

**Delta Plan Ecosystem Amendment
Mitigation Monitoring and
Reporting Program**

Mitigation Monitoring and Reporting Program

Delta Plan Background

In November 2009, the California Legislature enacted Senate Bill X7 1, one of several bills passed at that time related to water supply reliability, ecosystem health, and the Sacramento–San Joaquin Delta (Delta). This new law became effective February 3, 2010. Division 35 of the Water Code (Wat. Code), also known as the Sacramento–San Joaquin Delta Reform Act of 2009 (Delta Reform Act, or Act), requires the development of a legally enforceable, comprehensive, long-term management plan for the Delta, referred to as the Delta Plan. In May 2013, the Delta Stewardship Council (Council) adopted the Delta Plan. The Delta Plan has been amended since adoption.

The fundamental purpose of the Delta Plan is to further achievement of the coequal goals, which are defined in Wat. Code section 85054, and all of the inherent subgoals and policy objectives defined by statute. The Delta Plan contains an integrated and legally enforceable set of policies that serve as a basis for future certifications of consistency with the Delta Plan by State and local agencies with regard to specified “covered actions” as defined in Wat. Code section 85057.5. It also establishes a process by which any person can appeal such certifications to the Council, consistent with the Delta Reform Act and Council regulations. See Wat. Code sections 85225.10(a), 85225.15, 85225.30; Delta Stewardship Council, Administrative Procedures Governing Appeals section I(5).

The Delta Reform Act requires the Council to review the Delta Plan at least once every five years and revise it as the Council deems appropriate (Wat. Code section 85300(c)). When the Delta Plan was adopted, the Council anticipated periodic reviews of the Delta Plan and potential need for updates in response to changing circumstances and conditions in the Delta.

Ecosystem Amendment

The purpose of the proposed amendment to Chapter 4, *Protect Restore, and Enhance the Delta Ecosystem*, of the Delta Plan (proposed Ecosystem Amendment or Proposed Project) is to address a fundamental shift in how conservation is being planned and implemented in the Delta.

The Council, as the California Environmental Quality Act (CEQA) lead agency, prepared a Program Environmental Impact Report (PEIR) for the proposed Ecosystem Amendment in accordance with the requirements of CEQA (Public Resources Code Section 21000 et seq) and the CEQA Guidelines (California Code of Regulations [Cal. Code Regs.], title 14, section 15000, et seq.). As an informational document, the PEIR provides full disclosure to the public and Council of the potential significant environmental effects of the Ecosystem Amendment, and sufficient information to foster informed decision-making by the Council.

Mitigation Measures

Mitigation measures have been adopted and incorporated into the Delta Plan in order to reduce or avoid the significant environmental impacts of the Delta Plan. The Ecosystem Amendment PEIR includes new mitigation measures as well as revisions to applicable mitigation measures that were previously adopted and incorporated into the Delta Plan, as amended April 26, 2018, in order to incorporate updated formatting, best practices, and current standards, as relevant. The revised mitigation measures are equally effective as the previously adopted mitigation measures, and would not result in any new or substantially more severe impacts than the previously adopted mitigation measures.

Mitigation Monitoring and Reporting Program

Public Resources Code section 21081.6(a) and CEQA Guidelines section 15097 require a public agency to adopt a monitoring or reporting program to ensure compliance with the mitigation measures adopted by the agency at the time of project approval. The Council is responsible for making sure that the identified mitigation measures are fully enforceable by adopting and incorporating them into the Delta Plan (Pub. Resources Code section 21081.6(b)). This Mitigation Monitoring and Reporting Program (MMRP) will be used by the Council to ensure compliance with the mitigation measures identified in the Ecosystem Amendment PEIR and adopted and incorporated into the Delta Plan by the Council.

Table 1 presents the Delta Plan Mitigation Measures identified in the Ecosystem Amendment PEIR, which includes new mitigation measures as well as revisions to applicable mitigation measures that were previously adopted and incorporated into the Delta Plan, as amended April 26, 2018. The mitigation measures in Table 1 would continue to be implemented as part of the Delta Plan and would apply to covered actions as required by Delta Plan policy G P1(b)(2) (California Code of Regulations [Cal. Code Regs.] title 23, section 5002(b)(2)). Delta Plan policy G P1(b)(2) specifies that any covered action that is not exempt from CEQA must include either the mitigation measures identified in Table 1 and adopted and incorporated into the Delta Plan, if applicable and feasible; substitute mitigation measures that the proposing agency finds to be equally or more effective; or an explanation of why such mitigation is not feasible.

Monitoring and/or reporting on implementation of these mitigation measures is accomplished through the certification of consistency process required by policy G P1 (Cal. Code of Regs. title 23 section 5002). In the Certification of Consistency Form

submitted to the Council for every covered action, the proposing agency for the covered action must identify the specific mitigation measures for the covered action that correspond to each applicable mitigation measure, or explain why any such measures are not feasible in the context of the specific covered action and describe any substitute mitigation that is equally as effective as the pertinent mitigation measure. In addition, the Council is responsible for reviewing all appeals of a proposing agency's certification that a covered action is consistent with the Delta Plan.

For covered actions that are implemented in response to the Ecosystem Amendment, the implementation and enforcement of Delta Plan Mitigation Measures, or equally effective feasible measures, would be within the responsibility and jurisdiction of public agencies other than the Council. For non-covered actions that are implemented in response to the proposed Ecosystem Amendment, implementation of Delta Plan Mitigation Measures is recommended; however, the implementation and enforcement of mitigation measures for projects that are not covered actions is not within the authority of the Council.

Table 1 contains the following information in tabular format:

Mitigation Measure Number: Lists the mitigation measures by number, as designated in the Delta Plan Ecosystem Amendment PEIR and adopted and incorporated into the Delta Plan, by resource.

Mitigation Measure: Provides the text of the mitigation measures that have been adopted by the Council as designated in the Delta Plan Ecosystem Amendment PEIR, and adopted and incorporated into the Delta Plan, by resource.

Table 1: Delta Plan Ecosystem Amendment PEIR Mitigation Measures

Delta Plan Ecosystem Amendment Mitigation Measure Number	Delta Plan Ecosystem Amendment Mitigation Measure
Aesthetics	
5.2-1	Use non-specular conductors for transmission lines and distribution lines to reduce glare.
8-1(a)	Use compatible colors for proposed structural features, such as intakes, pumping plants, and surge towers. Use earth tone paints and stains with low levels of reflectivity.
8-1(b)	Minimize the vertical profile of proposed structures as much as possible. Where possible, use subgrades for floors of structures. Use landscaped berms instead of walls to mask views of structures from high-visibility sites. Use green roof design where roof structures would be highly visible.
8-1(c)	Use native vegetation plantings on proposed facility walls, such as climbing plants, espaliers, and other forms that soften the appearance of structures.
8-1(d)	Develop a landscaping plan for all proposed structures. Provide vegetative screening to soften views of structures. Landscaping shall complement the surrounding landscape.
8-1(e)	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; plant with more than just grasses.
8-1(f)	Landscape parking areas at proposed facilities, and include low-impact design features, such as permeable pavers, tree basins, and bioswales, that reduce stormwater runoff and enhance visual quality.
8-1(g)	Conduct only partial vegetative clearing of the construction footprint rather than clearing the entire area; partial clearing would leave islands of vegetation and result in a more natural look. Use irregular clearing shapes with feathered edges instead of hard edges to promote a more natural effect. Temporarily disturbed areas shall be restored to pre-construction conditions.
8-1(h)	Develop design form and materials with a goal to achieve compatible aesthetic visual character instead of a strictly utilitarian objective. For example, use cast natural form elements or natural materials for facing to achieve texture and color compatible with the adjacent landscape; and use natural materials for areas of high visibility and public use. Landscape areas adjacent to facilities. Use natural materials, such as wood and stone, for signage at proposed facilities.
8-1(i)	Develop aesthetically consistent landscaping for relocated roads at the shoulders, intersections, and on- and off- ramps from highways. Newly developed roads in high-visibility areas shall incorporate turnouts and scenic viewpoints for the public to access.
8-1(j)	To the extent consistent with the safety and reliability of the electric grid, as well as site-specific considerations, use tubular steel pole or non-specular steel electrical transmission towers instead of lattice-form towers for proposed large electrical transmission lines and specular conductors, and put transmission lines underground along areas with high visibility and high public use.
8-2(a)	Implement elements of Mitigation Measure 8-1 for temporary construction activities and new facilities that are visible from scenic vistas and designated roads and highways as appropriate.

Table 1: Delta Plan Ecosystem Amendment PEIR Mitigation Measures (contd.)

Delta Plan Ecosystem Amendment Mitigation Measure Number	Delta Plan Ecosystem Amendment Mitigation Measure
8-2(b)	Replace all scenic resources (e.g., large trees) that would be removed for the Proposed Project, when feasible. Identify compensatory mitigation for visual or aesthetic resources by providing improvements to areas with existing diminished scenic quality.
8-3	Projects shall utilize angled or shielded exterior lighting and ensure that lighting is directed downward and inward toward the facilities.
Agricultural and Forestry Resources	
7-1(a)	Design proposed projects to minimize, to the greatest extent feasible, the loss of the highest value agricultural land (i.e., Prime Farmland, Farmland of Statewide Importance, and Unique Farmland).
7-1(b)	Design proposed projects to minimize, to the greatest extent feasible, conflicts with land protected by agricultural zoning or a Williamson Act contract and the terms of the applicable zoning/contract. Approaches for minimizing conflicts include siting project components on lands that are consistent with zoning and contract restrictions, while placing other components in areas that would not affect the agricultural lands.
7-1(c)	For projects that will result in permanent conversion of Farmland, preserve in perpetuity other Farmland through acquisition of an agricultural conservation easement, or contributing funds to a land trust or other entity qualified to preserve Farmland in perpetuity (at a minimum target ratio of 1:1, depending on the nature of the conversion and the characteristics of the Farmland to be converted, to compensate for permanent loss).
7-1(d)	For projects that will result in permanent conversion of Farmland, restore agricultural land to productive use through removal of equipment or structures, such that the land can be designated as Farmland, to replace the impacted Farmland at a 1:1 ratio.
7-1(e)	Redesign project features (e.g., cluster project components) to minimize fragmenting or isolating Farmland. Where a project involves acquiring land or easements, ensure that the remaining non-project area is of a size sufficient to allow viable farming operations and continued classification as Farmland. The project proponents shall be responsible for acquiring easements, making lot line adjustments, and merging affected land parcels into units suitable for continued commercial agricultural management.
7-1(f)	Reconnect utilities or infrastructure that serve agricultural uses if these 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 shall be responsible for restoring access as necessary to ensure that economically viable farming operations are not interrupted.
7-1(g)	Manage project operations to minimize the introduction of invasive species or weeds that may affect agricultural production on adjacent agricultural land.

Table 1: Delta Plan Ecosystem Amendment PEIR Mitigation Measures (contd.)

Delta Plan Ecosystem Amendment Mitigation Measure Number	Delta Plan Ecosystem Amendment Mitigation Measure
7-1(h)	Establish buffer areas between projects and adjacent agricultural land that are sufficient to protect and maintain land capability and agricultural operation flexibility. Design buffers to protect the feasibility of ongoing agricultural operations and reduce the effects of construction- or operation-related activities (including the potential to introduce special-status species in the agricultural areas) on adjacent or nearby properties. The buffer shall also serve to protect ecological restoration areas from noise, dust, and the application of agricultural chemicals. The width of the buffer shall be determined on a project-by-project basis to account for variations in prevailing winds, crop types, agricultural practices, ecological restoration or infrastructure. Buffers can function as drainage swales, trails, roads, linear parkways, or other uses compatible with ongoing agricultural operations.
7-3(a)	Avoid protected forestland and timberland through site selection and/or project design.
7-3(b)	When selecting a project site, project proponents shall take into consideration the value of the forest, not only in terms of direct products such as wood but also as part of the watershed ecosystem.
7-3(c)	For projects that will result in permanent conversion of Forestland, project proponents shall acquire, at a fair market value, other forestland that shall be preserved in perpetuity through a conservation easement or contribute funds to a land trust or other agency (at a target ratio of 1:1, depending on the nature of the conversion and the characteristics of the Forestland to be converted, to compensate for permanent loss).
7-3(d)	When removal of existing forestland or timberlands is required as part of an action, project proponents shall acquire the property at fair market value.
Air Quality and Greenhouse Gas Emissions	
9-1(a)	Use equipment and vehicles that are compliant with Air Resource Board (ARB) requirements and emission standards for on-road and off-road fleets and engines. New engines and retrofit control systems shall reduce NOX and PM from diesel-fueled on-road and off-road vehicles and equipment.
9-1(b)	Minimize idling times either by shutting equipment off when not in use or reducing the maximum idling time to 5 minutes (as required by the California airborne toxics control measure Title 13, Section 2485 of California Code of Regulations [CCR]). Clear signage shall be posted for construction workers at all entrances to the site.
9-1(c)	Maintain all equipment in proper working condition according to manufacturer's specifications.
9-1(d)	Use electric equipment when possible. Use lower-emitting alternative fuels to power vehicles and equipment where feasible.
9-1(e)	Use low Volatile Organic Compound (VOC) coatings and chemicals; minimize chemical use.
9-1(f)	Prepare and implement a dust control plan and apply dust control measures at the construction sites.
9-1(g)	To minimize track-out of dirt and mud from dirt and gravel roads, all trucks and equipment, including their tires, shall be washed prior to leaving the site. Only exteriors of trucks and equipment are to be washed (no engine degreasing), no detergents or chemicals shall be used in the wash water, and off-site runoff of rinse water shall be prevented.
9-1(h)	For projects involving land fallowing, land conversion, or other agricultural operations, implement applicable BMPs from agencies such as the U.S. Department of Agriculture Natural Resources Conservation Service to reduce potential dust emissions.

Table 1: Delta Plan Ecosystem Amendment PEIR Mitigation Measures (contd.)

Delta Plan Ecosystem Amendment Mitigation Measure Number	Delta Plan Ecosystem Amendment Mitigation Measure
9-1(i)	<p>BMPs for fallowed lands could include, but are not limited to, the following:</p> <ol style="list-style-type: none"> Implement conservation cropping sequences and wind erosion protection measures, such as: <ol style="list-style-type: none"> Plan ahead to start with plenty of vegetation residue and maintain as much residue on fallowed fields as possible. Residue is more effective for wind erosion protection if left standing. If residues are not adequate, small grain can be seeded about the first of the year to take advantage of the winter rains and irrigated with a light irrigation if needed to get adequate growth. Avoid any tillage if possible. Avoid any traffic or tillage when fields are extremely dry to avoid pulverization.
9-1(j)	Apply soil stabilization chemicals to fallowed lands.
9-1(k)	Reapply drain water to allow protective vegetation to be established.
9-1(l)	<p>Reuse irrigation return flows to irrigate windbreaks across blocks of land including many fields to reduce wind fetch and reduce emissions from fallowed, farmed, and other lands within the block. Windbreak species, management, and layout would be optimized to achieve the largest feasible dust emissions reduction per unit water available for their irrigation. Windbreak corridors would provide ancillary aesthetic and habitat benefits. Project-specific lists of mitigation measures shall include applicable recommendations or requirements of the local air district(s) which a project is located in.</p>
9-1(m)	<p>Basic Construction Mitigation Measures Recommended for ALL Proposed Projects</p> <ol style="list-style-type: none"> All exposed surfaces (e.g., parking areas, staging areas, soil piles, graded areas, and unpaved access roads) shall be watered two times per day. All haul trucks transporting soil, sand, or other loose material off-site shall be covered. All visible mud or dirt track-out onto adjacent public roads shall be removed using wet power vacuum street sweepers at least once per day. The use of dry power sweeping is prohibited. All vehicle speeds on unpaved roads shall be limited to 15 mph. All roadways, driveways, and sidewalks to be paved shall be completed as soon as possible. Building pads shall be laid as soon as possible after grading unless seeding or soil binders are used. Idling times shall be minimized either by shutting equipment off when not in use or reducing the maximum idling time to 5 minutes (as required by the California airborne toxics control measure Title 13, Section 2485 of California Code of Regulations [CCR]). Clear signage shall be provided for construction workers at all access points. All construction equipment shall be maintained and properly tuned in accordance with manufacturer's specifications. All equipment shall be checked by a certified visible emissions evaluator. Post a publicly visible sign with the telephone number and person to contact at the lead agency regarding dust complaints. This person shall respond and take corrective action within 48 hours. The Air District's phone number shall also be visible to ensure compliance with applicable regulations.

Table 1: Delta Plan Ecosystem Amendment PEIR Mitigation Measures (contd.)

Delta Plan Ecosystem Amendment Mitigation Measure Number	Delta Plan Ecosystem Amendment Mitigation Measure
9-1(n)	Additional Construction Mitigation Measures Recommended for Projects with Construction Emissions Above the Threshold
	i. All exposed surfaces shall be watered at a frequency adequate to maintain minimum soil moisture of 12 percent. Moisture content can be verified by lab samples or moisture probe.
	ii. All excavation, grading, and/or demolition activities shall be suspended when average wind speeds exceed 20 mph.
	iii. Wind breaks (e.g., trees, fences) shall be installed on the windward side(s) of actively disturbed areas of construction. Wind breaks should have at maximum 50 percent air porosity.
	iv. Vegetative ground cover (e.g., fast-germinating native grass seed) shall be planted in disturbed areas as soon as possible and watered appropriately until vegetation is established.
	v. The simultaneous occurrence of excavation, grading, and ground-disturbing construction activities on the same area at any one time shall be limited. Activities shall be phased to reduce the amount of disturbed surfaces at any one time.
	vi. All trucks and equipment, including their tires, shall be washed off prior to leaving the site.
	vii. Site accesses to a distance of 100 feet from the paved road shall be treated with a 6- to 12-inch compacted layer of wood chips, mulch, or gravel.
	viii. Sandbags or other erosion control measures shall be installed to prevent silt runoff to public roadways from sites with a slope greater than one percent.
	ix. Minimizing the idling time of diesel powered construction equipment to two minutes.
	x. Develop a plan demonstrating that the off-road equipment (more than 50 horsepower) to be used in the construction project (i.e., owned, leased, and subcontractor vehicles) would achieve a project wide fleet-average 20 percent NOx reduction and 45 percent PM reduction compared to the most recent ARB fleet average. Acceptable options for reducing emissions include the use of late model engines, low-emission diesel products, alternative fuels, engine retrofit technology, after-treatment products, add-on devices such as particulate filters, and/or other options as such become available.
	xi. Use low VOC (i.e., reactive organic gases or ROG) coatings beyond the local requirements (i.e., Regulation 8, Rule 3: Architectural Coatings).
	xii. Requiring that all construction equipment, diesel trucks, and generators be equipped with Best Available Control Technology for emission reductions of NOx and PM.
	xiii. Require all contractors to use equipment that meets ARB's most recent certification standard for off-road heavy duty diesel engines.

Table 1: Delta Plan Ecosystem Amendment PEIR Mitigation Measures (contd.)

Delta Plan Ecosystem Amendment Mitigation Measure Number	Delta Plan Ecosystem Amendment Mitigation Measure
9-3(a)	<p>The Air Quality Technical Report prepared for the Proposed Project shall evaluate human health risks from potential exposures of sensitive receptors to substantial pollutant concentrations on a project-specific basis. The need for a human health risk analysis shall be evaluated using approved screening tools, and discussed with the local Air Quality Management District (AQMD) or Air Pollution Control District (APCD) at the time of preparation of the Air Quality Technical Report.</p> <p>If the health risk is determined to be significant on a project-specific basis, control measures shall be implemented to reduce health risks to levels below the applicable air district threshold.</p>
9-3(b)	<p>Implementation of one or more of the following requirements, where feasible and appropriate would reduce the effects of Impact 9-3a, Construction or Operation of Projects Would Expose Sensitive Receptors to Substantial Pollutant Concentrations:</p> <ul style="list-style-type: none"> i. Implement Mitigation Measure 9-1 to reduce air emissions and air quality impacts from construction and operations of the Proposed Project. ii. Use equipment with diesel engines designed or retrofitted to minimize DPM emissions, usually through the use of catalytic particulate filters in the exhaust. iii. Use electric equipment to eliminate local combustion emissions. iv. Use alternative fuels, such as compressed natural gas or liquefied natural gas.
9-3(c)	<p>If the project would result in significant emissions of airborne, naturally occurring asbestos or metals from excavation, hauling, blasting, tunneling, placement, or other handling of rocks or soil, a dust mitigation and air monitoring plan shall be required to specify site-specific measures to minimize emissions and that airborne concentrations of the toxic air contaminants (TACs) of concern do not exceed regulatory or risk-based trigger levels.</p>
21-1	<p>Implement GHG mitigation measures listed in the most recent applicable air district, state, regional, or state-of-the art guidance.</p> <p>In addition, the California Attorney General's Office has developed a list of various measures that may reduce GHG emissions at the individual project level. A selected list of those proposed measures that could be applied to DWR projects was appended to the DWR guidance document, titled <i>Guidance for Quantifying Greenhouse Gas Emissions and Determining the Significance of their Contribution to Global Climate Change for CEQA Purposes</i> (DWR 2010. <i>Guidance for Quantifying Greenhouse Gas Emissions and Determining the Significance of their Contribution to Global Climate Change for CEQA Purposes. California Department of Water Resources Internal Guidance Document. CEQA Climate Change Committee</i>. Sacramento, CA. January, Appendix B). As appropriate, the measures can be included as design features of a project, required as changes to the project, or imposed as mitigation (whether undertaken directly by the project proponent or funded by mitigation fees). The measures are examples; the list is not intended to be exhaustive. The following may serve as BMPs to be considered and implemented (as applicable) during design, construction, operation, and maintenance of project facilities.</p>

Table 1: Delta Plan Ecosystem Amendment PEIR Mitigation Measures (contd.)

Delta Plan Ecosystem Amendment Mitigation Measure Number	Delta Plan Ecosystem Amendment Mitigation Measure
21-1 (contd.)	Efficiency
	<ol style="list-style-type: none"> 1. Design buildings to be energy efficient. Site buildings to take advantage of shade, prevailing winds, landscaping and sunscreens to reduce energy use. 2. Install efficient lighting and lighting control systems. Use daylight as an integral part of lighting systems in buildings. 3. Install light colored “cool” roofs, cool pavements, and strategically placed shade trees. 4. Install energy efficient heating and cooling systems, appliances and equipment, and control systems. 5. Install light-emitting diodes for street and other outdoor lighting. 6. Limit the hours of operation of outdoor lighting.
	Renewable Energy
	<ol style="list-style-type: none"> 1. Install solar and wind power systems. 2. Install solar panels over parking areas. 3. Use combined heat and power in appropriate applications.
	Water Conservation and Efficiency
	<ol style="list-style-type: none"> 1. Create water-efficient landscapes. 2. Install water-efficient irrigation systems and devices, such as soil moisture-based irrigation controls. 3. Use reclaimed water for landscape irrigation. Install the infrastructure to deliver and use reclaimed water. 4. Design buildings to be water efficient. Install water-efficient fixtures and appliances. 5. Implement low-impact development practices that maintain the existing hydrologic character of the site to manage stormwater and protect the environment. (Retaining stormwater runoff on-site can drastically reduce the need for energy-intensive imported water at the site.) 6. Devise a comprehensive water conservation strategy appropriate for the project and location. The strategy may include many of the specific items listed above, plus other innovative measures that are appropriate to the specific project.
	Solid Waste
	Reuse and recycle construction and demolition waste (including, but not limited to, soil, vegetation, concrete, lumber, metal, and cardboard).
	Transportation and Motor Vehicles
	<ol style="list-style-type: none"> 1. Limit idling time for commercial vehicles, including delivery and construction vehicles. 2. Use low- or zero-emission vehicles, including construction vehicles. 3. Use alternative fuels for construction equipment. 4. Promote ride sharing. 5. Use local materials for at least 10 percent of construction materials. 6. Ensure tires on equipment and vehicles are inflated to their proper pressure.

Table 1: Delta Plan Ecosystem Amendment PEIR Mitigation Measures (contd.)

Delta Plan Ecosystem Amendment Mitigation Measure Number	Delta Plan Ecosystem Amendment Mitigation Measure
21-1 (contd.)	Blended Cements
	Use blended materials such as limestone, fly ash, natural pozzolan, and/or slag to replace some of the clinker in the production of Portland cement.
	Carbon Offsets
	<ol style="list-style-type: none"> 1. 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 may consider additional off-site mitigation. The project proponent could, for example, fund off-site mitigation projects (e.g., alternative energy projects, or energy or water audits for existing projects) that will reduce carbon emissions, conduct an audit of its other existing operations and agree to retrofit, or purchase carbon “credits” from another entity that will undertake mitigation. 2. If requiring offsets, issues that the lead agency should consider in determining the amount of mitigation that will be provided include: <ol style="list-style-type: none"> a. The location of the off-site mitigation. (If the off-site mitigation is far from the project, any additional, non-climate related benefits of the mitigation will be lost to the local community.) b. Whether the emissions reductions from off-site mitigation can be quantified and verified. c. Whether the mitigation ratio should be greater than 1:1 to reflect any uncertainty about the effectiveness of the offset.
	Whether the offset is real, additional, and permanent.
Biological Resources – Aquatics	
4-1(a)	Avoid siting project features that would result in the removal or degradation of sensitive natural communities, including jurisdictional wetlands and other waters, vernal pools, alkali seasonal wetlands, riparian habitats, and inland dune scrub.
4-1(b)	<p>Design the project to minimize effects on sensitive natural communities through one or more of the following measures:</p> <ol style="list-style-type: none"> i. Replace, restore, or enhance on a “no net loss” basis (in accordance with U.S. Army Corps of Engineers (USACE) and State Water Resources Control Board (SWRCB) requirements), wetlands and other waters of the United States and waters of the State. ii. Restore and/or preserve in-kind sensitive natural communities on-site, or off-site at a nearby site. iii. Purchase 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 temporary loss of habitat value).

Table 1: Delta Plan Ecosystem Amendment PEIR Mitigation Measures (contd.)

Delta Plan Ecosystem Amendment Mitigation Measure Number	Delta Plan Ecosystem Amendment Mitigation Measure
4-1(c)	<p>Construct the project to minimize effects on sensitive natural communities through one or more of the following measures:</p> <ol style="list-style-type: none"> i. Implement Mitigation Measure 3-1. ii. Restore natural communities disturbed or temporarily lost as a result of project construction activities. A restoration plan shall be prepared that is reviewed by resource agencies prior to implementation. The restoration plan would include, but might not be limited to: <ol style="list-style-type: none"> 1. Stockpiling of topsoil to be placed in graded areas. 2. Decompacting or amending soil if necessary before planting and use native species for revegetation. 3. Restoring natural communities with similar or improved function from communities that were affected.
4-1(e)	<p>Develop and implement an invasive species management plan for any project whose construction or operation could lead to introduction or facilitation of invasive species establishment. The plan shall ensure that invasive plant species and populations are kept below preconstruction abundance and distribution levels. The plan shall be based on the best available science and developed in consultation with DFW and local experts, such as the University of California Extension, county agricultural commissioners, representatives of County Weed Management Areas (WMA), California Invasive Plant Council, and California Department of Food and Agriculture. The invasive species management plan shall include the following elements:</p> <ol style="list-style-type: none"> i. Non-native species eradication methods (if eradication is feasible) ii. Non-native species management methods iii. Early detection methods iv. Notification requirements v. Best management practices for preconstruction, construction, and postconstruction periods vi. Monitoring, remedial actions and reporting requirements vii. Provisions for updating the target species list over the lifetime of the project as new invasive species become potential threats to the integrity of the local ecosystems
4-2(a)	<p>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.</p>
4-2(b)	<p>Schedule construction to avoid special-status species' breeding, spawning, or migration locations during the seasons or active periods that these activities occur.</p>
4-2(c)	<p>Conduct preconstruction surveys (by a qualified biologist) for special-status species in accordance with U.S. Fish and Wildlife Service (USFWS), National Marine Fisheries Service (NMFS) and DFW survey methodologies and appropriate timing to determine presence and locations of any special-status species and their habitat, and avoid, minimize, or compensate for impacts to special-status species in coordination with DFW and USFWS or NMFS.</p>
4-2(d)	<p>Conduct construction monitoring (by a qualified biologist) to ensure effectiveness of avoidance and minimization measures and implement remedial measures if necessary.</p>

Table 1: Delta Plan Ecosystem Amendment PEIR Mitigation Measures (contd.)

Delta Plan Ecosystem Amendment Mitigation Measure Number	Delta Plan Ecosystem Amendment Mitigation Measure
4-2(e)	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 the California Endangered Species Act (CESA) and federal Endangered Species Act (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).
4-3(a)	Select project site(s) that would avoid a substantial reduction in fish and wildlife species habitat, which may include foraging, sheltering, migration, and breeding habitat.
4-3(b)	To the maximum extent practicable, design project elements to avoid effects that would lead to a substantial loss of fish and wildlife habitat.
4-3(c)	Replace, restore, or enhance habitats for fish and wildlife species that would be lost.
4-3(d)	Where substantial loss of habitat for fish and wildlife species is unavoidable, compensate for impacts by preserving in-kind habitat.
4-4(a)	Protect migratory pathways for migratory aquatic species such as salmon, steelhead, and sturgeon including those that use Delta tributaries and floodplain habitats by screening new diversions, and screening existing diversions and removing existing migration barriers if the specific proposed project/activity (e.g., increased intake volume through an existing unscreened diversion, new diversion, new barrier, new barrier near an existing unscreened diversion, etc.) exacerbates the negative effect on migratory aquatic species caused by the existing barrier or unscreened diversion.
4-4(b)	<p>Avoid 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.</p> <p>If avoidance is not feasible, implement the following minimization measures:</p> <ol style="list-style-type: none"> i. Implement Mitigation Measure 3-1. ii. Prior to dewatering, a qualified biologist shall conduct fish rescues within any cofferdammed areas. <ol style="list-style-type: none"> 1. A dewatering and fish rescue plan shall be developed prior to fish rescues and approved by appropriate State federal agencies. 2. Pump intakes shall be fitted with agency-approved fish screens to prevent fish from becoming entrained. iii. If nighttime work is necessary, lights on work areas shall be shielded and focused to minimize lighting of fish habitat. iv. Hydroacoustic monitoring of underwater sound levels shall be performed to ensure compliance with established thresholds and minimize harm to special-status fish species. v. Monitoring of turbidity levels during constructions shall be conducted and a monitoring plan will be developed in consultation with the applicable Regional Water Board.

Table 1: Delta Plan Ecosystem Amendment PEIR Mitigation Measures (contd.)

Delta Plan Ecosystem Amendment Mitigation Measure Number	Delta Plan Ecosystem Amendment Mitigation Measure
Biological Resources – Terrestrial	
4-1(a) through (c) and (e)	Refer to Mitigation Measure 4-1(a) through (c) and (e), as described in Biological Resources-Aquatics
4-1(d)	<p>If a project may result in conversion of oak woodlands, as identified in section 21083.4 of the Public Resources Code, one or more of the following mitigation measures shall be implemented:</p> <ul style="list-style-type: none"> i. Conserve oak woodlands, through the use of conservation easements, at a target ratio of 1:1. ii. Plant an appropriate number of trees, as determined by the lead agency in consultation with CDFW, including maintaining plantings and replacing dead or diseased trees. iii. Contribute funds to the Oak Woodlands Conservation Fund, as established under Fish & Game Code section 1363 subdivision (a).
4-2(f)	Select project site(s) that would avoid habitats of special-status plant species.
4.2(g)	To the maximum extent practicable, design project elements to avoid effects that would lead to a substantial loss of special-status plant species.
4-2(h)	Conduct preconstruction surveys (by a qualified botanist) to evaluate the potential for special-status plant habitat at the project site, should suitable habitat for any special-status plant species be identified. Protocol-level surveys shall be conducted in accordance with the latest edition of DFW's <i>Protocols for Surveying and Evaluating Impacts to Special Status Native Plant Populations and Natural Communities</i> .
4-2(i)	Establish buffers around special-status plant species in advance of construction activities. The size of the buffer shall be in accordance with USFWS and DFW protocols for the applicable special-status plant species. The buffer shall be demarcated with high-visibility flagging, fencing, stakes, or clear, existing landscape demarcations (e.g., walkway). The size and shape of the buffer may be adjusted if a qualified botanist determines that such a smaller buffer is adequate.
4-2(j)	Conduct construction monitoring (by qualified botanist) to ensure effectiveness of avoidance and minimization measures and implement remedial measures if necessary.
4-2(k)	When appropriate, relocate special-status plant species from project sites following USFWS, CNPS, and DFW protocols.
4-2(l)	If relocation of the special-status plant species cannot be achieved, compensate for impacts through purchase of mitigation credits or placement of a conservation easement on property with known populations of the affected species.
4-3(a) and (b)	Refer to Mitigation Measure 4-3(a) and (b), as described in Biological Resources-Aquatics
4-3(e)	Schedule construction to avoid special-status species' breeding or migration locations during the seasons or active periods that these activities occur.
4-3(f)	Conduct preconstruction surveys (by a qualified biologist) for special-status species in accordance with USFWS and DFW survey methodologies and appropriate timing to determine presence and locations of any special-status species and their habitat, and avoid, minimize, or compensate for impacts to special-status species in coordination with DFW and USFWS.
4-3(g)	Establish buffers around special-status species habitats to exclude effects of construction activities. The size of the buffer shall be in accordance with USFWS and DFW protocols for the applicable special-status species. If nest tree removal is necessary, remove the tree only after the nest is no longer active, as determined by a qualified biologist.

Table 1: Delta Plan Ecosystem Amendment PEIR Mitigation Measures (contd.)

Delta Plan Ecosystem Amendment Mitigation Measure Number	Delta Plan Ecosystem Amendment Mitigation Measure
4-3(h)	Conduct construction monitoring (by qualified biologist) to ensure effectiveness of avoidance and minimization measures and implement remedial measures if necessary.
4-3(i)	When appropriate, relocate special-status plant and animal species or their habitats from project sites following USFWS and DFW protocols (e.g., for elderberry shrubs).
4-3(j)	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 the California Endangered Species Act (CESA) and federal Endangered Species Act (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).
4-4(c)	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.
4-4(d)	Protect, restore, and enhance connectivity of habitats, including but not limited to wetland and riparian habitats that function as migration corridors for wildlife species (similar to how it has been implemented through programs such as the California Essential Habitat Connectivity Project). 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. As an alternative, participate in existing mitigation banks or HCPs that provide suitable habitat for affected wildlife species. 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.
4-5(a)	Prior to construction, evaluate impacts to trees or other biological resources protected by local policies and ordinances, and abide by any permit requirements associated with these policies and ordinances.
Cultural Resources	
10-1(a)	California Native American tribes with which the lead agency is required to consult with under AB52 that are on the contact list of traditionally or culturally affiliated tribes of the Delta maintained by the California Native American Heritage Commission (pursuant to Pub. Res. Code § 21073), and have requested to be notified of all projects (pursuant to Pub. Res. Code 21080.3.1) shall be coordinated with early in the process during the design phase of ecosystem restoration projects. This coordination is intended to improve design, project resiliency, and respect, as well as enhance cultural values, and integrate traditional and local ecological knowledge.

Table 1: Delta Plan Ecosystem Amendment PEIR Mitigation Measures (contd.)

Delta Plan Ecosystem Amendment Mitigation Measure Number	Delta Plan Ecosystem Amendment Mitigation Measure
10-1(b)	Prior to project construction, a qualified archaeologist, defined as one meeting the U.S. Secretary of the Interior's Professional Qualifications Standards for Archeology and with expertise in California archaeology, in coordination with California Native American tribes traditionally and culturally affiliated with the Delta, shall develop a Cultural Resources/ Tribal Cultural Resources Awareness and Sensitivity Training Program for all construction and field workers involved in project-related ground-disturbing activities. The program shall include a presentation that covers, at a minimum, the types of cultural resources and tribal cultural resources common to the area, regulatory protections for such resources, and the protocol for unanticipated discovery of archaeological resources and potential tribal cultural resources. An archaeologist and representative from a culturally affiliated California Native American Tribe shall provide an in-person or, if in-person is not feasible, video-conference-based training presenting the Cultural Resources/Tribal Cultural Resources Awareness and Sensitivity Training Program to all personnel working in areas of project ground-disturbing activities prior to working in these areas. Written materials associated with the Program shall be provided to project personnel, as appropriate.
10-1(c)	Before any ground-disturbing activities begin, conduct intensive archaeological surveys, and subsurface investigations if warranted, to identify the locations, extent, and integrity of presently undocumented archaeological, tribal cultural, and landscape resources that may be located in areas of potential disturbance. Conduct tribal consultation to identify and evaluate the presence and significance of tribal cultural resources and landscapes. Surveys and subsurface investigations where tribes have identified tribal cultural resources shall include tribal monitors in addition to archaeologists. In addition, if ground-disturbing activities are planned for an area where a previously documented prehistoric archaeological site has been recorded but no longer may be visible on the ground surface, conduct test excavations to determine whether intact archaeological subsurface deposits are present. Also conduct surveys at the project site for the possible presence of cultural landscapes and traditional cultural properties.
10-1(d)	If potentially CRHR-eligible prehistoric or historic-era archeological, tribal cultural, or landscape resources are discovered during the survey phase, additional investigations may be necessary. These investigations should include, but not necessarily be limited to, measures providing resource avoidance, archival research, archaeological testing and CRHR eligibility evaluations, and contiguous excavation unit data recovery. In addition, upon discovery of potentially CRHR-eligible prehistoric resources, coordinate with the NAHC and the Native American community to provide for an opportunity for suitable individuals and tribal organizations to comment on the proposed research.
10-1(e)	If CRHR-eligible archaeological resources, tribal cultural resources, or cultural landscapes/properties are present and would be physically impacted, specific strategies to avoid or protect these resources should be implemented if feasible. These measures may include: <ul style="list-style-type: none"> i. Planning construction to avoid the sensitive sites ii. Deeding the sensitive sites into permanent conservation easements iii. Capping or covering archaeological sites iv. Planning parks, green space, or other open space to incorporate the sensitive sites
10-1(f)	If federal agencies are participants in the project and Section 106 of the National Historic Preservation Act applies, conduct formal consultation with the State Historic Preservation Officer and the California Native American tribes. Potential adverse effects on cultural resources recommended as eligible for listing in the NRHP will be resolved through the development of a memorandum of agreement and/or a program-level agreement.

Table 1: Delta Plan Ecosystem Amendment PEIR Mitigation Measures (contd.)

Delta Plan Ecosystem Amendment Mitigation Measure Number	Delta Plan Ecosystem Amendment Mitigation Measure
10-1(g)	As part of efforts to identify, evaluate, and consider cultural resources, including prehistoric sites, Native American human remains, and traditional cultural properties, California Native American tribes shall be consulted. The California Native American Heritage Commission (NAHC) shall be asked to provide a list of contacts for Native American tribes who should be contacted concerning an identified future project. The NAHC shall also be asked to search its Sacred Lands Files. California Native American tribes identified by the NAHC shall be contacted by letter to consult on the identification, evaluation, and treatment of tribal cultural resources.
10-1(h)	Before any project-specific ground-disturbing activities begin, conduct investigations to identify submerged cultural resources. These investigations would include review of State Lands Commission (SLC) Shipwrecks Database and other SLC files, and remote sensing surveys conducted under the direction of a qualified maritime archaeologist. Title to all abandoned shipwrecks, archaeological sites, and historic cultural resources on or in the tide and submerged lands of California is vested in the State and under the jurisdiction of the SLC. If avoidance of significant submerged cultural resources is not feasible, a permit from SLC may be necessary to conduct resource documentation and possible salvage of artifacts, ship components, and other data and objects.
10-1(i)	If potentially CRHR-eligible Native American or historic-era archaeological resources, including submerged or buried shipwrecks or other maritime-related cultural resources, are discovered during construction activities, work shall halt within 100 feet of the discovery until the find can be evaluated by a qualified archaeologist or maritime archaeologist as appropriate. A qualified archaeologist, which is defined as a person meeting the U.S. Secretary of the Interior's Professional Qualifications Standards for Archeology and with expertise in California archaeology, shall be immediately informed of the discovery. In addition, SLC shall be consulted. The qualified archaeologist shall inspect the discovery. If the qualified archeologist determines that the resource is or is potentially Native American in origin, culturally affiliated California Native American Tribes shall be contracted to assess the find and determine whether it is potentially a tribal cultural resource.
10-2(a)	In accordance with the California Health and Safety Code, if human remains are uncovered during ground-disturbing activities, the contractor shall immediately halt all ground disturbing activities within 100 feet of the burial and notify the county coroner to determine the nature of the remains. The coroner is required to examine all discoveries of human remains within 48 hours of receiving notice of a discovery on private or State lands (Health & Saf. Code section 7050.5[b]). If the coroner determines that the remains are those of a Native American, the coroner must contact the NAHC by telephone within 24 hours of making that determination (Health & Saf. Code section 7050[c]). Native American human remains are potentially considered Tribal Cultural Resources, and in the event of their discovery, Mitigation Measure 10-1(b) through (e) shall apply as appropriate.
10-2(b)	Following the coroner's findings, the property owner, contractor or project proponent, an archaeologist, and the NAHC-designated Most Likely Descendent (MLD) shall determine the ultimate treatment and disposition of the remains and take appropriate steps to ensure that additional human interments are not disturbed. The responsibilities for acting upon notification of a discovery of Native American human remains are identified in Public Resources Code section 5097.9. The location, content, and character of Native American human remains are confidential and shall not be released to the public. Native American human remains and associated funerary objects shall be treated with the utmost respect and in accordance with the direction of the identified MLD.

Table 1: Delta Plan Ecosystem Amendment PEIR Mitigation Measures (contd.)

Delta Plan Ecosystem Amendment Mitigation Measure Number	Delta Plan Ecosystem Amendment Mitigation Measure
10-2(c)	Upon the discovery of Native American remains, the landowner shall ensure that the immediate vicinity (according to generally accepted cultural or archaeological standards and practices) is not damaged or disturbed by further development activity until consultation with the MLD has taken place. The MLD shall have 48 hours to complete a site inspection and make recommendations after being granted access to the site.
10-2(d)	A range of possible treatments for the remains, including nondestructive removal and analysis, preservation in place, relinquishment of the remains and associated items to the descendants, or other culturally appropriate treatment, may be discussed. Public Resources Code section 5097.9 suggests that the concerned parties may extend discussions beyond the initial 48 hours to allow for the discovery of additional remains. The following is a list of site protection measures that the landowner shall employ: <ul style="list-style-type: none"> i. Record the site with the NAHC or the appropriate information center. ii. Use an open space or conservation zoning designation or easement. iii. Record a document with the county in which the property is located.
10-2(e)	The landowner or their authorized representative shall rebury the Native American human remains and associated grave goods with appropriate dignity on the property in a location not subject to further subsurface disturbance if the NAHC is unable to identify a MLD or if the MLD fails to make a recommendation within 48 hours after being granted access to the site. The landowner or their authorized representative may also reinter the remains in a location not subject to further disturbance if they reject the recommendation of the MLD and mediation by the NAHC fails to provide measures acceptable to the landowner.
10-2(f)	If the discovery of human remains occurs on lands owned and administered by a federal agency, the provisions of the Native American Graves Protection and Repatriation Act (NAGPRA) will apply. NAGPRA requires federal agencies and certain recipients of federal funds to document Native American human remains and cultural items in their collections, notify native groups of their holdings, and provide an opportunity for repatriation of these materials. The act also requires planning for dealing with potential future collections of Native American human remains and associated funerary objects, sacred objects, and objects of cultural patrimony.
10-3(a)	Inventory and evaluate historic-era buildings, structures, linear features, and cultural landscapes. Conduct cultural resources studies to determine whether historic-era buildings, structures, linear features, and cultural landscapes in the project area are eligible for listing in the CRHR.
10-3(b)	Before construction activities begin, an inventory and evaluation of historic-era resources in the project area shall be conducted under the direct supervision of an architectural historian meeting the Secretary of the Interior's Professional Qualification Standards for history or architectural history. The documentation should include conducting an intensive field survey, background research on the history of the project area, and property-specific research. Based on this research, the eligibility of historic-era resources located in the project area should be evaluated by the architectural historian using criteria for listing in the CRHR. The resources would be recorded on DPR 523 forms and the findings documented in a technical report. If federal funding or approval is required, then the project implementation agencies would comply with Section 106 of the National Historic Preservation Act.

Table 1: Delta Plan Ecosystem Amendment PEIR Mitigation Measures (contd.)

Delta Plan Ecosystem Amendment Mitigation Measure Number	Delta Plan Ecosystem Amendment Mitigation Measure
10-3(c)	Identify measures to avoid significant historic resources. Avoidance through project redesign is the preferred mitigation measure for mitigating potential effects on historic-era buildings, structures, linear features, and archaeological sites that appear to be eligible for listing in the NRHP or CRHR.
10-3(d)	Record photographic and written documentation to Historic American Building Survey (HABS)/Historic American Engineering Record (HAER) standards. If avoidance of a significant historic resource is not feasible, the lead agency should ensure that HABS/HAER documentation is completed. Through HABS/HAER documentation, a qualified architectural historian and qualified photographer shall formally document the historic resource through large-format photography, measured drawings, written architectural descriptions, and historical narratives. The completed documentation should be submitted to the Library of Congress.
10-3(e)	Comply with the Secretary of the Interior's Standards for Rehabilitation and Guidelines for Rehabilitating Historic Buildings in the event of relocation of a historic resource. If any historic buildings, structures, or levees are relocated or altered, the lead agency shall ensure that any changes to significant buildings or structures conform to the Secretary of the Interior's Standards for Rehabilitation and Guidelines for Rehabilitating Historic Buildings. Implementation of this measure can mitigate potential changes to significant architectural resources.
10-3(f)	Comply with the Secretary of the Interior's Guidance for the Treatment of Cultural Landscapes to preserve landscapes' historic form, features, and details that have evolved over time.
Geology, Soils and Mineral Resources	
11-1(a)	For construction that occurs in an Alquist-Priolo Special Studies Zone, a determination must be made by a licensed practitioner (California Certified Engineering Geologist) that no fault traces are present within the building footprint of any structure intended for human occupancy. The standard of care for such determinations includes direct examination of potentially affected subsurface materials (soil and/or bedrock) by logging of subsurface trenches. Uncertainties regarding the exact locations of future ground ruptures associated with such determinations generally are resolved by providing a minimum setback of 50 feet from any known surface trace of an active fault.
11-1(b)	Lead agencies shall ensure that geotechnical design recommendations are included in the design of facilities and construction specifications to minimize the potential impacts from seismic events and the presence of adverse soil conditions. Recommended measures to address adverse conditions shall conform to applicable design codes, guidelines, and standards.
11-2(a)	Require adherence, at minimum, to the precepts of the current approved version of the International Building Code (IBC). Included in the IBC are measures for mitigation of the impacts of strong ground motion on constructed works.
11-3(a)	For projects that would result in significant or potentially significant grading operations, a geotechnical investigation shall be performed and a geotechnical report prepared. The geotechnical report shall include a quantitative analysis to determine whether excavation or fill placement would result in a potential for damage due to soil subsidence during and/or after construction. Project designs shall incorporate measures to reduce the potential damage to an insignificant level, including but not limited to removal and recompaction of existing soils susceptible to subsidence, ground improvement (such as densification by compaction or grouting, soil cementation), and reinforcement of structural components to resist deformation due to subsidence. The site-specific potential for and severity of cyclic seismic loading shall be analyzed in the assessment of subsidence for specific projects.

Table 1: Delta Plan Ecosystem Amendment PEIR Mitigation Measures (contd.)

Delta Plan Ecosystem Amendment Mitigation Measure Number	Delta Plan Ecosystem Amendment Mitigation Measure
11-3(b)	A geotechnical investigation shall be performed by an appropriately licensed professional engineer and/or geologist to determine the presence and thickness of potentially liquefiable sands that could result in loss of bearing value during seismic shaking events. Project designs shall incorporate measures to mitigate the potential damage to an insignificant level, including but not limited to ground improvement (such as grouting or soil cementation), surcharge loading by placement of fill, excavation, soil mixing with non-liquefiable finer-grained materials and replacement of liquefiable materials at shallow depths, and reinforcement of structural components to resist deformation due to liquefaction. An analysis of site-specific probable and credible seismic acceleration values, in accordance with current applicable standards of care, shall be performed to provide for suitable project design.
11-3(c)	For projects that would result in construction of wells intended for groundwater extraction, a hydrogeological/geotechnical investigation shall be performed in accordance with the current standards of care for such work by an appropriate licensed professional engineer or geologist to identify and quantify the potential for groundwater extraction-induced subsidence. The study shall include an analysis of existing conditions and modeling of future conditions to assess the potential for aquifer compaction/consolidation.
11-3(d)	For projects that would result in construction of surface reservoirs and canals, a hydrogeological/geotechnical investigation shall be performed by a licensed professional engineer or geologist to identify and quantify the potential for seeps and springs to develop in areas adjacent to the proposed improvements and to propose mitigation measures. 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 and preparation of geotechnical reports shall be performed in the responsible care of California licensed geotechnical professionals including professional civil engineers, certified geotechnical engineers, professional geologists, certified engineering geologists, and certified hydrogeologists, all of whom should be practicing within the current standards of care for such work.
11-4(a)	Any covered action that would have significant soil erosion and topsoil loss impacts shall incorporate specific measures for future projects that would expand the use of BMPs or optional erosion control measures listed in the stormwater pollution prevention plan (SWPPP). The SWPPP shall identify an effective combination of BMPs to reduce erosion during construction and to prevent erosion during operation. Examples of typical BMPs include: i. Erosion control measures such as silt fencing, sandbags, straw bales and mats, and rice straw wattles shall be placed to reduce erosion and capture sediment. Straw used for erosion control shall be new cereal grain straw derived from rice, wheat, or barley; free of mold and noxious weed seed; and neither derived from dry-farmed crops nor previously used for stable bedding. Clearance shall be obtained from the County Agricultural Commissioner before straw obtained from outside the county is delivered to the work site. Monitoring requirements of the newly revised General Construction Permit shall be implemented, and more effective BMPs shall be identified and installed if runoff samples indicate excessive turbidity.

Table 1: Delta Plan Ecosystem Amendment PEIR Mitigation Measures (contd.)

Delta Plan Ecosystem Amendment Mitigation Measure Number	Delta Plan Ecosystem Amendment Mitigation Measure
11-4(a) (contd.)	<ul style="list-style-type: none"> ii. During construction activities, topsoil shall be removed, stockpiled, and saved for reapplication following completion of construction. The top 6 inches shall be salvaged and reapplied to a comparable thickness. Soil material shall be placed in a manner that minimizes compaction and promotes plant reestablishment. iii. If catch basins are used for sediment capture, the site shall be graded to ensure stormwater runoff flows into the basins, and basins shall be designed for the appropriate storm interval as provided in the General Construction Permit. iv. Temporary work areas shall be surfaced with a compacted layer of well-graded gravel. They may be covered with a thin asphalt binder. Where expansive or compressible soils are present in temporary work areas, construction trailers shall be supported with concrete pads or footings. v. Dust control shall conform to all federal, State, and local requirements and may include use of water trucks, street sweepers, or other methods described in the SWPPP. vi. Spoils shall be placed in 12-inch-thick loose lifts and compacted to reduce erosion and minimize future subsidence. Placement of peat spoils shall be on agricultural land where possible. Following construction, spoils sites shall be restored to avoid erosion.
11-5(a)	<p>In areas where expansive clays exist, a hydrogeological/geotechnical investigation shall be performed by a licensed professional engineer or geologist to identify and quantify the potential for expansion, particularly differential expansion of clayey soils due to leakage and saturation beneath new improvements. Measures could include, but are not limited to removal and recompaction of problematic expansive soils, soil stabilization, and/or reinforcement of constructed improvements to resist deformation due to expansion of subsurface soils.</p>
11-6(a)	<p>For projects that would result in construction of canals, storage reservoirs, and other surface impoundments, project design shall provide for protection from leakage to the subsurface. Measures could include, but are not limited to rendering concrete less permeable by specifying concrete additives such as bentonite, design of impermeable liner systems, design of leakage collection and recovery systems, and construction of impermeable subsurface cutoff walls.</p>
11-6(b)	<p>For ecosystem restoration projects that might cause subsurface seepage of nuisance water onto adjacent lands:</p> <ul style="list-style-type: none"> i. Perform seepage monitoring studies by measuring the level of shallow groundwater in the adjacent soils, to evaluate the baseline conditions. Continue monitoring for seepage during and after the project implementation. ii. Develop a seepage monitoring plan if subsurface seepage constitutes nuisance water to the adjacent land. iii. Implement seepage control measures if adjacent land is not useable, such as installing subsurface agricultural drainage systems to avoid raising water levels into crop root zones. Cutoff walls and pumping wells can also be used to mitigate for the occurrence of subsurface nuisance water.
11-7(a)	<p>For projects that would result in construction of levees, surface impoundments, and other fill embankments, project design shall incorporate fill placement in accordance with local and State regulations and in accordance with the prevailing standards of care for such work. Measures could include, but are not limited to blending of soils most susceptible to landsliding with soils having higher cohesion characteristics, installation of slope stabilization measures, designing top-of-slope berms or v-ditches, terrace drains and other surface runoff control measures, and designing slopes at lower inclinations.</p>

Table 1: Delta Plan Ecosystem Amendment PEIR Mitigation Measures (contd.)

Delta Plan Ecosystem Amendment Mitigation Measure Number	Delta Plan Ecosystem Amendment Mitigation Measure
11-9(a)	<p>For projects that would result in significant or potentially significant risk to structures due to the presence of highly organic soils, lead agencies shall require geotechnical evaluation prior to construction to identify measures to mitigate organic soils. The following measures may be considered:</p> <ul style="list-style-type: none"> i. Over-excavation and import of suitable fill material ii. Structural reinforcement of constructed works to resist deformation iii. Construction of structural supports below the depth of highly organic soils into materials with suitable bearing strength
12-1(a)	<p>During the project-level analysis, a Paleontological Resources Monitoring and Recovery Plan (PRMRP) shall be developed and implemented for all actions. The PRMRP shall include protocols for paleontological resources monitoring in those areas where sediment with moderate to high paleontological sensitivity would be affected by construction-related excavations. The PRMRP also shall set forth the following procedures:</p> <ul style="list-style-type: none"> i. Confirming the paleontological sensitivity (high, moderate, or low) of the areas to be impacted through review of project-level geological and geotechnical data ii. Determining the qualifications of the paleontologist as established by the Society of Vertebrate Paleontology. iii. The assessment and recovery of discovered fossil resources iv. The preparation and curation of fossil finds
12-1(b)	<p>The PRMRP shall provide guidelines for the establishment of a yearly or biannual monitoring program led by a qualified paleontologist to determine the extent of fossiliferous sediment being exposed and affected by erosion, and determine whether paleontological resources are being lost. If loss of scientifically significant paleontological resources can be documented, then a recovery program should be implemented.</p>
13-1(a)	<p>Ensure land use changes in designated mineral resource extraction areas are compatible with and do not prohibit existing mineral resource extraction activities.</p>
13-1(b)	<p>Maintain adequate buffers between future projects and designated MRZ-2 sectors.</p>
13-1(c)	<p>Explore opportunities to classify and designate new MRZ-2 sectors (e.g., in existing MRZ-3 sectors) to ensure that important mineral resources are conserved and continue to be available for future construction needs.</p>
13-1(d)	<p>Use recycled aggregate, where possible, to decrease the demand for new aggregate.</p>
13-2(a)	<p>Ensure access is maintained to existing, active mineral resource extraction sites both during and after project construction.</p>

Table 1: Delta Plan Ecosystem Amendment PEIR Mitigation Measures (contd.)

Delta Plan Ecosystem Amendment Mitigation Measure Number	Delta Plan Ecosystem Amendment Mitigation Measure
13-2(b)	Implement recommendations identified in the Geologic Energy Management Division of the State Department of Conservation (CalGEM) construction site well review program (DOC 2007. Well Review Program: Introduction and Application), such as:
	i. For all future projects, identify all existing natural gas well sites and oil production facilities within or in close proximity to the project area.
	ii. Identify any oil and natural gas well within 100 feet of any navigable body of water or watercourse perennially covered by water or any officially recognized wildlife preserve as a "critical well" (California Code of Regulations, Title 14, Chapter 4, Article 2, Section 1720(a)(2)(B) and (C)). The State Department of Conservation (DOC) requires that a "critical well" include more stringent blowout prevention equipment than non-critical wells based on pressure testing and rating.
	iii. Identify safety measures to prevent unauthorized access to equipment.
	iv. Include safety shut-down devices on oil and natural gas wells and other equipment, as appropriate.
	v. Notify DOC of new oil and natural gas wells or changes in oil and natural gas well operations or physical conditions, receive written approval from DOC of the changes, and receive written notification of DOC's inspection of new or changed equipment. The approvals will be primarily related to the ability to: (1) protect all subsurface hydrocarbons and fresh water, (2) protect the environment, (3) use adequate blowout prevention equipment, and (4) use approved drilling and cementing techniques.
	vi. If any plugged/abandoned or unrecorded oil and natural gas wells are uncovered during construction, the DOC should be notified, the wells should undergo remedial well plugging actions, and no structures should be constructed over the abandoned oil and natural gas wells.
	vii. If oil and natural gas wells are under the jurisdiction or a lease from the California State Lands Commission, project proponents should provide additional plans and environmental documentation as required prior to modification of the oil or natural gas wells.
Hazards and Hazardous Materials	
14-1(a)	Refueling and maintenance of vehicles and equipment shall occur only in designated areas that are either bermed or covered with concrete, asphalt, or other impervious surfaces to control potential spills.
14-1(b)	Refueling of vehicles and equipment shall occur only when employees are present.
14-1(c)	Vehicle and equipment service and maintenance shall be conducted only by authorized personnel.
14-1(d)	Refueling shall be conducted only with approved pumps, hoses, and nozzles.
14-1(e)	Catch-pans shall be placed under equipment to catch potential spills during servicing.
14-1(f)	All disconnected hoses shall be placed in containers to collect residual fuel from the hoses.
14-1(g)	Vehicle engines shall be shut down during refueling. Smoking shall be limited to designated areas that have been selected to reduce the risk of wildfire ignition (e.g., paved areas).
14-1(h)	No smoking, open flames, or welding shall be allowed in refueling or service areas.
14-1(i)	Refueling shall be performed away from bodies of water to prevent contamination of water in the event of a leak or spill.

Table 1: Delta Plan Ecosystem Amendment PEIR Mitigation Measures (contd.)

Delta Plan Ecosystem Amendment Mitigation Measure Number	Delta Plan Ecosystem Amendment Mitigation Measure
14-1(j)	When refueling is completed, the service truck shall leave the project site.
14-1(k)	Service trucks shall be provided with fire extinguishers and spill containment equipment, such as absorbents.
14-1(l)	Should a spill contaminate soil, the soil shall be placed in containers and disposed of as appropriate. All containers used to store hazardous materials shall be inspected at least once per week for signs of leaking or failure. All maintenance and refueling areas shall be inspected monthly. Results of inspections shall be recorded in a logbook maintained onsite.
14-1(m)	An automatic sprinkler system shall be installed in indoor hazardous material storage areas.
14-1(n)	An exhaust system shall be installed in indoor hazardous material storage areas.
14-1(o)	Incompatible materials shall be separated by isolating them from each other with a noncombustible partition.
14-1(p)	Implement a spill control in all storage, handling, and dispensing areas.
14-1(q)	Separate secondary containment shall be provided for each chemical storage system. Secondary containment is required to hold the entire contents of the tank plus the volume of water for the fire suppression system that could be used for fire protection for a period of 20 minutes in the event of a catastrophic spill.
14-1(r)	In the unlikely event of a spill, the spill shall be reported to the appropriate regulatory agencies and contaminated soil shall be cleaned, treated, and/or removed in accordance with regulatory requirements. Small spills shall be contained and cleaned up immediately by trained, onsite personnel. Larger spills shall be reported via emergency phone numbers to obtain help from offsite containment and cleanup crews. All personnel working on the project during the construction phase shall be trained in handling hazardous materials and the dangers associated with hazardous materials. An onsite health and safety person shall be designated to implement health and safety guidelines and to contact emergency response personnel and the local hospital, if necessary.
14-1(s)	If there is a large spill from a service or refueling truck, contaminated soil shall be placed into barrels or trucks by service personnel for offsite disposal at an appropriate facility in accordance with the law. If a spill involves hazardous materials quantities equal to or greater than the specific Reportable Quantities as required by regulatory agencies (42 gallons for petroleum products), all federal, State, and local reporting requirements shall be followed. In the event of a fire or injury, the local fire department shall be called.
14-2(a)	To reduce the risk due to increased exposure to materials that could be released during soil disturbance, worker training programs and breathing apparatus shall be provided. Monitoring programs shall be implemented as areas are excavated to determine the potential for exposure to soil organisms or other constituents.
14-2(b)	To reduce risk to the community due to increased exposure to materials that could be released during soil disturbance, public outreach programs shall be conducted to educate the public of the types of construction activities and risks that could occur. In areas near extreme hazards, such as construction in areas with identified petroleum-product pipelines or soils with high concentrations of petroleum products, warning sirens shall be used at construction sites to immediately notify workers and residents. Emergency procedures shall be included in the education and outreach programs for the workers and the community.

Table 1: Delta Plan Ecosystem Amendment PEIR Mitigation Measures (contd.)

Delta Plan Ecosystem Amendment Mitigation Measure Number	Delta Plan Ecosystem Amendment Mitigation Measure
14-3(a)	Freshwater habitat management activities shall include water-control-structure management, vegetation management, mosquito predator management, drainage improvements, and/or other best management practices, to be carried out by lead agencies or entities with designated management responsibility. These activities will be carried out in coordination with the DFW and local mosquito and vector control agencies regarding these strategies and specific techniques to help minimize mosquito production.
14-3(b)	Permanent ponds shall be maintained in a manner that both increases the diversity of waterfowl and decreases the introduction of vectors through constant circulation of water, vegetation control, and periodic draining of ponds. These activities will be carried out by lead agencies or entities with designated management responsibility.
14-3(c)	Tidal management activities shall include actions to minimize mosquito problems arising from the residual tidal and floodwaters remaining in depressions and cracked ground. These activities will be carried out by lead agencies or entities with designated management responsibility.
14-3(d)	Lead agencies or entities with designated management responsibility shall avoid ponding in tidal marsh habitat or in areas within the waterside of setback levees. Lead agencies or entities with designated management responsibility will ensure design of ecosystem restoration areas, waterfowl hunting areas, setback levees, parks, canals, and surface water storage facilities minimize standing water, or use other methods such as mosquito fish to reduce mosquito breeding.
14-4(a)	Avoid creating hazardous wildlife attractants within a distance of 10,000 feet of an Airport Operations Area.
14-4(b)	Maintain a distance of five miles between the farthest edge of the Airport Operations Area and hazardous wildlife attractants.
14-5(a)	Refer to Mitigation Measure 14-5(a), as described in Wildfire
17-1(a)	Develop worker training programs to reduce construction and operations risks.
17-1(b)	Develop adequate emergency access routes and equipment for both land and water access, if applicable (such as in the Delta), that provide for adequate response time. If use of an existing emergency access route becomes limited due to new or modified facilities, additional routes or placement of duplicate equipment on each side of the route limitation could be considered if needed to maintain emergency access.
17-1(c)	Develop traffic plans and emergency response plans for construction and operations phases of new facilities that contain plans for maintaining accessibility of evacuation routes.
17-1(d)	Develop all facilities, including parks and ecosystem restoration areas, in accordance with applicable fire codes and regulations, and with adequate fire equipment access routes, occupancy limitations, and fire-protection equipment.
19-3(a)	Coordinate with responsible local agencies to establish adequate emergency routes during construction activities and before existing emergency routes are reclassified to a nonemergency route use.
19-3(b)	Phase construction activities, and use multiple routes to and from offsite locations to minimize the daily amount of traffic on individual roadways, including roadways used as evacuation routes.
19-3(c)	Post warnings about the potential presence of slow-moving vehicles.
19-3(d)	Use traffic-control personnel when appropriate.

Table 1: Delta Plan Ecosystem Amendment PEIR Mitigation Measures (contd.)

Delta Plan Ecosystem Amendment Mitigation Measure Number	Delta Plan Ecosystem Amendment Mitigation Measure
19-3(e)	Place and maintain barriers, and install traffic-control devices necessary for safety, as specified in Caltrans' Manual of Traffic Controls for Construction and Maintenance Work Zones and in accordance with city and county requirements.
19-3(f)	Notify appropriate emergency service providers of project construction throughout the construction period to ensure that emergency access through construction areas is maintained.
Hydrology and Water Quality	
3-1(a)	<p>For construction of new facilities, all typical construction mitigation measures shall be required. Typical mitigation measures include the following construction-related Best Management Practices (BMPs):</p> <ul style="list-style-type: none"> i. Gravel bags, silt fences, etc., shall be placed along the edge of all work areas in order to contain particulates prior to contact with receiving waters. ii. All concrete washing and spoils dumping shall occur in a designated location. iii. Construction stockpiles shall be covered in order to prevent blowoff or runoff during weather events. iv. Severe weather event erosion control materials and devices shall be stored onsite for use as needed. v. Soil stabilization, sediment control, wind erosion control, tracking control, non-storm water management, and waste management/materials pollution control.
3-1(b)	Implementation of other BMPs shall be required as determined necessary by the regulating entity (city, county).
3-1(c)	Any new facility with introduced impervious surfaces shall include stormwater control measures that are consistent with the Regional Water Quality Control Board (RWQCB) National Pollutant Discharge Elimination System (NPDES) municipal stormwater runoff requirements. The stormwater control measures shall be designed and implemented to reduce the discharge of stormwater pollutants to the maximum extent practical. Stormwater controls such as bioretention facilities, flow-through planters, detention basins, vegetative swales, covering pollutant sources, oil/water separators, and retention ponds shall be designed to control stormwater quality to the maximum extent practical.
3-1(e)	<p>For any construction activities with the potential to cause in-river sediment disturbance associated with construction:</p> <ul style="list-style-type: none"> i. Apply BMPs to avoid or reduce temporary increases in suspended sediment. These BMPs for in-channel construction and levee disturbance may include, but are not limited to, silt curtains, cofferdams, the use of environmental dredges, erosion control on all inward levee slopes, and various levee-stabilization techniques, including revegetation. As required by project permits, all construction sites shall include preparation and implementation of a Storm Water Pollution Prevention Plan and BMPs designed to capture spills and prevent erosion to the waterbody. Turbidity shall be monitored up- and downstream of construction sites as a measure of impact. ii. Apply bank stabilization BMPs, as needed, for any in-channel disturbance, such as: <ul style="list-style-type: none"> 1. Where appropriate, a 100-foot vegetative or engineered buffer shall be maintained between the construction zone and surface water body.

Table 1: Delta Plan Ecosystem Amendment PEIR Mitigation Measures (contd.)

Delta Plan Ecosystem Amendment Mitigation Measure Number	Delta Plan Ecosystem Amendment Mitigation Measure
3-1(e) (contd.)	<ol style="list-style-type: none"> 2. Native and annual grasses or other vegetative cover shall be established on construction sites immediately upon completion of work causing disturbance, to reduce the potential for erosion close to a waterway or water body. 3. Where dredging would be particularly prone to the production of re-suspended sediment and contaminants, potential impacts shall be reduced through the use of submerged dredge cutter heads, silt curtains, and cofferdams, depending upon the site-specific soil conditions in the channel.
5-1(a)	<p>Prepare and implement a drainage or hydrology and hydraulic study that would assess the need and provide a basis for the design of drainage-related mitigations, such as new onsite drainage systems or new cross drainage facilities. Prepare the study in accordance with applicable standards of Federal Emergency Management Agency (FEMA), USACE, Department of Water Resources (DWR), CVFPB, as well as the local reclamation districts and flood control agencies and the counties and cities. Design subsequent mitigation measures in accordance with the final study and with the applicable standards of FEMA, USACE, DWR, and CVFPB. The study would identify potential increases in flood risks, including those that may result from new facilities.</p>
5-1(b)	<p>Provide drainage bypass facilities during construction that reroute drainage around, along, or over the Proposed Project facilities and construction sites. The temporary bypass facilities would be designed in accordance with the results and recommendations of a drainage or hydrologic and hydraulic study and would be in place and fully functional until long-term replacement facilities are completed.</p>
5-1(c)	<p>Provide on-site stormwater detention storage at construction and project facility sites that would reduce project-caused short- or long-term increases in drainage runoff. The storage space placement and capacity would be designed based on the drainage or hydrologic and hydraulic study.</p>
5-1(d)	<p>Based on the results of the drainage or hydrologic and hydraulic study, arrange the length of any stockpiles or other construction features in the direction of the floodplain flow to maximize surface flows under flood flow conditions.</p>
5-1(e)	<p>At instream construction sites that might reduce channel capacity, install setback levees or bypass channels to maintain channel capacity and to mitigate hydraulic impacts.</p>
5-1(f)	<p>Where low channel velocities might result from construction, implement a sediment management program in order to maintain channel capacity.</p>
5-1(g)	<p>Provide cross drainage, replacement drainage paths and facilities, and enlarged flow paths to reroute drainage around, under, or over the Proposed Project facilities and to restore the function of any affected existing drainage or flow paths and facilities.</p>
5-1(h)	<p>Channel modifications for restoration actions shall be required to be implemented to maintain or improve flood management functions and would be coordinated with the USACE, DWR, CVFPB, and other flood control agencies to assess the desirability and feasibility for channel modifications. To the extent consistent with floodplain land uses and flood control requirements, if applicable, woody riparian vegetation shall be allowed to naturally establish.</p>
5-1(i)	<p>For areas that would be flooded as a result of the project, or where existing flooding would be increased in magnitude, frequency, or duration, purchase a flowage easement and/or property at the fair-market value.</p>
5-1(j)	<p>Provide a long-term sediment removal program at in-river structures.</p>

Table 1: Delta Plan Ecosystem Amendment PEIR Mitigation Measures (contd.)

Delta Plan Ecosystem Amendment Mitigation Measure Number	Delta Plan Ecosystem Amendment Mitigation Measure
5-1(k)	To mitigate potential impacts of changes in the timing of reservoir releases or the possible combination of river peak flows, use forecasts to implement coordination of operations with existing reservoirs.
5-2(a)	Prepare a drainage or hydrology and hydraulics study that would assess the need and provide a basis for the design of drainage-related mitigations, such as new onsite drainage systems or new cross drainage facilities. Prepare the study in accordance with applicable standards of FEMA, USACE, DWR, CVFPB, as well as the local reclamation districts and flood control agencies and the counties and cities. Design subsequent mitigation measures in accordance with the final study and with the applicable standards of FEMA, USACE, DWR, and CVFPB.
5-2(b)	Provide on-site stormwater detention storage at construction and project facility sites that reduces project-caused, short- and long-term increases in drainage runoff. The storage space shall be designed based on the drainage or hydrologic and hydraulic study.
5-4(a)	Prepare and implement a drainage or hydrology and hydraulics study to assess the need and provide a basis for the design of drainage-related mitigations, such as new onsite drainage systems or new cross drainage facilities. Prepare the study in accordance with applicable standards of FEMA, USACE, DWR, CVFPB, as well as the local reclamation districts and flood control agencies and the counties and cities. Design recommended drainage-related mitigation in accordance with the final study and applicable standards of FEMA, USACE, DWR, and CVFPB.
5-4(b)	Where high channel velocities might result from construction, provide bank protection, such as riprap, to protect levees from erosion.
5-4(c)	Where construction results in longer channel wind fetch lengths, install vegetative buffer zones or wave erosion protection on the waterside slope of levees, such as rock or grouted riprap, and increase levee freeboard to address higher wind and wave runup.
5-5(a)	Prepare and implement a drainage or hydrology and hydraulics study that assesses the need and provide a basis for the design of drainage-related mitigations, such as new on-site drainage systems or new cross drainage facilities. Prepare the study in accordance with applicable standards of FEMA, USACE, DWR, CVFPB, as well as the local reclamation districts and flood control agencies and the counties and cities. Design subsequent mitigation measures in accordance with the final study and with the applicable standards of FEMA, USACE, DWR, and CVFPB. Provide temporary drainage bypass facilities that would reroute drainage around, along, or over the Proposed Project facilities and construction sites. The temporary bypass facilities shall be designed in accordance with drainage or hydrology and hydraulic study and shall be in place and fully functional until long-term replacement facilities are completed.
5-5(b)	Based on the results of the drainage or hydrologic and hydraulic study, arrange the length of any stockpiles or other construction features in the direction of the floodplain flow to maximize surface flows under flood conditions.
5-5(c)	At instream construction sites that might reduce channel capacity, install setback levees or bypass channels to maintain channel capacity and to mitigate hydraulic impacts.
5-5(d)	Provide cross drainage, replacement drainage paths and facilities, and enlarged flow paths to reroute drainage around, under, or over the Proposed Project facilities and to restore the function of any affected existing drainage or flow paths and facilities.

Table 1: Delta Plan Ecosystem Amendment PEIR Mitigation Measures (contd.)

Delta Plan Ecosystem Amendment Mitigation Measure Number	Delta Plan Ecosystem Amendment Mitigation Measure
5-5(e)	Channel modifications for restoration actions shall be required to be implemented to maintain or improve flood management functions and would be coordinated with the USACE, DWR, CVFPB, and other flood control agencies to assess the desirability and feasibility for channel modifications. To the extent consistent with floodplain land uses and flood control requirements, if applicable, woody riparian vegetation would be allowed to naturally establish.
Land Use and Planning	
6-2	Compensate for the loss or reduction in environmental values due to a conflict with an adopted plan or policy by implementing the following or equally effective measures: (a) Recording a deed restriction that ensures permanent conservation and mitigation on other property of equal or greater environmental mitigation value; (b) Creating a buffer or barrier between uses; (c) Redesigning the project or selecting an alternate location that avoids or mitigates the impact; and/or (d) Restoring disturbed land to conditions to provide equal or greater environmental value to the land affected by the covered action.
19-1(f) and (g)	Refer to Mitigation Measure 19-1(f) and (g), as described in Transportation
Noise	
15-1(a)	Limit the hours of operation at noise-generation sources located near or adjacent to noise-sensitive areas, wherever practicable, to reduce the level of exposure to meet applicable local standards.
15-1(b)	Locate construction equipment away from sensitive receptors, to the extent feasible, to reduce noise levels below applicable local standards.
15-1(c)	Maintain construction equipment to manufacturers' recommended specifications, and equip all construction vehicles and equipment with appropriate mufflers and other approved noise-control devices.
15-1(d)	Limit idling of construction equipment to the extent feasible to reduce the time that noise is emitted.
15-1(e)	Conduct individual traffic noise analysis of identified haul routes and provide mitigation, such as reduced speed limits, at locations where noise standards cannot be maintained for sensitive receptors.
15-1(f)	Incorporate use of temporary noise barriers, such as acoustical panel systems, between construction activities and sensitive receptors if it is concluded that they would be effective in reducing noise exposure to sensitive receptors.
15-2(a)	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.

Table 1: Delta Plan Ecosystem Amendment PEIR Mitigation Measures (contd.)

Delta Plan Ecosystem Amendment Mitigation Measure Number	Delta Plan Ecosystem Amendment Mitigation Measure
15-2(b)	<p>If the results of the analysis determine that groundborne vibration would exceed applicable thresholds at sensitive receptors, the following measures shall be implemented:</p> <ul style="list-style-type: none"> i. Designate a compliance 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. The coordinator shall manage complaints and concerns resulting from activities that cause vibrations. The severity of the vibration concern should be assessed by the coordinator and, if necessary, evaluated by a qualified noise and vibration control expert. ii. Conduct vibration monitoring before and during vibration generating operations occurring within 100 feet of historic structures. Every attempt shall be made to limit construction-generated vibration levels during pile driving and other groundborne noise and vibration-generating activities in the vicinity of the historic structures in accordance with recommendations of the appropriate agency with authority. iii. Cover or temporarily shore adjacent historic features, as necessary, for protection from vibrations, in consultation with the appropriate cultural resources authority. iv. Avoid or minimize the use of construction equipment known to generate high levels of groundborne vibration (e.g., pile drivers). v. Require that any pile driving within a 50-foot radius of residences use alternative installation methods where possible (e.g., pile cushioning, jetting, predrilling, cast-in-place systems, resonance-free vibratory pile drivers) to reduce the number and amplitude of blows required to seat the pile. vi. Conducting pile-driving activities within 285 feet of sensitive receptors shall be limited to daytime hours to avoid sleep disturbance during evening and nighttime hours.
15-3(a)	<p>Identify noise-sensitive receptors in the vicinity of project activities and design projects to minimize exposure of sensitive receptors to long-term, operational noise sources (for example, water pumps) to reduce noise levels below applicable local standards.</p>
15-3(b)	<p>Conduct a preliminary noise analysis report to determine future operation-related noise and distances to sensitive receptors. If results of the analysis determine that operation-related noise levels would exceed applicable thresholds at sensitive receptors, noise-minimizing measures shall be incorporated into design, including but not limited to building a structure to encase the new noise generating infrastructure. Materials (masonry brick, metal shed, wood) used to house the infrastructure will be of solid construction and void of gaps at the ground, roof line, and joints. All vents will include acoustically rated louvers.</p>
15-3(d)	<p>Locate parking lots no closer than 65 feet from the nearest residential property line and at least 25 feet from habitat for noise-sensitive wildlife species unless:</p> <ul style="list-style-type: none"> i. a detailed noise study is conducted that determines that placement of parking lots closer than the distances specified above will not result in noise levels that exceed 67 dBA at the nearest residential property line or 60 dBA from noise-sensitive habitat; or ii. appropriate mitigation measures, including permanent noise barriers, can be incorporated to reduce noise levels to equal the ambient noise level or referenced thresholds for residential property and noise sensitive habitat.

Table 1: Delta Plan Ecosystem Amendment PEIR Mitigation Measures (contd.)

Delta Plan Ecosystem Amendment Mitigation Measure Number	Delta Plan Ecosystem Amendment Mitigation Measure
Recreation	
18-1(a)	Projects shall be sited in areas that will not impair, degrade, or eliminate recreational facilities and opportunities. If this is not feasible, projects shall be designed such that recreational facilities and access to recreational opportunities (including bird-watching, hunting, recreational fishing, walking, and on-water recreation (e.g., boating or kayaking)) will be avoided or minimally affected. Once project construction activities have been completed, any affected recreational facilities and opportunities should be restored to pre-construction conditions if possible. Where impacts to existing recreational facilities and opportunities are unavoidable, new permanent or replacement facilities shall be constructed that are similar in type and capacity, and access to recreational opportunities restored, if feasible.
18-2(a)	If substantial temporary or permanent impairment, degradation, or elimination of recreational facilities causes users to be directed towards other existing facilities, lead agencies shall coordinate with impacted public and private recreation providers to direct displaced users to under-utilized recreational facilities through signage and public noticing, such as newsletters.
18-2(b)	Lead agencies shall provide additional operations and maintenance of existing facilities in order to prevent deterioration of these facilities.
18-2(c)	If the increase in use is temporary, the condition of the facilities prior to construction shall be documented, and once use returns to existing conditions, degraded facilities shall be rehabilitated or restored to their pre-construction condition.
18-2(d)	Where impacts to existing facilities are unavoidable, affected facilities shall be restored to their pre-construction condition once project construction activities are complete. If this is not feasible, new permanent or replacement facilities shall be constructed that are similar in type and capacity.
Transportation	
19-1(a)	Design projects to avoid modifications to federal, State, and county highways, local roadways, and bridges that may reduce vehicle capacity, to the extent feasible.
19-1(b)	Develop and implement a traffic control plan to reduce effects of roadway construction activities, including full and partial lane closures, bicycle and pedestrian facility closures, and reduced access to adjacent properties. The traffic control plan shall identify the following or equally effective measures: minimize lane closures during morning and evening peak hours; limit lane closures near the affected segment; reroute bicycle and pedestrian access around the project area; prevent bicyclists and pedestrians from entering the work area; and identify specific project-vehicle access routes that would avoid additional traffic in residential areas or would adversely affect other sensitive land uses, where feasible.
19-1(c)	Install roadway status signs at strategic locations in the Delta to inform the public of roadway closures and limits to ingress to/egress from Delta Islands. The signs shall include maps showing the relative locations of road closures and access restrictions to other Delta features.

Table 1: Delta Plan Ecosystem Amendment PEIR Mitigation Measures (contd.)

Delta Plan Ecosystem Amendment Mitigation Measure Number	Delta Plan Ecosystem Amendment Mitigation Measure
19-1(d)	For project operations that increase traffic, prepare a traffic study. The traffic study shall: determine haul routes that would be used; evaluate the potential impact of project traffic with respect to VMT; and evaluate the potential impact of project traffic on roadway safety and accessibility for all users (i.e., passenger vehicles, public transit, emergency service providers, bicycles, and pedestrians). If project traffic would result in a significant VMT impact, then appropriate measures shall be implemented to reduce VMT to the extent feasible. If project traffic would result in impacts to any of the roadway users listed above, then an alternate route shall be selected for project traffic or schedule project trips for non-peak-hour periods. If alternate routes are not feasible, then facility improvements shall be designed and constructed at intersections or road segments to maintain safe travel conditions and accessibility.
19-1(e)	Coordinate with Caltrans and/or other local agencies with jurisdiction over transportation system features during the planning and analysis of projects for the purpose of minimizing impacts on bridges, roadways, culverts, or other features that may be affected. Agencies responsible for constructing and maintaining levees on which a public roadway may be located shall also be consulted to ensure consistency with levee design criteria.
19-1(f)	For roads that will be flooded during floodplain operation, a vehicular traffic detour plan shall be prepared and shall be implemented prior to roadway inundation. The detour plan shall provide convenient and parallel vehicular traffic detours for routes closed because of inundation. The detour plan shall be prepared and implemented in accordance with current Caltrans Standard Plans and Specifications. (A temporary crossing structure, for example a Bailey Bridge, may be used to maintain circulation and avoid a detour plan.) After the detour route is identified and before flood flows are released that would overtop roads, the condition of the detour road surface shall be assessed and documented.
19-1(g)	<p>If roadways are to be partially or totally blocked during construction activities, a detour plan shall be prepared prior to beginning construction. The detour plan shall 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. The documentation shall 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 shall be assessed again and documented. The documentation shall identify substantial changes in the condition of the road surface, such as potholing or rutting. If substantial damage to roads and/or driveways occurs, repairs shall be implemented to restore the roads and/or driveways to their previous condition. Roadside drainage structures and road drainage features (e.g., rolling dips) shall be protected by regrading and reconstructing roads to restore the drainage structures and features to their previous condition.</p> <p>The detour plan shall prioritize paved roads for use as detour routes. If use of paved roadway detours is not feasible during flood flow road inundation periods, the detour plan shall require that visible dust emissions from unpaved detour routes be limited to the percent opacity indicated by the appropriate air pollution control district. The following dust control measures may be used to stabilize unpaved roadways:</p> <ul style="list-style-type: none"> • Watering • Uniform layer of washed gravel • Roadmix • Paving <p>Any other method that can be demonstrated to the satisfaction of the appropriate air pollution control district that effectively limits visible dust emission to the local percent opacity standard and meets the conditions of a stabilized unpaved road.</p>

Table 1: Delta Plan Ecosystem Amendment PEIR Mitigation Measures (contd.)

Delta Plan Ecosystem Amendment Mitigation Measure Number	Delta Plan Ecosystem Amendment Mitigation Measure
19-1(h)	<p>Traffic impact reports shall be prepared that meet the applicable agencies' standards to assess potential impacts on appropriate street segments, intersections, and highway/freeway on- and off-ramps. The traffic impact reports shall identify impacts that exceed the agencies' guidelines for significance and identify appropriate mitigation. Acceptable mitigation measures may include:</p> <ul style="list-style-type: none"> • Turn restrictions • Roadway widening to add lanes or shoulders • Redesign of freeway on- and off-ramps • Median construction/modification to restrict access • Flaring of intersections to add turn lanes • Provision of passing lanes or turnouts • Acceleration and deceleration lanes • Removal of obstructions • Roundabouts • Restriping to add lanes with or without parking removal and restrictions • Protected left-turn pockets or free right-turn lanes • Parking restrictions, daily or during peak hours • Fair-share contributions to approved projects identified in the agency's Capital Improvement Plan • Fair-share contributions to traffic signals identified in the agency's traffic signal plan

Table 1: Delta Plan Ecosystem Amendment PEIR Mitigation Measures (contd.)

Delta Plan Ecosystem Amendment Mitigation Measure Number	Delta Plan Ecosystem Amendment Mitigation Measure
19-1(i)	<p>Prepare and implement a waterway traffic control plan to ensure safe and efficient vessel navigation during construction in waterways. The plan shall identify vessel traffic control measures to minimize congestion and navigation hazards to the extent feasible. Construction areas in the waterway shall be barricaded or guarded by readily visible barriers or other effective means to warn boaters of their presence and restrict access. Warning devices and signage shall be consistent with the California Uniform State Waterway Marking System and effective during non-daylight hours and periods of dense fog. The waterway traffic control plan shall contain the following:</p> <ul style="list-style-type: none"> i. Where temporary partial channel closure is necessary, a temporary channel closure plan shall be developed. The waterway closure plan will identify and implement alternate detour routing and procedures for notifying boaters of construction activities and partial closures, including coordination with the U.S. Coast Guard, local boating organizations, and marinas. ii. To the extent feasible, ensure that safe boat access to public launch and docking facilities, businesses, and residences is maintained. iii. Coordinate with transit system operators to establish appropriate alternate transit system routes to be rerouted during construction activities, as appropriate. iv. Boat passage facilities shall be provided as an integral component of operable gate facilities, when feasible. Boat passage facilities shall be designed to provide uninterrupted boat passage when gates are in the “up” position. Floating docks with mooring bits shall be provided along the shoreline on both sides of the boat passage facility for boaters to use while they await passage. Floating barriers will guide boats into the passage facility chambers. v. Implement a program to provide boater education on procedures for waiting at and using the boat passage facility. vi. Minimize impacts on bicycle and pedestrian circulation where feasible by avoiding impacts, minimizing closure of paths, and providing for temporary or permanent relocation of the facility to the extent feasible. Consult with the appropriate public works department to determine the most feasible alignment for facility relocation.
19-2(a)	<p>Develop and implement a program that shall include procedures for routine inspections and emergency facility operation to allow safe navigation should the facility become damaged or malfunction. The program shall include the following specific components:</p> <ul style="list-style-type: none"> i. Routine inspections and correction procedures to ensure that facility safety features are in good working order. ii. Routine inspections and correction procedures for navigational hazards around facilities, including floating or submerged debris and the formation of shoals. iii. Contingency and emergency operating procedures to address the possibility that a boat colliding with the flow control facilities could damage the facilities or otherwise render them unable to operate as engineered, and provisions to allow safe navigation.
Tribal Cultural Resources	
10-1(a) through (i)	Refer to Mitigation Measure 10-1(a) through (i), as described in Cultural Resources
10-2(a) through (f)	Refer to Mitigation Measure 10-2(a) through (f), as described in Cultural Resources

Table 1: Delta Plan Ecosystem Amendment PEIR Mitigation Measures (contd.)

Delta Plan Ecosystem Amendment Mitigation Measure Number	Delta Plan Ecosystem Amendment Mitigation Measure
Utilities and Public Services	
20-1(b)	Limit disposal of construction debris and other solid waste at local landfills if the landfills have limited capacity.
20-1(c)	Dispose of all construction debris at landfills and disposal facilities that are licensed for the type of wastes to be disposed. If the landfills and disposal facilities are not located near future construction sites, include analysis of transportation of solid waste in future environmental documentation for specific projects.
20-1(d)	Require construction contractors to prepare construction debris management plans and require reuse or recycling of construction debris.
20-1(e)	Develop project-specific solid waste plans to maximize practices that reduce and recycle solid waste and sludge generated by water, wastewater, and stormwater treatment facilities; and collect, recycle, or compost litter and solid waste generated at new facilities designed for visitor use (such as parks and visitor centers).
Wildfire	
14-1(a) through (s)	Refer to Mitigation Measure 14-1(a) through (s), as described in Hazards and Hazardous Materials
14-5(a)	<p>Prepare and implement a fire management plan to minimize potential for wildland fires. The plan shall include requirements for carrying emergency fire equipment, conducting “tailgate meetings” that include discussions about fire safety, and restricting construction during red flag warnings. Measures in the plan shall include the following strategies for reducing the potential for fire:</p> <ul style="list-style-type: none"> i. Store fire suppression tools in or near work activities. ii. Train construction crews and other on-site personnel on fire prevention and suppression for the project. Hold a fire prevention discussion as part of each day’s safety meeting. iii. Identify a person responsible for monitoring fire-safe practices to ensure implementation of measures and to communicate with emergency responders in the case that there is a fire. iv. Require installation and maintenance of spark arresters and other fire-reducing measures on equipment.
17 1(a) through (d)	Refer to Mitigation Measure 17-1(a) through (d), as described in Hazards and Hazardous Materials

Note:

¹ The Council is responsible for making sure that the identified mitigation measures are fully enforceable by adopting and incorporating them into the Delta Plan (Pub. Resources Code section 21081.6(b)). Delta Plan Policy G P1 requires implementation of mitigation measures for covered actions pursuant to regulatory requirements (23 Cal. Code of Regs. section 5002(b)(2)), if applicable and feasible, unless equally effective substitute mitigation is implemented. Monitoring and/or reporting on implementation of the adopted mitigation measures is accomplished through the Certification of Consistency process required by policy G P1 (Cal. Code of Regs. title 23 section 5002).