident or Migratory Wildlife Corridors or Native Wildlife Nurseries for Fish or Wildlife Species**

    i. Protect habitat for migratory waterfowl and shorebirds by expanding existing wildlife refuges and management areas and establishing new ones in or near wetland areas used by migratory waterfowl and shorebirds. Manage these areas by establishing suitable vegetation, hydrology, and other habitat components to optimize the use by migratory waterfowl and shorebirds.

    ii. Protect, restore, and enhance connectivity of habitats, including but not limited to, wetland and riparian habitats that function as migration corridors for wildlife species. Acquire areas with potential to increase connectivity between existing habitats; protect these areas in perpetuity through the acquisition of conservation easements, deed restrictions, or similar tools; and restore the habitat for wildlife species in these areas. Habitat restoration might be accomplished by establishing suitable hydrology or other physical conditions for desirable vegetation, planting desirable vegetation, fencing and managing grazing, and other means.

    iii. Protect migratory pathways for migratory aquatic species such as salmon, steelhead, and sturgeon, including those that use Delta tributaries and floodplain habitats, by screening diversions and removing migration barriers.

    iv. Avoid or minimize alteration of flow patterns and water quality effects that could disrupt migratory cues for migratory aquatic species by implementing water management measures and establishing programs to reduce water pollution. This includes protecting peak flows that provide critical habitat.

5. **Dredging Plan:** Develop and implement a dredging plan to avoid direct physical injury to aquatic species, including special-status species if present, and to avoid and reduce disrupting the movement of local and migratory fish species through increased turbidity areas.

6. **Minimize Intake Impacts on Fish:** Design and operate surface water intakes to minimize effects on fish. Comply with applicable NMFS and USFWS fish screen engineering design and operational criteria for the region where the project is located to minimize impingement and entrainment. Fish screens will be inspected and maintained regularly to ensure that they are functioning as designed and meeting applicable fish screening criteria. Screens will be visually inspected while in operation to ensure that they are performing properly. BMPs associated with fish screen maintenance and repair will be implemented to minimize effects on special-status fish species and to ensure that fish are not passively entrained into the diversion canal.

7. **Compensate for Impacts on Special-Status Species and Habitat**: Compensate for direct and indirect effects on special-status species habitat by restoring disturbed habitat or preserving occupied habitat, preferably in the vicinity of the affected area, at a minimum of 1:1 ratio. Retain a qualified biologist to assess habitat to be restored or preserved and to provide guidance on habitat restoration. Conduct monitoring at the preserved area to ensure that habitat conditions are maintained at baseline conditions or better. A qualified biologist will conduct monitoring of restored habitat to ensure that restored habitat conditions are maintained and to make adaptive management recommendations for habitat improvements.
8. **Recreation Management Plan:** Prepare a recreation management plan for a new reservoir project that includes recreational areas. The plan will include actions such as the installation of signage and exclusion fencing to avoid recreational (e.g., hiking and camping) disturbance of sensitive natural communities and/or special-status species habitat, if applicable. The goal of these actions will be to avoid and reduce disruption of sensitive habitats and vegetation, including special-status plant populations that were avoided during construction of recreational areas.
9. **Environmental Awareness Training:** An environmental awareness training program will be implemented to familiarize on-site employees (including maintenance employees) and contractors with the regulatory requirements and potential environmental concerns associated with operations and maintenance on site. This program will include identification of sensitive natural resources and will discuss ways to avoid impacts on these resources.
10. **Reduce Bird Collisions with Overhead Power Lines:** Ensure that new overhead power lines and associated equipment are properly fitted with wildlife protective devices to isolate and insulate structures to prevent injury or mortality of birds. Protective measures will follow the guidelines provided in *Reducing Avian Collisions with Power Lines: The State of the Art* (Avian Power Line Interaction Committee 2012), or the current Avian Power Line Interaction Committee guidelines in place at the time the transmission lines are installed, and will include insulating hardware or conductors against simultaneous contact, using poles that minimize impacts on birds, and increasing the visibility of conductors or wires to prevent or minimize bird collisions.
11. **Maintenance Activities:** Comply with all applicable Construction BIO Mitigation Measures (CMM-BIO-a–f) and Herbicide and Pesticide Use (CMM-HAZ-a–h: 4) when conducting maintenance activities, especially for work on or near waterbodies.

C. Water Treatment Facilities BIO Mitigation Measures

1. **Reservoirs and Points of Diversion BIO Mitigation Measures** (7.22 MM-BIO-a–f: B)
2. **Water Treatment Facilities WQ Mitigation Measures** (7.22 MM-WQ-a–j: D)
3. **Desalination Facilities BIO Mitigation Measures:**
    i. Regulatory Compliance: In addition to consultation and compliance with fish and wildlife agencies, project proponents of ocean desalination facilities will comply with California Water Code section 13142.5(b) to minimize the intake and mortality of marine life. The new or expanded ocean desalination facility will use the "best available site, design, technology, and mitigation measures feasible." In addition, the project proponent will comply with the California Coastal Act through consultation with the

California Coastal Commission and the local city/county planning department (as necessary) as part of the Coastal Development Permitting process.

ii. Desalination Facilities WQ Mitigation Measures (7.22 MM-WQ-a–j: D4)

4. **Groundwater Wells and Groundwater Storage and Recovery WQ Mitigation Measures** (7.22 MM-WQ-a–j: C)

5. **Reduce Bird Collisions with Overhead Power Lines** (7.22 MM-BIO-a–f: B10)

6. **Maintenance Activities:** Comply with all applicable Construction BIO Mitigation Measures (CMM-BIO-a–f) and Herbicide and Pesticide Use (CMM-HAZ-a–h: 4) when conducting maintenance activities, especially for work on or near waterbodies.

D. Other Construction Projects BIO Mitigation Measures

1. **Wildlife Escape Measures:** Two types of wildlife escape could be used for lined canals: A standard method would be to construct escape ramps on the sidewalls of the canal at intervals of 1,000 feet or more. Because of the spacing, wildlife would be exposed to fatigue and injury attempting to escape while floating between ramps. Deflector cables might be needed to channel swimming wildlife to the ramp. Another method would be to develop slipform ridges while placing the concrete lining. The ridges typically would be placed at 18-inch intervals on both sides of the canal and protrude 1.5 inches from the canal sideslope. Deflector cables would be added upstream from each drop structure to channel swimming wildlife to the sides of the canal.

2. **Wildlife Passage at Aboveground Pipelines:** Where aboveground pipelines may be constructed to replace unlined canals, design/construct pipelines to provide reasonable opportunities to wildlife for crossing under or over pipelines. Crossing placement will consider wildlife habitat corridors and attempt to maintain movement corridors for species expected to occur. Data sources, including preconstruction surveys (see CMM-BIO-a–f: 2), vegetation/topographical maps, and LIDAR (i.e., light detection and ranging remote sensing method) may inform these decisions and influence the location of the crossing(s).

3. **Avoid, Minimize, or Compensate for Impacts on Sensitive Natural Communities** (CMM-BIO-a–f: 3) (i.e., potential impacts on riparian and other sensitive natural communities or wetland vegetation due to the reduction or elimination of water seepage from unlined canals).

H3.3.5 Cultural Resources Mitigation Measures

7.22 MM-CUL-a–d: Mitigate impacts on cultural resources

Entities or agencies designing and/or approving new or modified facilities will implement or require the following.

A. Construction CUL Mitigation Measures (CMM-CUL-a–d)

1. **Regulatory Compliance:** Conduct construction activities in compliance with all applicable federal, state, and local laws and regulations, including but not limited to, the National Historic Preservation Act (54 U.S.C. § 300101 et seq.); Antiquities Act (16 U.S.C. §§ 431–433); Archaeological Resources Protection Act (16 U.S.C. §§ 470ee–470mm); Native

American Graves Protection and Repatriation Act (25 U.S.C. § 3001 et seq.); CEQA and the State CEQA Guidelines (Pub. Resources Code, § 2100 et seq., §§ 21083.2–21084.1; Cal. Code Regs., tit. 14, § 1500 et seq.); Pub. Resources Code sections 5020–5029 and 5097 et. seq.; Health and Safety Code section 7050 et seq.; and any relevant local general plan.

2. Preconstruction Surveys for Historical, Archaeological, and Paleontological Resources; Cultural Landscapes; and Traditional Cultural Properties: Conduct cultural resources surveys, subsurface investigations, and other research to determine whether early Native American and post-contact-era archaeological resources, cultural landscapes, or traditional cultural properties in the project area are eligible for listing in the CRHR.

3. **Cultural Resources Management Plan:** Prior to the start of any ground-disturbing activities, a qualified archaeologist will be retained (per the Secretary of the Interior's Professional Qualification Standards) to prepare a comprehensive site-specific CRMP. The purpose of the CRMP is to document the actions and procedures to be followed to ensure avoidance or minimization of impacts on cultural resources consistent with CEQA Guidelines section 15126.4(b), and to develop a detailed program of mitigation for direct and indirect impacts on cultural resources during project implementation.

   The CRMP will include, but is not limited to, the following measures.

   i. A description of the roles and responsibilities of cultural resources personnel, and the reporting relationships between project construction management and the mitigation and monitoring team, including lines of communication and notification procedures.

   ii. Prescribed actions to be taken in the event that cultural resources are inadvertently discovered during construction, or known resources are affected in an unanticipated manner.

   iii. Specific measures to be taken to avoid impacts on significant cultural resources, such as the designation of environmentally sensitive areas.

   iv. Artifact collection, retention/disposal, and curation policies, including a statement that all cultural materials retained will be prepared in accordance with the requirements of an identified, qualified curatorial facility.

   v. Conform to the Secretary of the Interior's Standards for Rehabilitation and Guidelines for Rehabilitating Historic Buildings (36 C.F.R. pt. 67) in the event of relocation. If any historic buildings, structures, or levees are relocated or altered, the lead agency must ensure that any changes to significant buildings or structures conform to these standards.

   vi. If eligible or significant resources cannot be avoided and would be affected by a project, complete appropriate documentation, archival practices, and communication with the NAHC and Native American community, depending on project-specific circumstances.

4. **Unanticipated Discovery Measures:** Construction will stop within a 50-foot radius of any archeological, paleontological, or historical resources discovered during construction activities, and treatment measures will be devised as needed. A qualified archaeologist or other qualified cultural or paleontological resources specialist will be brought on site within 24 hours of the discovery. If the specialist determines the find is significant, a full archaeological survey will take place. Construction activities in the area would resume once the survey is completed.

If human remains are discovered and become exposed, follow procedures under Health and Safety Code, section 7050.5, and Pub. Resources Code, section 5097.9. If the human remains occur on lands owned and administered by a federal agency, the provisions of the Native American Graves Protection and Repatriation Act will apply.

5. **Oversight and Monitoring of Construction Activities:** Require a qualified professional cultural or paleontological resources specialist (per the Secretary of the Interior's Professional Qualification Standards) trained to identify paleontological, archaeological, and built environment resources in a construction setting during project ground-disturbing activities if significant cultural or paleontological resources are known to exist on the project site or if there is a high probability for significant cultural or paleontological resources to exist.
6. **Worker Cultural Resources Sensitivity Training:** A worker cultural resources sensitivity program will be implemented for the project. Prior to any ground-disturbing activity, an initial sensitivity training session will be provided to all project employees, contractors, subcontractors, and other professionals prior to their involvement in any ground-disturbing activities. The sensitivity program will address the cultural (Native American, archaeological, and paleontological) sensitivity of the project site; and a tutorial will provide information on how to identify these types of resources; appropriate behavior, worker access routes and restrictions, specific procedures to be followed in the event of an inadvertent discovery per the CRMP, and consequences in the event of noncompliance.
7. **Dust Control Measures** (CMM-AQ-a–e: 3)
8. **Construction NOI Mitigation Measures: Noise-Reduction Measures** (CMM-NOI- a,b,d–f: 2) and **Vibration-Reduction Measures** (CMM-NOI- a,b,d–f: 3)
9. **Construction Site Security** (CMM-HAZ-a–h: 7)
10. **Construction AES Mitigation Measures: Project Siting and Design** (CMM-AES-a–d: 1) and **Screen Construction Areas** (CMM-AES-a–d: 2)

B. Reservoirs and Points of Diversion CUL Mitigation Measures

1. **Historic Dams and Structures:** For reservoir expansion projects affecting an existing dam, determine whether the dam is eligible for listing in the CRHR treatment of historic dams and structures under Pub. Resources Code section 21084.1 and California Code of Regulations section 15064.5 subdivision (a). A cultural resource management strategy for recording and evaluating dams or structures will be conducted prior to any modifications. This includes a records search of the area; a field recordation of the dam and any associated historical structures on California Department of Parks and Recreation series 523 forms, specifically 523B (building, structure, or object) and/or 523E (linear resource); and submission of these materials and any nominating materials to the State Historical Resources Commission of the California Office of Historic Preservation.
2. **Project Planning**: Preproject planning for reservoir and dam projects requires consideration of a wide variety of technical, environmental, social, political, and economic issues, including environmental feasibility. A project design may provide opportunities for historic preservation such as leaving portions of an existing historic structure or avoidance altogether. Consider postconstruction interpretive features to educate the public on the cultural and historical aspects of the project.

3. **Coordination with General or Resource Management Plan**: Coordinate with relevant general plan (private land) or resource management plan (public land), including provisions for inventory, evaluation, research, and interpretation of cultural resources. Plans will contain site management measures, training for all operations and maintenance staff, and routine monitoring of known cultural resources. Implement any relevant HPMP or CRMP to meet the requirements of section 106 of the NHPA for projects on federal lands, and to coordinate historic preservation reviews in conjunction with other aspects of a project.
4. **Monitoring of Dredging:** If dredging of reservoir sediment may exceed the depth of the historical flood deposits and encounter native sediment, dredging will be monitored by a qualified archaeologist and paleontologist. If this occurs and archaeological and/or paleontological materials are observed, dredging in proximity of the discovery will be diverted until a qualified archaeologist and/or paleontologist evaluates the discovery.

H3.3.6 Energy and Greenhouse Gas Emissions Mitigation Measures

7.22 MM-EN-b/GHG-a, b: Mitigate energy and GHG emissions impacts

Entities or agencies designing and/or approving new or modified facilities will implement or require the following.

A. Construction EN/GHG Mitigation Measures (CMM-EN-b/GHG-a,b)

1. **Regulatory Compliance:** Comply with the legislative mandates of the State of California for the reduction in statewide GHG emissions, including Senate Bill 32 and Executive Order S-3-05 and Executive Order B-55-18. Comply with any relevant regional or local plan, policy, or ordinance addressing GHG emissions.
2. **GHG Emission Reduction Measures:** Construction BMPs and onsite measures to reduce GHG emissions will be implemented and will include, but not be limited to, the following.
    i. Preserve known GHG sinks to the extent feasible and limit GHG sources as a component of project design.
    ii. Implement the most recent applicable air quality management district guidance and local air district controls to reduce criteria pollutant emissions and to minimize GHG emissions.
    iii. Use electric or hybrid-electric off-road construction equipment and vehicles instead of diesel-powered. Use vehicles that use alternative fuels.
    iv. Design and construct the project to be energy-efficient according to Cal. Code Regs., title 24, Part 6 (*Energy Efficiency Standards for Residential and Nonresidential Buildings*).
    v. Use at least 10 percent of building materials that are locally manufactured.
    vi. Divert and recycle or salvage non-hazardous construction and demolition waste.
    vii. Minimize the amount of concrete for paved surfaces and use a low-carbon concrete option.
    viii. Minimize tree removal and mitigate indirect GHG emissions increases that occur due to vegetation removal, loss of sequestration, and soil. When onsite preservation is not

feasible, replace onsite trees, or contribute to a mitigation program providing carbon storage. Implement a tree-planting program to sequester an amount of GHG emissions equal to direct emissions produced during construction. Develop the program per the principles of CARB's *Compliance Offset Protocol Urban Forest Projects* (CalEPA and CARB 2011).

ix. When generators must be used, consider use of alternative fuels, such as propane or solar.

x. Minimize idling time by requiring that equipment be shut down after 5 minutes when not in use (Cal. Code Regs, tit. 13, § 2485). Provide clear signage that posts this requirement for workers at the entrances to the site.

xi. Maintain all construction equipment in proper working condition and perform all preventive maintenance. Required maintenance includes compliance with all manufacturer's recommendations, proper upkeep and replacement of filters and mufflers, and maintenance of all engine and emissions systems in proper operating condition. Maintenance schedules will be detailed and clearly posted for workers prior to commencement of construction.

xii. Implement a tire inflation program on each jobsite to ensure that equipment tires are correctly inflated. Check tire inflation when equipment arrives onsite and every 2 weeks for equipment that remains onsite. Check vehicles used for hauling materials offsite weekly for correct tire inflation.

xiii. Develop a project-specific ride share program to encourage carpools, shuttle vans, transit passes, and/or secure bicycle parking for construction worker commutes.

xiv. Reduce electricity use in temporary construction offices by using high-efficiency lighting and requiring that heating and cooling units be Energy Star compliant. Require that all contractors implement procedures for turning off computers, lights, air conditioners, heaters, and other equipment each day at close of business, wherever feasible.

3. **Construction AQ Mitigation Measures: Regulatory Compliance** (CMM-AQ-a–e: 1), **Emission Reduction Measures** (CMM-AQ-a–e: 2), and **Minimize Construction-Related Traffic and Equipment Use** (CMM-AQ-a–e: 7)

B. Regulatory Compliance: Adhere to all applicable state and federal energy efficiency standards, including title 24, part 6 of the California Code of Regulations (*Energy Efficiency Standards for Residential and Nonresidential Buildings*). Entities that implement actions requiring increased operation of stationary source equipment (e.g., diesel pumps) will comply with all applicable local policies and regulations regarding air quality. (See also CMM-EN-b/GHG-a,b: 1 [*Regulatory Compliance*].)

C. Reservoirs and Points of Diversion EN/GHG Mitigation Measures

1. **Regulatory Compliance** (7.22 MM-EN-b/GHG-a,b: B)

2. **Project Design:** Design project to minimize energy consumption. For example, locate project to reduce conveyance distances where possible and use gravity rather than pumps. Where pumps are required, use energy-efficient pumps to transport water. The U.S. Department of Energy standards for energy-efficient equipment in 10 C.F.R.431.462 (*Energy Efficiency Program for Certain Commercial and Industrial Equipment,* subpart Y. *Pumps*)

establishes energy efficiency standards for clean water pumps. Where feasible, incorporate hydropower facilities to power the energy needs of conveyance pumping and delivery, as well as building maintenance.

3. **GHG Reduction Plan:** Prepare and implement a GHG reduction plan for project construction and operation. The purpose of the plan is to document direct and indirect GHG emissions due to project construction and operation and the net incremental emissions required to be offset to achieve net carbon neutrality for the project. The plan will include a commitment to incorporate all available feasible energy efficiency, recovery and conservation technologies. The plan will also include a detailed description of the GHG emissions footprint for all operational components of the project based on manufacturer energy usage specification data for each piece of equipment and the most current power system emissions factor available for GHG emissions based on the energy portfolio of the project's electricity provider. Construction- and operations-related GHG emissions will also be analyzed to determine whether these emissions would exceed applicable air district thresholds.

   The reduction plan will include GHG mitigation strategies sufficient to offset project construction and operations (including maintenance) GHG emissions and ensure compliance with state and local plans to reduce GHG emissions. GHG mitigation strategies for construction would include, but not necessarily be limited to, those identified in CMM-EN-b/GHG-a,b: 2 (*GHG Emission Reduction Measures*). Additional GHG mitigation strategies for project construction, operation, and maintenance would include, but not necessarily be limited to, the following (or equivalent) measures.

   i. Minimize the energy demand: Operate the project through implementation of reasonable and feasible design/energy efficiency measures.

   ii. On-site renewable energy use: conduct an analysis to optimize on-site renewable energy use to further reduce GHG emissions based on site layout, environmental factors, and viable technology available.

   iii. Renewable power purchase: procure renewable energy from off-site sources within California.

   iv. Renewable energy certificates: procure and retire renewable energy certificates for projects or activities located in California.

   v. Carbon offsets: If, after analyzing and requiring all reasonable and feasible on-site mitigation measures for avoiding or reducing greenhouse gas-related impacts, the lead agency determines that additional mitigation is required, the agency will consider additional off-site mitigation. The project proponent could, for example, procure and retire carbon offsets in a quantity necessary to achieve net carbon neutrality for the project. Consideration will be given to whether a mitigation ratio should be greater than 1:1 to reflect any uncertainty about the effectiveness of the offset.

4. **Vegetation Removal:** Remove existing vegetation within reservoir inundation footprint prior to inundation (7.22 MM-WQ-a–j: B8ii).

D. Water Treatment Facilities EN/GHG Mitigation Measures

1. **Regulatory Compliance** (7.22 MM-EN-b/GHG-a,b: B)

2. **GHG Reduction Plan** (7.22 MM-EN-b/GHG-a,b: C3)
3. **Project Siting and Design**: Through project siting and design, implement energy efficiency measures for new water and wastewater treatment measures including the following. Consider additional measures identified in *Energy Efficiency in Water and Wastewater Facilities: A Guide to Developing and Implementing Greenhouse Gas Reduction Programs* (USEPA 2013).
    i. Locate project to reduce conveyance distances and use gravity rather than pumps, where feasible. Where pumps are required, use energy-efficient pumps to transport water. The U.S. Department of Energy standards for energy-efficient equipment in 10 C.F.R. 431.462 (*Energy Efficiency Program for Certain Commercial and Industrial Equipment,* subpart Y*. Pumps*) establishes energy efficiency standards for clean water pumps.
    ii. Consider decentralized facilities to reduce energy costs of conveyance.
    iii. Promote efficient use of water in the community served by the treatment facility.
    iv. Fix leaks in distribution system.
    v. Install SCADA software to increase the efficiency of process monitoring and operating control.
    vi. For WWTPs, improve efficiency of aeration equipment, including system controls, energy efficient blowers, and diffuser technologies.

H3.3.7 Geology and Soils Mitigation Measures

7.22 MM-GEO-a–e: Mitigate geology and soils impacts

Entities or agencies designing and/or approving new or modified facilities will implement or require the following.

A. Construction GEO Mitigation Measures (CMM-GEO-a–e)

1. **Regulatory Compliance:** Comply with existing federal, state, and local geotechnical regulations; water quality regulations; building codes (including the current approved version of the International Building Code and the California Building Standards Code); standards; specifications; zoning; and the site-specific recommendations of a geotechnical study prepared for the project.
2. **Project Siting and Design:**
    i. Locate projects away from areas with unsuitable soils or steep slopes.
    ii. During preliminary project design, a detailed site-specific geotechnical investigation of the project area will be performed/prepared by a certified engineer. The geotechnical investigation will include, but not necessarily be limited to, assessment of liquefaction potential, bearing strength of soils, and seismic hazards (including fault displacement). Based on results from the geotechnical investigation, project design measures will be developed and incorporated into the final project design to address any adverse geologic, seismic and/or soil conditions (e.g., expansive soils). The geotechnical

investigation will follow industry standard of practice and use American Society for Testing and Materials standards, where applicable.

Design measures will conform to applicable design codes, guidelines, and standards. At a minimum, the investigation will evaluate the soil potential for expansion, lateral spreading, subsidence, liquefaction, or collapse.

iii. The lead agency will ensure that findings/recommended design measures from the site-specific geotechnical investigation are incorporated into project design and siting to avoid potential adverse seismic effects and adverse soil conditions. The lead agency will ensure that the design specifications are properly executed during construction.

3. **Assurance of No Fault Traces:** A licensed practitioner will certify that no fault traces are present within the footprint of any building intended for human occupancy to be constructed within the Alquist-Priolo Special Studies Zone.

4. **Geology and Soils Management Measures:** Design, implement, and maintain site-specific measures as recommended by a qualified geotechnical professional in areas susceptible to landslides, lateral spreading, subsidence, liquefaction, or collapse.

   i. Implement ground improvements such as soil compaction and excavation and disposal of liquefiable soils.

   ii. Implement structural improvements, such as berms or dikes, to prevent large lateral spreading.

   iii. Stabilize areas susceptible to landslides with buttress fills or other appropriate measures.

   iv. Install special drainage devices and water injection wells.

   v. Monitor groundwater level to ensure stable soil conditions.

5. **Construction WQ Mitigation Measures: Regulatory Compliance** (CMM-WQ-a–j: 1) and **Erosion Control, Sedimentation Control, and Soil Stabilization Measures** (CMM-WQ-a–j: 3)

6. **Septic System Management Measures**: Mitigate impacts associated with soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of wastewater.

   i. Comply with all provisions of the state's *Water Quality Control Policy for Siting, Design, Operation, and Maintenance of Onsite Wastewater Treatment Systems* (SWRCB 2012), as implemented by the applicable regional water board or local county agency in which construction and operation of a septic system is proposed. The design, site evaluation, siting, construction, installation, and operation of the OWTS will be required to comply with all applicable minimum standards.

   ii. Comply with all provisions of the applicable codes for the county or counties in which construction and operation of a septic system is proposed, including the design and installation of septic systems.

   iii. Comply with Health and Safety Code sections 117400–117450, and any other applicable county code regarding cleaning septic tanks, chemical toilets, cesspools, and seepage pits.

7. **Blasting Operations and Safety Plan:** Prior to construction, a blasting operations and safety plan will be prepared and will identify BMPs to be implemented prior to, during, and following any blasting activities to minimize the potential for blasting-related hazards. These BMPs include the following.

    i. The transport and use of explosives for blasting will be conducted according to applicable regulations (e.g., Cal. Code Regs, title 8, article 115, *Transportation of Explosives*, and article 116, *Handling and Use of Explosive Materials in Blasting Operations*) and permits.

    ii. Implement measures to avoid potential hazards related to flyrock, such as the following.

    - Accurately measure the burden for each blast hole and be aware of the true burden for each hole along the free faces.
    - Use adequate stemming and stem through incompetent zones. Use crushed stone for stemming.
    - Place primer lower in the hole, increase delays between rows, reduce burden in back rows.

    iii. Implement measures to minimize fugitive dust due to blasting operations, such as the following**.**

    - Conduct blasting on calm days when wind conditions are suitable (e.g., no strong winds blowing toward sensitive receptors). Wind direction with respect to the nearby residences and other receptors will be considered.
    - Wet ground prior to blasting.
    - Install wind fence(s) for control of windblown dust.

    iv. Implement safety measures to prevent personal injury and fire related to the use of explosives. At a minimum, these measures will include the following.

    - Limit blasting activities to daylight hours.
    - Notify occupants of nearby buildings, stores, residences, places of business, and places of public gathering at least 48 hours in advance of blasting.
    - Use a signaling system to alert workers of an impending blast.
    - Do not locate explosive materials where they may be exposed to flame, excessive heat, sparks, or impact.
    - Conduct all blasting work in compliance with all pertinent fire prevention laws.

    v. Avoid blasting in potential rockslide/landslide areas and consult with a geologist prior to blasting in such areas.

    vi. Implement BMPs to reduce short-term noise and vibration impacts.

8. **Protect Agricultural Soils** (CMM-AG-a-e: 4)

B. Reservoirs and Points of Diversion GEO Mitigation Measures

1. **Regulatory Compliance:** Comply with existing regulatory requirements for the design and construction of new dams or the modification of existing dams. Under California Water

Code, Division 3, Chapter 5, Article 1 (New Dams and Reservoirs or Enlargements of Dams and Reservoirs), applicants must provide DWR, Division of Safety of Dams (DSOD) information about the location, type, size, height, storage capacity, and hydrologic conditions related to the dam.

2. **Project Siting and Design for New or Modified Reservoirs:** Dam foundations, abutments, and appurtenant facilities will adhere to applicable design and operating guidelines and requirements, which include the following.
    i. ASTM International C33 (2018) (standard specifications for aggregate for filters and drains and aggregate use in structural concrete).
    ii. DSOD Emergency Drawdown Criteria (DWR 2018).
    iii. DSOD standards and design review requirements for jurisdictional dams (DWR 2018)
    iv. International Building Code (IBC) (2018). Chapter 16 Structural Design.
    v. USACE 1997 Tunnels and Shafts in Rocks, EM-2-1110-2901.
    vi. USACE 2000 Roller-Compacted Concrete, EM 1110-2-2006.
    vii. USACE 2003 Slope Stability, EM 1110-2-1902.
    viii. USACE 2005 Stability Analysis of Concrete Structures, EM 1110-2-2100
    ix. USACE 2018 Hydrologic Engineering Center, HEC-HMS Hydrologic Modeling System, Version 4.3.
    x. Reclamation 1987 Design of Small Dams.
    xi. Reclamation 1989 Flood Hydrology Manual, First Edition.
    xii. Reclamation 2011 Design Standards No. 13, Embankment Dam Design Standards, Chapter 4: Static Stability Analysis Phase 4 (Final).
    xiii. Reclamation 2011 Design Standards, No. 13, Embankment Dam Design Standards, Chapter 5: Protective Filters Phase 4 (Final).
    xiv. Reclamation 2016 USBR Design Standards No. 6, Hydraulic and Mechanical Equipment, Chapter 12, Trashracks and Trashrack Cleaning Devices.
    xv. Reclamation 1989 Flood Hydrology Manual
3. **Geotechnical Investigations for Dam Foundation and Reservoir Rim:** For new reservoirs, conduct geotechnical investigations, including a seismic hazards study, for reservoir dam(s) and reservoir rim to provide project-specific recommendations for the engineering and final design of all facilities. The investigations for the dam(s) would include geologic reconnaissance and mapping, assessing subsoil and foundation conditions and behavior, physical tests to measure in place the properties and behavior of foundation materials at the dam or reservoir site, and fault trenching. *In situ* testing would also be conducted and would include downhole geophysics, packer testing, and dilatometer use. Piezometers would be installed at select locations to collect data on groundwater depth. These investigations will be adequately distributed over the potential dam site. In addition, laboratory testing of foundation material will be performed and may include, but not necessarily be limited to, tests such as direct shear, unconfined and triaxial compression, sliding friction, tensile strength, natural and dry density, moisture content, grain-size

analysis, and consolidation. An analysis of site-specific probable and credible seismic acceleration values, in accordance with current applicable standards of care, will be performed to provide for suitable project design. In addition, as part of the geotechnical investigations the potential for seeps and springs to develop in areas adjacent to the proposed improvements will be identified and quantified, and appropriate mitigation will be developed and implemented to control seepage. Mitigation of such seepage could include, without limitation, additives to concrete that reduce its permeability, construction of impervious liner systems, and design and construction of subdrainage (passive control) or dewatering systems (active control). Geotechnical investigations for the reservoir rim would include geologic mapping, geophysical investigations, borings, and *in situ* testing (including downhole geophysics and packer testing). The objective of the investigations related to the reservoir rim would be to evaluate seepage and stability. Hydrogeological/geotechnical investigation will be performed by a licensed professional engineer or geologist.

4. **Feasibility Studies:** Evaluate geologic site conditions, including slope stability of the abutments and upstream embankment slopes; streambank stability, determination of the erosion resistance of the dam abutments and foundation for flood flows, subsurface explorations for the design of potential diversion channels or tunnels, and estimation of foundation permeability and groundwater levels for dewatering the site excavations. Potential earthquake loadings and seismic stability will be considered for the retention of any large tower-like structures. Incorporate into engineering designs and construction any special accommodations for geological resources and worker safety. Design the reservoir drawdown rate to avoid inducing any potential landslides along the reservoir margins or a slope failure of an embankment dam. Proceed with project if feasibility analysis verifies that constructing or operating a project will not result in unacceptable consequences.
5. **Sediment Management and Monitoring Plan:** A sediment management and monitoring plan will be required to provide for the natural erosion, or handling and disposal, of both coarse- and fine-grained materials where the impoundment contains large quantities of sediment. During, and for an appropriate period following reservoir drawdown, potentially unstable areas within a reservoir footprint will be monitored for slope instability. If slope failure is observed, an exclusion zone will be established around the unstable area and the areas will be monitored. Slope stabilization measures will be implemented as appropriate. Potential impacts can be offset through appropriate actions such as engineering structural slope improvements (e.g., drilled shafts or other structural elements that could be installed to resist slope movement) and revegetation of affected areas. The plan must provide for removal and/or remediation of unstable or expansive soils as appropriate.

C. Groundwater Wells and Groundwater Storage and Recovery GEO Mitigation Measures

1. **Project Design for Passive Recharge**: To avoid soil erosion during fill and/or due to overflow of passive recharge facilities (e.g., recharge ponds, infiltration basins), project design elements will include, but not necessarily be limited to, the following.
    i. Consideration of site conditions, including soils (e.g., soil texture or classification should be conducive to infiltration), seasonal high groundwater elevation, and topography.
    ii. Design recharge pond, infiltration basin, spreading grounds or equivalent to completely drain between fill events.
    iii. Include energy dissipators at inlet and outlet.

2. **Regulatory Compliance** (7.22 MM-WQ-a–j: C3) for groundwater wells.

D. Water Treatment Facilities GEO Mitigation Measure

1. **Coordination with the California Coastal Commission:** During project siting and design phases, project managers will consult with the California Coastal Commission to help anticipate and avoid any geologic hazards.

H3.3.8 Hazards and Hazardous Materials Mitigation Measures

7.22 MM-HAZ-a–h: Mitigate hazards and hazardous materials impacts

Entities or agencies designing and/or approving new or modified facilities will implement or require the following.

A. Construction HAZ Mitigation Measures (CMM-HAZ-a–h)

1. **Measures for Transport, Use, or Disposal of Hazardous Materials:**

    i. Regulatory Compliance: Comply with all federal, state, and local plans, policies, ordinances, and permit requirements related to the handling, storage, transport, disposal, and accidental spill response for hazardous materials, including the Hazardous Waste Control Law, Cal/OSHA, and Asbestos National Emission Standards for Hazardous Air Pollutants for asbestos removal and disposal for demolition operations.

    ii. Hazardous Materials Storage: All hazardous materials will be stored in secondary containment in a clearly identified and protected area, and all hazardous materials brought onsite will have a Material Safety Data Sheet, that will be made readily available to employees and other personnel at the construction site.

    iii. Spill Prevention and Response Plan: Develop and implement a spill prevention and response plan that will comply with all governmental approvals and applicable local, state, and federal laws and regulations. The plan will include detailed procedures to prevent and respond to hazardous materials spills during construction of the project. At a minimum, the plan will include provisions for immediate response, containment, and cleanup of a spill, including excavation and disposal of contaminated soil at an approved disposal site, and notification responsibilities. Materials needed for potential cleanup activities will be kept on site.

    iv. Procedures for Hazardous Waste Generation and Disposal: Hazardous waste generated at work sites, such as contaminated soil, will be segregated from other construction spoils and properly handled, hauled, and disposed of at an approved disposal facility by a licensed hazardous waste hauler in accordance with state and local regulations. The contractor will obtain permits required for such disposal. The accumulation and temporary storage of hazardous waste will not exceed 90 days. Asbestos encountered as part of demolition activities will be disposed of according to the requirements of both the federal Clean Air Act and Cal/OSHA (Cal. Code Regs., tit. 8, subch. 4, art. 4, § 1529).

    v. Procedures for Hazardous Materials Use near Streams: Storage, use, or transfer of hazardous materials in or near wet or dry streams will be consistent with Fish and Game Code section 5650 and/or with the permission of CDFW.

vi. Waste Management and Material Control Measures (CMM-WQ-a–j: 4)

2. **Project Siting:**

   i. Avoid locating project construction areas within 0.25 mile of an existing or proposed school whenever feasible. If not feasible, provide preconstruction notification to schools within 0.25 mile of construction sites, alerting them of potential uses of hazardous materials and anticipated construction schedule.

   ii. Avoid locating projects on potentially contaminated sites and hazardous materials sites (including sites on the most recent Hazardous Waste and Substances Sites [Cortese] List).

   iii. Prior to beginning construction, project proponents will confirm utility/infrastructure locations through consultation with utility service providers, preconstruction field surveys, and services such as Underground Service Alert to ensure that underground utilities are not affected.

3. **Demolition Measures:**

   i. Characterize and separate hazardous materials from structures before demolition and ensure that such materials are disposed of at an approved disposal site according to applicable regulations. Implement proper handling and disposal procedures for potentially hazardous materials, such as solvents and household or industrial-strength maintenance chemicals and cleaners in buildings to be demolished.

   ii. As applicable, a Cal-OSHA-certified lead-based paint contractor will prepare a site-specific lead hazard control plan with recommendations for the containment of lead-based paint materials during demolition activities, for appropriate disposal methods and locations. Containers suspected of, or confirmed as, containing lead-based paint will be separated from other building materials during the demolition process. Separated paint will be classified as a hazardous waste if the lead content exceeds 1,000 parts per million and will be disposed of in accordance with applicable regulations.

   iii. Hazardous waste, including contaminated soil, generated at demolition sites will be handled, hauled, and disposed of at an appropriately licensed disposal facility under appropriate manifest by a licensed hazardous waste hauler.

4. **Herbicide and Pesticide Use:** Any chemical considered for control of invasive species must adhere to all regulations, be approved for use in California, adhere to all DPR regulations, and be applied by a licensed applicator under all necessary state and local permits. A pest control advisor can ensure that legal, appropriate, and effective chemicals are used with appropriate methodologies. Aquatic pesticides will be applied in compliance with NPDES order(s), where applicable.

5. **Hazardous Materials and Worksite Safety Training:** Provide hazardous materials and work site safety training for construction workers in accordance with local, state, and federal requirements, including but not limited to the Occupational Safety and Health Act, title 9 of C.F.R. and California Code of Regulations title 8.

6. **Emergency Response Plan:** The project proponent will develop and implement an emergency response plan. The emergency response plan will include descriptions of procedures to be implemented to help prevent emergency incidents, to ensure preparedness if these incidents occur and to provide a systematic and orderly response to

emergencies through coordination with emergency response agencies. The emergency response plan will be posted and readily accessible on site and will be coordinated, as applicable, with a traffic management plan (CMM-TRA-a,b,d–f: 2), fire prevention and management plan (CMM-HAZ-a–h: 9), and spill prevention and response plan (CMM-HAZ-a–h: 1iii).

7. **Construction Site Security:** To ensure adequate construction site security where equipment, chemicals, or hazardous conditions may be present, implement the following.
    i. Fence project construction site and install and enable motion-detecting lights.
    ii. Provide 24-hour on-site security personnel. Security personnel will serve as the first line of defense against criminal activities and nuisances at construction sites. Private patrol security operators hired to provide site security will have the appropriate licenses from the California Bureau of Security and Investigative Services. Individual security personnel will have, at a minimum, a security guard registration license that meets the California Bureau of Security and Investigative Services requirements for training and continuation training as required for that license. All security personnel will also receive environmental training similar to that of on-site construction workers so that they understand the environmental conditions and issues (e.g., hazardous conditions, cultural resources present) associated with the various areas for which they are responsible at a given time. At a minimum, the project construction site will be fenced**.**
8. **Construction near Airports:** Where construction occurs within an airport land use plan area, within 2 miles of a public airport or public use airport, or within the vicinity of a private airstrip, the following BMPs will be implemented, at a minimum, to avoid safety hazards for people residing or working in the project area.
    i. Follow applicable requirements of any relevant airport land use compatibility plan relevant to the proposed project site or area.
    ii. If proposed construction is within 2 miles of a private airstrip, coordinate with that airport to ensure that construction activities do not introduce air safety hazards.
9. **Fire Prevention and Management Plan:** A fire prevention and management plan will be developed to address fire prevention and response methods, including fire prevention and management/suppression measures. Coordinate with local, state, and federal fire suppression agencies, as applicable, in development of the plan. The fire prevention and management plan will, at a minimum, require the following BMPs be implemented.
    i. Identify and adhere to local laws, ordinances, and building codes related to fire prevention and protection, burning, welding, and other potentially hazardous activities that could increase the potential for fires in general and for wildland fires; obtain any necessary permits; and adhere to permit conditions.
    ii. Clear or wet areas of construction and demolition (as applicable) containing dried vegetation to prevent wildfires in high-risk areas.
    iii. Prohibit smoking, open flames, or welding in on-site refueling or service areas.
    iv. Maintain an adequate number of fire extinguishers and other tools and equipment that can be used for fighting fire on site and ensure that personnel are trained in their use.

v. If refueling is done on site, turn off vehicle engines during refueling.

vi. Equip all construction vehicles and machinery with functional spark arresters and/or mufflers, where applicable.

vii. Maintain a water tender during extensive welding and cutting operations.

viii. If the project includes blasting activities, include special precautions to minimize the risk of fire related to any explosive materials on the project site.

10. **Asbestos Control Measures** (CMM-AQ-a–e: 5)
11. **Valley Fever Control Measures** (CMM-AQ-a–e: 4)
12. **Blasting Operations and Safety Plan** (CMM-GEO-a–e: 7)
13. **Septic System Management Measures** (CMM-GEO-a–e: 6)
14. **Mosquito Control Measures:** Eliminate standing water to reduce mosquitoes at a construction site. Avoid leaving containers that can accumulate water in an uncovered or upright position. This includes wheelbarrows, drums, buckets, cans, tarps, and other containers. Create holes to drain water from containers. Fill in potholes and other areas where water is likely to accumulate. Routinely remove garbage and other debris. Implement CMM-HAZ-a–h: 4 if pesticide is applied.
15. **Installation and Operation of Underground and Aboveground Storage Tanks:** Conduct design, siting, construction, and operations activities in compliance with all applicable federal, state, and local laws and regulations, including but not limited to, International Fire Code, NFPA codes (NFPA 30, 30A, 303), Uniform Fire Code (Articles 52 and 79), California Fire Code (Cal. Code Regs., tit. 19, div. 1), NPDES (40 C.F.R. pt. 122), U.S. Coast Guard requirements for transferring oil or hazardous materials (33 C.F.R. pt. 154), and USEPA spill prevention control and countermeasure plan requirements (40 C.F.R. pt. 112).
16. **Installation and Maintenance of Plumbing in Public Restrooms:**

    i. Design, site, and construct restroom facilities in compliance with all applicable state and local laws and regulations, including but not limited to, California Plumbing Code (Cal. Code Regs., tit. 24, pt. 5) and applicable municipal code related to sanitary sewer connections.

    ii. Public restrooms and associated infrastructure will be regularly maintained to ensure that toilets and sewage lines are functioning properly at all times.

B. Hazardous Materials Storage: Hazardous material storage areas, including temporary storage areas, will be equipped with secondary containment sufficient in size to contain the volume of the largest container or tank. Incompatible materials will not be stored together.

C. Hazardous Materials Accidental Spill Response Plan: Develop and implement a hazardous materials accidental spill response plan that will outline methods, materials, and responsibilities for the response to, and clean-up of, an accidental hazardous material spill on site. At a minimum, the plans will include provisions for immediate response, containment, and cleanup of a spill, including excavation and disposal of contaminated soil and notification responsibilities. Materials needed for potential cleanup activities will be kept on site. In the

event of a spill, hazardous waste will be disposed of in accordance with applicable federal, state, and local laws and regulations at approved facilities.

D. Hazardous Materials Training: Provide annual hazardous materials training for employees in accordance with local, state, and federal requirements, including but not limited to, the state and federal Occupational Safety and Health Act. Personnel training will include management, awareness, and handling of hazardous materials and hazardous wastes; recognition of existing or potential hazards resulting from accidental spills or other releases; and implementation of evacuation, notification, and other emergency response procedures.

E. Wildfire Prevention Plan: For projects located in areas designated as Very High or High Fire Hazard Severity Zones, prepare and implement a site-specific wildfire prevention plan that, at a minimum, includes the following measures.

1. **Signage:** Install and maintain fire restriction and fire danger signage in locations visible to the public.
2. **Parking Restriction:** Restrict parking to cleared areas away from dry vegetation.
3. **Vegetation Maintenance:** Perform regular vegetation clearance in critical locations to reduce wildfire intensity and rate of spread.
4. **Fire Fighting Equipment:** Provide site operations and maintenance staff with access to a fire extinguisher and other tools and equipment that can be used for fighting fire onsite and will be trained in the use proper use of firefighting equipment.

F. Reservoirs and Points of Diversion HAZ Mitigation Measures

1. **Reservoirs and Points of Diversion WQ Mitigation Measures** (7.22 MM-WQ-a–j: B)
2. **Handling, Storage, and Disposal of Dredged Material** (CMM-WQ-a–j: 4vi)
3. **Hazardous Material Storage** (7.22 MM-HAZ-a–h: B)
4. **Hazardous Materials Accidental Spill Response Plan** (7.22 MM-HAZ-a–h: C)
5. **Hazardous Materials Training** (7.22 MM-HAZ-a–h: D)
6. **Wildfire Prevention Plan** (7.22 MM-HAZ-a–h: E)
7. **Air Safety Mitigation:** For new reservoir projects located within 2 miles of a public airport, implement the following.
    i. Follow applicable requirements of any applicable Airport Land Use Compatibility Plan.
    ii. Implement measures to reduce wildlife attractants near airports and private airstrips, including the following.
        - Avoid creating hazardous wildlife attractants within a distance of 10,000 feet of an Airport Operations Area.
        - Maintain a distance of 5 statute miles between the farthest edge of the Airport Operations Area and hazardous wildlife attractants.
8. **Mosquito Control:** Coordinate with the applicable mosquito and vector control or abatement district regarding ongoing control of larvae and adult mosquitoes. BMPs to be implemented may include the following.

i. Implement monitoring and sampling program to detect early signs of localized increase in mosquito population at project facilities.

ii. Use biological agents such as mosquito fish (*Gambusia affinis*) to limit larval mosquito populations.

iii. Use larvicides and adulticides, as necessary. If larvicides and adulticides are required, prepare a monitoring program for review by fish and wildlife agencies to evaluate potential effects related to application of these pesticides on macroinvertebrates and covered fish species. Pesticide use for mosquito abatement will be conducted by a trained and certified vector control pesticide applicator. Only pesticides approved by both USEPA and DPR will be used.

iv. If pesticide use is required, minimize public exposure to pesticide-treated areas by posting notices adjacent to treatment areas and at public access points for the day of treatment.

9. **Blasting Operations and Safety Plan** (CMM-GEO-a–e: 7)

G. Groundwater Storage and Recovery HAZ Mitigation Measure

1. **Mosquito Control** (7.22 MM-HAZ-a–h: F8)

H. Water Treatment Facilities HAZ Mitigation Measures

1. **Hazardous Materials Business Plan:** Prepare a Hazardous Materials Business Plan that will provide for safe storage, containment, and disposal of chemicals and hazardous materials used in reportable quantities (Health & Saf. Code Div. 20, Ch. 6.95 §§ 25500–25547.8, Article 1). The plan will include a description of the facility, including a site map; an inventory of applicable hazardous materials used and stored onsite, including hazardous materials safety data sheets; and an emergency response and employee training plan. The plan will be submitted to the local Certified Unified Program Agency for approval prior to project construction, and annually thereafter.
2. **Design of On-Site Access and Service Roads:** On-site access and service roads would be designed to minimize transportation hazards and would incorporate the following design features.

   i. On-site access roads would be designed with a minimum width of 24 feet, and service roads would be designed with a minimum width of 16 feet.

   ii. The facility site plan would be designed such that all transport vehicles would have looped access and would not be required to back up at any point during delivery of chemicals. A minimum 60-foot turning radius would be allowed for truck deliveries.

   iii. Onside roadways would provide service access to all sides of the water treatment facility, and chemical delivery would be located away from the center of general operations and visitors.

   iv. Truck traffic would be separated from employee and visitor traffic to the maximum extent possible.

3. **Measures for Transport, Use, or Disposal of Hazardous Materials** (CMM-HAZ-a–h: 1) for operation and maintenance

4. **Herbicide and Pesticide Use** (CMM-HAZ-a–h: 4) for maintenance
5. **Hazardous Materials Storage** (7.22 MM-HAZ-a–h: B)
6. **Hazardous Materials Accidental Spill Response Plan** (7.22 MM-HAZ-a–h: C)
7. **Hazardous Materials Training** (7.22 MM-HAZ-a–h: D)
8. **Wildfire Prevention Plan** (7.22 MM-HAZ-a–h: E)
9. **Water Treatment Facilities WQ Mitigation Measure** (7.22 MM-WQ-a–j: D)
10. **Groundwater Storage and Recovery HAZ Mitigation Measure** (7.22 MM-HAZ-a–h: G)

I. Other Construction Projects HAZ Mitigation Measure

1. **Wildfire Prevention Plan** (7.22 MM-HAZ-a–h: E)

H3.3.9 Hydrology and Water Quality Mitigation Measures

7.22 MM-WQ-a–j: Mitigate impacts on hydrology and water quality

Entities or agencies designing and/or approving new or modified facilities will implement or require the following.

A. Construction WQ Mitigation Measures (CMM-WQ-a–j)

1. **Regulatory Compliance:**
    i. Obtain and comply with all necessary permits and regulations related to waste discharge, including but not limited to, regional water board waste discharge requirements. For construction and land disturbance activities on sites larger than 1 acre, comply with State Water Board Order No. 2022-0057-DWQ (Construction General Permit), which regulates stormwater discharges from construction sites. This permit requires development of a SWPPP, which includes preconstruction and postconstruction BMPs to limit the discharge of pollutants in stormwater runoff. The BMPs would address all land- and water-based construction activities; excavation, grading, placement/removal of in-channel material; hazardous materials and waste containment and disposal procedures; and spill prevention, response, and cleanup procedures. The plan also would describe BMP inspection, monitoring, and maintenance procedures.
    ii. Obtain Clean Water Act section 404 permit and 401 water quality certifications, if necessary.
    iii. Obtain a dewatering permit from the regional water board, if necessary. Implement other BMPs as determined necessary by the regulating entity (city, county, or other state agency).
    iv. Water use must be pursuant to a valid water right.
    v. Comply with California Building Code or other applicable state and local regulations to adhere to building standards.
2. **Project Siting and Design:**

i. Preproject assessment, planning, and design activities could include geomorphic surveys and topographic/bathymetric surveys (including evaluation of susceptibility to mudflow).

ii. Locate projects away from areas with unsuitable soils or steep slopes.

iii. Avoid siting roads and other permanent features near streams. New road construction will be outside of waters of the state.

iv. Avoid locating structures in a 100-year flood hazard area, to the extent feasible. If structures must be placed in a 100-year flood hazard area, perform analysis to determine whether the structure could substantially impede or redirect flood flows. If so, determine whether redesign could improve flood conveyance. To mitigate exposure to loss due to flooding, purchase flood insurance and strengthen levees if appropriate (e.g., if nearby levees are weak or project work will directly affect a levee).

v. Avoid locating projects in areas subject to seiche or tsunami.

vi. Limit any construction activities within a floodplain but above the ordinary high-water line to those actions that can adequately withstand high river flows without resulting in inundation of and entrainment of materials in flood flows.

3. **Erosion Control, Sedimentation Control, and Soil Stabilization Measures:**

i. Minimize Potential for Erosion through Project Design: Evaluate the project site and upgradient and downgradient areas for erosion potential. Locate projects away from areas with unsuitable soils or steep slopes. During construction, maintain vegetation to minimize or prevent loss of topsoil. Remove vegetation only when necessary and make every effort to conserve topsoil for reuse in revegetation of disturbed areas.

ii. Stabilize and Revegetate Disturbed Soil: Stabilize and revegetate all disturbed soil surfaces before the beginning of the rainy season. Establish native and annual grasses or other vegetative cover on construction sites immediately upon completion of work causing disturbance.

iii. Erosion Control BMPs: Implement measures to prevent soil or sediment loss. Implement general erosion control measures, such as use of hydraulic mulch, straw, polyacrylamide, temporary and permanent seeding, soil stabilizers, binders, fiber rolls or blankets, temporary vegetation, earth dikes, drainage swales, and velocity dissipation devices. Other standard measures include prevention of runoff from construction equipment wash-down areas; installation of sediment basins and traps in conjunction with grading operations; development of slope drains; stabilization of streambanks; and installation of silt fences, gravel bag berms, sandbag barriers, storm drain inlet protection, and check dams. Monitor measures for effectiveness and maintain measures throughout the construction operations and between construction seasons.

iv. Perimeter Controls: Implement erosion control measures for the construction site perimeter, installing silt fences or placing straw wattles below slopes. Place gravel bags, silt fences, and other erosion containment along the edge of all work areas to contain particulates prior to contact with receiving waters.

v. Turbidity BMPs: Apply BMPs to minimize turbidity for construction activities in or adjacent to channels, such as the use of silt curtains, cofferdams, environmental dredges, erosion control on all inward levee slopes, and various levee-stabilization techniques—

including revegetation for long-term construction sites. Apply bank stabilization BMPs, as needed, for any in-channel construction, such as maintenance of a 100-foot vegetative or engineered buffer between the construction zone and surface waterbody. Implement turbidity monitoring during construction to maintain compliance with basin plan water quality objectives.

vi. Construction Timing: Limit any construction activities within an area of the ordinary high-water line of drainages and lakes to the dry season.

4. **Waste Management and Material Control Measures:**

i. Staging and Stockpile Management: Staging, storage, and stockpiling will occur on access roads or other previously disturbed upland areas, such as developed areas, paved areas, parking lots, areas with bare ground or gravel, and areas clear of vegetation, to avoid aquatic habitats and limit disturbance to surrounding habitats. Construction stockpiles will be covered to prevent blow-off or runoff during weather events, and concrete and scrap drywall and stucco materials will be covered when stored outside and potentially exposed to rain.

ii. Equipment Maintenance and Materials Storage: Vehicle traffic will be confined to existing roads and the proposed access route(s). All machinery must be in good working condition, showing no signs of fuel or oil leaks. Oil, grease, or other fluids will be washed off at designated wash stations, prior to equipment entering the construction site. Inspect and evaluate daily during construction for the potential of fluid leakage. No equipment refueling or fuel storage will take place within 100 feet of a body of water. All fuel and chemical storage, servicing, and refueling will be done in an upland staging area or other suitable location (e.g., barges) with secondary containment to prevent spills from traveling to surface water or drains. Project proponents will establish staging areas for equipment storage and maintenance, construction materials, fuels, lubricants, solvents, and other possible contaminants in coordination with resource agencies. Staging areas will have a stabilized entrance and exit and will be located in upland areas and at least 100 feet from bodies of water as site-specific circumstances allow. Fluids will be stored in appropriate containers with covers and properly recycled or disposed of offsite. Machinery stored on site will have pans or absorbent mats placed underneath potential leak areas.

iii. Hazardous Materials Management and Spill Response Plan: Prepare and implement a hazardous materials management and spill response plan to ensure that any hazardous materials are stored at the staging area(s) with an impermeable membrane between the ground and hazardous material and that the staging area is designed in such a way as to prevent the discharge of pollutants to groundwater and runoff water. Use and store hazardous materials, such as vehicle fuels and lubricants, in designated staging areas located away from stream channels and wetlands according to local, state, and federal regulations, as applicable. Contaminated sediments would need to be contained and transported to a waste disposal facility engineered and permitted for contaminated sediment. In the event of an accidental spill of hazardous materials, stop work, follow the spill response plan, and arrange for repair and cleanup by qualified individuals of any fuel or hazardous waste leaks or spills. (Wat. Code, § 13271.) Notify regulatory agencies within 24 hours of any leaks or spills. Properly contain and dispose of any

unused or leftover hazardous products off site. Implement measures for transport, use, or disposal of hazardous materials (CMM-HAZ-a–h: 1).

iv. pH Control for In-Water Concrete Use: A dewatering plan, if applicable, will be submitted and approved by State and/or regional water boards for in-water concrete use. Avoid concrete pours during rainy weather and treat pH-impaired stormwater from construction sites in a filter or settling pond or basin, with additional natural or chemical treatment if necessary. Poured concrete will be excluded from contact with surface water or groundwater during initial curing. Confine concrete washing and spoils dumping to a designated location.

v. Trash: All refuse, debris, unused materials, and supplies that cannot reasonably be secured will be removed daily from the project work area and deposited at an appropriate disposal or storage site. All construction debris will be removed from the project work area immediately upon project completion. During project activities all trash will be properly contained within sealed containers, removed from the work site, and disposed of daily.

vi. Handling, Storage and Disposal of Dredged Material: For construction involving dredging, handling, storage, and disposal of dredged materials in accordance with permit requirements. Dredge permits are issued pursuant to several acts and regulations, including section 10 of the Rivers and Harbors Act of 1899 (33 U.S.C. § 401 et seq.) and section 404 of the Clean Water Act. Permits are issued by the regional water board, California State Lands Commission, CDFW, USACE, and USEPA. Other agencies that may participate in the permit process include NMFS and USFWS. Measures will include sediment sampling and testing prior to dredging to assess sediment quality to determine whether any additional precautions are needed for dredging operations, disposal, or beneficial reuse due to the presence of contaminants. Permits will incorporate mitigation strategies to prevent release of contaminants that could degrade water quality.

5. **In-Water Placement of Materials, Structures, and Operation of Equipment:** Material used for bank stabilization will minimize discharge sediment or other forms of waste to waters of the state. Where feasible, construction will occur from the top of the streambank or on a ground protection mat underlain with filter fabric. All materials placed in streams, rivers, or other waters will be nontoxic. Any combination of wood, plastic, cured concrete, steel pilings, or other materials used for in-channel structures will not contain coatings or treatments or consist of substances toxic to aquatic organisms (e.g., zinc, arsenic, creosote, copper, other metals, pesticides, petroleum-based products) that may leach into the surrounding environment in amounts harmful to aquatic organisms.

6. **Stream-Crossing, Culvert, and Bridge Projects:** Design stream-crossing, culvert, and bridge projects to avoid or minimize water quality impacts. Design guidelines may include, but not be limited to the following.

   i. Stream-crossing projects will consider storm-proofing measures presented in the Handbook for Forest, Ranch, and Rural Roads: a Guide for Planning, Designing, Constructing, Reconstructing, Upgrading, Maintaining, and Closing Wildland Roads (Weaver et al. 2015) and any subsequent editions.

ii. Bridges and culverts will be designed to adequately convey flow and materials (e.g., 100-year flood). Culverts will conform to design guidelines for conveyance of the 100-year peak flow and associated sediment and wood. If a bridge/culvert is designed to convey less than the 100-year design flow, the project will demonstrate how the smaller culvert avoids excessive erosion/ sedimentation, headcutting, or habitat impacts.

iii. Road and stream-crossing structures will comply with current NMFS and CDFW fish passage guidelines and utilize stream simulations following NMFS Stream Simulation Design to inform project design. Structures will be designed to provide passage for all life stages of native fish species.

iv. Avoid placement of rock slope protection within the bankfull width of the stream except for the minimum necessary for protection of bridge abutments and pilings, culverts, and other stream-crossing infrastructure.

v. Drivable wet crossings will be appropriately armored on the downstream side to reduce potential for scouring.

7. **Groundwater Protection Measures:** During construction of any project that requires dewatering of groundwater resulting in a negative effect on nearby well yields, implement the following measures.

i. Install sheet piles to reduce the area influenced by shallow groundwater level declines.

ii. If sheet piles are not an option and domestic well fields are affected temporarily, truck in water to satisfy the well-user's needs.

iii. If sheet piles are not effective and the impact on the well yield is substantial such that trucking in water is not economically feasible, deepen the affected well or install a new, deeper well.

iv. Water used for construction must be pursuant to a valid water right, and recycled water will be used during construction where available (CMM-UT-a,c,f,g: 2).

8. **Drainage and Flood Protection Measures:**

i. Prepare a drainage or hydrology and hydraulic study for design of drainage-related features, such as new on-site drainage systems or new cross drainage facilities. Prepare the study in accordance with applicable standards of the FEMA, USACE, DWR, and the appropriate reclamation district, flood control agency(ies), county, and city. Design subsequent drainage features in accordance with the final study and with the applicable standards of the FEMA, USACE, DWR, and applicable flood protection agency. Based on the results of the study, design considerations could include arranging the length of any stockpiles or other construction features in the direction of the floodplain flow to maximize surface flows under flood flow conditions.

ii. Provide cross drainage, replacement drainage paths and facilities, and enlarged flow paths to reroute drainage around, under, or over the project facilities and to restore the function of any affected existing drainage or flow paths and facilities.

iii. Incorporate measures into overall drainage design that maximize infiltration/permeability and trap sediment and pollutants in stormwater runoff.

iv. Provide temporary drainage bypass facilities to reroute drainage around, along, or over the facilities and construction sites. Design the temporary bypass facilities in accordance

with the results and recommendations of a drainage or hydrology and hydraulic study; temporary facilities will be in place and fully functional until long-term facilities are completed.

v. Provide on-site stormwater detention storage at construction and project facility sites to reduce project-caused short- or long-term increases in drainage runoff. Design the storage space placement and capacity based on the drainage or hydrology and hydraulic study.

vi. At instream construction sites that might reduce channel capacity, perform hydraulic studies to evaluate channel capacity and the likelihood of flooding. If necessary, modify project design or install setback levees or bypass channels to maintain channel capacity and to mitigate hydraulic impacts. Where low channel velocities might result from construction, implement a sediment management program to maintain channel capacity.

9. **Construction GEO Mitigation Measures: Blasting Operations and Safety Plan** (CMM–GEO-a–e: 7) to reduce discharges of fugitive dust, soil and other matter into surface waters and **Septic System Management Measures** (CMM-GEO-a–e: 6).

10. **Construction BIO Mitigation Measures** (CMM-BIO-a–f)

11. **Construction HAZ Mitigation Measures: Herbicide and Pesticide Use** (CMM-HAZ-a–h: 4), **Installation and Operation of Underground and Aboveground Storage Tanks** (CMM-HAZ-a–h: 15), and **Installation and Maintenance of Plumbing in Public Restrooms** (CMM-HAZ-a–h: 16)

B. Reservoirs and Points of Diversion WQ Mitigation Measures

1. **Project Planning:** Utilize the P*rinciples, Requirements and Guidelines for Water and Land Related Resources Implementation Studies* (CEQ 2013; CEQ 2014) or other appropriate planning guidance to maximize economic, environmental, and recreational benefits of a project; promote more transparent and informed decision-making; and reduce costs. Any new or modified reservoir and points of diversion would undergo extensive hydrologic modeling of operations and analysis of impacts on the aquatic ecosystem and fish species, water quality, surface water, and water supply.

2. **Feasibility Studies:** Prior to expansion or constructing a new reservoir and/or point of diversion, conduct feasibility studies to evaluate economic justification, environmental compliance, and technical standards. Conduct geomorphic surveys, topographic/ bathymetric surveys (including evaluation of susceptibility to mudflow), seismic studies, geotechnical investigations, and sediment sampling and testing. Perform hydrologic, groundwater, water temperature and other applicable water quality modeling. For a new reservoir, study alternatives including off-stream locations to avoid or minimize ecosystem disruptions (blocking migration and exchange of sediment and nutrients in the stream). Proceed with project only if analyses verify that constructing or operating a project will not result in unacceptable environmental consequences to water quality and legal users of water.

i. **Water Availability Analysis:** In determining the amount of water available for appropriation, the State Water Board must take into consideration the public interest and the relative benefit to be derived from all beneficial uses of the water concerned

(including irrigation, municipal, industrial, recreation, and preservation and enhancement of fish and wildlife resources) and the water quality needed to protect beneficial uses (including preservation of some portion of peak flows for ecosystem processes). The project-specific environmental document will include an evaluation of a range of operating criteria that are consistent with updates to the Bay-Delta Plan.

ii. **Design Criteria:** If the project is determined to be feasible, develop design criteria to minimize environmental impacts. For example, for reservoirs, design the reservoir outlets at multiple elevations to provide flexibility for the depth of releases to limit the release of cyanotoxins and to control water temperature downstream of the reservoir. Reservoir outlets will be designed to safely convey flood flows that could exceed reservoir storage capacity.

3. **Regulatory Compliance:** New or modified reservoir and diversion projects must be developed and implemented in consultation with, and subject to approval from, multiple state and federal agencies. These include the State Water Board, regional water board, and DSOD (See also 7.22 MM-GEO-a–e: B1) for jurisdictional dams; fisheries agencies, including CDFW, NMFS and USFWS, USACE; and the Central Valley Flood Protection Board.

   i. Water Right Approval from State Water Board: A water right application to appropriate water by permit with the State Water Board is required. Consideration of such an application is a discretionary action that requires a determination that unappropriated water is available, a review of potential impacts on public trust resources, and a determination that the appropriation of water is in the public interest.

   ii. Water Quality Certification: Section 401 of the Clean Water Act (33 U.S.C. § 1341) requires any applicant for a federal license or permit for an activity that may result in any discharge to waters of the United States to obtain certification from the state that the project will comply with the applicable water quality requirements, including water quality standards promulgated pursuant to section 303 of the Clean Water Act (33 U.S.C. § 1313). Clean Water Act section 401 directs that certifications will prescribe effluent limitations and other conditions necessary to ensure compliance with the Clean Water Act and with any other appropriate requirements of state law, which includes the Porter-Cologne Water Quality Control Act (Wat. Code, § 13000 et seq.). Since reservoir and point of diversion projects involve water rights, the application for a Water Quality Certification should be submitted to the State Water Board, which will coordinate with the applicable regional water board on its processing.

   iii. Reservoir owners and operators are subject to existing regulatory requirements intended to protect water quality in reservoirs and streams below reservoirs. Consistent with California Fish and Game Code section 5937, cold water flows from reservoirs should be maintained and timed to provide for downstream temperatures at critical times of the year to ensure that fish below dams are kept in good condition. Additional regulatory authorities that protect cold water habitat include FERC license requirements, NMFS biological opinion requirements, regional water board basin plan requirements for the protection of beneficial uses, and State Water Board public trust authority.

   iv. Encroachment Permit: An encroachment permit from the Central Valley Flood Protection Board will be required if a project requires any construction to occur in or near a regulated stream, in a designated floodway, or on any federal flood control

project levee to include the area 10-feet landward of the landside levee toe. Review and endorsement of the project may be required by local maintaining agencies (e.g., reclamation districts), which have the responsibility to maintain project levees (Federal Flood Control Project).

4. **Reservoir Operations and Management Plan:** Develop and implement a reservoir operations and management plan that, at a minimum, incorporates measures to protect and maintain water quality; prevent impacts on instream flows (7.22 MM-WQ-a–j: B5); and manage water operations, including addressing bypass flows and flood control (7.22 MM-WQ-a–j: B6) during reservoir operation. Water quality management measures will address methylmercury (7.22 MM-WQ-a–j: B8), HABs (7.22 MM-WQ-a–j: B9), and aquatic invasive species, as well as dissolved oxygen, water temperature, and other applicable water quality constituents (7.22 MM-WQ-a–j: B7) to minimize downstream water quality effects.
5. **Prevent Impacts on Instream Flows:** If operation of a new or modified reservoir and/or points of diversion could result in hydrology impacts (e.g., by reducing peak flows or reducing flows at certain times of year), the reservoir operations and management plan would include reservoir releases to prevent such impacts. This could include releases to meet Delta water quality and flow objectives or bypassing a portion of flows to preserve downstream ecological functions.
6. **Develop Flood Control Rules:** Hydrologic studies will be performed to determine how much flood control space should be reserved in the reservoir in preparation for and throughout the runoff season. These rules will protect new or modified dams from being overtopped and reduce the likelihood of downstream flooding due to high reservoir releases.
7. **National Management Measures to Control Nonpoint Source Pollution from Hydromodification:** Implement National Management Measures to Control Nonpoint Source Pollution from Hydromodification, including Management Measure 3: Erosion and Sediment Control for the Construction of New Dams and Maintenance of Existing Dams, Management Measure 4: Chemical and Pollutant Control at Dams, and Management Measure 5: Protection of Surface Water Quality and Instream and Riparian Habitat (USEPA 2007). This guidance document provides detailed management practices to apply for each management measure appropriate to the source, location, and climate of a specific project.
8. **Methylmercury Management for New Reservoirs:** The reservoir owner or operator will implement actions to reduce the in-reservoir production of methylmercury to avoid exceeding applicable fish tissue water quality objectives protecting beneficial uses.
    i. Select a reservoir site in a watershed with few or no historical mercury, gold, or silver mines; mercury mineralized zones; or other naturally mercury-enriched areas. If the reservoir site is in a watershed with historical mine sites, (a) remediate actively eroding mine sites and mining waste upstream of the site; and (b) conduct comprehensive soil mercury monitoring of reservoir inundation area and cap or remove contaminated soils prior to filling the reservoir.
    ii. Conduct controlled burns or otherwise remove existing vegetation within the reservoir inundation footprint prior to initial filling of the new reservoir.
    iii. Do not stock high trophic-level fish species.

iv. Implement active reservoir water chemistry and fisheries management to prevent or reduce methylmercury production by means proven feasible and effective. These methylmercury control actions will be informed by methods proven to be effective at other mercury-impaired reservoirs. Implement ongoing monitoring, including aqueous and fish tissue methylmercury, to assess the effectiveness of the control actions.

9. **Harmful Algal Bloom Management for New Reservoirs:** The reservoir owner or operator will implement a water quality monitoring program and HABs action plan to minimize the potential for adverse effects on in-reservoir and downstream beneficial uses. The plan will include visual monitoring for HABs and water quality monitoring for cyanobacteria and cyanotoxins if HABs are suspected. Monitoring will occur monthly or more frequently if HABs are suspected or confirmed. Monitoring for HABs will begin with the initial filling of the reservoir.

   During monitoring, if the presence of cyanobacteria is confirmed, reservoir water samples will be taken for laboratory analysis for cell density and the presence of cyanotoxins (specifically *microcystins, anatoxin-a*, and *cylindrospermopsin*) to determine whether the trigger levels for posting public advisory signs for planktonic (water column) and benthic HABs have been met per the guidance of the California Water Quality Monitoring Council (California Water Quality Monitoring Council 2023). The reservoir operator will coordinate with the State Water Board and the applicable regional water board regarding posting advisory warning signs corresponding to the "Caution," "Warning," or "Danger" trigger level (as applicable based on cell density and cyanotoxin concentration).

   Incorporate reservoir design features, such as release from lower elevation outlet ports to avoid high concentrations of cyanotoxins being released downstream of the reservoir. If HABs become a consistent problem near the reservoir outlet(s), additional measures may be implemented such as oxygenation of the hypolimnion to reduce the release of bottom-sediment nutrients. Reducing reservoir nutrients may reduce the potential for the formation of HABs and/or the production of cyanotoxins at concentrations exceeding the trigger levels.

10. **Construction Timing for a Dam Raise Project:** To avoid potential flooding during construction of a dam raise project, construction will occur during a prolonged period of low storage levels such that there would be no risk of overtopping, or the reservoir will be drawn down to accommodate additional storage during construction of the dam raise.

11. **Dredging Plan:** For projects that involve dredging, develop and implement a dredging plan to ensure that contaminated sediments are contained and transported to a waste disposal facility engineered and equipped to receive contaminated sediment. Dredge permits are issued pursuant to several acts and regulations, including section 10 of the Rivers and Harbors Act of 1899 (33 U.S.C. § 401 et seq.) and section 404 of the Clean Water Act. Permits are issued by the regional water board, California State Lands Commission, CDFW, USACE, and USEPA. Other agencies that may participate in the permit process include NMFS and USFWS. Measures will include sediment sampling and testing prior to dredging to assess sediment quality to determine whether any additional precautions are needed for dredging operations, disposal, or beneficial reuse due to the presence of contaminants. Permits will incorporate mitigation strategies to prevent release of contaminants that could degrade water quality.

12. **Project Siting and Design for New or Modified Reservoirs** (7.22 MM-GEO-a–e: B2)

13. **Geotechnical Investigations for Dam Foundation and Reservoir Rim** (7.22 MM-GEO-a–e: B3)

C. Groundwater Wells and Groundwater Storage and Recovery WQ Mitigation Measures

1. **Well Siting:** Wells must be sited away from septic systems and other pollutant sources in a location where routine maintenance and testing can be performed on a regular schedule. New wells will not be located in groundwater basins already experiencing overdraft unless coordinated with existing SGMA plans or other managed recharge programs. In addition, new wells should not be sited where multiple aquifer zones of varying water quality are cross-connected, particularly in areas underlain by Corcoran clay.
2. **Groundwater Monitoring:** Perform a preproject survey of groundwater wells within the pumping influence area of the intake(s) and assess groundwater elevation and water quality in those wells to establish baseline data. Once the pump is operating, continue monitoring these wells to evaluate whether pumping is causing a measurable and consistent drawdown of local groundwater wells that is distinguishable from seasonal groundwater level fluctuation or measurable changes in groundwater quality. If it is determined that groundwater levels or water quality are being adversely affected by project pumping, the project proponent will coordinate with the well owner(s) to arrange for an interim water supply and begin developing a mutually agreed upon course of action to repair or deepen the affected well(s), restore groundwater yield by improving well efficiency, provide long-term water supply replacement, or construct a new well.
3. **Regulatory Compliance:**
    i. Implement DWR's California Well Standards (Bulletin 74-90), including future updates, as applicable at the time of project implementation. Well construction will be performed by contractors licensed in accordance with the provision of the Contractor's License Law (Chapter 9, Division 3, of the Business and Professions Code) unless exempted by that act.
    ii. For recharge using surface water, a water right is required to capture stream flows, including peak storm events, for groundwater recharge and later beneficial use.
    iii. New groundwater wells require an appropriative or overlying groundwater right and must be coordinated with existing SGMA plans or other managed recharge programs.
    iv. Comply with applicable city or county ordinance establishing groundwater well siting, construction, and maintenance standards.
    v. Obtain permits from local environmental health agencies or local water districts before construction, modification, or destruction of wells.
    vi. For new municipal wells, comply with drinking water standards (CCR title 22, division 4).
    vii. Comply with any applicable NPDES permit for low or limited threat discharges that are issued by the regional water boards for well construction dewatering, including dewatering of excavated material, and disposal of water used for pump testing.

D. Water Treatment Facilities WQ Mitigation Measures

1. **Regulatory Compliance:** Obtain and comply with all necessary permits and regulations related to waste discharge. Discharges to surface water require an NPDES permit that includes technology-based and, where appropriate, water quality-based effluent limitations. Discharges of waste to groundwater or land require WDRs. For drinking water treatment plants, comply with drinking water standards (maximum contaminant loads), in title 22 of the California Code of Regulations. For recycled water, comply with Water Reclamation Requirements for Recycled Water Use (Order WQ 2016-0068-DDW).

   The use and disposal of biosolids will comply with land application and disposal requirements in 40 C.F.R. part 503. Sludge or biosolids that are disposed of in a municipal solid waste landfill or used as daily landfill cover will meet the applicable requirements of 40 C.F.R. part 258. Obtain and comply with WDRs for the land application of biosolids as a soil amendment. New sludge treatment and storage facilities must comply with the requirements of the Water Code and title 27 of the California Code of Regulations.

2. **Groundwater Wells and Groundwater Storage and Recovery WQ Mitigation Measures** (7.22 MM-WQ-a–j: C) (i.e., well siting, groundwater monitoring, and regulatory compliance, if applicable).

3. **Hazardous Materials Business Plan** (7.22 MM-HAZ-a–h: H1), as applicable.

4. **Desalination Facilities WQ Mitigation Measures:**

   i. Comply with the Ocean Plan to ensure the protection of beneficial uses.

   ii. Intakes: Use subsurface intakes unless evaluation determines not feasible. Subsurface intakes will not cause or increase saltwater intrusion into local freshwater aquifers or change groundwater flow in the vicinity. Surface intakes must be screened with a 1.0 millimeter or smaller slot screen when withdrawing seawater or utilize equally protective method of preventing entrainment. Minimize impingement by limiting the through-screen velocity to 0.15 meters per second (0.5 feet per second).

   iii. Outfall: Discharges will not result in dense, negatively buoyant plumes that result in adverse effects due to elevated salinity or hypoxic conditions occurring outside the brine mixing zone. Design outfall structures to minimize the suspension of benthic sediments. If feasible, commingle brine with wastewater (e.g., agricultural, municipal, industrial, power plant cooling water) that would otherwise be discharged to the ocean to meet receiving water limit for salinity. If dilution is not feasible, use multiport diffusers or equally protective technology.

   iv. Mitigation: In addition to minimizing intake and mortality through best available site, design, and technology, the regional water board will ensure that an owner or operator fully mitigates for the operational lifetime of the facility through a mitigation project or fee-based mitigation program.

   v. Monitoring: The owner or operator of a desalination facility must submit a Monitoring and Reporting Plan to the regional water board for approval that includes, at a minimum, monitoring for benthic community health, aquatic life toxicity, hypoxia, and receiving water characteristics consistent for compliance with the receiving water limitations. Receiving water monitoring for salinity will be conducted at times when the monitoring locations are most likely affected by the discharge.

H3.3.10 Land Use Mitigation Measures

7.22 MM-LU-a–c: Mitigate land use impacts

Entities or agencies designing and/or approving new or modified facilities will implement or require the following.

A. Construction LU Mitigation Measures (CMM-LU-a–c)

1. **Regulatory Compliance:** Projects must comply with applicable city and county general plans and other local policies and ordinances. Implement CMM-BIO-a–f: 13 (*Compliance with HCPs and NCCPs*), if applicable. If a project is located on public land, comply with any applicable resource management plan. If a project is located in the Delta, pursuant to the Delta Reform Act, the lead agency will ensure project compliance with the Delta Plan, as applicable (i.e., if the project is a "covered action" as defined by Wat. Code, § 85057.5(a)).
2. **Project Siting and Design:** Site and design projects to avoid or minimize physical division of existing or established communities or residential areas by designing construction facilities and infrastructure to be located underground or with sufficient points of visual and physical access. Examples of methods of minimizing physical division include, but are not limited to, the following actions.
    i. Bury or visually mask construction infrastructure or facilities.
    ii. Restore disturbed landscapes to preconstruction conditions.
    iii. Implement other feasible mitigation to reduce the disturbance to a community's physical composition, visual character, or other features integral to the community's identity.
    iv. Notify all affected persons (for example, residents, property owners, school officials, business owners) in the project vicinity of the construction plans and schedules. This could include arranging schedules for road detours with residents and businesses to maintain access to homes, schools, and businesses, as well as providing protection, relocation, or temporary disconnection of utility services.
    v. Minimize the amount of permanent easement required for construction of facilities and consult with property owners to select easement locations that would lessen property disruption and fragmentation, if applicable.
    vi. Relocate roads prior to project construction to ensure continued access through the project vicinity.
3. **Traffic Management Plan** (CMM-TRA-a,b,d–f: 3)

B. Reservoirs and Points of Diversion LU Mitigation Measures

1. **Feasibility Study**: Land use impacts from new reservoir development must be considered and addressed in a feasibility study, including consideration of existing and future land use designations. The impacts on structures such as bridges and roads affected by new reservoir development must be addressed in the feasibility study, and the project must not result in the physical division of an established community.

2. **Minimize Community Disruption due to Hauling/Disposing of Construction Waste:** Identify off-site locations and haul distances for excavation or other materials and for disposal of waste materials to avoid or minimize disruptions to communities near the project construction site.
3. **Provide Appropriate Land Compensation:** Compensate at the minimum mitigation ratio of 1:1 land required by the applicable local jurisdiction to offset the loss with a preference for land contiguous with other existing open space or agricultural property.
4. **Project Planning** (7.22 MM-TRA-a,b,d–f: B1)
5. **Reservoirs and Points of Diversion REC Mitigation Measures** (7.22 MM-REC-a,b: B).

H3.3.11 Mineral Resources Mitigation Measures

7.22 MM-MIN-a,b: Mitigate impacts on mineral resources

Entities or agencies designing and/or approving new or modified facilities will implement or require the following.

A. Construction MIN Mitigation Measures (CMM-MIN-a,b)

1. **Project Siting and Design:**
    i. Design and locate projects to avoid displacement of and maintain access to active oil and gas wells or aggregate resource sites, to the extent feasible.
    ii. Avoid siting projects on land designated for ongoing or potential mineral extraction, either on a California Geological Survey Mineral Land Classification Map as MRZ-2 or -3 or zoned in a general plan for mining.
    iii. Ensure land use compatibility between existing mineral resource extraction activities and projects, activities, or actions that may be implemented.
    iv. If the project is located in the vicinity of designated MRZ-2 sectors, maintain adequate buffer distance.
    v. Establish designated work areas to ensure that they are not located within a state- or locally designated mineral resource area. Confine construction traffic to designated access roads and staging areas.
2. **Aggregate Use:**
    i. Limit use of construction aggregate to local sources with sufficient capacity to meet both project and future local development needs.
    ii. Use recycled aggregate, where possible, to decrease the demand for new aggregate.
3. **Access to Extraction Sites:** Ensure that access is maintained to existing, active mineral resource extraction sites during project construction.
4. **Implement the California Department of Conservation's Geologic Energy Management Division's (CalGEM) Recommendations:** Implement recommendations identified in CalGEM's Construction Site Well Review Program in coordination with local CalGEM district office.

H3.3.12 Noise Mitigation Measures

7.22 MM-NOI-a–f: Mitigate noise and vibration impacts

Entities or agencies designing and/or approving new or modified facilities will implement or require the following.

A. Construction NOI Mitigation Measures (CMM-NOI-a,b,d–f)

1. **Regulatory Compliance:** Comply with applicable state and local noise policies and regulations. Comply with Cal/OSHA standards related to occupational noise exposure (Cal. Code Regs., tit. 8, § 5096).
2. **Noise-Reduction Measures:** Implement noise-reducing construction measures such that noise from construction does not exceed applicable local noise standards or limits specified in the applicable county or city ordinances and general plan noise elements. Such measures may include the following.
    i. Restrict construction activities near noise-sensitive (e.g., residential) land uses to daytime hours on weekdays.
    ii. Prior to construction, the contractor will identify noise-sensitive receptors near a project site. At least 2 weeks prior to start of construction, the contractor will notify all property owners within 1,000 feet of the project site that construction activities are scheduled to commence.
    iii. Where construction occurs near residences, the contractor will provide local residents with a noise complaint hotline phone number, and noise complaints will be promptly addressed.
    iv. Maintain construction equipment to manufacturers' recommended specifications and equip all construction vehicles and equipment with appropriate mufflers and other approved noise-control devices, and/or use newer equipment with improved noise muffling. Ensure that all equipment items have the manufacturers' recommended noise abatement measures, (e.g., mufflers, engine covers, engine vibration isolators) intact and operational. Newer equipment will generally be quieter in operation than older equipment. Inspect all installation equipment at periodic intervals to ensure proper maintenance and presence of noise control devices (e.g., mufflers, shrouding).
    v. Shroud or shield all impact tools, to the extent feasible.
    vi. Locate all stationary noise-generating equipment (e.g., compressors) as far as possible from adjacent occupied offices, residents, or sensitive habitats (if they are adjacent to the project site).
    vii. Limit idling of construction equipment to reduce the time that noise is emitted.
    viii. Use temporary noise barriers or curtains along construction boundaries or partial enclosures around continuously operating stationary equipment.
    ix. Use the shortest possible routes from construction sites to local freeways for truck delivery routes, except when selecting routes to avoid going through residential neighborhoods.

x. Establish an active community liaison program that notifies landowners within 300 feet of construction areas of the construction schedule, in writing, prior to construction to keep them informed of schedule changes; designate a disturbance coordinator for the construction site.

xi. Monitor construction noise and vibrations and modify and/or reschedule construction activities if monitoring determines that maximum limits set by local or regional noise ordinances are exceeded.

xii. Conduct individual traffic noise analysis of identified haul routes and provide mitigation at locations where noise standards cannot be maintained for sensitive receptors.

3. **Vibration-Reduction Measures:** Measures to limit or minimize exposure of persons to or generation of excessive groundborne vibration or groundborne noise may include the following.

   i. Design projects to limit vibration from construction equipment to comply with the applicable local standards or commonly accepted thresholds.

   ii. Conduct a preliminary groundborne vibration analysis report to determine future construction-related groundborne vibration levels based on, but not limited to, a detailed equipment list, hours of operation, and distances to sensitive receptors located within 500 feet of project sites. If preliminary analysis determines that groundborne vibration would expose sensitive receptors to significant impacts in excess of local standards, implement the following actions.

      - Designate a complaint coordinator and post this person's contact information in a location near construction areas where it is clearly visible to the nearby receptors most likely to be affected.
      - Conduct vibration monitoring before and during vibration-generating operations occurring within 100 feet of historic structures. Make every attempt to limit construction-generated vibration levels during pile driving and other groundborne noise and vibration-generating activities near the historic structures.
      - Cover or shore adjacent historic features, as necessary, for protection from vibrations, in consultation with the appropriate local or state cultural resources authority.
      - For pile driving required within a 50-foot radius of residences, use alternative installation methods where feasible.
      - Conduct any pile-driving activities close to sensitive receptors only during daytime hours.
      - Use small equipment that generates less vibration when equipment must be used close to sensitive uses.

4. **Blasting Operations and Safety Plan (CMM-GEO-a–e: 7):** Implement BMPs to reduce short-term noise and vibration impacts.

5. **Construction near Airports (CMM-HAZ-a–h: 8):** Implement BMPs to avoid safety hazards for people residing or working in the project area.

B. Reservoirs and Points of Diversion, Groundwater Wells and Groundwater Storage and Recovery, and Water Treatment Facilities NOI Mitigation Measures (NOI-a,c,d)

1. **Noise-Reduction Consideration in Project Design and Operations:** Prepare an acoustical study and include noise-reduction measures in project design so that operational noise from stationary equipment does not exceed applicable local noise standards or limits specified in the applicable county or city ordinances and general plan noise elements. Noise-reduction measures to be implemented, as necessary, based on the results of the acoustical study may include using quiet technology and acoustic shielding, locating equipment away from sensitive receptors, outfitting equipment with noise-reduction devices, enclosing pumps and other noise-generating machinery in enclosures that reduce the operating noise, and incorporating dense landscaping to shield operational noise sources.
2. **Operational Truck Traffic Noise:** Design and implement measures to reduce operational truck traffic noise, such as locating haul routes away from sensitive receptors, limiting truck speed, and installing noise barriers near sensitive receptor locations.

H3.3.13 Population and Housing – No Potentially Significant Impacts

H3.3.14 Public Services – No Potentially Significant Impacts

H3.3.15 Recreation Mitigation Measures

7.22 MM-REC-a,b: Mitigate impacts on recreation

Entities or agencies designing and/or approving new or modified facilities will implement or require the following.

A. Construction REC Mitigation Measures (CMM-REC-a,b)

1. **Project Siting and Design:** Site and design construction project to minimize disturbances to or losses of existing recreational areas and associated facilities.
2. **Maintain Access to Existing Recreational Facilities during Construction:** If feasible, maintain access to the affected recreational site/facilities by providing appropriate signage for route relocations, including as appropriate, river markers. Provide additional operations and maintenance of existing recreational facilities to prevent deterioration.
3. **Coordinate with Public and Private Recreation Providers:** If substantial temporary or permanent impairment, degradation, or elimination of recreational facilities causes recreationists to be directed toward other existing facilities, the project proponent will coordinate with affected public and private recreation providers to direct displaced users to under-utilized recreational facilities. Provide temporary replacement facilities of equal capacity and quality.
4. **Rehabilitate or Restore Degraded Recreational Facilities or Provide Replacement Recreational Facilities:** Where impacts on existing facilities are unavoidable, compensate for impacts through mitigation, restoration, or preservation off site or creation of additional permanent replacement facilities. For construction of new recreational facilities, site the

project in area that would have minimal adverse physical effect on the environment. If modification of existing facilities or construction of new facilities is required, implement all construction mitigation measures identified in this section. Facilities with fueling stations or restroom facilities must implement additional construction and operational mitigation measures.

5. **Construction AES Mitigation Measures** (CMM-AES-a–d)
6. **Construction AQ Mitigation Measures** (CMM-AQ-a–e)
7. **Construction WQ Mitigation Measures** (CMM-WQ-a–j)
8. **Construction NOI Mitigation Measures** (CMM-NOI-a,b,d–f)
9. **Construction TRA Mitigation Measures** (CMM-TRA-a,b,d–f)

B. Reservoirs and Points of Diversion REC Mitigation Measures

1. **Project Siting and Design:** Site and design new or modified on-stream and off-stream reservoirs and/or points of diversion to minimize disturbances to or losses of existing recreational areas and associated facilities (e.g., campgrounds, parks, associated roads, marinas) and implement methods to maintain access to adjacent areas or to recreational areas that could be affected by new points of diversion facilities.
2. **Project Planning:** Where unavoidable, the impacts on recreation from reservoir development and new or changed points of division will be considered and addressed in a feasibility study as part of the project planning phase. Include contingency planning for recreation in performance monitoring and adaptive management (up to 5 years) after development and consider transportation impacts and needs associated with recreation facilities.
3. **Coordination with Public Recreation Providers:** For reservoir and/or points of diversion projects that would displace recreationists to other similar facilities (e.g., rivers and adjacent land-based recreation) such that substantial deterioration or accelerated deterioration of those facilities may occur, the project proponent will coordinate with affected public recreation providers to direct displaced users to under-utilized recreational facilities, provide additional operations and maintenance of existing recreational facilities, or otherwise compensate the provider to prevent deterioration or accelerated deterioration of affected facilities.
4. **Compensate for Impacts on Recreational Facilities:** Where long-term impacts on existing facilities are unavoidable, the project proponent will compensate for impacts through mitigation, restoration, or creation of additional new permanent replacement facilities. If modification of existing facilities or construction of new facilities is required, implement all construction mitigation measures identified in this section (H3.3). Facilities with fueling stations or restroom facilities must implement additional construction and operational mitigation measures.
5. **Construction WQ Mitigation Measures** (CMM-WQ-a–j)
6. **Construction BIO Mitigation Measures** (CMM-BIO-a–f)

C. Water Treatment Facilities REC Mitigation Measures

1. **Water Treatment Facilities AQ Mitigation Measures** (7.22 MM-AQ-a–e: C)

H3.3.16 Transportation and Traffic Mitigation Measures

7.22 MM-TRA-a,b,d–f: Mitigate transportation impacts

Entities or agencies designing and/or approving new or modified facilities will implement or require the following.

A. Construction TRA Mitigation Measures (CMM-TRA-a,b,d–f)

1. **Regulatory Compliance:** Comply with all applicable federal, state, and local transportation regulatory requirements, including but not limited to, 23 U.S. Code section 109 and 23 C.F.R. 630, subpart J, *Federal Work Zone Safety and Mobility Regulations*.
2. **Avoid and Minimize Interference with Transportation Networks:** Avoid modifications to federal, state, and county highways; local roadways; and bridges that may reduce vehicle capacity. Avoid and minimize impacts on bicycle and pedestrian circulation by minimizing closures of paths and providing for temporary or permanent relocation of the facility. Consult with the appropriate public works department to determine the most feasible alignment for facility relocation.
3. **Traffic Management Plan:** Prior to construction, and in coordination with applicable transportation entities (Caltrans Permit Department, local jurisdictions, and the California Highway Patrol), prepare a TMP to provide safe and efficient traffic flow during construction. The TMP will identify the project's effects on the surrounding road network, including any necessary closures, diversion routes for traffic and pedestrians, traffic management measures, waiting/loading restrictions, and emergency services access.

   Coordinate the TMP, as applicable, with the project's emergency response plan (CMM-HAZ-a–h: 6), fire prevention and management plan (CMM-HAZ-a–h: 9), and spill prevention and response plan (CMM-HAZ-a–h: 1iii).

   The TMP could include the following measures.

   i. Identify elements (e.g., warning and detour signage) to address traffic control for any street closure, detour, or other disruption to traffic circulation.

   ii. Identify routes that construction vehicles will use to access the site, construction detour routes, and vehicle weight and speed limits on local roads used to access the construction site.

   iii. Locate informational signs along roads directly adjacent to or approaching construction work zones to direct construction traffic regarding ingress and egress points.

   iv. Use signage, striping, fencing, barricades, and other physical structures to minimize pedestrian or bicyclist accidents or disruption of pedestrian or bicycle traffic and to prevent bicyclists and pedestrians from entering the construction area.

   v. Provide notice to transit operators, emergency service providers, businesses, and residences of construction work of any anticipated delays, traffic control measures, temporary road closures, and emergency and evacuation routes.

vi. Identify appropriate emergency access routes and equipment that provide adequate response time.

4. **Restore Damaged Transportation Facilities:** Restore damaged roads and roadway shoulders, public transit facilities, bicycle lanes, or pedestrian facilities to preproject or better conditions during (as needed for public safety) and upon completion of construction.

5. **Waterway Traffic Control Plan:** Prepare and implement a waterway traffic control plan to ensure safe and efficient vessel navigation during construction in or over waterways. The plan will identify vessel traffic control measures to minimize congestion and navigation hazards. Include the following components as appropriate for the project.

   i. Barricade or guard construction areas in the waterway with readily visible barriers or other effective means to warn boaters and to restrict access.

   ii. Where temporary partial channel closure is necessary, identify and implement alternate detour routing and procedures for notifying boaters of construction and partial closures, including coordination with the U.S. Coast Guard, local boating organizations, and marinas.

   iii. Ensure safe boat access to public launch and docking facilities, businesses, and residences, to the extent feasible.

6. **Road and Bridge Design:** Road and bridge projects will be constructed consistent with the latest version of the Caltrans *Highway Design Manual* (7th Edition [Caltrans *Highway Design Manual* (7th Edition) 2022]) or equivalent and will not conflict with any applicable plan, ordinance, or policy related to performance of the transportation system, traffic safety, and/or congestion management of the area in which the project is implemented.

B. Reservoirs and Points of Diversion TRA Mitigation Measures

1. **Project Planning:** Preproject planning for reservoirs and points of diversion requires consideration of a wide variety of technical, environmental, social, political, and economic issues, including environmental feasibility. A project design must take into consideration traffic management during and after construction to minimize impacts on transportation in and around the project site.

2. **Road Design:** Any new or relocated roads, or existing access roads that remain once the new/modified reservoir or point of diversion is built, must be constructed in conformance with applicable road design standards and regulations to avoid hazards (e.g., sharp curves, dangerous intersections) or incompatible uses.

3. **Feasibility Study** (7.22 MM-LU-a–c: B1)

4. **Project Siting and Design** (7.22 MM-REC-a,b: B1)

5. **Project Planning** (7.22 MM-REC-a,b: B2)

H3.3.17 Utilities and Service Systems Mitigation Measures

7.22 MM-UT-a,c–g: Mitigate impacts on utilities and service systems

Entities or agencies designing and/or approving new or modified facilities will implement or require the following.

A. Construction UT Mitigation Measures (CMM-UT-a,c,f,g)

1. **Wastewater Control Measures:**

    i. Obtain and comply with all necessary permits and regulations related to discharging wastewater, including but not limited to, regional water board waste discharge requirements and State Water Board Order No. 2022-0057-DWQ (Construction General Permit), which requires the applicant to address such items as employee wastewater generated during construction and spill containment and clean-up.

    ii. Implement water quality regulatory compliance measures (CMM-WQ-a–j: 1)

    iii. Place portable chemical toilets for the duration of construction. Wastewater will be pumped from these portable toilets and then hauled to and disposed of at permitted facilities in accordance with both county and state regulations.

2. **Water Supply:** Water used for construction must be pursuant to a valid water right or contract with a water provider. If a source of recycled water is available, use recycled water for non-potable construction demand.

3. **Non-Hazardous Solid Waste Disposal:**

    i. Regulatory Compliance: Comply with the California Integrated Waste Management Act (AB 939 [Sher], Statutes of 1989, as amended; Pub. Resources Code, § 41780) for the disposal of nonhazardous solid waste.

    ii. Construction Waste Recycling Plan: Prepare and implement a construction waste recycling plan for reuse/recycling of construction waste. The plan will identify the type of recyclable construction and demolition debris to be recycled (e.g., concrete, steel/metals, cardboard), the method of on-site handling of this debris, and the diversion facility that will receive this recyclable debris. The plan will emphasize source reduction measures, followed by recycling and composting methods, to ensure that construction and demolition waste generated by the project is managed consistent with applicable statutes and regulations. In accordance with the California Green Building Standards Code and local regulations, the plan will specify that all trees, stumps, rocks, and associated vegetation and soils and 50 percent of all other nonhazardous construction and demolition waste be diverted from landfill disposal. The plan will be prepared in coordination with the applicable local waste management district.

4. **Utility Services:** Mitigate impacts of construction that could result in the interruption of utility services.

    i. Coordinate Planned Power Outages: Coordinate any planned power outages, as necessary, and notify potentially affected utility users of temporary loss of electricity.

    ii. Identify Existing Underground Utilities and Telecommunication Lines prior to Excavation: Coordinate with the area utility or service provider to identify existing underground utilities and telecommunication lines at excavation sites prior to construction and avoid or relocate them. Relocate utilities prior to project construction to ensure continued access and utility service through the project area and vicinity. Restore any interrupted/disconnected utility services promptly.

    a. **Site-Specific Drainage Study:** Prior to project design, perform a site-specific drainage study to evaluate existing drainage conditions and inform project design such that

potential environmental impacts from new or expanded stormwater drainage facilities are avoided.

B. Reservoir and Points of Diversion UT Mitigation Measure

1. **Reservoirs and Points of Diversion WQ Mitigation Measures** (7.22 MM-WQ-a–j: B)

C. Groundwater Wells and Groundwater Storage and Recovery UT Mitigation Measure

1. **Groundwater Wells and Groundwater Storage and Recovery WQ Mitigation Measures** (7.22 MM-WQ-a–j: C)

D. Water Treatment Facilities UT Mitigation Measure

1. **Water Treatment Facilities WQ Mitigation Measures** (7.22 MM-WQ-a–j: D)

H3.4 References Cited

Avian Power Line Interaction Committee. 2012. *Reducing Avian Collisions with Power Lines: the State of the Art in 2012*. Edison Electric Institute and APLIC. Washington, D.C.

California Department of Fish and Game (CDFG). 2005a. *California Wildlife Habitat Relationship System Annual Grasslands*. Sacramento, CA.

California Department of Fish and Game (CDFG). 2005b. *California Wildlife Habitat Relationship System Perennial Grasslands*. Sacramento, CA.

California Department of Fish and Wildlife (CDFW). 2008. *California Aquatic Invasive Species Management Plan.*

California Department of Fish and Wildlife (CDFW). 2013. *Aquatic Invasive Species Decontamination Protocol.* October 16.

California Department of Fish and Wildlife (CDFW). 2016a. *Aquatic Invasive Species Disinfection/Decontamination Protocols (Northern Region).*

California Department of Transportation (Caltrans). 2020. *Technical Guidance for Assessment and Mitigation of the Hydroacoustic Effects of Pile Driving on Fish*. October.

California Department of Transportation (Caltrans). 2022. *Highway Design Manual*. 7th Edition

California Department of Water Resources (DWR). 2018. Division of Safety of Dams (DSOD). Last revised: unknown. Available: https://water.ca.gov/Programs/All-Programs/Division-of-Safety-of-Dams. Accessed: October 4, 2018.

California Department of Water Resources (DWR). 2020. *Climate Action Plan. Phase 1: Greenhouse Gas Emissions Reduction Plan. Update 2020.* July.

California Environmental Protection Agency and California Air Resources Board (CalEPA and CARB). 2011. *Compliance Offset Protocol Urban Forest Projects*.

California Invasive Plant Council (Cal-IPC). 2012. *Preventing the Spread of Invasive Plants: Best Management Practices for Land Managers*. 3rd edition.

California Water Quality Monitoring Council. 2023. California Voluntary Guidance for Response to HABs in Recreational Inland Waters. Available: https://mywaterquality.ca.gov/habs/resources/habs_response.html#general_awareness_signs. Accessed: June 7, 2023.

Council on Environmental Quality (CEQ). 2013. *Principles and Requirements for Federal Investments in Water Resources.* March. The White House, President Barack Obama. Accessed: March 18, 2022.

Council on Environmental Quality (CEQ). 2014. *Interagency Guidelines.* Chapter III. The White House, President Barack Obama.

Fisheries Hydroacoustic Working Group (FHWG). 2008. *Agreement in Principle for Interim Criteria for Injury to Fish from Pile Driving Activities.*

Flosi, G., S. Downie, J. Hopelain, M. Bird, R. Coey, and B. Collins. 2010. *California Salmonid Stream Habitat Restoration Manual*. Fourth Edition.

National Marine Fisheries Service (NMFS). 1997. *Fish Screening Criteria for Anadromous Salmonids*. January. Southwest Region.

National Marine Fisheries Service (NMFS). 2018. Endangered Species Act Section 7(a)(2) Biological Opinion, and Magnuson-Stevens Fishery Conservation and Management Act Essential Fish Habitat Response and Fish and Wildlife Coordination Act Recommendations for the NOAA Restoration Center's Program to Facilitate Implementation of Restoration Projects in the Central Valley of California. August 31.

National Marine Fisheries Service (NMFS). 2023. *NOAA Fisheries Guidelines for Salmonid Passage at Stream Crossings*. Southwest Region. Original Issue Date: September 2001. Addendum Issue Dates: September 2019 and February 2023.

Richmond, O., S. K. Chen, B. B. Risk, J. Tecklin, and S. Bessinger. 2010. California Black Rails Depend on Irrigation-Fed Wetlands in the Sierra Nevada Foothills. *California Agriculture* 64 (2):85–93.

Skidmore, P. B., C. R. Thorne, B. L. Cluer, G. R. Pess, J. M. Castro, T. J. Beechie, and C. C. Shea. 2011. *Science Base and Tools for Evaluating Stream Engineering, Management, and Restoration Proposals*. NMFS-NWFSC-112. Accessed: May 9, 2022.

U.S. Environmental Protection Agency (USEPA). 2007. *National Management Measures to Control Nonpoint Source Pollution from Hydromodification.* EPA 841-B-07-002. July

U.S. Environmental Protection Agency (USEPA). 2013. *Energy Efficiency in Water and Wastewater Facilities: A Guide to Developing and Implementing Greenhouse Gas Reduction Programs.*

U.S. Fish and Wildlife Service (USFWS). 2010. *Endangered Species Act Consultation on the Bureau of Reclamation's Proposed Central Valley Project Water Transfer Program for 2010–2011*. March 2. Sacramento, CA.

Weaver, W., E. Weppner, and D. Hagans. 2015. *Handbook for Forest, Ranch, and Rural Roads: a Guide for Planning, Designing, Constructing, Reconstructing, Upgrading, Maintaining, and Closing Wildland Roads*. April. Prepared for Mendocino Resource Conservation District, Ukiah, CA.