



Exhibit A
Sites Reservoir Project
Summary of Impacts and Mitigation

November 2023

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1.0 Introduction

The following provides a summary description of the California Environmental Quality Act (CEQA) environmental impacts of the Sites Reservoir Project (Project), describes the applicable mitigation measures identified in the Final Environmental Impact Report (Final EIR) and adopted by the Sites Project Authority's Board of Directors (Board), and states the Board's findings on the significance of each impact after imposition of the adopted mitigation measures. This document does not attempt to describe the full analysis of each CEQA environmental impact contained in the Final EIR. Instead, it provides a summary description of each CEQA impact, describes the applicable mitigation measures identified in the Final EIR and adopted by the Board, and states the Board's findings on the significance of each impact after imposition of the adopted mitigation measures.

2.0 Impact Determinations

The thresholds and criteria used in the Final EIR impact analyses for determining significance are specified in each resource chapter. These criteria were developed in consideration of current regulations, standards (e.g., CEQA Guidelines Appendix G Environmental Checklist Form), and/or consultation with state and federal agencies; professional judgment; knowledge of the Project design and the area that would be affected; and the context and intensity of the environmental effects.

Under CEQA, the impacts of the alternatives are compared to the existing conditions baseline and the No Project Alternative (existing conditions) and are classified as follows:

- No impact—No change in the environment would result from implementing the alternative.
- Less-than-significant impact—No substantial adverse change in the environment would result from implementing the alternative.
- Less than significant with mitigation—The implementation of one or more mitigation measures would reduce the impact from an alternative to a less-than-significant level.
- Significant impact—A potentially substantial adverse change in the physical conditions of the environment would result from implementing the alternative based on the evaluation of project effects using specified significance criteria. Mitigation measures are proposed, when feasible, to reduce effects on the environment.

2.1 Less-Than-Significant Impacts

A number of environmental impacts were analyzed and determined to either have no impact or are less than significant, with no mitigation required. These include:

- Impact HYDRO-1: Reduce water supply for non-Sites Storage Partner water users.
- Impact HYDRO-2: Substantial increase in the rate or amount of surface runoff in a manner which would result in flooding on site or off site.
- Impact HYDRO-3: Impede or redirect flood flows.

- Impact WQ-3: Violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface water quality during maintenance activities.
- Impact WQ-4: Be placed in a flood hazard or seiche zone, risking release of pollutants due to Project inundation.
- Impact WQ-5: Conflict with or obstruct implementation of a water quality control plan.
- Impact WQ-6: Create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff.
- Impact FLV-1: Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner which would result in a substantial increase or decrease in on- or offsite erosion or siltation.
- Impact FLV-2: Substantially alter natural river geomorphic processes (i.e., flow regime, sediment transport, and bank erosion) and existing river geomorphic characteristics (i.e., sinuosity, channel gradient, substrate composition, channel width and depth, and riparian vegetation).
- Impact FLV-3: Substantially alter the amount of instream woody material, boulders, shaded riverine aquatic habitat, or spawning gravel in Funks and Stone Corral Creeks downstream of Sites Reservoir.
- Impact FLV-4: Substantially alter geomorphic processes upstream of the dam sites.
- Impact GW-1: Violation of water quality standards or waste discharge requirements or otherwise substantial degradation of groundwater quality.
- Impact GW-2: Substantial decrease in groundwater supplies or substantial interference with groundwater recharge that would impede sustainable groundwater management of the basin.
- Impact GW-3: Conflict with or obstruct implementation of a sustainable groundwater management plan.
- Impact VEG-6: Introduction or increased spread of invasive plant species.
- Impact FISH-2: Operations effects on winter-run Chinook salmon.
- Impact FISH-3: Operations effects on spring-run Chinook salmon.
- Impact FISH-4: Operations effects on fall-run/late fall-run Chinook salmon.
- Impact FISH-5: Operations effects on Central Valley steelhead.
- Impact FISH-6: Operations effects on green sturgeon.
- Impact FISH-7: Operations effects on white sturgeon.
- Impact FISH-10: Operations effects on lampreys.

- Impact FISH-11: Operations effects on native minnows (Sacramento splittail, Sacramento hitch, hardhead, and Central California roach).
- Impact FISH-12: Operations effects on starry flounder and northern anchovy.
- Impact FISH-13: Operations effects on striped bass.
- Impact FISH-14: Operations effects on American shad.
- Impact FISH-15: Operations effects on threadfin shad.
- Impact FISH-16: Operations effects on black bass (largemouth bass, smallmouth bass, and spotted bass).
- Impact FISH-17: Operations effects on California bay shrimp.
- Impact FISH-18: Operations effects on reservoir fish species.
- Impact FISH-19: Operations effects on Southern Resident killer whale.
- Impact FISH-20: Maintenance effects on fish and aquatic biological resources.
- Impact GEO-1a: Directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving: Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map, issued by the State Geologist for the area or based on other substantial evidence of a known fault.
- Impact GEO-1b: Strong seismic ground shaking.
- Impact GEO-1c: Seismic-related ground failure, including liquefaction.
- Impact GEO-1d: Landslides.
- Impact GEO-2: Result in reservoir-triggered seismicity or be subject to a seiche.
- Impact GEO-3: Result in substantial soil erosion or the loss of topsoil.
- Impact GEO-4: Be located in a geologic unit or soil that is unstable, or that would become unstable as a result of the Project, and potentially result in onsite or offsite landslide, lateral spreading, subsidence, liquefaction, or collapse.
- Impact GEO-5: Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial direct or indirect risks to life or property.
- Impact GEO-6: Have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of wastewater.
- Impact MIN-1: Loss of availability of a known mineral resource that would be of value to the region and the residents of the state.

- Impact MIN-2: Loss of availability of a locally important mineral resource recovery site delineated on a local general plan, specific plan, or other land use plan.
- Impact LAND-2: Significant environmental impact due to a conflict with a land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect.
- Impact AG-4: Involve other changes in the existing environment, which, due to their location or nature, could result in the conversion of Prime Farmland, Farmland of Statewide Importance, or Unique Farmland, as designated under the FMMP of the California Resources Agency or under the federal Farmland Protection Policy Act, to nonagricultural use.
- Impact REC-1: Increased use of existing neighborhood and regional parks or other recreational facilities that would result in new or accelerated substantial physical deterioration of those facilities.
- Impact EN-1: Potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources during construction or operation.
- Impact EN-2: Conflict with or obstruct a state or local plan for renewable energy or energy efficiency.
- Impact EN-3: Place a substantial demand on regional energy supply or require substantial additional capacity or substantially increase peak and base period electricity demand.
- Impact TRA-1: Conflict with a program, plan, ordinance, or policy addressing the circulation system, including transit, roadway, bicycle, and pedestrian facilities.
- Impact TRA-2: Conflict or be inconsistent with CEQA Guidelines Section 15064.3, Subdivision (b)
- Impact TRA-3: Substantial increase in hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment).
- Impact TRA-4: Result in inadequate emergency access.
- Impact NAV-1: Substantially impair recreational and commercial navigation during construction and operations.
- Impact NOI-1: Generation of a substantial temporary increase in ambient noise levels in the vicinity of the Project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies.
- Impact NOI-2: Generation of a substantial permanent increase in ambient noise levels in the vicinity of the Project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies.
- Impact NOI-3: Generation of excessive groundborne vibration or groundborne noise levels.
- Impact AQ-4a: Expose sensitive receptors to toxic air contaminants.
- Impact AQ-4c: Expose sensitive receptors to asbestos, lead-based paint, or fungal spores that cause Valley Fever.

- Impact AQ-5: Result in other emissions (such as those leading to odors) adversely affecting a substantial number of people.
- Impact VIS-2: Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area.
- Impact POP-1: Induce substantial unplanned population growth in an area, either directly or indirectly.
- Impact POP-2: Displace substantial numbers of existing people or housing, necessitating the construction of replacement housing elsewhere.
- Impact UTIL-1: Result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times, or other performance objectives for fire protection, police protection, schools, or other public facilities.
- Impact UTIL-2: Require or result in the relocation or construction of new or expanded water, wastewater treatment or stormwater drainage, electric power, natural gas, or telecommunications facilities, the construction or relocation of which could cause significant environmental effects.
- Impact UTIL-3: Have insufficient water supplies available to serve the Project and reasonably foreseeable future development during normal, dry, and multiple dry years.
- Impact UTIL-4: Result in a determination by the wastewater treatment provider which serves or may serve the Project that it has inadequate capacity to serve the Project's projected demand in addition to the provider's existing commitments.
- Impact UTIL-5: Generate solid waste in excess of state or local standards, or in excess of the capacity of local infrastructure, or otherwise impair the attainment of solid waste reduction goals
- Impact HAZ-1: Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials.
- Impact HAZ-2: Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment.
- Impact HAZ-3: Be located on a site which is included on a list of hazardous materials sites compiled pursuant to California Government Code Section 65962.5 and, as a result, would create a significant hazard to the public or the environment.
- Impact HAZ-4: Impair implementation of or physically interfere with adopted emergency response plan or emergency evacuation plan.

- Impact HAZ-5a: Be located in or near State Responsibility Areas or lands classified as very high fire hazard severity zones and substantially impair an adopted emergency response plan or emergency evacuation plan.
- Impact HAZ-5b: Due to slope, prevailing winds, and other factors, exacerbate wildfire risks and expose Project occupants to pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire.
- Impact HAZ-5c: Require the installation or maintenance of associated infrastructure (such as roads, fuel breaks, emergency water sources, power lines or other utilities) that may exacerbate fire risk or that may result in temporary or ongoing impacts to the environment.
- Impact HAZ-5d: Expose people or structures to a significant risk, loss, injury or death involving wildland fires or significant risks, including downslope or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes.
- Impact HAZ-6: Result in an impact on public health related to methylmercury bioaccumulation in fish.
- Impact HAZ-7: Result in an impact on public health due to an increase in harmful algal blooms.
- Impact HAZ-8: Result in substantial exposure of humans to mosquito-borne illnesses.
- Effect SOC-1: Substantial adverse effects on regional economics.
- Effect SOC-2: Substantial adverse effects on local economics (local government fiscal conditions and recreational economics).
- Effect SOC-3: Substantial adverse effects on agricultural economics.
- Effect SOC-4: Substantial adverse effects on municipal and industrial economics.

3.0 Significant Impacts

The following sections provide an overview of the Project's significant impacts, discussed by resource area and alternative. An initial impact statement is followed by a determination of how the resource area would be affected and identification of feasible mitigation to reduce impacts those impacts. Several of the impacts have been found by the Authority to be significant and unavoidable, as these impacts cannot feasibly be mitigated to a less-than-significant level. Significant and unavoidable impact determinations are noted in **bold**.

Table A-1 (attached) also provides a summary list of significant impacts for each alternative, a list of the mitigation measures identified to reduce impacts, and significance before and after mitigation.

3.1 Surface Water Quality

Impact WQ-1: Violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface water quality during construction

Construction of Project facilities would not violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface water quality in the study area.

Implementation of BMP¹-11, BMP-12, BMP-13, and BMP-14 would minimize or avoid the potential discharge of pollutants, including sediment, to study area waterbodies.

The initial filling of Sites Reservoir would result in the release of nutrients and dissolved organic carbon to the water column from newly inundated soil and other organic matter in the inundation area. Decomposition of freshly submerged organic matter would consume oxygen and thus temporarily reduce DO in the reservoir. Conditions within the reservoir itself would be effects on the Project, rather than effects from the Project on the surrounding environment. Releases during the initial filling period would not reduce drinking water quality downstream due to nutrients and organic carbon or cause low DO because nutrients and organic carbon in Sites Reservoir releases would be diluted and water would be aerated upon release. Thus, effects from initial filling of Sites Reservoir on downstream conditions with respect to nutrients, organic carbon and DO would be less than significant.

The initial filling of Sites Reservoir would not result in the substantial introduction or spread of invasive aquatic vegetation because these species already exist in the Sacramento River system. Recreational boating activities could be limited during the initial filling period if HABs were also present (Section 2D.3), which would help reduce the substantial introduction or spread of invasive aquatic vegetation. Furthermore, potential effects of invasive aquatic vegetation on water quality would be actively managed and minimized, including through use of approved herbicides, as well as mechanical, biological, and manual removal methods where appropriate (Section 2D.3).

The initial filling of Sites Reservoir would result in temporarily elevated concentrations of nutrients and dissolved organic carbon relative to concentrations in diverted Sacramento River water. Elevated nutrient levels would promote initiation and sustainment of HABs in Sites Reservoir generally in late spring through fall. If cyanobacteria and cyanotoxins were present in reservoir releases, potential downstream effects on water quality would not be expected because concentrations of cyanobacteria and cyanotoxins would be greatly diluted when eventually discharged into the Sacramento River, and cyanotoxins would undergo biodegradation, adsorb to sediment, and photodegrade to some degree. Furthermore, measures including monitoring and restricting in-water recreation based on the presence of cyanobacteria and cyanotoxins, and releasing water from lower in the reservoir if cyanobacteria and cyanotoxins are confirmed near the I/O tower at a level at or exceeding the "Caution" action trigger level, would further reduce any potential for adverse water quality effects (Section 2D.3.1, *Harmful Algal Blooms*). The timing and volume of releases from Sites Reservoir to Funks and Stone Corral Creeks will be determined and adaptively managed to comply with California Fish and Game Code Section 5937. It is anticipated that the flows to these creeks will be managed to reflect the historical hydrograph and seasonal conditions as characterized by the aquatic studies. Sites Reservoir releases will thus likely occur in late fall, winter, and early spring at times when HABs are less likely to occur in the reservoir. Releases

¹ Best management practices (BMPs) are incorporated into the Project and are described in the EIR in Chapter 2, *Project Description and Alternatives*, and in Appendix 2D, *Best Management Practices, Management Plans, and Technical Studies*.

to the creeks could be curtailed if, relative to baseline conditions in the creeks, high concentrations of cyanobacteria or cyanotoxins were present in the reservoir release. Thus, effects from initial filling of Sites Reservoir on downstream conditions would be less than significant with respect to HABs.

In the short term, estimated reservoir total mercury and aqueous methylmercury concentrations would be approximately twice as high as estimated long-term average concentrations. Mercury concentrations in the short-term (within 1–10 years of initial filling) would not exceed the CTR criterion, but methylmercury fish tissue concentrations may exceed the California sport fish objective of 0.2 mg/kg ww. Conditions within the reservoir itself would be effects on the Project, rather than effects from the Project on the surrounding environment.

Sites Reservoir releases to Funks and Stone Corral Creeks would likely increase aqueous and fish tissue methylmercury concentrations in these creeks such that the sport fish tissue objective is exceeded but would not cause aqueous mercury concentrations to exceed the CTR criterion. In the short-term, given the greater mercury and methylmercury concentrations in releases relative to long-term concentrations, methylmercury in Sites Reservoir releases may temporarily increase aqueous and fish tissue methylmercury concentrations in the CBD. This temporary increase could cause exceedances of the sport fish objective because methylmercury concentrations in CBD fish approach the California sport fish objective under the No Project Alternative. Because Funks Creek and Stone Corral Creek are small, intermittent streams and their stream banks are located primarily on private land, it is unlikely that anglers would be fishing these creeks; accordingly, any potential exceedances of the sport fish objective at these locations would not be expected to affect the public. Aqueous mercury and methylmercury in the Yolo Bypass would not increase substantially due to Sites Reservoir releases, and these releases would not cause measurable increases in fish tissue methylmercury. Aqueous and fish tissue methylmercury concentrations in the Sacramento River at Freeport may increase measurably in Dry and Critically Dry Water Years during release periods due to methylmercury in Sites Reservoir releases. The potential methylmercury impact on water quality in the CBD, Funks and Stone Corral Creeks, and the north Delta would be significant. To reduce the magnitude of this impact, Mitigation Measure WQ-1.1, *Methylmercury Management*, would be implemented at Sites Reservoir with the goal of reducing the methylation of mercury in Sites Reservoir. Most of the methylmercury reduction actions under this mitigation measure are recommended actions for new reservoirs by the State Water Board and Regional Water Quality Control Boards, as identified in the *Draft Staff Report for Scientific Peer Review for the Amendment to the Water Quality Control Plan for Inland Surface Waters, Enclosed Bays, and Estuaries of California, Mercury Reservoir Provisions – Mercury TMDL and Implementation Program for Reservoirs* (State Water Resources Control Board 2017b). The potential to reduce methylmercury concentrations exists based on current research (State Water Resources Control Board 2017b) but may be site specific. As such, the degree of effectiveness of any single methylmercury minimization action or combination of actions to reduce methylmercury in Sites Reservoir during the initial fill period such that there would be no substantial measurable increase in aqueous and fish tissue methylmercury concentrations at the downstream locations due to Sites Reservoir releases is not known at this time. Therefore, this impact would be significant and unavoidable.

Mitigation Measure WQ-1.1: Methylmercury Management

The Authority will implement the following actions as part of the RMP (Section 2D.3) to minimize reservoir methylmercury production and bioaccumulation of methylmercury in reservoir fish so that the average methylmercury concentrations in Sites Reservoir fish do not exceed the 0.2 mg/kg sport fish

objective². Most of these actions are recommended actions for new reservoirs by the State Water Board and Regional Water Quality Control Boards, as identified in the *Draft Staff Report for Scientific Peer Review for the Amendment to the Water Quality Control Plan for Inland Surface Waters, Enclosed Bays, and Estuaries of California, Mercury Reservoir Provisions – Mercury TMDL and Implementation Program for Reservoirs* (State Water Resources Control Board 2017b). The potential effectiveness of these recommended methylmercury reduction actions is supported by current research (State Water Resources Control Board 2017b) but may be site-specific. Methylmercury reduction actions and fish tissue monitoring will be implemented in coordination with the State Water Board and Central Valley RWQCB, as required.

1. Remove vegetation (e.g., brush, trees) in the inundation area prior to initial Sites Reservoir filling to reduce organic carbon. The decomposition of organic carbon in flooded soil and vegetation fuels the microbial methylation of mercury (Hall et al. 2005; Kelly et al. 1997).
2. Do not stock Sites Reservoir with fish for the first 10 years following its initial filling to reduce the potential for methylmercury bioaccumulation in reservoir fish when methylmercury levels in the reservoir are expected to be highest.
3. Upon completion of the initial filling of Sites Reservoir, implement a fish sampling program to determine whether game fish are present (e.g., due to unauthorized fish stocking) and whether a population has become established (i.e., presence of reproductively mature fish and several year classes). This sampling program would include one or two surveys in spring or early summer using a single electrofishing crew. The survey would include several transects along the shoreline, likely in the vicinity of the boat ramps and campgrounds. Once it has been determined that a population of game fish has established in the reservoir, begin monitoring Sites Reservoir fish tissue methylmercury concentrations (as total mercury) via annual tissue sampling.

Based on results from fish tissue monitoring, and in coordination with the State Water Board, Central Valley RWQCB, and the Office of Environmental Health Hazards Assessment, fish consumption warning signs will be posted in several visible locations around the reservoir if fish tissue concentrations exceed the 0.20 mg/kg ww sport fish objective³. As available in the reservoir, tissue from both sport and prey-sized fish from multiple species will be sampled in accordance with the State Water Board's Surface Water Ambient Monitoring Program, Safe to Eat Workgroup protocol (State Water Resources Control Board 2021c, 2022b). Mercury in fish tissues will be analyzed according USEPA's Method 1630 (U.S.

² The average methylmercury concentrations shall not exceed 0.2 milligrams per kilogram (mg/kg) fish tissue within a calendar year. The water quality objective must be applied to trophic level 3 (TL3) or trophic level 4 (TL4) fish, whichever is the highest existing trophic level in the water body. The objective applies to the wet weight concentration in skinless fillet. Freshwater TL3 fish are between 150 to 500 millimeters (mm) in total length and TL4 fish are between 200 to 500 mm in total length, or as additionally limited in size in accordance with the "legal size" set for recreational fishing, established by Title 14, California Code of Regulations 14 Sections 1–53.03.

³ For evaluating compliance with the sport fish objective, monitoring will include representative TL4 fish species, if present, or TL3 fish if no TL4 fish are present in the reservoir. A sample will be considered either an analytical result from individual fish tissue or a composite of tissue from several fish. Sample sets for comparison with the sport fish objective shall include a range of TL3 fish between 150 to 500 mm total length and TL4 fish between 200 to 500 mm total length.

Environmental Protection Agency 1998b, or as updated). The annual reservoir mercury monitoring program will continue for a minimum of 10 years following the first year of regulated reservoir stocking.

4. Manage reservoir water chemistry to control methylmercury production. The scope of water chemistry management actions would be informed by actions proven feasible and effective at reducing mercury methylation in other mercury-impaired reservoirs in the state. Monitoring, including aqueous and fish tissue methylmercury, will be implemented to assess the effectiveness of methylmercury reduction measures.

Water chemistry management actions may include the addition of an oxidant (e.g., DO) to the reservoir bottom waters (near the sediment-water interface) to reduce anoxia when the reservoir is stratified. Oxygen levels can be increased in the hypolimnion of a reservoir using a hypolimnetic oxygenation system (HOS). The use of HOS to reduce hypolimnetic anoxia may suppress mercury methylation and discharge to the hypolimnion in some reservoirs (State Water Resources Control Board 2017b:7-42, 7-43); however, the effectiveness of this method in reducing fish tissue mercury concentrations is not clear based on results from studies to date. Seelos et al. (2021) found that after 4 consecutive years of operation of a HOS in two California reservoirs, Guadalupe and Stevens Creek Reservoirs, there was a significant, albeit modest, decrease in fish tissue mercury and that results suggested that this may have been due to oxygenation mixing nutrients into surface water and enhancing primary productivity, which indirectly affected mercury bioaccumulation by diluting concentrations in phytoplankton, rather than directly lowering methylmercury in the water column. In contrast, in Calero Reservoir, within the same watershed as Guadalupe Reservoir, near-continuous HOS operation during “the 2014 dry season” reduced hypolimnetic methylmercury but did not substantially reduce mercury concentrations in zooplankton or small fish (McCord et al. 2016). McCord et al. (2016) hypothesized that operational factors may have accounted for the lack of reduction in methylmercury bioaccumulation: (1) operation of the HOS after the onset of hypoxia below the epilimnion, which allowed the accumulation of methylmercury in the hypolimnion and metalimnion and subsequent mixing of the accumulated methylmercury into the epilimnion making it available for uptake by phytoplankton; (2) a vertical gap between the oxygen diffuser line and the deepest sediments left an hypoxic zone that acted as an ongoing source of methylmercury to the hypolimnion, which was then mixed into the water column by the bubble plume of the HOS; and (3) the HOS did not overcome the hypoxia in the metalimnion, which may have provided methylmercury to the epilimnion.

If a HOS is implemented at Sites Reservoir, the addition of oxygen would take place annually just prior to the onset of stratification until after reservoir turnover in late fall or early winter. Pilot studies within the reservoir will help inform the design (e.g., sizing, type of oxygenation system) and operation (i.e., design oxygen delivery rate) parameters that result in the most effective reduction of in-reservoir mercury methylation and fish tissue methylmercury concentrations while avoiding potential adverse effects on reservoir water quality. The Authority will retain a qualified water quality specialist and/or fisheries biologist with expertise in methylmercury management to design these studies.

5. Manage reservoir fisheries to reduce in-reservoir fish tissue methylmercury levels. The scope of fisheries management actions would be informed by actions proven feasible and effective at other mercury-impaired reservoirs in the state. Fisheries management actions could include the following.
 - a. Intensive fishing to reduce fish populations to provide more food resources for remaining fish. This would increase the growth rate in the remaining fish and reduce their methylmercury body burdens through somatic growth dilution.

- b. Stocking the reservoir with low-methylmercury prey fish for stocked predator fish to consume.
- c. Stocking more or different sport fish species, including lower trophic level sport fish.
- d. Stocking large, old predator fish from hatcheries that supply fish with low methylmercury concentrations.

To assess the effectiveness of methylmercury reduction actions after initial implementation, fish tissue methylmercury concentrations (as total mercury) will be monitored. Young fish will be sampled because they have accumulated methylmercury for a shorter time period relative to older, larger sport fish and therefore will better reflect recent mercury exposure (State Water Resources Control Board 2017b). Fish tissue methylmercury concentrations in young fish will be assessed prior to implementation of any methylmercury reduction action.

To assess the effectiveness of fisheries management actions over the long term, ongoing monitoring of aqueous and fish tissue methylmercury in Sites Reservoir will be implemented per requirements or conditions in a water right order, Section 401 water quality certification issued pursuant to the CWA, or other appropriate order issued by the State Water Board and/or Central Valley RWQCB.

The Authority will coordinate with the Central Valley RWQCB to implement mercury/methylmercury control or reduction measures and monitor and report on fish tissue methylmercury, as required.

Impact WQ-2: Violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface water quality during operation

Except as noted below, operation of Alternatives 1, 2, and 3 would not substantially degrade water quality and would have less than significant effects on water quality with respect to changes in salinity, water temperature at discharge sites, HABs, invasive aquatic vegetation, nutrients, organic carbon, DO, mercury, and, for most locations, pesticides and metals for the following reasons:

- **Water Temperature:** fisheries resources are the primary designated beneficial use potentially affected by water temperature. As such, most of the potential effects associated with changes in water temperature are discussed in Chapter 11, *Aquatic Biological Resources*. Water temperature is also discussed in Chapter 15, *Agriculture and Forestry Resources*, because it is important for growing rice. The analysis in this chapter focuses on the Central Valley Basin Plan objective for waterbodies designated with the WARM or COLD beneficial use that at no time or place shall the temperature of intrastate waters be increased more than 5°F above natural receiving water temperature. Operation would not increase water temperature more than 5°F at discharge locations, in compliance with the Central Valley Basin Plan.
- **Salinity:** operation would not result in a substantial increase in salinity or violations of Delta or other water quality objectives due to the relatively low EC of the Sacramento River water used to fill the reservoir, the small volume of local inflows (Salt Pond and creeks), the requirements for salinity monitoring and I/O tower operation (Section 2D.3), dilution of the Sites Reservoir discharge by the Sacramento River, and limited effects of CVP/SWP reoperation on Delta water quality.
- **Nutrients, Organic Carbon, Dissolved Oxygen:** operation would not reduce drinking water quality downstream due to nutrients and organic carbon or cause low DO because nutrients and

organic carbon in Sites Reservoir releases would be diluted and water would be aerated upon release. Any increases in reservoir nutrient concentrations may benefit fish. Yolo Bypass habitat releases from Sites Reservoir may cause a temporary reduction in DO (below the 5.0 mg/L water quality objective) in the Toe Drain, Tule Canal, and other Yolo Bypass channels, but this would not be substantially different than what occurs historically during non-managed flow pulses under the No Project Alternative. Although habitat releases may stimulate phytoplankton growth, this would be unlikely to be of a magnitude that would result in a nuisance or adversely affect beneficial uses.

- HABs, Invasive Aquatic Vegetation: operation would result in reservoir drawdown, reduced storage volume, and higher water temperatures from late spring through fall, particularly in Dry and Critically Dry Water Years. This would create favorable conditions for the initiation of HABs, and growth of invasive aquatic vegetation. If cyanobacteria and cyanotoxins were present in Sites Reservoir releases, potential downstream effects on water quality and beneficial uses would not be expected because concentrations of cyanobacteria and cyanotoxins would be greatly diluted when eventually discharged into the Sacramento River, and cyanotoxins would undergo biodegradation and, to some degree, photodegradation and adsorption to sediment. Furthermore, measures including monitoring and restricting in-water recreation based on the presence of cyanobacteria and cyanotoxins in Sites Reservoir, and releasing water from lower in the reservoir if cyanobacteria and cyanotoxins are confirmed near the I/O tower at a level at or exceeding the “Caution” action trigger level, as well as other potential management actions (such as hypolimnetic oxygenation) would further reduce any potential for adverse water quality effects (Section 2D.3). In TC Canal, GCID Main Canal, and CBD, where there would be less dilution of Sites Reservoir releases, cyanobacteria and cyanotoxins are expected to have limited effect due to controlled releases from the I/O tower, aquatic algaecides routinely used by TCCA and GCID, lack of HAB-conducive conditions in CBD, and the effect of biotic and abiotic processes to reduce the concentration of cyanotoxins in the water column. In addition, releases to Funks and Stone Corral Creeks will be adaptively managed to ensure that fish in the creeks are kept in good condition in compliance with California Fish and Game Code Section 5937. It is anticipated that the flows to these creeks will be managed to reflect the historical hydrograph. Sites Reservoir releases will thus likely occur in late fall, winter, and early spring at times when HABs are less likely to occur in the reservoir. Releases to the creeks could be curtailed if, relative to baseline conditions in the creeks, high concentrations of cyanobacteria or cyanotoxins were present in the reservoir release. Based on results from the North Delta Food Subsidy studies and hydrologic processes (increased flow in the Yolo Bypass canals and tidal mixing), habitat flows through the Yolo Bypass would not be expected to cause substantial increases in HABs in the canals of the Yolo Bypass or the north Delta. Sites contributions to Sacramento River flow at Freeport would also not be expected to increase HAB formation in the Delta because concentrations of cyanobacteria and cyanotoxins from Sites Reservoir in the lower Sacramento River would be minimal and would represent an insubstantial fraction of the potential cyanobacteria seed supply to the Delta.
- Impacts with respect to invasive aquatic vegetation would be the same as described under Impact WQ-1. Potential effects of invasive aquatic vegetation on water quality would be actively managed and minimized, including through use of approved herbicides, as well as mechanical, biological, and manual removal methods, where appropriate (Section 2D.3). Project operations would not increase HABs in the Delta because water would be diverted during the winter and would not reduce flows (i.e., increase residence time) when HABs typically occur in the Delta (i.e., summer).

- Pesticides: concentrations in Sites Reservoir and Sites releases are expected to be low because source water concentrations are low; operations would not change the overall pesticide load to the Delta as pesticides are already present in the Yolo Bypass; any increase as a result of habitat flows into Yolo Bypass would be reduced by net and tidal flows from the Sacramento River and the California Department of Fish and Wildlife (CDFW) would use habitat flows in the manner most advantageous to ecosystem benefits identified in the WSIP program.
- Mercury and Methylmercury: operation would not cause mercury concentrations to exceed the CTR criterion in Sites Reservoir. Sites Reservoir releases with estimated expected long-term aqueous methylmercury concentrations would be lower than that in the CBD under the No Project Alternative and therefore would not be expected to increase bioaccumulation of methylmercury in CBD fish. Sites Reservoir releases could increase aqueous and fish tissue methylmercury concentrations in the CBD, particularly during Dry and Critically Dry Water Years at estimated long-term worst-case methylmercury concentrations in releases. However, fish tissue methylmercury levels in the CBD would likely return to baseline levels within months following the May–November release period.
- Metals other than Mercury: operation would not cause significant effects on water quality in the CBD, Funks Creek, water used for local agriculture (e.g., arsenic), or the Sacramento River. Discharge of Sites Reservoir water to the CBD would likely reduce metals concentrations in the CBD because metal concentrations in the CBD are generally higher than metals concentrations in the Sacramento River regardless of time of year. Project effects on Funks Creek would be less than significant because (1) exceedances likely already occur under 2020 baseline conditions and the No Project Alternative in the reach of the creek where existing flows would be replaced by reservoir releases; (2) the limited channel length that would be maximally affected by reservoir releases; (3) reductions in total metal concentrations due to settling of suspended sediment; and (4) water would be released to the creek from the I/O Works (i.e., higher in the reservoir away from the bed sediment). Water quality, including metals concentrations, will be monitored in the creeks and adaptive management will occur as necessary to maintain fish in the creeks in good condition in compliance with California Fish and Game Code Section 5937 (Appendix 2D). In the Sacramento River, discharges to the river from Sites Reservoir would occur after reductions in total metal concentrations due to settling of suspended sediment. These discharges would not cause substantial increases in concentration or exceedances or exacerbation of exceedances of water quality standards for metals in the Sacramento River.

Operation of Alternatives 1, 2, or 3 could cause significant water quality impacts related to the following constituents:

- Methylmercury: Sites Reservoir releases may cause measurable long-term degradation of water quality downstream in the north Delta by causing increases in aqueous and fish tissue methylmercury concentrations, relative to the No Project Alternative, in Dry and Critical Water Years, and causing exceedances of the methylmercury TMDL fish tissue objectives to occur more frequently and/or by greater magnitudes during these years and release period. Mercury and methylmercury in reservoir releases to Funks and Stone Corral Creeks would be reflected in the tissue of fish in these creeks and could cause exceedances of the 0.2 mg/kg ww sport fish objective. This would be a significant impact. Mitigation Measure WQ-1.1, *Methylmercury Management*, would be implemented at Sites Reservoir to reduce the magnitude of this impact. Mitigation Measure WQ-1.1 would be implemented to reduce the methylation of mercury in Sites Reservoir. Although the potential to reduce methylmercury concentrations exists based on

current research (State Water Resources Control Board 2017b), the effectiveness of the methylmercury minimization actions to reduce methylmercury concentrations in Sites Reservoir such that there would be no substantial measurable increase in aqueous and fish tissue methylmercury concentrations at downstream locations is not known at this time. Therefore, this impact would be **significant and unavoidable**.

- **Metals in Stone Corral Creek:** operation could cause elevated concentrations of some metals in Stone Corral Creek because reservoir discharges to Stone Corral Creek would generally come from the bottom of Sites Reservoir, where metal concentrations may be greater than in other parts of the reservoir water column. Mitigation Measure WQ-2.1, *Prevent Metal Impacts in Stone Corral Creek Associated with Sites Reservoir Discharge*, would be implemented if metal concentrations in Stone Corral Creek exceed water quality standards for the protection of aquatic life during the drier parts of the year when exceedances would not be expected. Implementation of Mitigation Measure WQ-2.1 would reduce this impact to less than significant because releases would be controlled and metal concentrations would be reduced.
- **Metals and Pesticides in Yolo Bypass:** operation could cause elevated concentrations of some metals and pesticides in Yolo Bypass as a result of redirection of some of the CBD water from the Sacramento River to the Yolo Bypass. Mitigation Measure WQ-2.2, *Prevent Net Detrimental Metal and Pesticide Effects Associated with Moving Colusa Basin Drain Water Through the Yolo Bypass*, includes evaluation of metals and pesticide concentrations in Yolo Bypass to ensure net benefits for aquatic communities and discontinuing flows if shown otherwise. Implementation of Mitigation Measure WQ-2.2 would reduce impacts to less than significant because flow would be terminated if needed.

Mitigation Measure WQ-1.1: Methylmercury Management

See Impact WQ-1 for a description of this mitigation measure.

Mitigation Measure WQ-2.1: Prevent Metal Impacts in Stone Corral Creek Associated with Sites Reservoir Discharge

The metals of concern for Project operations include aluminum, copper, iron, and lead. Mercury is considered separately. The effect of the Project on metal concentrations in Stone Corral Creek is uncertain and therefore considered potentially significant without mitigation. To evaluate the potential effect, metal concentrations will be measured in samples collected from Stone Corral Creek approximately half a mile downstream from Sites Dam. Samples will be collected every other month for 1 year prior to construction and every other month after construction for a period sufficient to indicate that any impacts are less than significant, including during periods when the reservoir is at least 75% full. The measurements will include total and dissolved aluminum, copper, iron, lead, and hexavalent chromium. Hexavalent chromium is included because existing data are insufficient to evaluate potential Project effects. Measurements of metal concentrations will be accompanied by measurements of pH, dissolved organic carbon, and hardness because these parameters influence water quality standards for aquatic life protection for some metals. Additional metal measurements are planned for the Stone Corral Creek and Funks Creek Aquatic Study Plan (Section 2D.4).

Under the No Project Alternative, exceedances of standards for the protection of aquatic life for total aluminum, copper, iron, and lead (standards shown in Table 6-9) tend to occur in the Sacramento River and Stone Corral Creek during the rainy season. Stone Corral Creek would be considered as affected by elevated metal concentrations if they were found to exceed thresholds for aquatic life protection during

the drier parts of the year when exceedances would not be expected. For evaluation purposes, this drier part of the year would begin in April or a month after the last diversions to Sites Reservoir storage, whichever is later, and run through November or until the commencement of diversions to storage, whichever is earlier.

If measurements from Stone Corral Creek taken during this dry period indicate that concentration of one or more of these metals is greater than water quality standards for the protection of aquatic life, actions to reduce metal concentrations in Stone Corral Creek will be implemented to reduce concentrations to levels that meet these standards. Mitigative actions may include, but are not limited to, one or more of the following types of measures.

- Modify the flow released to Stone Corral Creek. Changes in release flow could affect metal concentrations in the reservoir discharge by altering the withdrawal zone in the reservoir.
- Release occasional pulses of high flow. Flow pulses could flush away low-quality sediment and water from the bottom of the reservoir adjacent to Sites Dam.
- Add a vertical extension in the reservoir at the withdrawal point. This extension would pull water from higher in the reservoir, where metal concentrations are expected to be lower.
- Pump water from the top of Sites Reservoir for release into Stone Corral Creek. Based on the demonstration of the effect of partial settling of suspended sediment on total metal concentrations in Sites Reservoir and the conservative nature of this assessment, metal concentrations in Sites Reservoir are generally expected to meet water quality standards for metals for the protection of aquatic life during the drier parts of the year in water located above the deepest portions of the reservoir.
- Discontinue or delay releases. The flow regime for Sites Reservoir releases to Stone Corral Creek has not yet been established, but it is likely to be similar to the natural hydrograph. If Sites Reservoir releases to Stone Corral Creek would exceed the objective described above (exceed thresholds for aquatic life protection during the drier parts of the year when exceedances would not be expected), releases could be discontinued in the spring or delayed in the fall, such that the exceedances would not occur, without resulting in substantial deviation from the flow pattern of the natural hydrograph.

Mitigation Measure WQ-2.2: Prevent Net Detrimental Metal and Pesticide Effects Associated with Moving Colusa Basin Drain Water Through the Yolo Bypass

The effect of the Project on metal and pesticide concentrations in the Yolo Bypass due to increased inflow from the CBD is uncertain and therefore considered potentially significant without mitigation. Flow augmentation with other water sources is continuing to be evaluated with oversight from the Delta Coordination Group. The effect of Yolo Bypass flow augmentation on pesticide levels in water and plankton is under investigation by the U.S. Geological Survey and DWR (Orlando et al. 2020:99). This mitigation measure provides for monitoring of metal concentrations in the Yolo Bypass and for cessation of flows from the Project to the Yolo Bypass if needed for avoiding significant impacts.

To monitor metal concentrations, metal concentrations will be measured in samples collected at the downstream end of the CBD and at two locations in the Yolo Bypass, one in the Tule Canal and the other in the Toe Drain. Samples will be collected monthly during June–October to evaluate concentrations before and during the period of CBD discharge to the Yolo Bypass.

If the pesticide studies indicate that flow augmentation would increase pesticide concentrations to a level that could be detrimental to fish or if the metal measurements indicate that the Project habitat flows could cause Yolo Bypass concentrations of metals to exceed water quality standards for aquatic life protection, the potential net effects of these elevated concentrations on aquatic communities will be evaluated. Net effects include additive or synergistic effects, effects on food supply for fish, and direct effects on fish. This evaluation will be part of the ongoing evaluation conducted by CDFW and other agencies to determine net benefits of the Yolo Bypass habitat flows and the Project's funded ecosystem benefits under the WSIP. CDFW would have the discretion to modify WSIP water that is released to Yolo Bypass, depending on the state of the science and fish needs, and flows would cease if there were no net benefit.

3.2 Vegetation and Wetland Resources

Impact VEG-1: Substantial adverse effect (i.e., loss or removal), either directly or through habitat modifications, on plant species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service

Alternative 1 and 3

Construction of Alternative 1 or 3 would result in significant impacts on special-status plant species by reducing the number of occurrences of special-status plants and lowering the quality of occupied habitat for bent-flowered fiddleneck, brittlescale, red-flowered bird's-foot trefoil, and San Joaquin spearscale. Construction could also affect potential habitat for additional special-status plant species, including the federally listed Keck's checkerbloom and palmate-bracted bird's-beak. The Authority will implement BMP-10, BMP-12, BMP-13, BMP-33, BMP-35, and BMP-36 that would limit direct impacts on special-status plants before and during construction. Indirect impacts under Alternative 1 or 3 due to erosion, sedimentation, and contamination from hazardous or petroleum substances into occupied special-status plant habitats located outside of the construction area would be avoided with implementation of BMP-12 and BMP-13. The occurrences of special-status plants in the construction footprint are significant because their loss could substantially decrease genetic diversity for the species, particularly the red-flowered bird's-foot trefoil, which is known from only eight locations. While measures would be implemented before and during construction to avoid and minimize impacts on special-status plants, Alternative 1 or 3 would still result in the loss and habitat quality degradation of their habitats. Additionally, the construction footprint has not been recently or completely surveyed for special-status plants, and there is potential for additional species or locations of the known special-status plant species to occur in the footprint and be subject to construction-related impacts.

The direct, permanent losses of special-status plants would be a significant impact. Implementation of Mitigation Measures VEG-1.1 and VEG-1.2 would reduce the level of impact to less than significant because all locations of special-status plants in and within 300 feet of the Project footprint would be identified, mapped, and avoided, if feasible. If avoidance is not feasible, the acquisition and permanent protection of occupied habitat for each affected species at identified ratios would ensure some of the populations of these species would survive in perpetuity.

Operation impacts on special-status plants would not occur from erosion, sedimentation, or spills of hazardous or petroleum substances because such activities either would not be located in proximity to special-status plant species or potential impacts would be minimized by implementation of BMP-12 and

BMP-13 by the Authority. The Authority will develop and implement the LMP and Recreation Management Plan to further protect special-status plants. Operation impacts on special-status plants from vegetation maintenance activities could result in losses of special-status plants, and this would be a significant impact. Implementation of Mitigation Measure VEG-1.3 would reduce the level of impact to less than significant because all locations of special-status plants in the vegetation maintenance areas would be identified, fenced, and avoided prior to any maintenance activities.

Mitigation Measure VEG-1.1: Conduct Appropriately Timed Surveys for Special-Status Plant Species Prior to Construction Activities

The Authority will require qualified botanists to conduct special-status plant surveys of the Project footprint, including all permanent and temporary construction impact areas and a 250-foot-wide buffer area to encompass areas where indirect effects may occur. The surveys will be conducted in accordance with *Protocols for Surveying and Evaluating Impacts to Special Status Native Plant Populations and Natural Communities* (California Department of Fish and Wildlife 2018), or the most current protocols, specifically with respect to the number and timing of surveys, use of reference populations, and evaluation of negative findings. Surveys will occur during the seasons that special-status plant species would be evident and identifiable, which generally is during their blooming periods. The surveys will be conducted no more than 3 years prior to the start of ground-disturbing activities. The results of the surveys will be submitted in a report to CDFW and/or USFWS for review no less than 1 year prior to the start of ground-disturbing activities.

The survey report will include the location and description of all work areas and the location and description of all occupied habitat for special-status plant species. The report will also identify locations where effective avoidance measures could be implemented. In areas where no special-status plant species are present, no further mitigation will be required.

Mitigation Measure VEG-1.2: Establish Activity Exclusion Zones Around Special-Status Plants in Temporary Impact Areas and Compensate for Permanent Impacts on Special-Status Plant Species

Where surveys conducted according to Mitigation Measure VEG-1.1 determine that a special-status plant species is present in or adjacent to an area where temporary ground-disturbing activities would take place, the Authority will avoid Project impacts on the species, if feasible, through the establishment of activity exclusion zones, in which no ground-disturbing activities will take place, including construction staging or other temporary work areas. Activity exclusion zones for special-status plant species will be a minimum of 50 feet established around each occupied habitat site, the boundaries of which will be clearly marked with construction exclusion fencing or its equivalent. The establishment of activity exclusion zones will not be required if no construction-related disturbances will occur within 250 feet of the occupied habitat. The size of activity exclusion zones may be reduced below 50 feet through consultation with a qualified biologist and with concurrence from CDFW or, for any federally listed species, from USFWS based on site-specific conditions.

If exclusion zones cannot feasibly be established for avoidance, and construction would result in take of federally listed or state-listed plants or plant parts (roots, shoots, fruit, or seeds), the Authority will apply for take authorization through an Incidental Take Permit from USFWS for any federally listed plant or CDFW for any state-listed plant.

Prior to any construction activities that would result in permanent impacts on special-status plants, the Authority will acquire and permanently protect compensatory mitigation habitat for each affected species at a minimum 2:1 ratio (2 acres preserved for every 1 acre permanently affected), but the final compensation ratios will be based on site-specific information and determined through coordination with the applicable state and/or federal agencies (CDFW, USFWS) during permit processing. The compensation acreage used for the ratio will be based on the area of impact as determined by surveys required under Mitigation Measure VEG-1.1. Compensatory mitigation will be accomplished by procurement of existing onsite or offsite occupied habitat acquired in fee, through conservation easements, or by purchasing credits from a certified conservation bank or mitigation bank. The purchase of mitigation credits or the establishment of onsite or offsite mitigation areas (or a combination of the two) would be completed as agreed upon by the Authority, USFWS, and/or CDFW, as appropriate for the species being mitigated. If onsite or offsite occupied habitat is acquired (permittee-responsible mitigation), the habitat will require monitoring by the Authority. If credits are purchased from a certified bank, no further monitoring will be required.

The Authority will monitor any permittee-responsible mitigation habitat annually for a minimum of 5 years, or as required by the regulating agency, to verify that the habitat suitability and extent of species cover are maintained. For these mitigation areas, the Authority will prepare and implement an operations and management plan for each compensation habitat, with funding provided through an endowment. The plan will include requirements to monitor the occupied habitat, including the special-status species absolute and relative cover, cover of other native species, and cover of invasive species. The plan will also be consistent with the LMP and will determine and implement appropriate management measures to maintain the habitat and the plant species cover at the same or greater extent as when the occupied habitat was acquired. Management measures may include removal of invasive plant species. The Authority will submit annual monitoring reports to CDFW or, for any federally listed species to USFWS, for review and verification that the Project remains in compliance with the mitigation requirements.

Mitigation Measure VEG-1.3: Establish Activity Exclusion Zones Around Special-Status Plants Prior to Vegetation Maintenance Activities

Prior to surface-disturbing maintenance or herbicide use, the Authority will use the results of the surveys conducted under Mitigation Measure VEG-1.1 to mark the known locations of special-status plants in or within 50 feet of any maintenance areas. Prior to maintenance requiring surface disturbance or vegetation removal in annual grassland, chaparral, oak woodland and savanna, and wetlands, the Authority will require qualified botanists to conduct special-status plant surveys of the maintenance areas. If any special-status plants are found in or within 50 feet of the maintenance areas, the Authority will fence and avoid the plants that could be affected by surface-disturbing maintenance activities.

Alternative 2

Construction of Alternative 2 would result in similar impacts to Alternatives 1 and 3 except that construction of the South Road would result in greater loss of annual grassland, chamise, mixed chaparral, blue oak woodland, oak savanna, and seasonal wetland, and the smaller reservoir would result in somewhat smaller loss of special-status plant habitats. The Authority will implement BMP-10, BMP-12, BMP-13, BMP-33, BMP-35, and BMP-36, which would limit direct impacts on special-status plants before and during construction. Indirect impacts under Alternative 2 due to erosion, sedimentation, and contamination from hazardous or petroleum substances into occupied special-status plant habitats located outside of the construction area would be avoided with implementation of BMP-

12 and BMP-13. As with Alternatives 1 and 3, implementation of Mitigation Measures VEG-1.1 and VEG-1.2 would reduce the level of impact to less than significant. The Authority would minimize operation impacts on special-status plants by implementing BMP-12 and BMP-13. There would be no impact in the recreation areas, but there would be potential impacts in vegetation maintenance areas. As with Alternatives 1 and 3, implementation of BMPs, the LMP, the Recreation Management Plan, and Mitigation Measure VEG-1.3 would reduce the level of impact from vegetation maintenance to less than significant.

Impact VEG-2: Substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, and regulations or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service

Alternative 1 and 3

Alternative 1 or 3 would result in significant impacts on state-protected sensitive natural communities by direct removal of vegetation in these communities for the regulating reservoirs and conveyance complex, Sites Reservoir, roads, and recreation areas. Implementation of BMP-33, BMP-35, and BMP-36 will avoid and minimize permanent and temporary impacts on sensitive natural communities. Indirect impacts under Alternative 1 or 3 due to erosion, sedimentation, and contamination from hazardous or petroleum substances into sensitive natural communities located outside of the construction area would be avoided with implementation of BMP-12 and BMP-13. The sensitive natural communities in the construction footprint are important because they are rare and/or declining in California and elsewhere. Measures would be implemented before and during construction to avoid and minimize impacts on sensitive natural communities. The construction of Alternative 1 or 3 would still result in the loss of sensitive natural communities and habitat quality degradation. The loss of sensitive natural communities would be significant. Implementation of Mitigation Measures VEG-2.1 and VEG-2.2 would reduce the level of impact because all locations of sensitive natural communities in and within 300 feet of the Project footprint would be identified and mapped, and the acquisition and permanent protection of in-kind communities for each affected sensitive natural community at identified ratios would ensure survival of the affected sensitive natural community in perpetuity. Mitigation for impacts on sensitive communities within annual grassland could be accomplished in one or two seasons because of the relatively rapid growth rate of herbaceous plants. Implementation of mitigation would avoid, minimize, and compensate for loss of sensitive communities within annual grassland and would reduce the level of this impact to less than significant. For upland riparian and oak savanna communities, the removal of mature trees would be a long-term impact because of the length of time that would be required for newly planted trees to reach mature size and fully replace the habitat function and habitat value of the removed trees. This impact would remain **significant and unavoidable** even with mitigation because of the long-term loss of upland riparian and oak savanna habitat.

Operation impacts from vegetation maintenance could result in losses of sensitive natural communities in annual grasslands, oak savanna, oak woodland, or upland riparian, and this would be a significant impact. Operation impacts on sensitive natural communities from erosion, sedimentation, and spills of hazardous or petroleum substances would be avoided by implementing BMP-12 and BMP-13. In addition, the LMP and the Recreation Management Plan would include exclusion practices that would be implemented during the operations phase. Implementation of Mitigation Measure VEG-2.3 would reduce the level of impact to less than significant because sensitive natural communities in vegetation maintenance areas would be identified, fenced, and avoided during vegetation maintenance activities.

Mitigation Measure VEG-2.1: Conduct Surveys for Sensitive Natural Communities and Oak Woodlands in the Project Area Prior to Construction Activities

Prior to the start of any Project construction activities, the Authority will retain qualified botanists to conduct surveys of the Project area, including all permanent and temporary impact areas and an additional buffer of 250 feet to encompass potential indirectly affected areas. The surveys will be conducted in accordance with Protocols for Surveying and Evaluating Impacts to Special Status Native Plant Populations and Natural Communities (California Department of Fish and Wildlife 2018), or most current protocols. Surveys will occur during the season that plant species would be evident and identifiable, which generally is during their blooming season. Surveys will also include assessment of SRA cover, using standard methods for measuring linear feet and area, in all permanent and temporary impact areas. The surveys will be conducted no more than 3 years prior to the start of ground-disturbing activities.

The results of the survey will be submitted in a report to CDFW and/or USFWS for review no less than 90 days prior to the start of ground-disturbing activities. The report will include the location and description of all work areas and the location and description of all sensitive natural communities and oak woodlands, and it will identify locations where effective avoidance measures could be implemented. In areas where no sensitive natural communities or oak woodlands are present, no further mitigation will be required.

Mitigation Measure VEG-2.2: Avoid and Compensate for Adverse Effects on Sensitive Natural Communities

Where surveys determine that a sensitive natural community is present in or adjacent to an area where temporary ground-disturbing activities would take place, the Authority will avoid Project impacts on the community, if feasible, through the establishment of activity exclusion zones, in which no ground-disturbing activities will take place, including construction staging or other temporary work areas. Activity exclusion zones for sensitive natural communities will be a minimum of 50 feet established around each community site, the boundaries of which will be clearly marked with construction exclusion fencing or its equivalent. The establishment of activity exclusion zones will not be required if no construction-related disturbances will occur within 250 feet of the sensitive natural community. The size of activity exclusion zones may be reduced below 50 feet through consultation with a qualified biologist and with concurrence from CDFW or, for any federally protected communities of concern, from USFWS based on site-specific conditions.

Prior to any activities that would result in permanent impacts on sensitive natural communities, the Authority will acquire and permanently protect compensation habitat for each affected sensitive natural community at a minimum 1:1 ratio (1 acre restored or created for every 1 acre removed), or by an equivalent or greater requirement determined through coordination with state and/or federal agencies (CDFW, USFWS) during permit processing. The compensation acreage used for the ratio will be based on the area of impact as determined by surveys required under Mitigation Measure VEG-2.1. In addition to mitigating the loss of riparian habitat, specific measures will be included, as detailed in Impact FISH-1, to compensate for the loss of SRA cover (area and linear feet), as portions of the affected riparian habitat also provide SRA cover for fish. Loss of SRA cover will be mitigated at a ratio of 3:1 or by an equivalent or greater requirement determined through coordination with state and/or federal agencies (CDFW, USFWS, and NMFS). The mitigation credits for SRA cover mitigation will apply toward riparian habitat mitigation requirements (i.e., the acreage required for compensation will not be duplicated).

Compensation habitat for sensitive natural communities will consist of existing onsite or offsite in-kind habitat acquired in fee, through conservation easements, or from by purchasing credits from a certified conservation bank or mitigation bank. The purchase of mitigation credits or the establishment of onsite or offsite mitigation areas (or a combination of the two) would be completed as agreed upon by the Authority, CDFW, USFWS, and/or NMFS, as appropriate for the resource being mitigated. If onsite or offsite habitat is acquired (permittee-responsible mitigation), the habitat will require monitoring by the Authority. If credits are purchased from a certified bank, no further monitoring will be required.

The Authority will monitor any permittee-responsible mitigation areas annually for a period of 10 years for woodland habitats or 5 years for herbaceous habitats or more as required by CDFW or USFWS, to verify that the community suitability is maintained including survival and cover of plantings. For these mitigation areas, the Authority will prepare and implement an operations and management plan for each compensation community, with funding provided through an endowment. The plan will include requirements to monitor the mitigation areas, including comparisons between the mitigation habitat and a reference site of the same habitat retained in the preconstruction survey buffer area. Monitoring criteria may include survival, size, vigor, and percent cover of the dominant tree species for woodland habitats; percent cover of shrubs for riparian habitat and herbaceous species for grassland habitats; percent cover of invasive species for all sensitive community types; and any other relevant performance standards of the permittee-responsible mitigation required by agencies as part of the permits. In any years in which the performance standards are not met, causes for the failure, such as inadequate maintenance, irrigation, or other biotic factors will be assessed; remedial measures will be developed and implemented; and replacement plantings will be installed. The monitoring period for any subsequent plantings will restart from the date of planting. The Authority will submit annual monitoring reports to CDFW or, for any federally protected communities, to USFWS for review and verification that the Project remains in compliance with the mitigation.

Mitigation Measure VEG-2.3: Establish Activity Exclusion Zones Around Sensitive Natural Communities Prior to Vegetation Maintenance Activities

The Authority will retain a qualified botanist to use the results of the surveys conducted under Mitigation Measure VEG-2.1 to mark the locations of sensitive natural communities in vegetation maintenance areas. The Authority will fence and avoid any parts of sensitive natural communities that occur in or within 50 feet of the vegetation maintenance areas that could be affected by surface-disturbing maintenance activities. The 50-foot distance could be reduced if there are existing barriers, such as roads or buildings, between the maintenance area and the sensitive natural community that would prevent movement of soil or any herbicides used for maintenance into the sensitive natural community. The fencing will allow for wildlife movement and the Authority will maintain the fencing throughout the operations period. Alternatively, if sensitive natural communities cannot be completely avoided, the size of the affected area will be minimized to the full extent possible. If the remaining impacts on sensitive natural communities as the result of vegetation maintenance activities added together exceed 0.1 acre, the Authority will implement additional compensatory mitigation based on the same requirements as described in Mitigation Measure VEG-2.2.

Alternative 2

Construction of Alternative 2 would result in similar impacts to Alternatives 1 and 3 except that construction of the new South Road under Alternative 2 would result in permanent loss of upland riparian, foothill pine woodland, and oak savanna; the smaller reservoir would result in somewhat smaller loss of sensitive natural communities; and construction of the Sacramento River discharge would

result in permanent loss of upland riparian habitat. The same BMPs as those for Alternatives 1 and 3 would be implemented for construction of Alternative 2. As with Alternatives 1 and 3, implementation of Mitigation Measures VEG-2.1 and VEG-2.2 would reduce the level of impact to less than significant for the loss of sensitive communities in annual grassland. This impact would remain **significant and unavoidable** even with mitigation for foothill pine woodland, upland riparian, and oak savanna.

Operation impacts on sensitive natural communities would be avoided by the implementation of the same BMPs identified for operation of Alternatives 1 and 3, the LMP, and the Recreation Management Plan. There would be no impact in the recreation areas, but there would be potential impacts in vegetation maintenance areas. As with Alternatives 1 and 3, implementation of Mitigation Measure VEG-2.3 would reduce the level of impact from vegetation maintenance to less than significant.

Impact VEG-3: Substantial adverse effect on state or federally protected wetlands (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means

Alternative 1 or 3 would result in significant impacts on state- and federally protected wetlands and non-wetland waters by direct removal, filling, hydrological interruption, and other indirect impacts due to erosion and sedimentation into wetlands and non-wetland waters located outside of the construction area. The loss of ditch and canal habitats would be considered significant only where the ditch or canal supports wetland habitat, such as freshwater marsh, scrub-shrub wetland, or seasonal wetland. The Authority will implement BMP-12, BMP-13, BMP-33, BMP-35, and BMP-36 to minimize direct impacts on wetlands and non-wetland waters before and during construction. While BMPs would minimize impacts on wetlands and non-wetland waters, Alternatives 1 or 3 would still result in the permanent loss of wetlands and non-wetland waters and habitat quality degradation. The permanent loss of wetlands and non-wetland waters would be significant. Implementation of Mitigation Measures VEG-3.1, VEG-3.2, and VEG-3.3 would reduce the level of impact to less than significant because all wetlands and non-wetland waters in and within 300 feet of the Project footprint would be identified and mapped, and the acquisition and permanent protection of in-kind wetlands and non-wetland waters for each affected wetland and non-wetland water at identified ratios in Mitigation Measures VEG-3.2 and VEG-3.3 and any additional requirements identified during the permitting process would ensure no net loss of wetlands and non-wetland waters in perpetuity.

Operation impacts on wetlands and non-wetland waters from erosion, sedimentation, and spills of hazardous or petroleum substances would be avoided by implementation of BMP-12 and BMP-13. Development and implementation of the LMP and the Recreation Management Plan would reduce impacts on wetlands and non-wetland waters. Operation impacts on wetlands and non-wetlands waters from vegetation maintenance could result in losses of wetlands and non-wetland waters, and this would be a significant impact. Implementation of Mitigation Measure VEG-3.4 would reduce the level of impact to less than significant, because all locations of wetlands and non-wetland waters within the vegetation maintenance areas would be identified, fenced, and avoided by vegetation maintenance activities.

Mitigation Measure VEG-3.1: Avoid and Minimize Disturbance of Wetlands and Non-Wetland Waters During Construction Activities

To the extent practicable, the Authority will avoid and minimize impacts on wetlands and non-wetland waters during construction by implementing the measures listed below. These measures will be incorporated into contract specifications and implemented by the construction contractor. Compliance will be monitored by a qualified biologist and reported as indicated in BMP-35.

- The roads, pipelines, electrical corridors, and recreation areas will be designed, to the extent practicable, to avoid direct and indirect impacts on wetlands and non-wetland waters.
- In wetlands and non-wetland waters that will be preserved, construction activities will be avoided in saturated or ponded natural wetlands and drainages during the wet season (spring and winter) to the maximum extent feasible. Where such activities are unavoidable, protective practices such as use of padding or vehicles with balloon tires will be employed.
- Exposed drainage banks and levees above drainages will be stabilized immediately following completion of construction activities. Non-wetland waters will be restored in a manner that encourages vegetation to reestablish to its pre-Project condition and reduces the effects of erosion on the drainage system.
- Any trees, shrubs, debris, or soils that are inadvertently deposited below the ordinary high-water mark of streams will be removed in a manner that minimizes disturbance of the drainage bed and bank.
- To the extent feasible, in-stream construction below the ordinary high-water mark of natural drainages will be restricted to the low-flow period (generally April through October).

Where wetlands or non-wetland waters (streams or ponds) are present in or adjacent to an area where temporary ground-disturbing activities would take place, the Authority will avoid Project impacts on wetlands, streams, and ponds through the establishment of activity exclusion zones, in which no ground-disturbing activities will take place, including construction staging or other temporary work areas. Activity exclusion zones will be established around each wetland and at the edges of each stream or pond, the boundaries of which will be clearly marked with construction exclusion fencing. The establishment of activity exclusion zones will not be required if no construction-related disturbances will occur in 250 feet of a wetland, stream, or pond. The size of activity exclusion zones may be reduced based on site-specific conditions, such as the presence of hydrologic or topographic barriers, through consultation with a qualified biologist and with concurrence from CDFW and/or State Water Board, for state-regulated wetlands and non-wetland waters or, from USACE for any federally protected wetlands or non-wetland waters. Where temporary impacts on wetlands, streams, or ponds cannot be avoided during construction, the impact will be compensated as a permanent impact, as outlined in Mitigation Measure VEG-3.2.

Mitigation Measure VEG-3.2: Compensate for Temporary and Permanent Impacts on State- or Federally Protected Wetlands

For unavoidable temporary and permanent impacts on wetlands, the Authority will compensate for the loss by creation or acquisition and permanent protection of suitable wetland habitat to ensure no net loss of wetland habitat functions and values. Compensation will be provided for all permanent impacts and temporary impacts on wetlands that last longer than 1 year, and mitigation will be implemented immediately following temporary impacts and concurrent with or in advance of permanent impacts. Final compensation acreages will be based on the verified aquatic resources delineation and through the CWA Section 404 and 401 permitting process. Mitigation for temporary impacts will occur on site, if feasible. Compensation will also be in compliance with the Regional Compensatory Mitigation and Monitoring Guidelines for South Pacific Division (U.S. Army Corps of Engineers 2015). Any permanent impact on wetlands will be mitigated by creating or preserving wetlands at a minimum 1:1 ratio (1 acre restored or created for every 1 acre filled), but the final compensation ratios may include additional compensation and will be based on site-specific information and determined through coordination with state and federal agencies (State Water Board, USACE) during permit processing. Where wetland

impacts overlap with listed species impacts, mitigation will be coordinated for both resources and will not be duplicated.

Wetland mitigation will consist of replacement habitat that may be a combination of the following two options, purchase of mitigation bank credits and permittee-responsible mitigation. The purchase of mitigation credits or the establishment of onsite or offsite mitigation areas (or a combination of the two) would be completed as agreed upon by the Authority, USACE, State Water Board, and/or CDFW, as appropriate for the resource being mitigated. Purchase of mitigation bank credits will be the preferred compensation method to reduce the risk and uncertainty of mitigation success and avoid temporal losses of wetland function during the establishment phase of wetland creation or restoration.

- The Authority will purchase offsite mitigation bank credits for the affected wetland type (i.e., forested wetland [riparian], freshwater marsh, scrub-shrub wetland [riparian], seasonal wetland) at a USACE-approved and CDFW-approved mitigation bank to allow for economy of scale and higher quality habitat due to large patch size. Preference will also be for a mitigation bank in the same watershed as the affected wetlands. The Authority will provide written evidence to the resource agencies that compensation has been established through the purchase of mitigation credits. The Authority will not be required to monitor mitigation credit wetlands.
- For permittee-responsible mitigation, the Authority will retain a qualified restoration biologist to develop a wetland restoration and monitoring plan that involves creating or enhancing the affected wetland type (i.e., forested wetland [riparian], freshwater marsh, scrub-shrub wetland [riparian], seasonal wetland) in open space in the Project area or at an offsite location. The Authority will coordinate with CDFW, USACE, and the State Water Board for final plan approval prior to the removal of any wetland habitat and will ensure implementation of the wetland restoration plan. The plan will be based on the Project alternative selected and the extent of wetlands at the time of construction. The plan will identify how, where, and when mitigation will occur, monitoring and maintenance activities, success criteria, funding assurances, appropriate long-term management measures, and agency reporting requirements. The plan will include a species list and specify the number of each species, planting locations, and maintenance requirements. Plantings will use an appropriate method (i.e., seed, container plant, or plug) for the best survival potential and cost efficiency. The extent of planting will ensure that the required mitigation ratio will be reached by the end of the monitoring period and that stem density, canopy cover, and species composition requirements are met. Species seeded will be similar to those removed from the Project area and will consist of inoculum taken from the affected wetlands. The survival rates and vegetative cover of wetland plantings and wetland hydrology will be monitored annually for 5 years, or an equivalent or longer period as required in the Project permits and compared with nearby undisturbed reference wetlands. Progress reports will be provided to the USACE and the State Water Board at the completion of each monitoring period. If the percent vegetative cover of wetland plants is equivalent to reference sites at the end of the monitoring period, the revegetation will be considered successful. Planting survival requirements will be 70% at the end of 5 years, or greater, if required by the Project permits. If the survival criterion of 70% is not met in any monitoring year or at the end of the monitoring period, planting and monitoring will be repeated after mortality causes have been identified and remedial measures have been implemented, and the monitoring period will be extended to account for the required number of monitoring years for all plantings. Mitigation sites will be protected in perpetuity in a conservation easement or through deed restriction.

Mitigation Measure VEG-3.3: Compensate for Temporary and Permanent Impacts on State- or Federally Protected Non-Wetland Waters

For unavoidable temporary and permanently affected streams and ponds, the Authority will compensate for the loss by creation or acquisition and permanent protection of suitable open-water habitat to ensure no net loss of stream or pond habitat functions and values. Compensation will be provided for all permanent impacts and temporary impacts on non-wetland waters that last longer than 1 year, and mitigation will be implemented immediately following temporary impacts and concurrent with or in advance of permanent impacts. Final compensation acreages will be based on the verified aquatic resources delineation and through the CWA Section 404 and 401 permitting process. Mitigation for temporary impacts will occur on site, if feasible. Compensation will also be in compliance with the Regional Compensatory Mitigation and Monitoring Guidelines for South Pacific Division (U.S. Army Corps of Engineers 2015). Any permanent effect on open-water habitat will be mitigated by creating or preserving habitat at a 1:1 ratio (1 acre restored or created for every 1 acre filled), or by an equivalent or greater requirement as determined through coordination with state and federal agencies (State Water Board, USACE) during permit processing. Compensation will be provided for all permanent impacts and temporary impacts on non-wetland waters that last longer than 1 year, and mitigation will be implemented concurrent with or in advance of construction-related impacts. Final compensation acreages will be based on the verified aquatic resources delineation and through the CWA Section 404 and 401 permitting process. Where stream or pond impacts overlap with listed species impacts, mitigation will be coordinated for both resources and not be duplicated.

Stream and pond mitigation will consist of replacement habitat that may be a combination of the following two options, which include purchase of mitigation bank credits and permittee-responsible mitigation. The purchase of mitigation credits or the establishment of onsite or offsite mitigation areas (or a combination of the two) would be completed as agreed upon by the Authority, USACE, State Water Board, and/or CDFW, as appropriate for the resource being mitigated. Purchase of mitigation bank credits will be the preferred compensation method to reduce the risk and uncertainty of mitigation success and avoid temporal losses of stream and pond functions during the establishment phase of creation or restoration.

- The Authority will purchase offsite mitigation bank credits at a USACE-approved and CDFW-approved mitigation bank. Out-of-kind compensation may be used based for stream or pond, if approved by the regulatory agencies. Preference will also be for a mitigation bank in the same watershed as the affected streams and ponds. The Authority will provide written evidence to the USACE and State Water Board that compensation has been established through the purchase of mitigation credits. The Authority will not be required to monitor mitigation credit non-wetland waters.
- For permittee-responsible mitigation, the Authority will retain a qualified restoration biologist to develop a non-wetland restoration and monitoring plan that involves creating or enhancing the affected water type (i.e., ephemeral, intermittent, or perennial stream, or pond) in open space in the Project area or at an offsite location. The Authority will coordinate with CDFW, USACE, and the State Water Board for final plan approval prior to the removal of any stream or pond habitat and will ensure implementation of the restoration plan. The plan will be based on the Project alternative selected and the extent of streams and ponds at the time of construction. The plan will identify how, where, and when mitigation will occur, monitoring and maintenance activities, success criteria, funding assurances, appropriate long-term management measures, and agency reporting requirements. The plan will include grading specifications and design

information for creation of stream and pond habitat. The bank stability and downcutting of streams and hydrology of ponds will be monitored annually for a minimum of 5 years, or as required in the Project permits. Progress reports will be provided to the USACE and the State Water Board at the completion of each monitoring period. If stream and pond structure and stability are retained at the end of the monitoring period, the mitigation will be considered successful. If the stream stability or pond hydrology is not met in any monitoring year or at the end of the monitoring period, remedial measures will be implemented, and the monitoring period will be extended to account for the required number of monitoring years. Mitigation sites will be protected in perpetuity in a conservation easement or through deed restriction.

Mitigation Measure VEG-3.4: Establish Activity Exclusion Zones Around Wetlands and Non-Wetland Waters Prior to Vegetation Maintenance Activities

The Authority will retain a wetland specialist to mark the boundaries of wetlands and non-wetland waters in vegetation maintenance areas using the verified aquatic resources delineation prepared for Project permitting. If wetlands or non-wetland waters occur in or within 50 feet of the vegetation maintenance areas, the wetlands or non-wetland waters will be fenced and avoided by all surface-disturbing maintenance activities. Alternatively, if wetlands and non-wetland waters cannot be completely avoided, the size of the affected area will be minimized to the full extent possible. The Authority will implement additional compensatory mitigation that is based on the same requirements as those specified in Mitigation Measures VEG-3.2 and VEG-3.3 for any remaining impacts on wetlands or non-wetland waters from vegetation maintenance activities.

Alternative 2

Construction of Alternative 2 would result in similar impacts to Alternatives 1 and 3. Construction of the South Road would result in greater loss of forested wetland, seasonal wetland, scrub-shrub wetland, ephemeral stream, and intermittent stream when compared to Alternatives 1 and 3, given the larger footprint. Construction of the smaller reservoir would result in somewhat smaller losses of forested wetland, freshwater marsh, managed wetland, scrub-shrub wetland, and seasonal wetland due to the locations of these resources and the smaller reservoir footprint (Tables 9-4a and 9-4b). The same BMPs as those for Alternatives 1 and 3 would be implemented for construction of Alternative 2. As with Alternatives 1 and 3, implementation of Mitigation Measures VEG-3.1, VEG-3.2, and VEG-3.3 would reduce the level of impact to less than significant.

Operation impacts on wetlands and non-wetland waters would be the same as described for Alternatives 1 and 3, and the same BMPs identified for operation of Alternatives 1 and 3 would be implemented. There would be no impact in the recreation areas, but there would be potential impacts in vegetation maintenance areas. As with Alternatives 1 and 3, implementation of the LMP, the Recreation Management Plan, and Mitigation Measure VEG-3.4 would reduce the level of impact from vegetation maintenance to less than significant.

Impact VEG-4: Conflict with any local policies or ordinances protecting vegetation resources (including wetlands and non-wetland waters), such as a tree preservation policy or ordinance

Alternative 1 and 3

Alternative 1 or 3 would have significant impacts on sensitive vegetation and wetland resources protected by local general plan policies. The BMPs identified for construction under Impacts VEG-1, VEG-2, and VEG-3 will minimize permanent and temporary impacts on special-status species, sensitive

natural communities, wetlands, and non-wetland waters. Mitigation Measures VEG-1.2, VEG-2.2, VEG-3.1, VEG-3.2, and VEG-3.3 would minimize and compensate for impacts on these protected sensitive resources except blue oak woodland. Oak woodlands are considered important under the state Oak Woodlands Conservation Act and county general plans. Loss of blue oak woodland from construction under Alternative 1 or 3 would be considered significant. Implementation of Mitigation Measures VEG-2.1, VEG-4.1, and VEG-4.2 would reduce the level of impact because all locations of blue oak woodland in and within 300 feet of the construction footprint would be identified and mapped, and the acquisition and permanent protection of blue oak woodland for each affected woodland at ratios identified below in the applicable mitigation measures would ensure survival of blue oak woodland in perpetuity. However, the removal of mature blue oak trees would be a long-term impact due to the length of time required for newly planted trees to reach mature size and fully replace the habitat function and habitat value of the removed trees in the woodland community. Additionally, in accordance with the California Oak Woodland Conservation Act (California Public Resources Code 21083.4), no more than 50% of the blue oak woodland loss could be compensated directly through planting. Therefore, there would be a long-term and permanent loss of blue oak woodland habitat from construction even with mitigation and this impact would remain **significant and unavoidable**.

The Authority will develop and implement the LMP and Recreation Management Plan to protect blue oak woodland with exclusion practices, but operation impacts from vegetation maintenance could result in loss of blue oak woodland, and this would be a significant impact. Implementation of Mitigation Measure VEG-4.3 would reduce the level of impact to less than significant, because all locations of blue oak woodland in the vegetation maintenance areas would be identified, fenced, and avoided during vegetation maintenance activities.

Mitigation Measure VEG-1.2: Establish Activity Exclusion Zones Around Special-Status Plants in Temporary Impact Areas and Compensate for Permanent Impacts on Special-Status Plant Species

See Impact VEG-1 for a description of this mitigation measure.

Mitigation Measure VEG-2.1: Conduct Surveys for Sensitive Natural Communities and Oak Woodlands in the Project Area Prior to Construction Activities

See Impact VEG-2 for a description of this mitigation measure.

Mitigation Measure VEG-2.2: Avoid and Compensate for Adverse Effects on Sensitive Natural Communities

See Impact VEG-2 for a description of this mitigation measure.

Mitigation Measure VEG-3.1: Avoid and Minimize Disturbance of Wetlands and Non-Wetland Waters During Construction Activities

See Impact VEG-3 for a description of this mitigation measure.

Mitigation Measure VEG-3.2: Compensate for Temporary and Permanent Impacts on State- or Federally Protected Wetlands

See Impact VEG-3 for a description of this mitigation measure.

Mitigation Measure VEG-3.3: Compensate for Temporary and Permanent Impacts on State- or Federally Protected Non-Wetland Waters

See Impact VEG-3 for a description of this mitigation measure.

Mitigation Measure VEG-4.1: Avoid and Minimize Potential Adverse Effects on Oak Woodlands During Construction

Where surveys determine that oak woodlands are present in or adjacent to an area where temporary ground-disturbing activities would take place, the Authority will avoid impacts on oak woodlands through the establishment of activity exclusion zones, within which no ground-disturbing activities will take place, including construction staging or other temporary work areas. Activity exclusion zones for oak woodlands will be established at the edges of oak woodland habitat that is within 50 feet of construction activity, the boundaries of which will be clearly marked with construction exclusion fencing. The establishment of activity exclusion zones will not be required if no construction-related disturbances will occur within 50 feet of an oak woodland.

The following measures will also be implemented during construction of each Project component to protect and minimize effects on retained oak woodland trees that are adjacent to construction activities.

- The potential for long-term loss of woody vegetation will be minimized by pruning vegetation rather than removing entire trees or shrubs in areas where complete removal is not required. Any trees or shrubs that need to be trimmed will be cut at least 1 foot above ground level to leave the root systems intact and allow for more rapid regeneration. Cutting will be limited to the minimum area necessary in the construction zone. To protect nesting birds, no pruning or removal of woody vegetation will be performed between February 1 and August 31 without preconstruction bird surveys conducted in accordance with CDFW and/or USFWS requirements, as described in Mitigation Measures WILD-1.22 and WILD-1.23, Conduct Vegetation Removal During the Non-Breeding Season of Nesting Migratory Birds and Conduct Preconstruction Surveys for Non-Raptor Nesting Migratory Birds and Implement Protective Measures if Found, respectively.
- Operation or parking of vehicles, digging, trenching, slope cuts, soil compaction, grading, paving, or placement of fill will be prohibited within 6 feet of the driplines of retained oak woodland trees.
- Any offsite drainage will be directed in such a way as to prevent drainage into adjacent oak woodlands.

Mitigation Measure VEG-4.2: Compensate for Adverse Effects on Oak Woodlands

Per protection of oak trees in oak woodland in Policy CON 1-9 from the Colusa County General Plan, the Authority, in coordination with Colusa County, will develop a management plan for the protection and enhancement of oak woodlands to offset the loss of oak woodlands. This plan will mitigate the loss of oak woodlands using one or more of the following options:

- Offsite deed restriction or conservation easement acquisition and/or acquisition in fee title by a land conservation organization for purposes of offsite oak woodland conservation;
- In-lieu fee payment to the Oak Woodlands Conservation Fund;

- Replacement planting onsite in an area subject to deed restriction or conservation easement;
- Replacement planting off site in an area subject to a conservation easement; or
- A combination of these options.

The establishment of offsite conservation areas, payment of an in-lieu fee, or onsite or offsite planting areas (or a combination of the options) would be completed as agreed upon by the Authority and Colusa County. Prior to any activities that would result in permanent impacts on oak woodlands, any permanent impacts to oak woodlands will be mitigated by creating or preserving oak woodlands at a 1:1 ratio (1 acre restored or created for every 1 acre removed), or by an equivalent or greater requirement as determined through coordination with Colusa County during permit processing. The compensation acreage used for the ratio will be based on the area of impact as determined by surveys required under Mitigation Measure VEG-2.1. In accordance with requirements of the California Oak Woodland Conservation Act (California Public Resources Code 21083.4), replacement planting will not account for more than 50% of the oak woodland mitigation requirement. Therefore, up to half of the oak woodland impact mitigation requirement will consist of onsite or offsite replacement planting. The replacement planting area must be suitable for tree planting, not conflict with current or planned land uses, and be large enough to accommodate replacement plantings at a density equal to the density of the affected oak woodlands, up to a maximum density of 200 trees per acre. The remaining portion of the oak woodland impact mitigation requirement will be implemented in the form of an in-lieu fee payment to the state or to the county in which the oak woodland is affected.

The Authority will prepare and implement a mitigation and monitoring plan for oak woodlands, with funding provided through an endowment. The plan will include requirements to implement appropriate management measures to maintain the oak woodlands. The Authority will monitor oak woodland plantings annually for at least 5 years to verify that the habitat quality is maintained and meets success criteria. Success criteria for oak woodland plantings may include criteria such as survival of plantings, tree vigor, tree diameter, and tree canopy size. Planting survival requirements will be 70% at the end of 5 years with at least fair or good vigor, or as required by Colusa County. The plan will also coordinate with the LMP and will determine and implement appropriate management measures to maintain the community and meet monitoring performance standards. If the survival and vigor criteria are not met in any monitoring year or at the end of the monitoring period, planting and monitoring will be repeated after mortality or insufficient growth causes have been identified and remedial measures have been implemented, and the monitoring period will be extended to account for the required number of monitoring years for all plantings. Mitigation sites will be protected in perpetuity in a conservation easement or through deed restriction.

Mitigation Measure VEG-4.3: Establish Activity Exclusion Zones Around Blue Oak Woodlands Prior to Vegetation Maintenance Activities

The Authority will retain qualified botanists to mark the locations of blue oak woodlands in vegetation maintenance areas using the results of the surveys conducted under Mitigation Measure VEG-2.1. If blue oak woodland occurs in or within 50 feet of the vegetation maintenance areas, the outer dripline of the woodland canopy will be fenced and avoided by all surface-disturbing maintenance activities. Alternatively, if blue oak woodlands cannot be completely avoided, the size of the affected area will be minimized to the full extent possible. If the remaining impacts on blue oak woodland by vegetation maintenance activities exceed 0.1 acre, the Authority will implement additional compensatory mitigation based on the same requirements as described in Mitigation Measure VEG-4.2.

Alternative 2

Construction of Alternative 2 would result in similar impacts to Alternatives 1 and 3 except that the smaller reservoir size would result in a somewhat smaller loss of blue oak woodland. The same BMPs as those for Alternatives 1 and 3 would be implemented for construction of Alternative 2. Implementation of Mitigation Measures VEG-2.1, VEG-4.1, and VEG-4.2 would reduce the level of impact. There would be a long-term and permanent loss of blue oak woodland habitat even with mitigation and this impact would remain **significant and unavoidable**.

As with Alternatives 1 and 3, operation of Alternative 2 would not result in additional impacts in the recreation areas, but there would be potential impacts in vegetation maintenance areas. As with Alternatives 1 and 3, implementation of the BMPs for operation, the LMP, the Recreation Management Plan, and Mitigation Measure VEG-4.3 would reduce the level of impact from vegetation maintenance to less than significant.

Impact VEG-5: Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan

Alternatives 1 and 3

Construction of Alternative 1 or 3 would result in significant impacts on special-status plant species habitats, sensitive natural communities, wetlands, and non-wetland waters through direct removal of vegetation, filling, hydrological interruption, and other indirect impacts as described above under Impacts VEG-2, VEG-3, and VEG-4. The BMPs identified under Impacts VEG-1, VEG-2, and VEG-3 will minimize permanent and temporary impacts on special-status species, sensitive natural communities, wetlands, and non-wetland waters. Implementation of Mitigation Measures VEG-2.1, VEG-2.2, VEG-3.1, VEG-3.2, VEG-3.3, VEG-4.1, and VEG-4.2 would reduce the level of the construction impacts and avoid conflicts with the adopted Yolo County HCP/NCCP and Yolo Bypass Wildlife Area LMP because all locations of special-status species, sensitive natural communities, wetlands, and non-wetland waters in and within 300 feet of the construction footprint under Alternatives 1 and 3 would be identified and mapped, and the acquisition and permanent protection of these resources at identified compensation ratios would ensure survival of special-status plant species, sensitive natural communities, wetlands, and non-wetland waters in perpetuity. Therefore, the level of this impact would be reduced to less than significant with mitigation. Operation of Alternative 1 or 3 would not result in additional impacts.

Mitigation Measure VEG-2.1: Conduct Surveys for Sensitive Natural Communities and Oak Woodlands in the Project Area Prior to Construction Activities

See Impact VEG-2 for a description of this mitigation measure.

Mitigation Measure VEG-2.2: Avoid and Compensate for Adverse Effects on Sensitive Natural Communities

See Impact VEG-2 for a description of this mitigation measure.

Mitigation Measure VEG-3.1: Avoid and Minimize Disturbance of Wetlands and Non-Wetland Waters During Construction Activities

See Impact VEG-3 for a description of this mitigation measure.

Mitigation Measure VEG-3.2: Compensate for Temporary and Permanent Impacts on State- or Federally Protected Wetlands

See Impact VEG-3 for a description of this mitigation measure.

Mitigation Measure VEG-3.3: Compensate for Temporary and Permanent Impacts on State- or Federally Protected Non-Wetland Waters

See Impact VEG-3 for a description of this mitigation measure.

Mitigation Measure VEG-4.1: Avoid and Minimize Potential Adverse Effects on Oak Woodlands During Construction

See Impact VEG-4 for a description of this mitigation measure.

Mitigation Measure VEG-4.2: Compensate for Adverse Effects on Oak Woodlands

See Impact VEG-4 for a description of this mitigation measure.

Alternative 2

Construction of Alternative 2 would result in similar impacts to Alternatives 1 and 3 but slightly greater, due to the extension of the pipeline alignment to the Sacramento River. As with Alternatives 1 and 3, implementation of the BMPs and Mitigation Measures VEG-2.1, VEG-2.2, VEG-3.1, VEG-3.2, VEG-3.3, VEG-4.1, and VEG-4.2 would reduce the level of impact to less than significant.

Under Alternative 2, the impacts related to conflicts with the adopted Yolo County HCP/NCCP or Yolo Bypass Wildlife Area LMP during operation would be as described for Alternatives 1 and 3 and there would be no additional impacts.

Wildlife Resources

Impact WILD-1: Substantial adverse effect (i.e., loss or removal), either directly or through habitat modifications, on wildlife species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service (*the following impact analysis is subdivided into lettered components, and special-status species are grouped together when they utilize the same land cover types or impacts are similar – Only sig*)

Impact WILD-1a: Vernal Pool Branchiopods

Alternative 1 and 3

Construction of Alternative 1 or 3 would result in significant impacts on vernal pool branchiopods from removal of suitable habitat and loss of individuals. Operational effects on vernal pool branchiopods would be avoided or minimized through implementation of BMP-15, the LMP, and the Recreation Management Plan, and would be less than significant. Construction impacts would be significant because implementation of Alternative 1 or 3 could reduce the local populations of federally listed vernal pool branchiopods through direct mortality and habitat loss.

Implementation of Mitigation Measures WILD-1.1, WILD-1.2, and WILD-1.3 would reduce the level of impact from construction and operation to less than significant because surveys would be conducted to determine occupancy, habitat disturbance would be avoided during the rainy season, the topsoil of vernal pools in permanent impact areas would be removed for use in habitat creation or restoration (if requested by USFWS), and compensation would be provided for impacts on occupied habitat. All modeled habitat would be evaluated, and suitable habitat would be surveyed for the presence of vernal pool branchiopods prior to construction. Direct and indirect impacts on occupied habitat would be mitigated through acquiring and protecting habitat in perpetuity or purchasing mitigation credits in accordance with mitigation ratios and requirements developed during ESA Section 7 consultation with USFWS.

Mitigation Measure WILD-1.1: Assess Habitat Suitability and Survey Suitable Habitat for Vernal Pool Branchiopods

Once property access is granted and prior to the start of construction, the Authority will retain qualified biologists to assess habitat suitability and conduct surveys for vernal pool branchiopods in the Project area and where modeled habitat is within 250 feet of the Project area and indirect effects may occur. Qualified biologists are defined as those who have a recovery permit from USFWS to conduct surveys for listed vernal pool branchiopods. The surveys will be conducted in accordance with the Survey Guidelines for the Listed Large Branchiopods, which recommend surveys at 14-day intervals after initial inundation of habitat until the habitat dries or it has been inundated for a minimum of 90 consecutive days (U.S. Fish and Wildlife Service 2015b). Surveys in accordance with the guidelines take a minimum of 1 year to complete and will be initiated early enough to allow completion before the start of construction. The biologists will submit the results of the surveys in a report to USFWS, per the requirements of the biologists' recovery permits.

Mitigation Measure WILD-1.2: Avoid and Minimize Potential Effects on Vernal Pool Branchiopods and Western Spadefoot

The following steps will be taken to avoid or minimize potential effects on vernal pool branchiopods and western spadefoot.

- Ground disturbance within 250 feet of occupied habitat or suitable habitat that hasn't been surveyed that would not be directly affected will be avoided during the rainy season (approximately October 15 through May 15). Compensation will be provided for habitat occupied by listed vernal pool branchiopods that cannot be avoided during the rainy season (Mitigation Measure WILD-1.3).
- If a portion of occupied vernal pool branchiopod or western spadefoot habitat will be filled (i.e., permanent impacts), the filling will be conducted when the habitat is completely dry.
- If requested by USFWS, the top 3 to 4 inches of soil of pools occupied by listed or unlisted vernal pool branchiopods that would be destroyed or completely filled will be removed and stored in the Project area until ready for placement in created or restored habitat outside of the Project footprint. The topsoil will be covered with tarps or other appropriate material and orange construction barrier fencing or stakes and flagging will be installed around the covered topsoil. A qualified biologist will be on site to monitor the removal and covering of the topsoil during periodic monitoring visits to the Project area. The stored topsoil will be spread over the bottom of created or restored pools prior to the start of the winter rainy season.

Mitigation Measure WILD-1.3: Compensate for Impacts on Occupied Vernal Pool Branchiopod Habitat

The Authority will compensate for direct and indirect effects on occupied vernal pool branchiopod habitat through the purchase of mitigation credits at a USFWS-approved mitigation or conservation bank or through acquiring, creating, restoring and/or protecting habitat in perpetuity at a location approved by USFWS. Direct and indirect effects on occupied habitat will be mitigated by preserving occupied habitat at a 2:1 ratio (habitat preserved: habitat directly or indirectly affected) or by an equivalent or greater amount as determined during ESA Section 7 consultation with USFWS. In addition, direct effects on occupied habitat will be mitigated by creating or preserving occupied habitat at a 1:1 ratio (habitat created: habitat directly affected) or by an equivalent or greater amount as determined during ESA Section 7 consultation with USFWS. The purchase of mitigation credits or the establishment of onsite or offsite mitigation areas (or a combination of these options) would be completed as agreed upon by the Authority, Reclamation, and USFWS.

USFWS-approved conservation banks have long-term adaptive management plans with performance standards. Therefore, if mitigation is through a USFWS-approved conservation bank, the bank's performance standards and success criteria will be applied.

If credits are not purchased at a USFWS-approved conservation bank, the Authority will implement standards for long-term management and protection of conservation areas. The Authority will work closely with USFWS during the planning and development of conservation areas. Once established, conservation areas will be surveyed by a USFWS-approved biologist a minimum of two times per year during the wet season (generally November through April). The biologist will survey for the presence of listed vernal pool branchiopods, evaluate the adequacy of site protection (e.g., fencing, signage) and weed control, assess potential threats to vernal pool branchiopods, and take photographs of the site. The biologist will also survey a set of reference pools to compare to the preserved and created/restored pools. The reference pools should be located in proximity to the conservation area and exhibit characteristics similar to the preserved and created/restored pools.

For non-mitigation bank compensation, the performance standard for occupancy of the created/restored pools by listed vernal pool branchiopods is a minimum of 5% of the total number of created/restored pools supporting listed vernal pool branchiopods over a 10-year monitoring period. A pool must be occupied at least once during the 10-year monitoring period to be considered occupied. If the performance standard cannot be achieved, the Authority and Reclamation will consult with USFWS to determine if the standard is not realistic based on data from other vernal pool surveys in the Project region and/or implement an alternative compensatory mitigation approach.

Working closely with USFWS during planning and development of the conservation area, monitoring the conservation area to ensure performance standards are achieved, and applying adaptive management actions when the performance standard is not achieved will ensure that the compensatory mitigation is effective and compensates for the loss of occupied habitat resulting from the Project.

Alternative 2

Construction of Alternative 2 would result in similar impacts to Alternatives 1 and 3 except that permanent loss of modeled habitat would be less under Alternative 2 because of the smaller inundation area and fewer permanent impacts on habitat from dams and dikes (Appendix 10C, Table 10C-1). Operation of Alternative 2 would result in similar impacts to Alternatives 1 and 3 except that the

additional impermeable surface from South Road could result in potential indirect effects on additional modeled vernal pool branchiopod habitat. Operational effects on vernal pool branchiopods would be avoided or minimized through implementation of BMP-15, the LMP, and the Recreation Management Plan, and would be less than significant. Construction impacts would be significant because the implementation of Alternative 2 could reduce the local populations of federally listed vernal pool branchiopods through direct mortality and habitat loss. Implementation of Mitigation Measures WILD-1.1, WILD-1.2, and WILD-1.3 would reduce the level of impact to less than significant for reasons discussed above.

Impact WILD-1b: Antioch Dunes Anthicid Beetle and Sacramento Anthicid Beetle

Alternative 2 (Only)

Construction of Alternative 2 would result in the permanent loss and temporary disturbance of potentially suitable habitat for Antioch Dunes anthicid beetle and Sacramento anthicid beetle and could cause mortality of individuals. These impacts would be significant because the construction of Alternative 2 could reduce the local populations of these rare beetles through direct mortality and habitat loss. Implementation of Mitigation Measures WILD-1.4 and WILD-1.5 would reduce the level of impact from construction to less than significant because potentially suitable habitat would be assessed and surveyed by a qualified entomologist prior to removal or disturbance and suitable habitat that would not be affected would be fenced and avoided during construction. If occupied habitat is removed, an equivalent amount of habitat would be restored or preserved in the vicinity of the affected area. There would be no impact on Antioch Dunes anthicid beetle and Sacramento anthicid beetle from operations under Alternative 2.

Mitigation Measure WILD-1.4: Evaluate and Survey Potential Habitat for Antioch Dunes Anthicid and Sacramento Anthicid Beetles and Implement Protective Measures

The Authority will retain a qualified entomologist (experienced with anthicid beetle identification and habitat suitability) to assess and survey the area of potentially suitable habitat for Antioch Dunes anthicid and Sacramento anthicid beetles prior to the start of construction of the Sacramento River discharge. If suitable habitat is not present or no Antioch Dunes anthicid and Sacramento anthicid beetles are observed and the entomologist concurs that no further surveys are needed, no further actions are required. If either beetle species is observed, the entomologist will relocate the beetles to suitable habitat outside of the impact area. The entomologist will report observations of either beetle species to CDFW and submit occurrence data to the CNDDDB. The Authority will protect any suitable habitat in the vicinity of the work area that will not be affected with fencing or stakes and flagging. No construction related foot or vehicle traffic will be allowed in the fenced or flagged area. The Authority will remove fencing when construction of the Sacramento River discharge is complete.

Mitigation Measure WILD-1.5: Compensate for the Loss of Occupied Antioch Dunes Anthicid and Sacramento Anthicid Beetle Habitat

The Authority will compensate for the permanent loss of occupied Antioch Dunes anthicid beetle and/or Sacramento anthicid beetle habitat by restoring disturbed habitat or preserving occupied habitat along the Sacramento River, preferably in the vicinity of the affected area, at a 1:1 ratio (acres restored or preserved: acres of permanent impact). The Authority will retain a qualified entomologist to assess habitat to be restored or preserved and provide guidance on habitat restoration. The Authority will retain a qualified entomologist to monitor the restored or preserved habitat annually for a minimum of

5 years. Monitoring will be conducted at the preserved area to ensure that habitat conditions are maintained at baseline conditions or better, that the habitat has not been degraded, and that it continues to be occupied by the beetle(s). If habitat is restored, the entomologist will conduct monitoring to ensure the restored habitat conditions are maintained, survey for beetle occupancy, and make adaptive management recommendations for habitat improvements. The Authority will submit monitoring reports that include habitat conditions, beetle occupancy information, and photographs to the CDFW annually. If either beetle is observed during habitat monitoring, the entomologist will submit occurrence information to the CNDDDB.

Impact WILD-1c: Valley Elderberry Longhorn Beetle

Alternatives 1 and 3

Construction of Alternative 1 or 3 could result in significant impacts on valley elderberry longhorn beetle from removal of suitable habitat and loss of individuals, when compared to baseline conditions. Operation could result in significant impacts on valley elderberry longhorn beetle from altered hydrology, loss of connectivity to adjacent habitat, and disturbance from maintenance activities. These impacts would be significant because the implementation of Alternative 1 or 3 could reduce the local population of this federally listed species through direct mortality and habitat loss. Implementation of Mitigation Measures WILD-1.6, WILD-1.7, WILD-1.8, and WILD-1.9 would reduce the level of impact from construction and operation to less than significant because surveys would be conducted to determine presence, elderberry shrubs to be protected would be fenced, compensation would be provided for permanent loss of habitat, and specifications for herbicide and pesticide use will be followed to ensure potential effects on valley elderberry longhorn beetle and its habitat would be avoided and minimized.

Mitigation Measure WILD-1.6: Conduct Surveys for Suitable Valley Elderberry Longhorn Beetle Habitat

The Authority will retain qualified biologists or botanists (i.e., with elderberry/valley elderberry longhorn beetle experience) to conduct surveys to identify and map locations of elderberry shrubs in work areas and within 165 feet of the work areas. For shrubs located in non-riparian areas, elderberry stems will be examined for the presence of valley elderberry beetle exit holes. This information will be used to determine the amount of compensation required for the loss of elderberry shrubs in accordance with the Framework for Assessing Impacts to the Valley Elderberry Longhorn Beetle (*Desmocerus californicus dimorphus*) (U.S. Fish and Wildlife Service 2017a). The biologist will mark elderberry shrubs in or within 165 feet of work areas with flagging for future removal or protection.

Mitigation Measure WILD-1.7: Fence Elderberry Shrubs to be Protected

Elderberry shrubs in or within 165 feet of work areas that will not be removed will be protected during construction. If not already marked, a qualified biologist will flag the elderberry shrubs that will be protected during construction. The Authority's contractor will install orange construction barrier fencing or stakes and flagging at the edge of the buffer areas established for each shrub and signs indicating the potential for beetle presence and excluding any Project activity within the buffer areas will be posted prior to the start of work. The buffer area distances will be proposed by the biologist and approved by USFWS. No construction activities will be permitted in the buffer area other than those activities necessary to erect the fencing or stakes and flagging without written permission from USFWS.

If orange construction barrier fencing is used, it will be placed such that there is at least a 1-foot gap between the ground and the bottom of the orange construction fencing to minimize the potential for snakes and other ground-dwelling animals to become caught in the fencing. Buffer areas around elderberry shrubs will be inspected periodically by a qualified biologist until Project construction is complete or until the fences or staking/flagging are removed, as approved by the biological monitor and the resident engineer. The Authority's contractor will be responsible for maintaining the buffer area fences around elderberry shrubs throughout construction and removing the fencing or staking and flagging when construction is complete. The biologist's fencing inspection reports will be provided to the Authority.

Mitigation Measure WILD-1.8: Transplant Permanently Affected Elderberry Shrubs and Compensate for Loss of Valley Elderberry Longhorn Beetle and its Habitat

Before construction begins, the Authority will retain a qualified contractor to transplant elderberry shrubs that cannot be avoided to a USFWS-approved mitigation or conservation bank or other approved area in accordance with the Framework for Assessing Impacts to the Valley Elderberry Longhorn Beetle (*Desmocerus californicus dimorphus*) (U.S. Fish and Wildlife Service 2017a). Elderberry shrubs that cannot be avoided will be transplanted during the plant's dormant phase (November through the first 2 weeks of February). A qualified biological monitor will remain on site while the shrubs are being transplanted. Additionally, the Authority will compensate for permanent impacts on occupied riparian habitat by creating or preserving habitat at a 3:1 (acres of created or preserved habitat : acres of permanent impact) or by an equivalent or greater amount as determined in consultation with USFWS. The Authority will compensate for permanent impacts on occupied non-riparian habitat by creating or preserving habitat at a ratio of 1:1 for all acres that are permanently affected, or by transplanting affected elderberry shrubs containing valley elderberry longhorn beetle exit holes and providing compensation at a 1:1 ratio for the area of the affected shrubs. The purchase of mitigation credits or the establishment of onsite or offsite mitigation areas (or a combination of these options) would be completed as agreed upon by the Authority, Reclamation, and USFWS.

USFWS-approved conservation banks have long-term adaptive management plans with performance standards. If credits are not purchased at a USFWS-approved conservation bank, the Authority will implement standards for long-term management and protection of conservation areas. The Authority will work closely with USFWS during the planning and development of preservation areas. Once established, preservation areas will be surveyed by a USFWS-approved biologist a minimum of two times per year between February 14 and June 30. The biologist will search for valley elderberry longhorn beetle exit holes, evaluate the adequacy of site protection (e.g., fencing, signage) and weed control, assess potential threats to the beetle, take photographs of the site, and evaluate the performance standards below.

1. A minimum of 60% of the initial elderberry and native associate plantings must survive over the first 5 years after the site is established. As much as feasible, elderberry shrubs should be well distributed throughout the site; however, in some instances underlying geologic or hydrologic issues might preclude elderberry establishment over some portion of the site. If significant die-back occurs within the first 3 years, replanting may be used to achieve the 60% performance standard. However, replanting efforts should be concentrated in areas containing surviving elderberry plants. In some instances, overplanting may be used to offset the selection of a less suitable site.

2. After 5 years, the site must show signs of recruitment. A successful site should have evidence of new growth on existing plantings, as well as natural recruitment of elderberry. New growth is characterized as stems 1.2 inches in diameter. If no signs of recruitment are observed, the Authority and Reclamation will discuss possible remedies with the USFWS. Following USFWS's interim standards for the long-term management and protection of mitigation sites, working closely with USFWS during planning and development of the preservation area, monitoring the preservation area to ensure performance standards are achieved, and replanting elderberries when the performance standards are not achieved will ensure that the compensatory mitigation is effective and compensates for the losses resulting from the Project.

Mitigation Measure WILD-1.9: Protect Special-Status Invertebrates and Their Host and Food Plants from Herbicide and Pesticide Use

To minimize impacts on valley elderberry longhorn beetle, monarch butterfly, Crotch bumble bee, and western bumble bee from herbicide drift, herbicide application will be limited to areas immediately adjacent to Project facilities and will be conducted using handheld equipment. Herbicides and pesticides will be applied only by applicators with current licenses and/or certifications from the California Department of Pesticide Regulation. The applicator will follow the herbicide label directions. Spray nozzles will be kept within 24 inches of target vegetation during spraying. The most current information on herbicide toxicity on wildlife will be used to inform future decisions about herbicide and pesticide use during operations.

Alternative 2

Construction of Alternative 2 would result in similar impacts to Alternatives 1 and 3 except that permanent habitat loss would be less under Alternative 2 because of the smaller inundation area and reduced impacts from construction of dams and dikes and roads. Temporary habitat loss would be less for construction of Alternative 2 because of less modeled habitat being affected by the regulating reservoirs and conveyance complex, I/O Works, dams, and dikes. Operation of Alternative 2 would result in the same impacts as Alternatives 1 and 3. These impacts would be significant because the implementation of Alternative 2 could reduce the local valley elderberry longhorn beetle population through direct mortality and habitat loss. Implementation of Mitigation Measures WILD-1.6, WILD-1.7, WILD-1.8, and WILD-1.9 would reduce the level of impact from construction and operation to less than significant.

Impact WILD-1d: Monarch Butterfly

Alternatives 1 and 3

Construction of Alternative 1 or 3 would result in significant impacts on monarch butterfly from removal of suitable habitat and loss of individuals. Operation of Alternative 1 or 3 could result in mortality of adult butterflies from vehicle strikes, illness or injury of adults or larvae from pesticide use, or death of nectar plants from herbicide use. Construction and operation impacts would be significant because the implementation of Alternative 1 or 3 could reduce the local monarch butterfly population. Implementation of Mitigation Measures WILD-1.9, WILD-1.10, and WILD-1.11 would reduce the level of impact from construction and operation to less than significant because surveys would be conducted to identify patches of native milkweeds and nectar plants, temporarily disturbed habitat would be restored, permanent loss of habitat containing native milkweeds and/or nectar plants would be

compensated for through either onsite or offsite habitat restoration or preservation, and a measure would be implemented to avoid and minimize potential effects of herbicide and pesticide use on monarch butterfly and its larval host plants and nectar plants.

Mitigation Measure WILD-1.9: Protect Special-Status Invertebrates and Their Host and Food Plants from Herbicide and Pesticide Use

This measure is the same as that described above under Impact WILD-1c for valley elderberry longhorn beetle.

Mitigation Measure WILD-1.10: Assess Habitat Suitability and Survey for Presence of Monarch Butterfly Nectar and Larval Host Plants

No more than 3 years prior to the start of ground-disturbing activities botanists will identify and map locations of milkweed and/or nectar plants using information from https://xerces.org/sites/default/files/publications/19-046_01_MonarchNectarPlants_California_web-3pg.pdf or the most up-to-date information. During special-status plant surveys (Mitigation Measure VEG-1.1), botanists will map actual presence of these plants in areas that would be permanently or temporarily affected by construction.

Mitigation Measure WILD-1.11: Compensate for Loss of Monarch Butterfly Nectar and Larval Host Plants

The Authority will compensate for permanent loss of suitable monarch butterfly habitat (as identified through implementation of Mitigation Measure WILD-1.10) by including native milkweed and nectar plants for monarch butterfly in onsite and/or offsite mitigation plans for sensitive natural communities (Mitigation Measure VEG-2.2). The Authority will compensate for permanent loss of suitable monarch butterfly habitat by planting native milkweed and nectar plants at suitable onsite and/or offsite restoration or preservation areas at a ratio of 1:1 (acres lost : acres planted.). The offsite restoration areas would provide suitable habitat constituents for monarch butterfly (e.g., roosting habitat, nectar plants, native milkweed) and will be preserved through a conservation easement. The establishment of restoration areas would be completed as agreed upon by the Authority, USFWS, and CDFW.

The Authority will compensate for temporary loss of suitable monarch butterfly habitat by including native milkweed and nectar plants in planting palettes for onsite restoration of sensitive natural communities (Mitigation Measure VEG-2.2) or temporarily disturbed grassland, and/or at offsite mitigation areas.

The Authority will utilize monarch butterfly information from The Xerces Society to ensure that mitigation areas provide the suitable habitat constituents described above for monarch butterfly. The Authority will conduct baseline surveys of each onsite and offsite mitigation area to determine the baseline habitat conditions for monarch butterfly prior to implementing habitat improvements (i.e., planting), if applicable. Each area will be surveyed by qualified botanists to determine the extent of naturally occurring milkweed and nectar plants. After onsite restoration is completed at each mitigation area, qualified botanists will conduct surveys during 3 of the next 5 years and evaluate each site to determine if the area and condition of milkweed and nectar plants achieve the performance standards of being at or above baseline conditions.

Methods and results of surveys, and recommendations for adaptive management actions as needed, will be included in annual monitoring reports for each mitigation area (if there is more than one) and will be submitted to USFWS and CDFW.

Using the latest information from The Xerces Society during planning and development of the mitigation areas, monitoring the mitigation areas to ensure performance standards are achieved and implementing adaptive management options when the performance standards are not achieved will ensure that the compensatory mitigation is effective and compensates for the losses resulting from the Project.

Alternative 2

Construction of Alternative 2 would result in similar impacts to Alternatives 1 and 3 except that permanent and temporary impacts on modeled monarch butterfly habitat would be less under Alternative 2 because of the smaller inundation area and reduced impacts from construction of dams and dikes. Operation of Alternative 2 would result in similar impacts to Alternatives 1 and 3 except that the increased amount of roadway could result in greater potential for monarch butterflies to be struck by vehicles. These impacts would be significant because the implementation of Alternative 2 could reduce the local population of monarch butterfly through direct mortality and habitat loss. Implementation of Mitigation Measures WILD-1.9, WILD-1.10, and WILD-1.11 would reduce the level of impact from construction and operation to less than significant.

Impact WILD-1e: Crotch Bumble Bee and Western Bumble Bee

Alternatives 1 and 3

Construction and operation of Alternative 1 or 3 would result in significant impacts on Crotch bumble bee and western bumble bee from removal of potential habitat and loss of individuals. These impacts would be significant because Alternative 1 or 3 could reduce the local populations of these rare bumble bees through direct mortality and habitat loss. Implementation of Mitigation Measures WILD-1.9, WILD-1.12, and WILD-1.13 would reduce the level of impact from construction and operation to less than significant because surveys would be conducted to identify patches of native food plants, temporarily disturbed habitat would be restored, permanent loss of habitat containing suitable native food plants would be compensated for through offsite habitat restoration or preservation, and a measure would be implemented to avoid and minimize potential effects of herbicide and pesticide use on Crotch bumble bee, western bumble bee, and their food plants.

Mitigation Measure WILD-1.9: Protect Special-Status Invertebrates and Their Host and Food Plants from Herbicide and Pesticide Use

See Impact WILD-1c for a description of this mitigation measure.

Mitigation Measure WILD-1.12: Assess Habitat Suitability and Survey for Presence of Crotch Bumble Bee and Western Bumble Bee Food Plants

No more than 3 years prior to the start of ground-disturbing activities, botanists will identify and map locations of patches of native plants in the taxa most commonly associated with Crotch bumble bee and western bumble bee that would be permanently or temporarily affected by construction during special-status plant surveys (Mitigation Measure VEG-1.1). Native plants of the following genera are appropriate for Crotch bumble bee: *Antirrhinum*, *Asclepias*, *Phacelia*, *Chaenactis*, *Clarkia*, *Dendromecon*, *Eriogonum*, *Eschscholzia*, *Lupinus*, *Medicago*, and *Salvia*. Native plants of the following taxa are appropriate for

western bumble bee: *Asteraceae*, *Ceanothus*, *Centaurea*, *Chrysothamnus*, *Cirsium*, *Eriogonum*, *Geranium*, *Grindelia*, *Lupinus*, *Melilotus*, *Monardella*, *Rubus*, *Penstemon*, *Solidago*, and *Trifolium*.

Mitigation Measure WILD-1.13: Compensate for Loss of Crotch Bumble Bee and Western Bumble Bee Habitat

The Authority will compensate for permanent loss of suitable bumble bee foraging habitat (as identified through implementation of Mitigation Measure WILD-1.12) by including suitable native nectar- and pollen-producing plants commonly used as food sources by Crotch and western bumble bees in onsite and/or offsite mitigation plans for sensitive natural communities (Mitigation Measure VEG-2.2). The Authority will compensate for permanent loss of suitable Crotch and western bumble bee habitat by planting native suitable native nectar- and pollen-producing plants at suitable onsite and/or offsite restoration or preservation areas at a ratio of 1:1 (acres lost : acres planted). The Authority will compensate for temporary loss of suitable Crotch and western bumble bee habitat by including native bumble bee food plants in planting palettes for onsite restoration of sensitive natural communities (Mitigation Measure VEG-2.2) or temporarily disturbed grassland and/or at offsite mitigation areas.

Native plants of the following genera are appropriate for Crotch bumble bee: *Antirrhinum*, *Asclepias*, *Phacelia*, *Chaenactis*, *Clarkia*, *Dendromecon*, *Eriogonum*, *Eschscholzia*, *Lupinus*, *Medicago*, and *Salvia*. Native plants of the following taxa are appropriate for western bumble bee: *Asteraceae*, *Ceanothus*, *Centaurea*, *Chrysothamnus*, *Cirsium*, *Eriogonum*, *Geranium*, *Grindelia*, *Lupinus*, *Melilotus*, *Monardella*, *Rubus*, *Penstemon*, *Solidago*, and *Trifolium*. In mitigation areas where these plant genera are present, habitat will be preserved. In mitigation areas where these plant genera are absent, these plant genera will be seeded or planted, as appropriate based on site conditions. Mitigation areas will be placed under a conservation easement.

The Authority will utilize bumble bee conservation information from The Xerces Society to ensure that mitigation areas provide the suitable native nectar- and pollen-producing plants described above for Crotch bumble bee and western bumble bee. The Authority will conduct baseline surveys of each onsite and offsite mitigation area to determine the baseline habitat conditions for Crotch bumble bee and western bumble bee prior to implementing habitat improvements (i.e., planting), if applicable. Each area will be surveyed by qualified botanists to determine the extent of naturally occurring native nectar- and pollen-producing plants. After onsite restoration is completed at each mitigation area, qualified botanists will conduct surveys during 3 of the next 5 years and evaluate each site to determine if the area and condition of native nectar- and pollen-producing plants achieve the performance standards of being at or above baseline conditions.

Methods and results of surveys and recommendations for adaptive management actions as needed will be included in annual monitoring reports for each mitigation area (if there is more than one) and will be submitted to USFWS and CDFW.

Using the latest information from The Xerces Society during planning and development of the mitigation area, monitoring the mitigation area to ensure performance standards are achieved, and implementing adaptive management options when the performance standards are not achieved will ensure that the compensatory mitigation is effective and compensates for the losses resulting from the Project.

Alternative 2

Construction of Alternative 2 would result in similar impacts to Alternatives 1 and 3 except that permanent and temporary impacts on modeled Crotch bumble bee and western bumble bee habitat

would be less under Alternative 2 than under Alternatives 1 and 3 because of the smaller inundation area and reduced impacts from construction of dams and dikes. Operation of Alternative 2 would result in similar impacts to Alternatives 1 and 3 except that the increased amount of roadway could result in greater potential for Crotch bumble bee and western bumble bee to be struck by vehicles. These impacts would be significant because the implementation of Alternative 2 could reduce the local populations of Crotch bumble bee and western bumble bee through direct mortality and habitat loss. Implementation of Mitigation Measures WILD-1.9, WILD-1.12, and WILD-1.13 would reduce the level of impact from construction and operation to less than significant.

Impact WILD-1f: Western Spadefoot

Alternatives 1 and 2

Construction of Alternative 1 or 3 would result in significant impacts on western spadefoot from removal of potential habitat and loss of individuals. Operation of Alternative 1 or 3 would result in significant impacts on western spadefoot because exotic invasive species that prey on or compete with western spadefoot could be introduced at recreation areas and individuals could be killed by being struck by the vehicles of personnel or recreationists. These impacts would be significant because implementation of Alternatives 1 and 3 could reduce the local western spadefoot population through direct mortality and habitat loss. Implementation of Mitigation Measures WILD-1.2, WILD-1.3, WILD-1.14, WILD-1.15, WILD-1.16, VEG-2.2, and VEG-3.2 would reduce the level of impact from construction and operation to less than significant because surveys would be conducted to determine presence, disturbance of seasonal wetlands would be avoided during the rainy season, compensation would be provided for the permanent and temporary losses of occupied vernal pool branchiopod habitat (which would also benefit western spadefoot), and if found to be necessary through a wildlife corridor study, suitable crossings would be installed at appropriate locations to facilitate safe crossings.

Mitigation Measure WILD-1.2: Avoid and Minimize Potential Effects on Vernal Pool Branchiopods and Western Spadefoot

This measure is described above under Impact WILD-1a for vernal pool branchiopods.

Mitigation Measure WILD-1.3: Compensate for Impacts on Vernal Pool Branchiopod Habitat

This measure is described above under Impact WILD-1a for vernal pool branchiopods.

Mitigation Measure WILD-1.14: Assess Habitat Suitability and Survey Suitable Habitat for Western Spadefoot, California Red-legged Frog, and Western Pond Turtle

Once property access is granted and prior to the start of construction, the Authority will retain qualified biologists to assess habitat suitability and conduct surveys for western spadefoot, California red-legged frog, and western pond turtle in the Project area and where potentially suitable habitat is within 300 feet of the Project area where impacts from operation may occur. Qualified biologists are defined as those who have experience evaluating habitat and conducting focused surveys for western spadefoot, California red-legged frog, and western pond turtle. The surveys will be conducted in accordance with the following conditions.

Western spadefoot habitat assessments and surveys of seasonal wetland habitat will be conducted during vernal pool branchiopod habitat assessments and surveys (Mitigation Measure WILD-1.1).

Habitat assessment and surveys for California red-legged frog will be conducted in accordance with the *Revised Guidance on Site Assessments and Field Surveys for the California Red-legged Frog*, which provides direction for site assessments and recommend up to eight surveys that are conducted over a period of 9–12 months (U.S. Fish and Wildlife Service 2005b). Habitat assessment and surveys for western pond turtle and western spadefoot (intermittent streams) will be conducted concurrently with the California red-legged frog surveys.

The qualified biologists will prepare and submit reports describing the methods and results of the habitat assessments and surveys to the Authority, CDFW, and USFWS.

Mitigation Measure WILD-1.15: Design and Construct Wildlife Crossings for New Roadways at Suitable Locations

The Authority will retain a qualified wildlife biologist with expertise in wildlife crossing use and design to conduct a wildlife connectivity and crossing assessment and to determine where suitable wildlife crossing structures would be most effective along North Road, Sites Lodoga Road, South Road, and other roads as determined by the Authority and the wildlife biologist, in coordination with CDFW. Wildlife crossing structures will be designed and constructed at suitable locations to provide habitat connectivity and safe movement for an array of wildlife likely to use the Project area. To ensure that the assessment is inclusive of a variety of species, a wildlife crossing species guild (WCG) approach will be used as detailed in Kintsch et al. (2015). This WCG approach will include ecological and behavioral needs of a variety of species inhabiting the Project area/region. The Authority will also use information from other documents (e.g., Clevenger and Huijser 2011; Langton and Clevenger 2020; Ontario Ministry of Natural Resources and Forestry 2016) when planning and designing corridors for amphibians and reptiles. Wildlife crossing locations and design will be determined based on WCG species inhabiting the Project area/region, habitat features, topography, existing land ownership and use, and the future state of the study area (as shown or described in planning documents) through a wildlife connectivity and crossing assessment. Where possible, wildlife crossings will be located where there is compatible land ownership and use and opportunities for habitat preservation on either side of the wildlife crossing.

Prior to final roadway design for the Project, a wildlife connectivity assessment will be conducted to assess existing and expected wildlife movement and habitat connectivity conditions, evaluate Project-related impacts on connectivity and species movement, and identify appropriate wildlife crossing locations and designs. Other connectivity enhancement strategies such as land acquisition, retrofit of existing structures, habitat enhancement, and traffic control will be considered as part of the connectivity assessment to maintain and enhance connectivity in the area surrounding the reservoir. The assessment will include a landscape-scale and local (Project)-scale assessments. The assessment may use database research, field surveys, photo monitoring, GIS modeling, or a combination thereof to identify existing wildlife species in the Project area, determine how connectivity and species movement may be affected by the Project, and determine the appropriate locations and designs of wildlife crossings.

Wildlife crossings will be located at appropriate frequencies within contiguous suitable habitat and in other locations where crossing structures are warranted (e.g., riparian/riverine crossings) to accommodate a range of species expected to move through the area. For example, for small-bodied animals like amphibians, reptiles, and small mammals, where species habitat and movement needs are present, wildlife crossings may be located no more than 1,000 feet apart or as determined appropriate for specific target species. For medium- and large-bodied animals, such as bobcats, coyotes, tule elk, and deer, wildlife crossings may be located no more than 1 mile apart.

Wildlife crossings will be located where there is suitable habitat on both sides of the roadway. If feasible and depending on the size and ecological and behavioral needs of target species, vegetative cover will be provided near entrances to give animals security and reduce negative effects such as lights and noise associated with the road. Suitable habitat and/or cover will also be provided in the crossing structure wherever feasible. This may be achieved by designing culverts or culvert-like structures to be high enough to allow light for plants to grow, installing rubble piles, stumps, or branches to provide cover for smaller animals in the crossings, and leaving earthen bottoms in crossing structures.

When possible, wildlife crossings will be located away from areas used or dominated by humans, including recreation areas, trails, and lighted areas to avoid reduced wildlife crossing movement function and to prevent human-wildlife conflict.

Wildlife crossings will be designed to optimally facilitate movement for multiple WCG species. When possible, proposed culverts will be constructed to function as multi-use culverts, which are designed to ensure that they facilitate wildlife movement. Multi-use culvert crossings will be designed to be optimally accessible to wildlife movement and will also be designed to require minimal maintenance.

Wildlife fencing will be installed to direct wildlife toward crossings and prevent species' access to roadways and other areas they must be excluded from. Escape opportunities such as jump-out ramps may be provided as appropriate in conjunction with fencing to allow animals to escape from the roadway.

Mitigation Measure WILD-1.16: Monitor and Maintain Wildlife Crossings

Because many wildlife species will avoid or be obstructed by structures with a substantial amount of debris or blockages, the Authority will require a qualified wildlife biologist to regularly monitor crossings and culverts and clear them or oversee the clearing of debris and other blockages. Cameras, roadkill surveys, or other methods will be used to monitor wildlife crossing use. Vegetative cover will be maintained near crossing entrances to provide cover and reduce negative effects such as artificial lighting and noise associated with the road. A monitoring and maintenance plan for wildlife crossings will be developed during design of wildlife crossings (Mitigation Measure WILD-1.15). Plan components will include but are not limited to specifications and methods for documenting postconstruction conditions, the approach for and frequency of monitoring and maintenance, performance standards, reporting requirements, and adaptive management actions to ensure long-term success of crossing structure function.

Mitigation Measure VEG-2.2: Avoid and Compensate for Adverse Effects on Sensitive Natural Communities

This mitigation measure is described above for Impact VEG-2.

Mitigation Measure VEG-3.2: Compensate for Temporary and Permanent Impacts on State- or Federally Protected Wetlands

This mitigation measure is described above for Impact VEG-3.

Alternative 2

Construction of Alternative 2 would result in similar impacts to Alternatives 1 and 3 except that construction of South Road and TRR West would result in additional permanent loss of potential habitat

and the smaller reservoir footprint would reduce the amount of permanent habitat loss under Alternative 2. Overall, permanent and temporary impacts on modeled western spadefoot habitat would be less under Alternative 2 than under Alternatives 1 and 3, except for permanent impacts on modeled aquatic habitat, because of the smaller inundation area and reduced impacts from construction of dams and dikes (Appendix 10C, Table 10C-6). Operation of Alternative 2 would result in similar impacts to Alternatives 1 and 3 except that the increased amount of roadway could impede movement over a larger area and result in additional mortality from vehicle strikes. These impacts would be significant because the implementation of Alternative 2 could reduce the local western spadefoot population through direct mortality and habitat loss. Implementation of Mitigation Measures WILD-1.2, WILD-1.3, WILD-1.14, WILD-1.15, WILD-1.16, VEG-2.2, and VEG-3.2 would reduce the level of impact from construction and operation to less than significant.

Impact WILD-1g: California Red-legged Frog

Construction of Alternative 1 or 3 could result in significant impacts on California red-legged frog from removal of modeled habitat and potential loss of individuals. Operation of Alternative 1 or 3 could result in significant impacts on California red-legged frog as a result of new or increased contaminants entering habitat, vehicle strikes, introduction of exotic invasive species that prey on or compete with California red-legged frog, and impeded movement from new roadways. These impacts would be significant because the implementation of Alternative 1 or 3 could reduce the local California red-legged frog population through direct mortality and habitat loss. Implementation of Mitigation Measures WILD-1.14, WILD-1.15, WILD-1.16, WILD-1.17, and WILD-1.18 would reduce the level of impact from construction and operation to less than significant because surveys would be conducted to determine presence, protective measures would be implemented during construction, compensation would be provided for the permanent and temporary losses of suitable habitat, and if found to be necessary through a wildlife corridor study, suitable crossings would be installed at appropriate locations to facilitate safe crossings.

Mitigation Measure WILD-1.14: Assess Habitat Suitability and Survey Suitable Habitat for Western Spadefoot, California Red-legged Frog, and Western Pond Turtle

This mitigation measure is described above under Impact WILD-1f for western spadefoot.

Mitigation Measure WILD-1.15: Design and Construct Wildlife Crossings for New Roadways at Suitable Locations

This mitigation measure is described above under Impact WILD-1f for western spadefoot.

Mitigation Measure WILD-1.16: Monitor and Maintain Wildlife Crossings

This mitigation measure is described above under Impact WILD-1f for western spadefoot.

Mitigation Measure WILD-1.17: Implement California Red-legged Frog Protective Measures

If California red-legged frog is found in the Project area either incidentally or during surveys conducted in accordance with Mitigation Measure WILD-1.14, the Authority will implement the following protective measures. These measures will apply to upland habitat (within 300 feet) and dispersal habitat (within 1 mile) of aquatic habitats that are found to be occupied during surveys.

Occupied aquatic habitat will not be removed or filled until California red-legged frogs have been relocated to suitable habitat outside of disturbance areas or other actions that will avoid mortality of individuals or effects on the population as determined during ESA Section 7 consultation with USFWS.

Occupied aquatic habitat that will not be removed or disturbed will be protected with exclusion fencing along the edge of the work area a minimum of 200 feet from the aquatic habitat. The fencing will be installed to prevent individuals from entering the work area but will not completely enclose the pond or exclude dispersal to and from the pond. The USFWS-approved biologist will assist with preparing the fence plans and will be present during installation. The fencing will be installed to a depth of 6 inches and extended at least 30 inches above grade. The contractor will avoid placing fencing on top of ground squirrel burrows. The fence will be pulled taut at each support to prevent folds or sagging. A USFWS-approved biologist will also walk all fence lines daily to look for individual frogs stranded along fence lines. Fencing will be inspected and maintained in good condition throughout work and will be removed after work is complete and all construction equipment is removed from the work area.

A USFWS-approved biologist will be present during all ground-disturbing work in California red-legged frog upland and dispersal habitats during the rainy season (generally October 15 to May 1) when frogs are dispersing. The biologist will survey work areas for frogs and for rodent burrows in potential upland habitat immediately prior to the start of any ground-disturbing work (including moving equipment into the area). If a California red-legged frog is found, it will be moved out of the work area in accordance with the USFWS biological opinion for the Project. Disturbance of suitable habitat will be minimized to the maximum extent feasible.

In the event a California red-legged frog is trapped, construction within 300 feet of the location will cease until the individual has been removed from the location per a USFWS-approved relocation plan. The plan will include trapping and relocation methods, relocation sites, and post-relocation monitoring. Only USFWS-approved biologists will be allowed to relocate listed species to outside of the construction area.

If ground disturbance or vegetation removal will occur in suitable upland or dispersal habitats during or 24 hours following a rain event between October 15 and May 1, a USFWS-approved biologist will be onsite to monitor the work and ensure that the exclusion fencing is intact. Following a rain event, no work will proceed until a USFWS-approved biologist has inspected the work areas and verified that there are no California red-legged frogs present. A rain event is to be considered precipitation of at least 0.25 inch within a 24-hour period.

Activities within suitable upland/dispersal habitat will cease no less than 30 minutes before sunset and will not begin again prior to no less than 30 minutes after sunrise. Except when necessary for driver or pedestrian safety artificial lighting at a worksite will be prohibited during the hours of darkness when working in suitable California red-legged frog upland/dispersal habitat.

For any night work, the driving path and work area will be surveyed for California red-legged frog immediately prior to work and nighttime work will be monitored by a USFWS-approved biologist.

If work must be conducted at night, all lighting will be directed away and shielded from California red-legged frog habitat outside the work area to minimize light spillover to the greatest extent possible.

Mitigation Measure WILD-1.18: Compensate for Permanent and Temporary Losses of Occupied California Red-legged Frog Aquatic and Upland Habitats

The Authority will compensate for the permanent and temporary losses of occupied California red-legged frog aquatic habitat and associated upland habitat through the purchase of mitigation credits at a USFWS-approved mitigation or conservation bank or through acquiring or preserving and protecting habitat in perpetuity at a location approved by USFWS. Permanent impacts on habitat will be mitigated by restoring or preserving habitat at a 2:1 ratio (habitat restored or preserved : habitat affected) or by an equivalent or greater amount as determined during Section 7 ESA consultation with USFWS. Temporary impacts on habitat will be mitigated by restoring or preserving habitat at a 1:1 ratio (habitat restored or preserved: habitat affected), or by an equivalent or greater amount as determined during Section 7 ESA consultation with USFWS for the Project. The purchase of mitigation credits or the establishment of onsite or offsite mitigation areas (or a combination of these options) would be completed as agreed upon by the Authority, Reclamation, and USFWS.

USFWS-approved conservation banks have long-term adaptive management plans with performance standards. Therefore, if mitigation occurs through a USFWS-approved conservation bank, the bank's performance standards and success criteria will be applied.

If credits are not purchased at a USFWS-approved conservation bank, the Authority will implement standards for long-term management and protection of conservation areas. The Authority will work closely with USFWS during the planning and development of conservation areas. Conservation areas will have suitable aquatic and upland habitat. Once established, conservation areas will be surveyed by a USFWS-approved biologist a minimum of two times between January 1 and June 30. The biologist will survey aquatic habitat for California red-legged frog, evaluate the adequacy of site protection (e.g., fencing, signage), assess potential threats to the frog, and take photographs of the site. The biologist will also survey a set of reference ponds or other aquatic habitat known to be occupied by California red-legged frog to compare to the preserved and created/restored aquatic habitat. The reference ponds/habitat should be located within proximity to the conservation area and exhibit characteristics similar to the preserved and created/restored habitat.

Performance standards for management of non-mitigation bank ponds are as follows: (1) > 10% of the shoreline is vegetated; (2) 30%–60% of the pond has emergent vegetation; and (3) 40%–70% of the pond is open water. Performance standards are not included for California red-legged frog occupancy since the objective of the Project mitigation is to establish compensatory suitable habitat rather than to ensure occupancy. Therefore, the successful establishment of aquatic and upland habitats based on the floristic, physical, and hydrologic components of the habitats will be used to evaluate the success of offsite California red-legged frog habitat compensatory mitigation. If the performance standards cannot be achieved, the Authority and Reclamation will consult with USFWS to implement an alternative compensatory mitigation approach.

Working closely with USFWS during planning and development of the conservation area and monitoring the conservation area to ensure performance standards are achieved and adaptive management actions are applied when the performance standards are not achieved will ensure that the compensatory mitigation is effective and compensates for the losses resulting from the Project.

Alternative 2

Construction of Alternative 2 would result in similar impacts to Alternatives 1 and 3 except that permanent impacts on modeled California red-legged frog habitat would be less under Alternative 2 than under Alternatives 1 and 3 because of the smaller inundation area and reduced impacts from construction of dams and dikes (Appendix 10C, Table 10C-7). A net decrease in the amount of habitat removed would also decrease the potential for individuals to be crushed or buried by equipment or struck by vehicles and equipment traveling along access roads. The operation impacts of Alternative 2 would be similar to those for Alternatives 1 and 3 except that the increased amount of roadway could impede movement over a larger area and result in additional mortality from vehicle strikes. These impacts would be significant because the implementation of Alternative 2 could reduce the local California red-legged frog population through direct mortality and habitat loss. Implementation of Mitigation Measures WILD-1.14, WILD-1.15, WILD-1.16, WILD-1.17, and WILD-1.18 would reduce the level of impact from construction and operation to less than significant.

Impact WILD-1h: Western Pond Turtle

Alternative 1 and 3

Construction of Alternative 1 or 3 would result in significant impacts on western pond turtle from removal of potential habitat and potential loss of individuals. Operation of Alternative 1 or 3 could result in significant impacts on western pond turtle as a result of new or increased contaminants entering habitat, vehicle strikes, and new roads creating impediments to movement. These impacts would be significant because the implementation of Alternative 1 or 3 could reduce the local western pond turtle population through direct mortality and habitat loss. Implementation of Mitigation Measures WILD-1.14, WILD-1.15, WILD-1.16, WILD-1.19, VEG-2.2, VEG-3.1, VEG-3.2, and VEG-3.3 would reduce the level of impact from construction and operation to less than significant because surveys would be conducted to identify suitable habitat, qualified biologists would conduct preconstruction surveys and monitor initial work in suitable aquatic habitat, compensation would be provided for the permanent and temporary losses of suitable habitat, and if found to be necessary through a wildlife corridor study, suitable crossings would be installed at appropriate locations to facilitate safe crossings.

Mitigation Measure WILD-1.14: Assess Habitat Suitability and Survey Suitable Habitat for Western Spadefoot, California Red-legged Frog, and Western Pond Turtle

This measure is described above under Impact WILD-1f for western spadefoot.

Mitigation Measure WILD-1.15: Design and Construct Wildlife Crossings for New Roadways at Suitable Locations

This mitigation measure is described above under Impact WILD-1f for western spadefoot.

Mitigation Measure WILD-1.16: Monitor and Maintain Wildlife Crossings

This mitigation measure is described above under Impact WILD-1f for western spadefoot.

Mitigation Measure WILD-1.19: Conduct Preconstruction Surveys for Western Pond Turtle and Monitor Initial In-Water Work

The Authority will retain qualified biologists (i.e., experienced in the identification of and knowledge of the life history and habitats of western pond turtle) to conduct preconstruction surveys within 24 hours of the start of activities that disturb occupied or suitable western pond turtle aquatic habitat. The biologist will survey the aquatic habitat and adjacent marsh, riparian, and grassland habitat in the construction area. If in-water work does not start immediately, the biologist will return to the construction site immediately prior to the start of in-water work to conduct another preconstruction survey. The biologist will remain onsite until initial in-water work is complete. If a turtle becomes trapped during initial in-water work, a biologist who is CDFW-approved to capture and relocate turtles during construction of the Project will relocate the individual to suitable aquatic habitat upstream or downstream of the construction area. The construction crew will be instructed to notify the crew foreman who will contact the biologist if a turtle is found trapped in the construction area. Work in the area where the turtle is trapped will stop until the biologist arrives and removes and relocates the turtle. The biologist will report their activities to CDFW within 24 hours of relocating any turtle.

Mitigation Measure VEG-2.2: Avoid and Compensate for Adverse Effects on Sensitive Natural Communities

This mitigation measure is described above under Impact VEG-2.

Mitigation Measure VEG-3.1: Avoid and Minimize Disturbance of Wetlands and Non-Wetland Waters During Construction Activities

This mitigation measure is described above under Impact VEG-3.

Mitigation Measure VEG-3.2: Compensate for Temporary and Permanent Impacts on State- or Federally Protected Wetlands

This mitigation measure is described above under Impact VEG-3.

Mitigation Measure VEG-3.3: Compensate for Temporary and Permanent Impacts on State- or Federally Protected Non-Wetland Waters

This mitigation measure is described above under Impact VEG-3.

Alternative 2

Construction of Alternative 2 would result in similar impacts to Alternatives 1 and 3 except that permanent and temporary impacts on modeled western pond turtle aquatic habitat would be greater under Alternative 2 because of the construction of South Road and TRR West and permanent and temporary impacts on modeled western pond turtle upland habitat would be less under Alternative 2 because of the smaller inundation area and reduced impacts from construction of dams, and dikes. A net increase in the amount of modeled aquatic habitat removed would also increase the potential for individuals to be crushed or buried by equipment. Operation of Alternative 2 would be the same as Alternatives 1 and 3 except that the increased amount of roadway would impede movement over a larger area and result in additional mortality from vehicle strikes. These impacts would be significant because the implementation of Alternative 2 could reduce the local western pond turtle population through direct mortality and habitat loss. Implementation of Mitigation Measures WILD-1.14, WILD-

1.15, WILD-1.16, WILD-1.19, VEG-2.2, VEG-3.1, VEG-3.2, and VEG-3.3 would reduce the level of impact from construction and operation to less than significant.

Impact WILD-1i: Giant Gartersnake

Alternatives 1 and 2

Construction of Alternative 1 or 3 would result in significant impacts on giant gartersnake from removal of suitable habitat and potential loss of individuals. Operation of Alternative 1 or 3 could result in significant impacts on giant gartersnakes if individuals are injured or killed during maintenance of waterway structures or are struck by vehicles during maintenance activities. These impacts would be significant because the implementation of Alternative 1 or 3 could reduce the local giant gartersnake population through direct mortality and habitat loss. Implementation of Mitigation Measure WILD-1.20 would reduce the level of impact from construction and operation to less than significant because construction in suitable habitat would be conducted during this species' active period to the extent feasible, surveys would be conducted to determine presence of giant gartersnake, construction would be suspended if giant gartersnakes are observed in work areas, exclusion fencing would be installed along the edge of the construction area where suitable habitat is present, and additional measures would be implemented to avoid causing giant gartersnake injury and mortality. Furthermore, implementation of Mitigation Measures VEG-2.2, VEG-3.2, VEG-3.3, and WILD-1.21 would reduce the level of impact to less than significant because temporarily disturbed aquatic and upland habitats would be restored and compensation would be provided for the permanent and temporary losses of suitable aquatic and upland habitat. The Authority will also implement measures specified in the biological opinion from USFWS and the incidental take permit from CDFW for the Project.

Mitigation Measure WILD-1.20: Implement Protective Measures for Giant Gartersnake

The Authority will implement the following protective measures when working in or near giant gartersnake habitat.

When possible, all construction activity in suitable giant gartersnake aquatic habitat, and upland habitat within 200 feet of suitable aquatic habitat, will be conducted during the snake's active period (between May 1 and October 1). For work that cannot be conducted between May 1 and October 1, additional protective measures, such as installing exclusion fencing or additional biological monitoring, or other measures determined during consultation with USFWS and CDFW, will be implemented.

Any dewatered habitat will remain dry for at least 15 consecutive days after April 15 and prior to excavating or filling of the dewatered habitat.

The movement of heavy equipment within 200 feet of the banks of potential giant gartersnake aquatic habitat will be confined to designated haul routes to minimize habitat disturbance.

Vegetation clearing within 200 feet of the banks of suitable giant gartersnake aquatic habitat will be limited to the minimum area necessary. Avoided giant gartersnake habitat in or adjacent to the Project area will be flagged and designated as an activity exclusion zone, to be avoided by all construction personnel.

To reduce the likelihood of snakes entering the construction area, exclusion fencing will be installed along the edge of the construction area that is within 200 feet of suitable aquatic habitat. The exclusion fencing will be installed during the active period for giant gartersnakes (May 1 to October 1) to reduce

the potential for injury and mortality during this activity. The exclusion fencing will consist of 3-foot-tall silt fencing buried 4 to 6 inches below ground level.

A USFWS- and CDFW-approved biologist will conduct a preconstruction survey of work areas within 200 feet of suitable giant gartersnake habitat no more than 24 hours before the start of work in that area.

Prior to construction activities each morning, construction personnel will inspect exclusion and orange barrier fencing to ensure they are both in good working order. If any snakes are observed in the construction area during this inspection or at any other time during construction, the USFWS- and CDFW-approved biologist will be contacted to survey the site for snakes. The work area will be re-inspected and surveyed whenever a lapse in construction activity of 2 weeks or more has occurred. If a snake (believed to be a giant gartersnake) is encountered during construction, activities will cease until appropriate corrective measures have been completed or it has been determined that the snake will not be harmed.

The Authority will prepare a giant gartersnake relocation plan for review and approval by USFWS and CDFW prior to Project implementation. The plan will include trapping and relocation methods, relocation sites, and post-relocation monitoring. If a giant gartersnake becomes trapped, construction will cease until the individual has been relocated to an appropriate location as described in the approved relocation plan. Only USFWS and CDFW-approved biologists will conduct surveys and move listed species in accordance with the approved relocation plan.

Mitigation Measure WILD-1.21: Compensate for Permanent and Temporary Losses of Giant Gartersnake Aquatic and Upland Habitats

The Authority will compensate for the permanent and temporary losses of suitable giant gartersnake aquatic habitat and associated upland habitat through the purchase of mitigation credits at a USFWS- and CDFW-approved mitigation or conservation bank or through acquiring and protecting habitat in perpetuity at a location approved by USFWS and CDFW. Permanent impacts on habitat will be mitigated by restoring or preserving habitat at a 3:1 ratio (habitat restored or preserved: habitat affected) or by an equivalent or greater amount as determined through consultation with USFWS or CDFW. Temporary impacts on habitat will be mitigated by restoring or preserving habitat at a 1:1 ratio (habitat restored or preserved: habitat affected), or by an equivalent or greater amount as determined during consultation with USFWS or CDFW. The purchase of mitigation credits or the establishment of onsite or offsite mitigation areas (or a combination of these options) would be completed as agreed upon by the Authority, Reclamation, USFWS, and CDFW.

USFWS and CDFW-approved conservation/mitigation banks have long-term adaptive management plans with performance standards. If mitigation occurs through a USFWS and CDFW-approved conservation/mitigation bank, the bank's performance standards and success criteria will be applied.

If credits are not purchased at a USFWS and CDFW-approved conservation bank, the Authority will implement standards for long-term management and protection of conservation areas. The Authority will work closely with USFWS and CDFW during the planning and development of conservation areas. Conservation areas will have suitable aquatic and upland habitat. Once established, conservation areas will be surveyed annually by a USFWS- and CDFW- approved biologist. The biologist will assess the aquatic and upland habitat conditions, evaluate the adequacy of site protection (e.g., fencing, signage), assess potential threats to giant gartersnake, and take photographs of the site. The biologist will prepare

monitoring reports that will include methods and results of monitoring and recommendations for adaptive management actions as needed.

Performance standards for non-mitigation bank aquatic and upland habitat compensation will provide the basis for monitoring parameters and will help determine the need for possible remedial actions after Project implementation. General performance standards for management of non-mitigation bank giant gartersnake habitat are as follows: (1) protected habitat is supplied with a reliable source of clean water from March through November or at a minimum, through the critical active summer months; (2) a sufficient amount of upland habitat is adjacent to aquatic habitat and is not inundated during the active season (May 1 through October 1); (3) the site provides available and abundant bankside vegetative cover (i.e., tule, cattail) for cover; and (4) permanent shelter, such as bankside cracks or crevices, holes, or small mammal burrows and upland winter refugia (areas that do not flood) must be present and maintained. During planning and development of the mitigation area, additional or more refined performance standards may be developed in coordination with USFWS and CDFW. Performance standards are not included for giant gartersnake occupancy since the objective of the Project mitigation is to establish compensatory suitable habitat rather than to ensure occupancy. Therefore, the successful establishment of aquatic and upland habitats based on the floristic, physical, and hydrologic components of the habitats will be used to evaluate the success of offsite giant gartersnake habitat compensatory mitigation.

Working closely with USFWS and CDFW during planning and development of the conservation area, monitoring the conservation area to ensure performance standards are achieved, and applying adaptive management actions when the performance standards are not achieved will ensure that the compensatory mitigation is effective and compensates for the losses resulting from the Project.

Mitigation Measure VEG-2.2: Avoid and Compensate for Adverse Effects on Sensitive Natural Communities

This mitigation measure is described above under Impact VEG-2.

Mitigation Measure VEG-3.2: Compensate for Temporary and Permanent Impacts on State- or Federally Protected Wetlands

This mitigation measure is described above under Impact VEG-3.

Mitigation Measure VEG-3.3: Compensate for Temporary and Permanent Impacts on State- or Federally Protected Non-Wetland Waters

This mitigation measure is described above under Impact VEG-3.

Alternative 2

Construction of Alternative 2 would result in similar impacts to those under Alternatives 1 and 3 except that permanent impacts on modeled upland habitat would be less under Alternative 2 because of reduced impacts from construction of TRR West and temporary impacts on modeled aquatic and upland habitat would be greater under Alternative 2 because of the extended Dunnigan Pipeline and construction of the Sacramento River discharge. Operation of Alternative 2 could also result in additional potential for injury or mortality of giant gartersnakes from maintenance activities at the Sacramento River discharge. These impacts would be significant because the implementation of Alternative 2 could reduce the local giant gartersnake population through direct mortality and habitat

loss. Implementation of Mitigation Measures WILD-1.20, WILD-1.21, VEG-2.2, VEG-3.2, and VEG-3.3 would reduce the level of impact from construction and operation to less than significant.

Impact WILD-1j: Northern Harrier and Burrowing Owl

Alternatives 1 and 3

Construction of Alternative 1 or 3 would result in significant impacts on northern harrier and burrowing owl from removal of modeled habitat and potential loss or disturbance of active nests. Operation of Alternative 1 or 3 could result in disturbance of northern harrier and burrowing owl from human-generated noise and disturbance at recreation areas and near the reservoir, or illness or mortality of northern harrier or burrowing owl from ingestion of rodents that have consumed rodenticide. Collision with new transmission lines could cause injury or death of individuals from the collision impact or electrocution. New or widened roadways and additional vehicles traveling on roadways could increase the potential for injury or mortality of northern harrier and burrowing owl from vehicle strikes. These impacts would be significant because the implementation of Alternative 1 or 3 could reduce the local northern harrier and burrowing owl populations through direct mortality and habitat loss.

Implementation of Mitigation Measures WILD-1.22, WILD-1.23, WILD-1.24, WILD-1.25, WILD-1.26, WILD-1.27, VEG-2.2, and VEG-3.2 would reduce the level of impact from construction and operation to less than significant because vegetation would be removed during the non-breeding season, surveys would be conducted to determine if northern harrier and burrowing owl are nesting (or for burrowing owl, wintering) in or near work areas, no-disturbance buffers would be established around active nest (or wintering) sites, rodenticides would be used minimally and appropriately, transmission lines would be fitted with protective devices, and impacts on sensitive natural communities in which northern harriers or burrowing owls may nest or forage would be compensated for through habitat restoration or protection.

Mitigation Measure WILD-1.22: Conduct Vegetation Removal During the Non-Breeding Season of Nesting Migratory Birds

The Authority will, to the maximum extent feasible, remove trees, shrubs, and herbaceous vegetation during the non-breeding season for most migratory birds (generally between September 1 and January 31) to remove nesting substrate and avoid potential delays in construction caused by the presence of nesting birds. If vegetation cannot be removed between September 1 and January 31, or if ground cover re-establishes in areas where vegetation has been removed, the affected area will be surveyed for nesting birds, as discussed in Mitigation Measure WILD-1.23.

Mitigation Measure WILD-1.23: Conduct Preconstruction Surveys for Non-Raptor Nesting Migratory Birds and Implement Protective Measures if Found

For special-status species where survey protocols have been established by CDFW, USFWS, or technical advisory committees, those survey protocols will supersede this measure (i.e., Mitigation Measures WILD-1.24, WILD-1.28, and WILD-1.29 for burrowing owl, golden eagle/bald eagle, and Swainson's hawk/white-tailed kite). The Authority will retain qualified wildlife biologists with knowledge of the relevant species to conduct non-raptor nesting bird surveys no more than 14 days prior to the start of construction. Where suitable habitat is present to support bank swallow, yellow-breasted chat, tricolored blackbird, yellow warbler, and song sparrow (Modesto population), wildlife biologists will thoroughly survey habitat and listen for calls and songs of these species. Surveys for non-raptor nesting

migratory birds will include examining all potential nesting habitat in and within 50 feet of work areas on foot and/or using binoculars. Surveys for nesting raptors will be conducted during Swainson's hawk/white-tailed kite surveys. If no active nests are detected during these surveys, no additional measures are required. During all nesting bird surveys, the biologist will document any special-status bird species detected in the survey area.

If an active nest is found in the survey area, a no-disturbance buffer will be established around the nest site to avoid disturbance or destruction of the site until the end of the breeding season (August 31) or until after a qualified wildlife biologist determines that the young have fledged and moved out of the Project area (this date varies by species). The extent of these buffers will be determined by the biologist in coordination with USFWS and CDFW and will depend on the species, level of noise or construction disturbance, line of sight between the nest and the disturbance, ambient levels of noise and other disturbances, and other topographical or artificial barriers. If it is determined that the no-disturbance buffer cannot be maintained, the Authority and the qualified biologist will consult with USFWS and CDFW about implementing a reduced buffer but requiring full-time nest monitoring by a qualified biologist to watch for signs of stress. If behaviors indicating stress or potential nest abandonment (e.g., visible or audible agitation, leaving the nest at an unusual time or for an unusual length of time), the biologist will have the authority to stop work until the bird has returned to the nest or otherwise shows signs of recovery from the stress.

For federally and state-listed species, the above protective measures will be implemented, and the Authority will contact CDFW and USFWS to discuss the need for take authorization if the Authority does not already have such authorization.

Mitigation Measure WILD-1.24: Conduct Surveys for Western Burrowing Owl Prior to Construction and Implement Avoidance and Minimization Measures if Found

The Authority will retain qualified biologists (experienced at identification of burrowing owls and their habitat) to conduct burrowing owl surveys in accordance with CDFW's *2012 Staff Report on Burrowing Owl Mitigation* (2012 Staff Report) (California Department of Fish and Game 2012). Biologists will conduct four surveys during the breeding season as follows: (1) one survey between February 15 and April 15, and (2) a minimum of three surveys at least 3 weeks apart between April 15 and July 15, with at least one survey after June 15. Biologists will also conduct four surveys spread evenly throughout the non-breeding season (September 1 to January 31). A report describing the methods and results of the survey will be submitted to CDFW within 30 days of completing the surveys.

The Authority will retain qualified biologists to conduct preconstruction take avoidance surveys for active burrows according to methodology in the 2012 Staff Report. If burrowing owls are found during any of the surveys, the Authority will implement Mitigation Measure WILD-1.25, which requires habitat to be replaced at a conservation area before permanent impacts occur. Because ample lead time is necessary to acquire and protect replacement habitat, these efforts should begin as soon as possible after presence of burrowing owls is determined.

Regardless of results from the surveys described above, if suitable habitat is present in the Project area, take avoidance (preconstruction) surveys will be conducted in the Project area (i.e., the area of ground disturbance and surrounding 500 feet) no less than 14 days prior to and 24 hours before initiating ground-disturbing activities (i.e., two surveys). If suitable habitat within 500 feet of ground disturbance is not accessible because of landowner restrictions, then the survey will extend to the edge of where access is allowed. Because burrowing owls may re-colonize a site after a few days, subsequent surveys

will be conducted if more than 48 hours pass between Project activities. If no burrowing owls are found, no further mitigation is required. If burrowing owls are found, the Authority will implement the following measures summarized from the 2012 Staff Report.

Occupied burrows will not be disturbed during the breeding season (February 1–August 31).

Depending on the time of year and level of disturbance, a 164-foot to 1,640-foot-wide buffer area will be established around occupied burrows. No construction will be authorized within the buffer unless a qualified biologist determines through non-invasive methods that egg laying and incubation have not begun or that juveniles are foraging independently and are capable of independent survival.

To the maximum extent possible, burrows occupied during the non-breeding season by migratory or non-migratory resident burrowing owls will be avoided.

To the maximum extent possible, destruction of unoccupied burrows in temporary impact areas will be avoided, and visible markers will be placed near burrows to ensure they are not collapsed.

Occupied burrows that cannot be avoided will have exclusion devices installed and be collapsed. Burrow exclusion will be conducted only by qualified biologists during the non-breeding season, before breeding behavior is exhibited and after the burrow is confirmed empty by site surveillance and/or scoping.

Qualified biologists will conduct additional take avoidance surveys, as described above.

Qualified biologists will monitor the Project site for burrowing owls during Project construction activities.

Impacts on burrowing owls and their habitat will be minimized by using buffer areas, visual screens, and other measures during Project construction activities. Recommended buffer distances in the 2012 Staff Report will be used or site-specific buffers and visual screens will be determined through information collected during site-specific monitoring and consultation with CDFW.

Mitigation Measure WILD-1.25: Restore Temporarily Disturbed Habitat and Compensate for the Permanent Loss of Occupied Burrowing Owl Habitat

If burrowing owls have been documented to occupy burrows at the Project site in the last 3 years, CDFW considers the site occupied and mitigation is required (California Department of Fish and Game 2012:6).

The Authority will restore temporarily disturbed areas to pre-Project conditions. The Authority will mitigate for permanent impacts on occupied burrowing owl habitat in accordance with the 2012 Staff Report. Permanent impacts will be mitigated by creating or preserving habitat at a 1:1 ratio (habitat created or preserved : habitat permanently affected) or by an equivalent or greater amount as determined in coordination with CDFW. Replacement habitat will be established through onsite mitigation, offsite mitigation, and/or credits purchased at a CDFW-approved mitigation or conservation bank. The purchase of mitigation credits or the establishment of onsite or offsite mitigation areas (or a combination of these options) would be completed as agreed upon by the Authority and CDFW.

CDFW-approved mitigation banks have long-term adaptive management plans with performance standards. If mitigation occurs through a CDFW-approved conservation/ mitigation bank, the bank's performance standards and success criteria will be applied.

If credits are not purchased at a CDFW-approved conservation bank, the Authority will implement standards for long-term management and protection of mitigation areas. A conservation easement would be placed on offsite mitigation land. A mitigation monitoring plan will be prepared for onsite and offsite mitigation to ensure the long-term success of the habitat. The mitigation monitoring plan will describe the requirements for monitoring and maintaining the site, performance standards, adaptive management techniques, and reporting requirements.

The Authority will work closely with CDFW during the planning and development of onsite and offsite mitigation areas. Mitigation areas will provide suitable nesting and foraging habitat. Once established, mitigation areas will be periodically monitored by a CDFW-approved biologist. The biologist will survey the site for presence of western burrowing owl, assess the suitability of the site in providing nesting and foraging habitat (including the abundance of prey), evaluate the adequacy of site protection (e.g., fencing, signage), assess potential threats to burrowing owls, and take photographs of the site. The biologist should determine the number of adult burrowing owls and pairs, and if the numbers are maintained between monitoring years. The frequency of monitoring will be determined based on site-specific conditions in coordination with CDFW and will be included in the mitigation monitoring plan.

Performance standards for management of burrowing owl habitat will be based on site-specific conditions and included in the mitigation monitoring plan. Performance standards may include managing vegetation height to between 4.7 and 13 centimeters through grazing or mowing (California Department of Fish and Game 2012) and maintaining conditions that promote or support natural prey distribution and abundance, especially in proximity to occupied burrows. The successful establishment or maintenance of suitable breeding and foraging habitat based on the vegetation height and prey abundance will be used to evaluate the success of the burrowing owl habitat compensatory mitigation.

Working closely with CDFW during planning and development of the conservation area, monitoring the conservation area to ensure performance standards are achieved, and applying adaptive management when performance standards are not achieved will ensure that the compensatory mitigation is effective and compensates for the permanent habitat loss resulting from the Project.

Mitigation Measure WILD-1.26: Protect Special-Status Wildlife from Rodenticide Use

To minimize the potential for wildlife to be poisoned by ingesting rodenticide, use of rodenticides will be minimized to the maximum extent feasible and limited to areas immediately surrounding Project facilities. Facilities will be maintained in a manner to reduce the potential for nuisance rodents, including sealing openings in structures, securely storing trash bins, and installing signage at recreation areas discouraging feeding of wildlife and encouraging disposal of food and other trash in designated containers. Signage will include text from the California Code of Regulations that states it is illegal to feed big game mammals and that feeding of wildlife is considered harassment and should not be done under any circumstances.

Wherever feasible, alternatives to rodenticide will be used for rodent eradication, such as traps, if they can be used safely around other wildlife. Additionally, to minimize the risk to non-target species from directly ingesting rodenticides, anticoagulant and non-anticoagulant rodenticides will not be broadcast. The Authority will consult with California Department of Pesticide Regulation's PRESCRIBE database (<https://www.cdpr.ca.gov/docs/endspec/prescint.htm>) prior to any vertebrate pest control activity. The database incorporates section by section coordination with CDFW's Biogeographic Information and Observation System and the CNDDDB to provide species-specific use restrictions that are not on pesticide labels, including use of modified bait stations and what those modifications must be.

Mitigation Measure WILD-1.27: Construct Overhead Power Lines and Associated Equipment Following Suggested Practices to Reduce Bird Collisions with Power Lines

The Authority will ensure that new transmission lines and associated equipment will be properly fitted with wildlife protective devices to isolate and insulate structures to prevent injury or mortality of birds. Protective measures shall follow the guidelines provided in *Reducing Avian Collisions with Power Lines: The State of the Art* (Avian Power Line Interaction Committee 2012), or the current Avian Power Line Interaction Committee guidelines in place at the time the transmission lines are installed, and will include insulating hardware or conductors against simultaneous contact, using poles that minimize impacts to birds, and increasing the visibility of conductors or wires to prevent or minimize bird collisions.

Mitigation Measure VEG-2.2: Avoid and Compensate for Adverse Effects on Sensitive Natural Communities

This mitigation measure is described above under Impact VEG-2.

Mitigation Measure VEG-3.2: Compensate for Temporary and Permanent Impacts on State- or Federally Protected Wetlands

This mitigation measure is described above under Impact VEG-3.

Alternative 2

Construction of Alternative 2 would result in impacts similar to those under Alternatives 1 and 3 except that permanent and temporary impacts on burrowing owl habitat and permanent impacts on northern harrier habitat would be less under Alternative 2 and temporary impacts on northern harrier habitat would be greater under Alternative 2. Operation of Alternative 2 would result in similar impacts as those described above for Alternatives 1 and 3 except that the greater amount of roadway could increase the potential for northern harrier and burrowing owl to be struck by vehicles of workers traveling to operations facilities or visitors traveling to recreation areas. These impacts would be significant because the implementation of Alternative 2 could reduce the local northern harrier and burrowing owl populations through direct mortality and habitat loss. Implementation of Mitigation Measures WILD-1.22, WILD-1.23, WILD-1.24, WILD-1.25, WILD-1.26, WILD-1.27, VEG-2.2, and VEG-3.2 would reduce the level of impact from construction and operation to less than significant.

Impact WILD-1k: Golden Eagle and Bald Eagle

Alternatives 1 and 3

Implementation of Alternative 1 or 3 would have the beneficial effects of providing new bald eagle foraging habitat (Sites Reservoir) and new nesting sites or wintering habitat because of the proximity to the new foraging habitat (12 to 20 years after reservoir filling begins). Construction of Alternative 1 or 3 would result in significant impacts on golden eagle and bald eagle from removal of suitable habitat and potential loss or disturbance of active nests. Operation of Alternative 1 or 3 may result in disturbance of bald eagle and golden eagle if nesting or foraging at or near recreation areas and the use of rodenticides could cause illness, injury, or mortality of bald eagle or golden eagle if rodenticides are ingested. Collision with new transmission lines could cause injury or death of individuals from the collision impact or electrocution. Consumption of fish that have bioaccumulated methylmercury could cause illness or

mortality of bald eagle. These impacts would be significant because the implementation of Alternative 1 or 3 could reduce the local golden eagle and bald eagle populations through direct mortality and habitat loss.

Implementation of Mitigation Measures WILD-1.22, WILD-1.26, WILD-1.27, WILD-1.28, WILD-1.29, VEG-2.2, VEG-3.2, VEG-3.3, VEG-4.1, VEG-4.2, and WQ-1.1 would reduce the level of impact on bald eagle from construction and operation to less than significant because vegetation would be removed during the non-breeding season, surveys would be conducted to determine if bald eagle are nesting in or near work areas, no-disturbance buffers would be established around active nest sites, rodenticides would be used minimally and appropriately, transmission lines would be fitted with protective devices; steps would be taken to reduce, monitor, and manage mercury in the reservoir and fish population; and impacts on sensitive natural communities in which bald eagles may nest or forage would be compensated for through habitat restoration and preservation. Implementation of Mitigation Measures WILD-1.22, WILD-1.26, VEG-2.2, VEG-3.2, VEG-3.3, VEG-4.1, and VEG-4.2 would reduce the level of construction impacts on golden eagle; however, the removal of mature trees within blue oak woodland, foothill pine, and oak savanna communities would be a long-term impact on golden eagle because of the length of time that would be required for newly planted trees to reach mature size and fully replace the habitat function and habitat value of the removed trees. This impact on golden eagle would remain **significant and unavoidable** even with mitigation because of the long-term loss of blue oak woodland, foothill pine, and oak savanna habitat. Implementation of Mitigation Measures WILD-1.27 and WILD-1.28 would reduce the level of impact on golden eagle from operation to less than significant because rodenticides would be used minimally and appropriately, and transmission lines would be fitted with protective devices. The Authority will also implement measures specified in an Eagle Conservation Plan, which will be prepared in coordination with USFWS and CDFW to address Project impacts on bald eagle and golden eagle.

Mitigation Measure WILD-1.22: Conduct Vegetation Removal During the Non-Breeding Season of Nesting Migratory Birds

This measure is described above under Impact WILD-1j for northern harrier and burrowing owl.

Mitigation Measure WILD-1.26: Protect Special-Status Wildlife from Rodenticide Use

This measure is described above under Impact WILD-1j for northern harrier and burrowing owl.

Mitigation Measure WILD-1.27: Construct Overhead Power Lines and Associated Equipment Following Suggested Practices to Reduce Bird Collisions with Power Lines

This measure is described above under Impact WILD-1j for northern harrier and burrowing owl.

Mitigation Measure WILD-1.28: Conduct Focused Surveys for Golden Eagle and Bald Eagle and Implement Protective Measures if Found

Prior to the start of construction, the Authority will retain qualified wildlife biologists (experienced with raptor identification and behaviors) to conduct focused surveys for golden eagle and bald eagle nests in suitable habitat in the Project area and within a 2-mile radius of the Project area.

The surveys will be conducted in accordance with the Interim Golden Eagle Inventory and Monitoring Protocols; and other Recommendations (Pagel et al. 2010), Protocol for Evaluating Bald Eagle Habitat and Populations in California (Jackman and Jenkins 2004), Bald Eagle Breeding Survey Instructions

(California Department of Fish and Wildlife 2017) and Updated Eagle Nest Survey Protocol (U.S. Fish and Wildlife Service 2020b).

Prior to conducting surveys, existing survey reports and other known breeding area records will be reviewed, and a map of potential nest sites will be created using GIS mapping of suitable nesting habitat. If feasible, an initial survey will be conducted during the fall or winter, prior to the initial occupancy survey, to identify existing nest sites. Nest locations will be mapped using GPS software and will be used during the occupancy surveys.

For golden eagle, based on the results of the initial survey, aerial (helicopter) or ground surveys will be conducted to assess nest occupancy. A minimum of two aerial surveys or ground observation periods lasting at least 4 hours each will be conducted in a single breeding season (January 1 through August 31) to confirm presence/absence of golden eagle. Each survey will be conducted at least 30 days apart. Surveys will be conducted in the morning during favorable weather conditions.

For bald eagle, based on the results of the initial survey, a minimum of three surveys will be conducted during the bald eagle nesting season (January 1 to July 31) in the year that construction will begin, and each year during the construction period, to look for new nests. The first survey will be conducted in the early breeding period in early March, and additional surveys will be conducted in mid-nesting season (late April or early May) and late in the season (mid-June). Surveys will be conducted in the morning, if feasible, during favorable weather conditions.

For both species, the final survey methods and survey area boundaries will be determined based on coordination with USFWS and CDFW, and all survey results will be submitted to these agencies.

No active bald eagle or golden eagle nest trees will be removed during the nesting season. If an occupied golden eagle or bald eagle nest is identified in the survey area, a no-disturbance buffer will be established around the nest site to avoid disturbance or destruction of the site, consistent with the USFWS's *Recommended Buffer Zones for Human Activities around Nesting Sites of Bald Eagles in California and Nevada* and the USFWS *Recommended Buffer Zones for Ground-based Human Activities around Nesting Sites of Golden Eagles in California and Nevada* (U.S. Fish and Wildlife Service 2017c, 2020c). If it is determined that the no-disturbance buffer cannot be maintained, the Authority and the qualified biologist will consult with USFWS and CDFW about implementing a reduced buffer but requiring full-time nest monitoring by a qualified biologist to watch for signs of stress. If behaviors indicating stress or potential nest abandonment (e.g., visible or audible agitation, leaving the nest at an unusual time or for an unusual length of time), the biologist will have the authority to stop work until the bird has returned to the nest or otherwise shows signs of recovery from the stress. Work will be delayed as long as necessary to ensure that nest abandonment does not occur.

Mitigation Measure WILD-1.29: Compensate for the Loss of Eagle Nest Trees

Prior to the start of construction, the Authority will prepare an Eagle Conservation Plan in consultation with USFWS, which will ensure that the loss of eagle nest trees results in a less-than-significant impact. Based on the results of the Eagle Conservation Plan and eagle nest surveys (Mitigation Measure WILD-1.28), the Authority will purchase compensatory mitigation credits from the Bald Eagle and Golden Eagle Electrocutation Prevention In-lieu Fee Program for the loss of eagle nest trees. The number of credits necessary to offset the permitted level of eagle take is determined by the permittee and USFWS during the consultation process. As such, the number of credits purchased to offset the effects of the Project will be specified in the Eagle Take Permit issued by USFWS.

Mitigation Measure VEG-2.2: Avoid and Compensate for Adverse Effects on Sensitive Natural Communities

This mitigation measure is described above under Impact VEG-2.

Mitigation Measure VEG-3.2: Compensate for Temporary and Permanent Impacts on State- or Federally Protected Wetlands

This mitigation measure is described above under Impact VEG-3.

Mitigation Measure VEG-3.3: Compensate for Temporary and Permanent Impacts on State- or Federally Protected Non-Wetland Waters

This mitigation measure is described above under Impact VEG-3.

Mitigation Measure VEG-4.1: Avoid and Minimize Potential Adverse Effects on Oak Woodlands During Construction

This mitigation measure is described above under Impact VEG-4.

Mitigation Measure VEG-4.2: Compensate for Adverse Effects on Oak Woodlands

This mitigation measure is described above under Impact VEG-4.

Mitigation Measure WQ-1.1: Methylmercury Management

This mitigation measure is described above under Impact WQ-1.

Alternative 2

Construction of Alternative 2 would result in impacts similar to those for Alternatives 1 and 3 except permanent and temporary impacts on golden eagle nesting and foraging habitats would be less under Alternative 2 and permanent impacts on bald eagle nesting and foraging habitat would be greater under Alternative 2. A net increase in the amount of suitable bald eagle nesting habitat removed would also increase the potential for destruction of nests or nest abandonment, which could cause injury or mortality of eggs or nestlings. Operation of Alternative 2 would result in similar impacts as those described above for Alternatives 1 and 3 except that the completed reservoir under Alternative 2 would provide new but smaller bald eagle foraging habitat than Alternatives 1 and 3 and could result in new nesting sites or wintering habitat because of the proximity to new foraging habitat. These impacts would be significant because the implementation of Alternative 2 could reduce the local golden eagle and bald eagle populations through direct mortality and habitat loss. Implementation of Mitigation Measures WILD-1.22, WILD-1.26, WILD-1.27, WILD-1.28, WILD-1.29, VEG-2.2, VEG-3.2, VEG-3.3, VEG-4.1, and VEG-4.2 would reduce the level of construction and operation impacts on bald eagle to less than significant.

Implementation of Mitigation Measures WILD-1.22, WILD-1.26, WILD-1.27, WILD-1.28, WILD-1.29, VEG-2.2, VEG-3.2, VEG-3.3, VEG-4.1, and VEG-4.2 would reduce the level of construction and operations impacts on golden eagle; however, the removal of mature trees within blue oak woodland, foothill pine, and oak savanna communities would be a long-term impact on golden eagle because of the length of time that would be required for newly planted trees to reach mature size and fully replace the habitat function and habitat value of the removed trees. This impact on golden eagle would remain **significant**

and unavoidable even with mitigation because of the long-term loss of blue oak woodland, foothill pine, and oak savanna habitat. The Authority will also implement measures specified in an Eagle Conservation Plan, which will be prepared in coordination with USFWS to address Project impacts on bald eagle and golden eagle.

Impact WILD-1I: Swainson's Hawk and White-tailed Kite

Alternatives 1 and 2

Construction of Alternative 1 or 3 would result in significant impacts on Swainson's hawk and white-tailed kite from removal of suitable habitat and potential loss or disturbance of active nests. Operation of Alternative 1 or 3 may result in disturbance of Swainson's hawk and white-tailed kite if nesting or foraging at or near recreation areas, and the use of rodenticides could cause illness, injury, or mortality of Swainson's hawk and white-tailed kite if rodenticides are ingested. Collision with new transmission lines could cause injury or death of individuals from the collision impact or electrocution. These impacts would be significant because the implementation of Alternative 1 or 3 could reduce the local Swainson's hawk and white-tailed kite populations through direct mortality and habitat loss.

Implementation of Mitigation Measures WILD-1.22, WILD-1.26, WILD-1.27, WILD-30, WILD-1.31, VEG-2.2, VEG-4.1, and VEG-4.2 would reduce the level of impact from construction and operation to less than significant because vegetation would be removed during the non-breeding season, surveys would be conducted to determine if Swainson's hawk or white-tailed kite is nesting in or near work areas, no-disturbance buffers would be established around active nest sites, rodenticides would be used minimally and appropriately, transmission lines would be fitted with protective devices, and impacts on foraging habitat and other sensitive natural communities in which Swainson's hawk or white-tailed kite may nest or forage would be mitigated through habitat restoration and preservation. Mitigation Measure WILD-1.29 would ensure that mitigation lands fulfill both the foraging and nesting requirements for Swainson's hawk, and that they support nesting Swainson's hawks at equal or greater densities than the habitat lost. Mitigation Measures VEG-2.2 and VEG-4.2 would further mitigate the loss of nesting habitat through restoration or creation of riparian and oak woodland at a ratio of at least 1:1. Mitigation of riparian and oak woodland at a 1:1 ratio in conjunction with Swainson's hawk foraging habitat mitigation (Mitigation Measure WILD-1.31) is more than sufficient to reduce impacts on Swainson's hawk and white-tailed kite habitat to less than significant.

Mitigation Measure WILD-1.22: Conduct Vegetation Removal During the Non-Breeding Season of Nesting Migratory Birds

This measure is described above under Impact WILD-1j for northern harrier and burrowing owl.

Mitigation Measure WILD-1.26: Protect Special-Status Wildlife from Rodenticide Use

This measure is described above under Impact WILD-1j for northern harrier and burrowing owl.

Mitigation Measure WILD-1.27: Construct Overhead Power Lines and Associated Equipment Following Suggested Practices to Reduce Bird Collisions with Power Lines

This measure is described above under Impact WILD-1j for northern harrier and burrowing owl.

Mitigation Measure WILD-1.30: Conduct Focused Surveys for Nesting Swainson's Hawk, White-tailed Kite, and Other Raptors Prior to Construction and Implement Protective Measures During Construction

The Authority will retain qualified wildlife biologists (experienced with raptor identification and behaviors) to conduct focused surveys for Swainson's hawk, white-tailed kite, and other raptor nesting areas before construction begins. Survey methodology will follow the Swainson's Hawk Technical Advisory Committee's methodology (Swainson's Hawk Technical Advisory Committee 2000). A minimum of six surveys will be conducted during the appropriate timeframes discussed in the methodology. If needed, the qualified biologists will coordinate with CDFW regarding the extent and number of surveys. Surveys will generally be conducted from February to July. Survey methods and results will be reported to CDFW within 30 days of the completion of the surveys.

Because the area surrounding the Project area is largely undeveloped, focused surveys for Swainson's hawk and white-tailed kite will be conducted in the Project area and in a buffer area up to 0.5 mile around the Project area. The survey area for other nesting raptors will encompass potential habitat within 500 feet of work areas. The portions of the Swainson's hawk/white-tailed kite buffer area containing unsuitable nesting habitat and/or with an obstructed line of sight to the Project area will not be surveyed.

No active Swainson's hawk or white-tailed kite nest trees will be removed during the nesting season. If the biologists find an active Swainson's hawk or white-tailed kite nest, the contractor will maintain a 0.25-mile no-work buffer between construction activities and the active nest(s) until it has been determined that the young have fledged. The biologists will mark the no-work buffer with stakes and signs and will check the location at least weekly to ensure that the signs are in place and the buffer is being maintained. No work will be authorized within the buffer except for vehicle travel. If a 0.25-mile buffer around the nest cannot be maintained, the Authority and a qualified biologist will consult with CDFW about implementing alternative protective measures that are sufficient to minimize the risk of disturbance, such as a reduced buffer with full-time nest monitoring by a qualified biologist. If nesting raptors exhibit agitated behavior indicating stress, the biological monitor will have the authority to stop construction in that area until they determine that the young have fledged.

For active nests of other raptors, no-disturbance buffers will be established around the nest sites to avoid disturbance or destruction of the sites until the end of the breeding season (August 31) or until after a qualified wildlife biologist determines that the young have fledged and moved out of the Project area (this date varies by species). The extent of these buffers will be determined by the biologist in coordination with USFWS and CDFW and will depend on the species, level of noise or construction disturbance, line of sight between the nest and the disturbance, ambient levels of noise and other disturbances, and other topographical or artificial barriers.

Mitigation Measure WILD-1.31: Compensate for the Permanent Loss of Foraging Habitat for Swainson's Hawk and White-tailed Kite

The Authority will compensate for permanent loss of suitable Swainson's hawk and white-tailed kite foraging habitat by restoring or preserving habitat onsite or offsite at a 1:1 ratio (habitat restored or preserved: habitat affected) for foraging habitat within 10 miles of an active Swainson's hawk nest (i.e., determined active during current surveys or within the last 5 years based on available data from prior surveys, if any). Onsite or offsite mitigation lands will provide suitable foraging habitat and sufficient potential nesting trees to support Swainson's hawk (including protected trees or planted trees, or both),

as determined by a qualified biologist, in an area with Swainson's hawk nesting densities equal to or greater than nesting densities in the Project area. The Authority may purchase mitigation credits for Swainson's hawk habitat from a CDFW-approved mitigation or conservation bank in lieu of or in addition to onsite or offsite habitat preservation. The purchase of mitigation credits or the establishment of onsite or offsite mitigation areas (or a combination of these options) would be completed as agreed upon by the Authority and CDFW.

Mitigation Measure VEG-2.2: Avoid and Compensate for Adverse Effects on Sensitive Natural Communities

This mitigation measure is described above under Impact VEG-2.

Mitigation Measure VEG-4.1: Avoid and Minimize Potential Adverse Effects on Oak Woodlands During Construction

This mitigation measure is described above under Impact VEG-4.

Mitigation Measure VEG-4.2: Compensate for Adverse Effects on Oak Woodlands

This mitigation measure is described above under Impact VEG-4.

Alternative 2

Construction of Alternative 2 would result in impacts similar to those for Alternatives 1 and 3 except that permanent and temporary impacts on Swainson's hawk and white-tailed kite nesting and foraging habitats would be less under Alternative 2. Operation of Alternative 2 would result in similar impacts to those described above for Alternatives 1 and 3 except that the greater amount of roadway could increase the potential for Swainson's hawk and white-tailed kite to be struck by vehicles of workers traveling to operations facilities or visitors traveling to recreation areas. These impacts would be significant because the implementation of Alternative 2 could reduce the local Swainson's hawk and white-tailed kite populations through direct mortality and habitat loss. Implementation of Mitigation Measures WILD-1.22, WILD-1.26, WILD-1.27, WILD-1.30, WILD-1.31, VEG-2.2, VEG-4.1, and VEG-4.2 would reduce the level of construction and operation impacts to less than significant.

Impact WILD-1m: Mountain Plover

Alternatives 1 and 3

Construction of Alternatives 1 and 3 would result in significant impacts on mountain plover from removal of suitable wintering habitat. Operation of Alternative 1 or 3 could result in significant impacts if mountain plovers are injured or die from electrocution from colliding with new transmission lines or electrocution. These impacts would be significant because Alternative 1 or 3 could affect the local wintering mountain plover population through direct mortality and habitat loss. Implementation of Mitigation Measures WILD-1.27, VEG-2.2, VEG-3.2, and AG-1.1 would reduce the level of impact from construction and operation to less than significant because permanent loss of sensitive natural communities in which mountain plover may forage would be compensated for through habitat restoration or preservation and purchasing conservation easements on Important Farmland (defined in Chapter 15, *Agriculture and Forestry Resources*).

Mitigation Measure WILD-1.27: Construct Overhead Power Lines and Associated Equipment Following Suggested Practices to Reduce Bird Collisions with Power Lines

This measure is described above under Impact WILD-1j for northern harrier and burrowing owl.

Mitigation Measure VEG-2.2: Avoid and Compensate for Adverse Effects on Sensitive Natural Communities

This mitigation measure is described above under Impact VEG-2.

Mitigation Measure VEG-3.2: Compensate for Temporary and Permanent Impacts on State- or Federally Protected Wetlands

This mitigation measure is described above under Impact VEG-3.

Mitigation Measure AG-1.1: Purchase Agricultural Conservation Easements to Preserve Regional Important Farmland

This mitigation measure is described below under Impact AG-1.

Alternative 2

Construction of Alternative 2 would result in impacts similar to those for Alternatives 1 and 3 except that permanent and temporary impacts on modeled wintering habitat would be less under Alternative 2. Operation of Alternative 2 would result in similar impacts to those described above for Alternatives 1 and 3 except that the greater amount of roadway could increase the potential for mountain plover to be struck by vehicles of workers traveling to operations facilities or visitors traveling to recreation areas. These impacts would be significant because Alternative 2 could affect the local wintering mountain plover population through direct mortality and habitat loss. Implementation of Mitigation Measures WILD-1.27, VEG-2.2, VEG-3.2, and AG-1.1 would reduce the level of construction and operation impacts to less than significant.

Impact WILD-1n: Western Yellow-billed Cuckoo, Yellow-breasted Chat, Yellow Warbler, and Song Sparrow (Modesto Population)

Alternatives 1 and 2

Construction and operation of Alternative 1 or 3 would have no impact on western yellow-billed cuckoo. Construction of Alternative 1 or 3 would result in significant impacts on yellow-breasted chat, yellow warbler, and song sparrow from removal of modeled habitat and potential loss or disturbance of active nests. Operation of Alternative 1 or 3 could result in impacts on yellow-breasted chat, yellow warbler, and song sparrow from disturbance during the nesting season if nesting or foraging at or near recreation areas, injury or mortality from vehicle strikes, and changes in communication or behavior from new or increased roadway noise. Vehicle strikes are anticipated to be infrequent and road noise is not anticipated to substantially affect populations, if present. Construction impacts would be significant because Alternative 1 or 3 could reduce the local yellow-breasted chat, yellow warbler, and song sparrow populations through direct mortality and habitat loss.

Implementation of Mitigation Measures WILD-1.22, WILD-1.23, VEG-2.2, VEG-3.2, and VEG-3.3 would reduce the level of impact from construction to less than significant for yellow-breasted chat, yellow

warbler, and song sparrow because vegetation would be removed during the non-breeding season, preconstruction surveys for nesting birds would be conducted, no-disturbance buffers would be established around active nest sites, and impacts on sensitive natural communities in which yellow-breasted chat, yellow warbler, and song sparrow may nest or forage would be compensated for through habitat restoration. The completed reservoir would also benefit yellow-breasted chat, yellow warbler, and song sparrow by providing additional insect prey.

Mitigation Measure WILD-1.22: Conduct Vegetation Removal During the Non-Breeding Season of Nesting Migratory Birds

This measure is described above for northern harrier and burrowing owl.

Mitigation Measure WILD-1.23: Conduct Preconstruction Surveys for Non-Raptor Nesting Migratory Birds and Implement Protective Measures if Found

This measure is described above under Impact WILD-1j for northern harrier and burrowing owl.

Mitigation Measure VEG-2.2: Avoid and Compensate for Adverse Effects on Sensitive Natural Communities

This mitigation measure is described above under Impact VEG-2.

Mitigation Measure VEG-3.2: Compensate for Temporary and Permanent Impacts on State- or Federally Protected Wetlands

This mitigation measure is described above under Impact VEG-3.

Mitigation Measure VEG-3.3: Compensate for Temporary and Permanent Impacts on State- or Federally Protected Non-Wetland Waters

This mitigation measure is described above under Impact VEG-3.

Alternative 2

Construction and operation of Alternative 2 would have no adverse effect on western yellow-billed cuckoo. Construction of Alternative 2 would result in impacts similar to those for Alternatives 1 and 3 except that permanent impacts on modeled yellow-breasted chat, yellow warbler, and song sparrow habitat would be greater under Alternative 2 as a result of greater permanent impacts associated with new and widened roads. A net increase in the amount of modeled habitat removed would also increase the potential for destruction of nests or nest abandonment, which could cause injury or mortality of eggs or nestlings. Operation of Alternative 2 would result similar impacts to those described for Alternatives 1 and 3 except that the greater amount of roadway could increase the potential for yellow-breasted chat, yellow warbler, and song sparrow to be struck by vehicles of workers traveling to operations facilities or visitors traveling to recreation areas and new or increased roadway noise could affect yellow-breasted chat, yellow warbler, and song sparrow communication and behaviors over a larger area. Vehicle strikes are anticipated to be infrequent and road noise is not anticipated to substantially affect populations, if present. Construction impacts would be significant for yellow-breasted chat, yellow warbler, and song sparrow because Alternative 2 could reduce the local populations through direct mortality and habitat loss. Implementation of Mitigation Measures WILD-

1.22, WILD-1.23, VEG-2.2, VEG-3.2, and VEG-3.3 would reduce the level of impact from construction to less than significant.

Impact WILD-1o: Bank Swallow

Alternatives 1 and 2

Construction of Alternatives 1 and 3 could result in significant impacts on bank swallow from removal of suitable foraging habitat. Operation of Alternative 1 or 3 could result in disturbance of bank swallow foraging activities from human-generated noise and disturbance at recreation areas and near the reservoir, but these impacts would not be significant. Construction impacts would be significant because Alternatives 1 and 3 could affect the local bank swallow population through loss of foraging habitat. Implementation of Mitigation Measures WILD-1.23, VEG-2.2, VEG-3.2, and VEG-3.3 would reduce the level of impact for construction to less than significant because surveys for nesting bank swallows would be conducted and impacts on sensitive natural communities in which bank swallow may forage would be compensated for through habitat restoration and preservation.

Mitigation Measure WILD-1.23: Conduct Preconstruction Surveys for Non-Raptor Nesting Migratory Birds and Implement Protective Measures if Found

This measure is described above under Impact WILD-1j for northern harrier and burrowing owl.

Mitigation Measure VEG-2.2: Avoid and Compensate for Adverse Effects on Sensitive Natural Communities

This measure is described above under Impact VEG-2.

Mitigation Measure VEG-3.2: Compensate for Temporary and Permanent Impacts on State- or Federally Protected Wetlands

This measure is described above under Impact VEG-3.

Mitigation Measure VEG-3.3: Compensate for Temporary and Permanent Impacts on State- or Federally Protected Non-Wetland Waters

This measure is described above under Impact VEG-3.

Alternative 2

Construction of Alternative 2 would result in impacts similar to those for Alternatives 1 and 3 except that permanent impacts on modeled bank swallow foraging habitat would be less under Alternative 2 because of the reduced inundation area and fewer construction impacts from dams and dikes and the regulating reservoirs and conveyance complex. Temporary impacts on modeled foraging habitat would be greater under Alternative 2 because of greater impacts from conveyance to the Sacramento River and new and widened roads. Operation of Alternative 2 would result in the same impacts as those described above for Alternatives 1 and 3 and there would be no adverse effect on bank swallow. Construction impacts would be significant because Alternative 2 could affect the local bank swallow population through loss of foraging habitat. Implementation of Mitigation Measures WILD-1.23, VEG-2.2, VEG 3.2, and VEG-3.3 would reduce the level of impact from construction to less than significant.

Impact WILD-1p: Tricolored Blackbird

Alternatives 1 and 3

Construction of Alternatives 1 and 3 could result in significant impacts on tricolored blackbird from removal of suitable habitat and potential loss or disturbance of active nests. Operation of Alternative 1 or 3 could result in impacts on tricolored blackbird from injury or mortality from vehicle strikes and changes in communication or behavior from new or increased roadway noise. Vehicle strikes are anticipated to be infrequent and road noise is not anticipated to substantially affect populations, if present. Construction impacts would be significant because they could reduce the local tricolored blackbird population through direct mortality and habitat loss. Implementation of Mitigation Measures WILD-1.22, WILD-1.23, WILD-1.31, VEG-2.2, VEG-3.2, and VEG-3.3 would reduce the level of impact from construction to less than significant because vegetation would be removed during the non-breeding season, surveys would be conducted to determine if tricolored blackbird is nesting in or near work areas, no-disturbance buffers would be established around active nest sites, and impacts on sensitive natural communities in which tricolored blackbird may nest or forage would be compensated for through habitat restoration and preservation. Implementation of Mitigation Measures VEG-2.2, VEG-3.2, and VEG-3.3 would avoid and compensate for permanent loss of potential tricolored blackbird nesting habitat. Annual grassland foraging habitat would be preserved at a minimum 1:1 ratio through implementation of Mitigation Measures WILD-1.31 and VEG-2.2. Implementation of Mitigation Measure AG-1.1 would compensate for the loss of agricultural foraging habitat through preservation and purchasing conservation easements on Regional Important Farmland (defined in Chapter 15). The completed reservoir would also benefit tricolored blackbird by providing additional insect prey.

Mitigation Measure WILD-1.22: Conduct Vegetation Removal During the Non-Breeding Season of Nesting Migratory Birds

This measure is described above under Impact WILD-1j for northern harrier and burrowing owl.

Mitigation Measure WILD-1.23: Conduct Preconstruction Surveys for Non-Raptor Nesting Migratory Birds and Implement Protective Measures if Found

This measure is described above under Impact WILD-1j for northern harrier and burrowing owl.

Mitigation Measure WILD-1.31: Compensate for the Permanent Loss of Foraging Habitat for Swainson's Hawk and White-tailed Kite

This measure is described above under Impact WILD-1j for Swainson's hawk and white-tailed kite.

Mitigation Measure VEG-2.2: Avoid and Compensate for Adverse Effects on Sensitive Natural Communities

This measure is described above under Impact VEG-2.

Mitigation Measure VEG-3.2: Compensate for Temporary and Permanent Impacts on State- or Federally Protected Wetlands

This measure is described above under Impact VEG-3.

Mitigation Measure VEG-3.3: Compensate for Temporary and Permanent Impacts on State- or Federally Protected Non-Wetland Waters

This measure is described above under Impact VEG-3.

Mitigation Measure AG-1.1: Purchase Agricultural Conservation Easements to Preserve Regional Important Farmland

This measure is described below under Impact AG-1.

Alternative 2

Construction of Alternative 2 would result in impacts similar to those for Alternatives 1 and 3 except that permanent impacts on nesting habitat and temporary impacts on foraging habitat would be greater under Alternative 2 and permanent impacts on tricolored blackbird foraging habitat and temporary impacts on nesting habitat would be less under Alternative 2. A net increase in the amount of nesting habitat removed would also increase the potential for destruction of nests or nest abandonment, which could cause injury or mortality of eggs or nestlings. Operation of Alternative 2 would result in similar impacts to those described above for Alternative 1 or 3 except that the greater amount of roadway could increase the potential for tricolored blackbird to be struck by vehicles of workers traveling to operations facilities or visitors traveling to recreation areas and new or increased roadway noise could affect tricolored blackbird communication and behaviors over a larger area. Vehicle strikes are anticipated to be infrequent and road noise is not anticipated to substantially affect populations, if present. Impacts from construction would be significant because they could reduce the local tricolored blackbird population through direct mortality and habitat loss. Implementation of Mitigation Measures WILD-1.22, WILD-1.23, WILD-1.31, VEG-2.2, VEG-3.2, VEG-3.3, and AG-1.1 would reduce the level of impact from construction to less than significant.

Impact WILD-1q: Pallid Bat, Townsend's Big-eared Bat, Silver-haired Bat, Western Red Bat, Hoary Bat, Long-eared Myotis and Colonies of Non-special-status Roosting Bats

Alternatives 1 and 3

Construction of Alternatives 1 and 3 would result in significant impacts on special-status bats from removal of suitable habitat and potential loss or disturbance of active roosts and displacement of bats from roost sites. Impacts from construction would be significant because they could reduce the local populations of these special-status bats through direct mortality and habitat loss. Implementation of Mitigation Measures WILD-1.32, WILD-1.33, WILD-1.34, VEG-2.2, VEG-3.2, VEG-4.1, and VEG-4.2 would reduce the level of impact from construction to less than significant because surveys for special-status bats would be conducted, protective measures would be implemented, roosting habitat that is permanently lost would be replaced and protected onsite or at an offsite preservation area, impacts on oak woodland would be minimized, and impacts on sensitive natural communities in which special-status bats may roost or forage would be compensated for through habitat restoration and preservation. Operation of Alternative 1 or 3 may result in disturbance of roosting or foraging bats but is not anticipated to result in destruction of habitat. Consumption of insects contaminated with methylmercury could cause illness or mortality of bats. Implementation of Mitigation Measure WQ-1.1 would reduce the impact from operation to less than significant because steps would be taken to reduce, monitor, and manage mercury in the reservoir. Ingestion of HABs by bats either through drinking water or eating insects contaminated with the toxins could cause illness or death of bats. The

water quality monitoring program and a HABs action plan described under *Harmful Algal Blooms* in the Reservoir Management Plan in Appendix 2D, *Best Management Practices, Management Plans, and Technical Studies*, would minimize the potential for HABs to be present and ingested by bats. The completed reservoir would also benefit special-status bats by providing a new drinking water source and additional insect prey.

Mitigation Measure WILD-1.32: Conduct Surveys and Implement Protection Measures for Special-Status Bat Species Prior to Building/Structure Demolition

Prior to building/structure demolition, the Authority will retain a qualified biologist (defined below) to conduct preconstruction surveys and implement protective measures for pallid bat, Townsend's big-eared bat, silver-haired bat, long-eared myotis, and other bats that roost in or on buildings and structures. At least 30 days prior to the demolition of the existing buildings and structures, qualified biologists will conduct an initial daytime survey to assess the buildings/structures for potential bat roosting habitat, and to look for bats and indications of bat use. The qualified biologists will have knowledge of the natural history of the species that may be present, have sufficient experience determining bat occupancy, and be familiar with bat survey techniques. The qualified biologist will examine both the inside and outside of the buildings/structures for potential roosting habitat, as well as routes of entry to the building and structures. Locations of any roosting bats, signs of bat use, and entry and exit points will be noted and mapped on a drawing of the buildings and structures. Roost sites will also be photographed as feasible. Depending on the results of the habitat assessment, the Authority will ensure the following steps are taken:

If the building and structures can be assessed (i.e., sufficient areas of the buildings and structures can be examined) and no habitat or limited potential habitat for roosting bats is present and no signs of bat use are present, the building may be demolished within 24 hours. If the building is not demolished within 24 hours, another survey of the interior and exterior of the buildings/structure by a qualified biologist will be conducted within 24 hours of the scheduled demolition.

If moderate or high potential habitat for roosting bats is present and habitat can be thoroughly surveyed, the structure may be demolished within 24 hours. If there are no signs of bat use but the habitat cannot be thoroughly surveyed, measures will be implemented under the guidance of the qualified biologists to exclude bats from using the buildings and structures as a roost site to the extent feasible given the conditions of the structures, such as sealing off entry points. Prior to installing exclusion measures, the qualified biologists will re-survey the buildings and structures to ensure that no bats are present. In addition, a preconstruction survey of the interior and exterior of the buildings and structures will be conducted within 24 hours of demolition to confirm that no bats are present.

If moderate or high potential habitat is present and bats or bat sign are observed, exclusion measures are not installed as described above, or the buildings or structures provide suitable habitat but cannot be fully assessed, the Authority will implement the following protective measures:

Prior to initiating demolition activities, follow-up surveys will be conducted to determine if bats are present and the species of bats present. The qualified biologists will develop a survey plan (number, timing, and type of surveys) and conduct surveys using night vision goggles and/or active acoustic monitoring using full spectrum bat detectors will be conducted.

The qualified biologist will develop a plan to discourage or exclude bat use of buildings/structures prior to demolition based on the timing of demolition, extent of evidence of bat use or occupied habitat, and

species present. The plan may include modifying the structure to be less appealing for roosting without causing harm to bats, installing exclusion measures, or using light or other means to deter bats from using the buildings and structures to roost. The plan will be submitted to CDFW for review and comment.

A preconstruction survey of the interior and exterior of the building and structures will be conducted within 24 hours of demolition to confirm that no bats are present.

Depending on the species of bats present, size of the bat roost, and timing of the demolition, the Authority will implement the following additional protective measures as applicable:

To avoid impacts on maternity colonies and/or hibernating bats, buildings/structures where bats are confirmed to be present will not be demolished during the maternity season (generally assumed to be between April 15 and August 15 for this Project) or the hibernation season (generally from November 1 to March 1). Removal of occupied roosting habitat will be conducted only following the maternity season and prior to hibernation, generally between August 16 and October 31, unless exclusionary devices are first installed. Other measures, such as using lights to deter bat roosting, may be used as developed by the qualified biologist and as approved by CDFW, if applicable.

Installation of exclusion devices will be conducted only before maternity colonies establish (generally after March 1) or after they disperse (generally August 15 to October 31) to prevent bats from occupying a roost site during demolition to the extent feasible. Exclusionary devices will be installed by or under the supervision of a qualified biologist.

Mitigation Measure WILD-1.33: Conduct Surveys and Implement Protection Measures for Special-Status Bat Species Prior to Tree Trimming and Removal

Prior to tree trimming or removal, the Authority will retain a qualified biologist to conduct preconstruction surveys and implement protective measures for pallid bat, Townsend's big-eared bat, silver-haired bat, western red bat, hoary bat, long-eared myotis, and other tree-roosting bats. Prior to initiating tree trimming or removal, a qualified biologist will examine the trees to be removed or trimmed to identify suitable bat roosting habitat. Because of the limited timeframe for tree removal (September 15 to October 31), the tree habitat assessment should be conducted early enough to provide information to inform tree removal planning. The biologists will identify high-quality habitat features (e.g., large tree cavities, basal hollows, loose or peeling bark, larger snags), and the area around these features will be searched for bats and indications of bat use. If the tree can be assessed and no habitat for roosting bats is present, no further actions are necessary and tree removal or trimming may commence. Because signs of bat use are not easily found, and trees cannot be completely surveyed for bat roosts, the Authority will implement the following protective measures listed below for trees containing potential roosting habitat.

Trimming or removal of trees with potentially suitable bat roosting habitat will be avoided during the maternity season (generally between April 1 and July 31) and the hibernation season (generally from November 1 to March 1).

Removal of trees providing bat roosting habitat will be conducted only before maternity colonies establish (generally after March 1) or after they disperse (generally August 1 to October 31).

If a maternity roost is found, the roost will be protected until July 31 or until the qualified biologist has determined the maternity roost is no longer active. Appropriate no-work buffers around the roost will

be established under direction of the qualified biologist. Buffer distances may vary depending on the species and activities being conducted.

Trimming and removal of trees (between July 31 and October 31) with suitable roosting habitat will be monitored by a qualified biologist. Tree trimming and removal will be conducted using a two-phase removal process conducted over two consecutive days. In the afternoon on the first day, limbs and branches will be removed using chainsaws only. Only branches or limbs without cavities, crevices, or deep bark fissures will be removed; branches and limbs with these features will be avoided. On the second day, the entire tree will be removed. The qualified biologist will search through downed vegetation for injured or dead bats. Observation of injured or dead special-status bats will be reported to CDFW.

Mitigation Measure WILD-1.34: Compensate for Permanent Impacts on Occupied Roosting Habitat

The Authority will compensate for the permanent loss of occupied roosting habitat by constructing and/or installing suitable replacement habitat onsite or at an offsite preservation area. The roosting habitat type and design will be developed in coordination with CDFW. A monitoring plan will be prepared to ensure the replacement habitat is maintained and functions as intended. Annual reports will be submitted to CDFW to document compliance with monitoring requirements.

Mitigation Measure VEG-2.2: Avoid and Compensate for Adverse Effects on Sensitive Natural Communities

This measure is described above under Impact VEG-2.

Mitigation Measure VEG-3.2: Compensate for Temporary and Permanent Impacts on State- or Federally Protected Wetlands

This measure is described above under Impact VEG-3.

Mitigation Measure VEG-4.1: Avoid and Minimize Potential Adverse Effects on Oak Woodlands During Construction

This measure is described above under Impact VEG-4.

Mitigation Measure VEG-4.2: Compensate for Adverse Effects on Oak Woodlands

This measure is described above under Impact VEG-4.

Mitigation Measure WQ-1.1: Methylmercury Management

This measure is described above under Impact WQ-1.

Alternative 2

Construction of Alternative 2 would result in impacts similar to those for Alternatives 1 and 3 except that permanent impacts on bat roosting/foraging habitat and temporary impacts on foraging habitat would be greater under Alternative 2 and permanent impacts on bat foraging habitat and temporary impacts on roosting/foraging habitat would be less under Alternative 2. A net increase in the amount of suitable roosting habitat removed would also increase the potential for destruction of roosts or roost

abandonment, which could cause injury or mortality of individuals, including non-volant pups. Operation of Alternative 2 would result in similar impacts to Alternatives 1 and 3. These impacts would be significant because Alternative 2 could reduce the local special-status bat populations through direct mortality and habitat loss. Implementation of Mitigation Measures WILD-1.32, WILD-1.33, WILD-1.34, VEG-2.2, VEG-3.2, VEG-4.1, VEG-4.2, and WQ-1.1 would reduce the level of impact from construction and operation to less than significant.

Impact WILD-1r: American Badger

Alternatives 1 and 3

Construction of Alternative 1 or 3 would result in significant impacts on American badger from removal of suitable habitat and potential loss or disturbance of active dens. Operation of Alternative 1 or 3 could result in significant impacts if American badger denning sites at or near recreation areas are disturbed or if the use of rodenticides causes illness, injury, or mortality of individuals from ingestion of rodenticides. These impacts would be significant because Alternative 1 or 3 could reduce the local American badger population through direct mortality and habitat loss. Implementation of Mitigation Measures WILD-1.15, WILD-1.16, WILD-1.26, WILD-1.35, and VEG-2.2 would reduce the level of impact from construction and operation to less than significant because surveys would be conducted to determine if suitable or occupied dens are present in or near work areas, no-disturbance buffers would be established around potentially active and active den sites, impacts on sensitive natural communities in which American badger may den or forage would be compensated for through offsite habitat restoration and preservation, and if found to be necessary through a wildlife corridor study, suitable crossings would be installed at appropriate locations to facilitate safe crossings.

Mitigation Measure WILD-1.15: Design and Construct Wildlife Crossings for New Roadways at Suitable Locations

This mitigation measure is described above under Impact WILD-1f for western spadefoot.

Mitigation Measure WILD-1.16: Monitor and Maintain Wildlife Crossings

This mitigation measure is described above under Impact WILD-1f for western spadefoot.

Mitigation Measure WILD-1.26: Protect Special-Status Wildlife from Rodenticide Use

This measure is described above under Impact WILD-1f for northern harrier and burrowing owl.

Mitigation Measure WILD-1.35: Implement Protective Measures to Avoid and Minimize Potential Impacts on American Badger

Where suitable habitat is present for American badger in and within 200 feet of work areas where ground disturbance will occur, the Authority will implement the following protective measures.

The Authority will retain qualified biologists (experienced with the identification of suitable badger dens) to conduct a preconstruction survey for active badger dens prior to temporary or permanent ground disturbance. The preconstruction survey will be conducted no less than 14 days and no more than 30 days before the beginning of ground disturbance. The biologists will conduct den searches by systematically walking transects through the area to be disturbed and a 200-foot buffer area. Transect distance should be based on the height of vegetation such that 100% visual coverage of the disturbance

area is achieved. If a suitable or occupied den is found during the survey, the biologist will record the den dimensions, the shape of the den entrance, presence of tracks, scat, or prey remains, den occupancy (i.e., suitable, potentially occupied, or occupied), recent excavations at the den site, and the den location.

To the maximum extent feasible, disturbance or destruction of suitable dens for American badger in temporary impact areas will be avoided.

Any occupied or potentially occupied American badger den will be avoided by establishing an exclusion zone around the den. For potentially occupied dens, a 50-foot exclusion zone will be applied around the den; for occupied dens, a 100-foot exclusion zone will be applied around the den. The width of exclusion zones around maternity dens may exceed 100 feet, will be determined through coordination with CDFW, and will remain in place throughout the pup-rearing season (February 15 through July 1). Any adjustments to buffers will require prior written approval by CDFW. If the den cannot be avoided, the Authority will contact CDFW for direction on additional steps to be taken.

Unoccupied suitable dens that would be destroyed by construction may be removed by hand excavation by a biologist or under the supervision of a biologist; a mini excavator may be used to facilitate excavation of dens.

Mitigation Measure VEG-2.2: Avoid and Compensate for Adverse Effects on Sensitive Natural Communities

This measure is described above under Impact VEG-2.

Alternative 2

Construction of Alternative 2 would result in impacts similar to those for Alternatives 1 and 3 except that permanent and temporary impacts on modeled habitat for badger would be less under Alternative 2 than Alternatives 1 and 3 because of the smaller inundation area and reduced impacts from construction of dams and dikes. Operation impacts under Alternative 2 would be similar to those under Alternative 1 or 3 except that the increased amount of roadway would impede movement over a larger area and could result in additional mortality from vehicle strikes. These impacts would be significant because Alternative 2 could reduce the local American badger population through direct mortality and habitat loss. Implementation of Mitigation Measures WILD-1.15, WILD-1.16, WILD-1.26, WILD-1.35, and VEG-2.2 would reduce the level of impact from construction and operation to less than significant.

Impact WILD-2: Substantial interference with the movement of a native resident or migratory wildlife species or with established native resident or migratory wildlife corridors, or impediment of the use of native wildlife nursery sites

Alternatives 1 and 3

Construction of Alternative 1 or 3 would create barriers to or impede wildlife movement within existing natural landscape blocks and essential connectivity areas. Fragmentation and loss of natural landscape blocks and essential connectivity areas would result in a significant impact on wildlife movement and wildlife corridors. Construction of Alternative 1 or 3 would also result in removal or disturbance of nursery sites. Operation of Alternative 1 or 3 would result in additional vehicles on roadways and fencing that would create barriers to or impede wildlife movement. These impediments would also result in a significant impact on wildlife movement. Maintenance activities and human activity at

facilities and recreation areas could cause disturbance of breeding sites or cause wildlife to avoid these areas as breeding sites. Implementation of mitigation measures discussed in Impact WILD-1 (including Mitigation Measures WILD-1.15 and WILD-1.16) would reduce construction and operation impacts on nursery sites, wildlife movement, and the loss of habitat connectivity within existing habitat blocks, but they would not mitigate the substantial barrier created by Sites Reservoir. Impacts on wildlife movement and habitat connectivity after mitigation would remain **significant and unavoidable**.

Alternative 2

Construction of Alternative 2 would create barriers to or impede wildlife movement within existing natural landscape blocks and essential connectivity areas. Under Alternative 2, the length of new roadway would be substantially longer (more than 10 miles) than under Alternatives 1 and 3. Fragmentation and loss of natural landscape blocks and essential connectivity areas would result in a significant impact on wildlife movement and wildlife corridors. Construction of Alternative 2 would also result in removal or disturbance of nursery sites. Operation of Alternative 2 would result in additional vehicles on roadways and fencing that would create barriers to or impede wildlife movement. These impediments would also result in a significant impact on wildlife movement. Maintenance activities and human activity at facilities and recreation areas could cause disturbance of breeding sites or cause wildlife to avoid these areas as breeding sites. Implementation of mitigation measures discussed in Impact WILD-1 (including Mitigation Measures WILD-1.15 and WILD-1.16) would reduce construction and operation impacts on nursery sites, wildlife movement, and the loss of natural landscape blocks and essential connectivity areas, but they would not mitigate the substantial barrier created by Sites Reservoir. Impacts on wildlife movement and habitat connectivity after mitigation would remain **significant and unavoidable**.

Impact WILD-3: Conflict with any local policies or ordinances protecting wildlife resources

Alternatives 1, 2 and 3

Construction and operation of Alternative 1, 2, or 3 would conflict with policies and local ordinances protecting wildlife resources and would result in a significant impact. Implementation of mitigation measures discussed under Impacts WILD-1 would require habitat assessments and focused surveys for special-status wildlife, avoidance and minimization measures to reduce impacts on special-status wildlife and their habitats during construction and operation, replacement of permanently lost habitat, and reduction of new impediments to wildlife movement through design, construction, monitoring, and the maintenance of wildlife crossings at strategic locations. With the implementation of these measures, Alternatives 1, 2, and 3 would not conflict with the goals and policies in the Tehama County, Glenn County, Colusa County, and Yolo County General Plans, and impacts would be reduced to a less-than-significant level.

Impact WILD-4: Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan

Construction and operation of Alternative 1, 2, or 3 would not conflict with provisions of the Yolo Bypass Wildlife Area LMP but would conflict with provisions of the Yolo County HCP/NCCP. The conflict of Alternatives 1, 2, and 3 with the provisions of the Yolo County HCP/NCCP would be a significant impact. Implementation of mitigation measures discussed under Impact WILD-1 would avoid, minimize, and compensate for impacts on special-status wildlife included in the Yolo County HCP/NCCP. With

implementation of these measures, Alternatives 1, 2, and 3 would not conflict with the provisions of the Yolo County HCP/NCCP, and impacts would be reduced to a less-than-significant level.

3.3 Aquatic Biological Resources

Impact FISH-1: Construction Effects on Special-Status Fish

Construction of Alternative 1, 2, or 3 would result in ground-disturbance activities, the use of heavy equipment and hazardous materials, in-water construction (including pile driving), stream diversion and dewatering, removal of riparian and stream-side vegetation (including vegetation supporting SRA cover), and the filling of Sites Reservoir. Under Alternatives 1 and 3, and all components of Alternative 2 with the exception of construction of the energy dissipation structure for the Sacramento River discharge, these activities would result in temporary impacts on special-status fish during construction activities. These activities would also result in permanent impacts from placement of facilities and the conversion of stream habitat to open-water habitat from the filling of Sites Reservoir. These temporary and permanent impacts would not affect any ESA-listed fish species as construction activities would occur on the upstream streams of the Sacramento River which do not support listed species.

Under Alternative 2, construction of the energy dissipation structure for the Sacramento River discharge would result in ground-disturbance activities, in-water construction (including pile driving and coffer dam installation), dewatering, and the removal of riparian and stream-side vegetation (including vegetation supporting SRA cover). These activities would result in temporary impacts on state and federally listed fish and other special-status fish in the Sacramento River during construction activities, and permanent impacts from the removal of riparian vegetation and SRA cover. Underwater noise generated by pile driving associated with the installation of sheet piles for the coffer dam and pipe piles for the work platforms would be of most concern because of the potential for underwater noise to injure fish.

The Authority will implement BMPs during construction of Alternatives 1, 2, and 3 to avoid and minimize permanent and temporary impacts on state and federally listed fish and other special-status fish species. Implementation of BMP-12, BMP-13, and BMP-14 would control storm water runoff with physical and procedural means to reduce or avoid degradation of water quality in watercourses downstream of the construction sites that could have both short- and long-term effects on fish populations and aquatic habitat. All in-water construction activities would be limited to allowable in-water work windows as part of BMP-35 and the Authority or its contractors would manage the salvage, stockpiling, and replacement of topsoil as part of BMP-10 for the protection of fish, wildlife, and plant species. As a result, the construction would not result in increased or contaminated stormwater runoff or violations of water quality standards that would adversely affect fish populations and habitat.

The Authority will also implement BMP-34 to avoid and minimize the potential for direct physical injury and mortality of trapped fish by removing fish from harm's way prior to initiating in-water activities and dewatering.

Pile driving would be performed in accordance with BMP-23 to reduce the potential for injury to fish from exposure to impact pile driving noise because hydroacoustic monitoring would be conducted during impact pile driving to ascertain compliance with established objectives (e.g., distances to cumulative noise thresholds) and identify corrective actions to be taken should the predicted threshold distances be exceeded. In addition, this BMP would restrict all pile driving (impact or vibratory) to specific seasonal periods and daily (7:00 a.m. to 7:00 p.m.) timing limitations, where appropriate, to

minimize and avoid the primary periods when sensitive life stages or species are present and to limit the daily exposure of fish to underwater noise.

In addition, the Authority will implement various mitigation measures that will also benefit special-status fish or compensate for impacts on state and federally listed fish and other special-status fish and their habitat. For example, Mitigation Measures VEG-2.1 and VEG-2.2 will minimize or avoid, and compensate for the permanent loss of riparian habitat, including SRA cover. Mitigation Measure VEG-3.2 will compensate for permanent impacts on wetlands, including forested wetland (riparian) and freshwater marsh. Mitigation Measure VEG-3.3 will compensate for temporary and permanent impacts on state or federally protected non-wetland waters by creating or acquiring and permanently protecting suitable open-water habitat to ensure no net loss of stream or pond habitat functions and values.

Construction of Alternative 1, 2, or 3 would not have a substantial adverse effect, either directly or through habitat modifications, on state or federally listed fish or other special-status fish species or interfere substantially with the movement of any native resident or migratory fish species or with established native resident or migratory wildlife corridors or impede the use of native wildlife nursery sites. Construction of Alternative 1, 2, or 3 would be less than significant with mitigation.

Mitigation Measure VEG-2.1: Conduct Surveys for Sensitive Natural Communities and Oak Woodlands in the Project Area Prior to Construction Activities

This mitigation measure is described above under Impact VEG-2.

Mitigation Measure VEG-2.2: Avoid and Compensate for Adverse Effects on Sensitive Natural Communities

This measure is described above under Impact VEG-2.

Mitigation Measure VEG-3.2: Compensate for Temporary and Permanent Impacts on State- or Federally Protected Wetlands

This measure is described above under Impact VEG-3.

Mitigation Measure VEG-3.3: Compensate for Temporary and Permanent Impacts on State- or Federally Protected Non-Wetland Waters

This measure is described above under Impact VEG-3.

Impact FISH-8: Operations Effects on Delta Smelt

Operations impacts of Alternatives 1, 2, and 3 on delta smelt include small differences assessed for flow-related zooplankton prey and other flow-related habitat attributes during spring, summer, and fall; no increase in south Delta entrainment risk because south Delta exports of Sites Reservoir water do not occur during times of the year when delta smelt are susceptible to entrainment; small reductions in suspended sediment to the Delta, addressed by the Sediment Technical Studies Plan and Adaptive Management for Sacramento River; and potential positive effects from summer/fall Sites Reservoir releases to move foodweb materials into the lower Yolo Bypass and Cache Slough Complex, as well as potential positive effects on prey from greater summer/fall Delta outflow. These impacts would be less than significant.

Impacts on delta smelt would be significant due to uncertainty associated with DO and temperature effects from Sites Reservoir releases (see *Effects from Reservoir Releases to CBD/Yolo Bypass* above) and the population status of delta smelt (Appendix 11A). Mitigation Measure FISH-8.1 will reduce this significant impact by preventing detrimental DO and water temperature effects associated with moving CBD water through the Yolo Bypass. DO and temperature levels suitable to delta smelt would be maintained and would not exceed recognized critical physiological thresholds through implementation of Mitigation Measure FISH-8.1; therefore, impacts would be reduced to less than significant. There is uncertainty in the potential for negative effects from Sites habitat flows redirecting CBD water relatively high in pesticides downstream to the lower Yolo Bypass where delta smelt occur. This potential effect would be addressed by Mitigation Measure WQ-2.2. Operation of Alternative 1, 2, or 3 would not have a substantial adverse effect, either directly or through habitat modifications, on delta smelt compared to the NAA. Operational impacts for Alternatives 1, 2, and 3 on delta smelt would be less than significant with mitigation.

Mitigation Measure FISH-8.1: Prevent Detrimental Dissolved Oxygen and Water Temperature Effects on Fish Associated with Moving Colusa Basin Drain Water Through the Yolo Bypass

To evaluate potential water quality effects, when Project releases are made via the Dunnigan Pipeline to the Yolo Bypass DO and water temperature will be measured at 15-minute intervals within 50 feet of the Project discharge location at the Dunnigan Pipeline, at existing California Data Exchange Center stations at the upstream end of the Yolo Bypass at Ridge Cut Slough, and at the downstream end at Lisbon Weir. Measurements of DO and water temperature will occur before and during the period of CBD discharge to the Yolo Bypass, the same as is described for Mitigation Measure WQ-2.2.

Downstream DO and temperature measurements, together with water quality measurements of water released from Sites Reservoir, will be evaluated to determine whether habitat flow releases from Sites Reservoir would lower DO and increase temperatures in the Yolo Bypass Toe Drain and Cache Slough Complex to a level that could be detrimental to delta smelt inhabiting these areas. Dissolved oxygen and temperature criteria for determining effects will be developed in collaboration with the fishery agencies and will maintain existing DO and temperature levels suitable to delta smelt that will not exceed recognized critical physiological thresholds. This evaluation will be part of ongoing monitoring to determine benefits of the Yolo Bypass habitat flows and the Project's funded ecosystem benefits under WSIP. CDFW would have the discretion to modify WSIP water that is released to Yolo Bypass, depending on best available science and fish needs. If measurements indicate DO or temperature criteria are exceeded in the Yolo Bypass Toe Drain and Cache Slough Complex as a result of Project releases and these criteria cannot be maintained for delta smelt, actions to improve DO concentration and temperature will be implemented. Mitigative actions may include, but are not limited to one or more of the following types of measures:

- Use of engineered actions (e.g., installation of aerators) to prevent exceedance of critical physiological thresholds for delta smelt.
- Cessation of releases of flow to the Yolo Bypass until temperature and DO concentration do not exceed critical physiological thresholds for delta smelt.

Mitigation Measure WQ-2.2: Prevent Net Detrimental Metal and Pesticide Effects Associated with Moving Colusa Basin Drain Water Through the Yolo Bypass

This measure is described above under Impact WQ-2.

Impact FISH-9: Operations Effects on Longfin Smelt

The analyses of potential impacts of Alternatives 1, 2, and 3 on longfin smelt suggested that entrainment risk under Alternatives 1, 2, and 3 would be similar to entrainment risk under the NAA. The analyses of flow-related effects (differences in Delta outflow/X2) suggested the potential for small negative effects under Alternatives 1, 2, and 3, albeit with uncertainty given the appreciably greater variability of longfin smelt abundance index estimates for a given alternative relative to the difference from the NAA. As identified in Section 11.3, *Methods of Analysis*, operations resulting from Alternatives 1, 2, and 3 would be consistent with all applicable regulations to limit the potential for negative effects on fish and aquatic resources, including the existing spring outflow measures required by the CDFW (2020) State ITP for the SWP. In order to achieve a less-than-significant impact, mitigation would be required for the small, uncertain negative outflow-related effect of Alternatives 1, 2, and 3 in consideration of longfin smelt's CESA-listed status. Implementation of Mitigation Measure FISH-9.1 would provide tidal habitat restoration mitigation. Tidal habitat restoration would expand the diversity, quantity, and quality of longfin smelt rearing and refuge habitat consistent with recent tidal habitat mitigation required for outflow impacts on the species (California Department of Fish and Wildlife 2020:112). As shown by multiple recent tidal habitat restoration projects in the Delta⁴, there are potential feasible opportunities for tidal habitat restoration directly applicable to longfin smelt. Operational impacts for Alternatives 1, 2, and 3 on longfin smelt would be less than significant with mitigation.

Mitigation Measure FISH-9.1: Tidal Habitat Restoration for Longfin Smelt

Tidal habitat restoration mitigation for longfin smelt was calculated based on the same method recently applied by DWR (2019d:5-5). The method is described in more detail in Appendix 11F, Section 11F.7, *Tidal Habitat Restoration Mitigation Calculations for Longfin Smelt*. The mitigation requirement for each alternative varies between 5.1 and 9.7 acres (Table 11-89). The mitigation will consist of tidal wetland habitat within the Delta/Suisun Marsh and will be completed prior to commencement of Project operations.

Table 11-89. Tidal Habitat Restoration Mitigation for Longfin Smelt (Acres)

Alt 1A	Alt 1B	Alt 2	Alt 3
5.1	8.3	5.1	9.7

⁴ See, for example, the California EcoRestore program's summary of recent projects (California Department of Water Resources 2023).

3.4 Geology and Soils

Impact GEO-7: Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature

Alternative 1 and 3

Under Alternative 1 or 3, construction activities that would have a less-than-significant impact on paleontological resources are those that would occur in geologic units not sensitive for paleontological resources (Holocene units and the Great Valley sequence, including the Boxer and Cortina Formations) and involve small or shallow ground-disturbing activities, such as GCID Main Canal improvements and road improvements. In addition, the Worker Environmental Awareness Program (WEAP) BMP, which requires training construction workers to recognize paleontological resources and stopping work if paleontological resources are encountered, would be in place should fossils be unexpectedly encountered during construction activities.

Construction activities that would have a significant impact on paleontological resources are those that involve excavation in sensitive units, such as most construction in the regulating reservoir complex and trenching and staging for the Dunnigan Pipeline.

Overall construction impacts would be significant. For most activities, implementation of Mitigation Measures GEO 7.1–GEO-7.5 would reduce this impact by requiring that a qualified paleontologist be retained and design a paleontological resources monitoring and mitigation plan (PRMMP) so that fossils in the construction areas would be preserved.

For soil amendment under the TRR East, the use of CDSM could destroy fossils in the Riverbank and Modesto Formations. The ground disturbance would be deep, and a paleontological monitor would not be able to observe the disturbance or halt construction. Therefore, this impact would be **significant and unavoidable**.

Under Alternative 1 or 3 operations, wave action along the reservoir shoreline would cause a less-than-significant impact. No other operations would cause an impact.

Mitigation Measure GEO-7.1: Retain a Qualified Paleontological Resource Specialist Prior to the Start of Construction

The Authority will retain a qualified Paleontological Resource Specialist once the construction footprint can be accessed and the engineering design is at sufficient level of detail but at least 90 days prior to the start of construction. The Paleontological Resource Specialist will meet the minimum or equivalent qualifications for a paleontological resources manager, as described in the SVP guidelines (2010).

The Authority will retain qualified Paleontological Resource Monitors with the assistance of the Paleontological Resource Specialist to monitor construction activities, as described in the PRMMP. Paleontological Resource Monitors will have the equivalent of the following qualifications:

- Bachelor of Science or Bachelor of Arts degree in geology or paleontology and 1 year of experience monitoring in California
- Associate of Science or Associate of Arts degree in geology, paleontology, or biology and 4 years of experience monitoring in California

- Enrollment in upper-division classes pursuing a degree in the fields of geology or paleontology and 2 years of monitoring experience in California

Mitigation Measure GEO-7.2: Consultation with the Paleontological Resource Specialist Prior to and During Project Construction

At least 30 days prior to the start of construction, the Authority will provide maps or drawings to the Paleontological Resource Specialist that show the planned construction footprint. Maps will identify all areas where ground disturbance is anticipated during Project implementation. The plan drawings will show the location, depth, and extent of all ground disturbances affecting paleontologically sensitive sediment. If construction proceeds in phases, maps and drawings may be submitted prior to the start of each phase. In addition, the proposed schedule of each Project phase will be provided to the Paleontological Resource Specialist. Before work commences on affected phases, the Authority will notify the Paleontological Resource Specialist of any construction phase scheduling changes.

Mitigation Measure GEO-7.3: Prepare and Implement a Paleontological Resources Monitoring and Mitigation Plan

Once the construction footprint can be accessed and the engineering design is at sufficient level of detail, the Authority will prepare a PRMMP to identify general and specific measures to minimize potential effects on significant paleontological resources. Approval of the PRMMP by the Authority will occur prior to any ground disturbance. The PRMMP will function as the formal guide for paleontological resources monitoring, collecting, and sampling activities, and may be modified by the Authority to accommodate new data or changes to the Project. This document will be used as the basis of discussion when onsite decisions or changes are proposed. Copies of the PRMMP will reside with the Authority, Paleontological Resource Specialist, each Paleontological Resource Monitor, and the Authority's onsite manager.

The PRMMP will be developed in accordance with professional guidelines and be consistent with those issued by SVP (2010) and will include the following:

Procedures for the performance and sequence of resource-related tasks, such as any literature searches, preconstruction surveys, appropriate worker environmental training module, construction monitoring, mapping and data recovery, discovery situations, fossil preparation and collection, identification and inventory, preparation of final reports, transmittal of materials for curation, and final report will be provided in the PRMMP, including:

- A discussion of the geologic units expected to be encountered, the location and depth of the units relative to the Project footprint, when known, and the known paleontological sensitivity of those units.
- A discussion of the locations of where the monitoring of construction activities is deemed necessary, and a proposed plan for monitoring and sampling.
- An explanation of why, how, and how much sampling is expected to take place and in what units, including descriptions of different sampling procedures that may be used.
- A discussion of procedures to be followed in the event of a significant fossil discovery, diverting construction away from a find, resuming construction, and how notifications will be performed.

- A discussion of equipment and supplies necessary for collection of fossil materials and any specialized equipment needed to prepare, remove, load, transport, and analyze large-sized fossils or extensive fossil deposits.
- Procedures for inventory, preparation, and delivery for curation into a retrievable storage collection in a repository or museum, which meet SVP standards and requirements for the curation of paleontological resources.
- Identification of the institution(s) that will be approached to receive data and fossil materials collected, and requirements or specifications for materials delivered for curation.

The PRMMP will also provide guidance for preparation of a Paleontological Resources Report by the designated Paleontological Resource Specialist at the conclusion of ground-disturbing activities that may affect paleontological resources. The Paleontological Resources Report will include an analysis of the collected fossil materials and related information, including a description and inventory of recovered fossil materials, a map showing the location of paleontological resources encountered, determinations of sensitivity and significance, and a statement by the Paleontological Resource Specialist that effects on paleontological resources have been mitigated to be not adverse.

Mitigation Measure GEO-7.4: Conduct Monitoring During Project Construction and Prepare Monthly Reports

The Authority will ensure that the Paleontological Resource Specialist and Paleontological Resource Monitor(s) monitor construction excavations consistent with the PRMMP in areas where potential fossil-bearing materials have been identified, both at reservoir sites and along any constructed linear facilities associated with the Project.

The Authority will ensure that the Paleontological Resource Specialist and Paleontological Resource Monitor(s) have the authority to halt or redirect construction if paleontological resources are encountered. The Authority will ensure that there is no interference with monitoring activities, as directed by the Paleontological Resource Specialist.

The Authority will ensure that the Paleontological Resource Specialist prepares and submits monthly summaries of monitoring and other paleontological resources management activities. The summary will include the name(s) of the Paleontological Resource Specialist or Paleontological Resource Monitor(s) active during the month; general descriptions of training and monitored construction activities; and general locations of excavations, grading, and other activities. A section of the report will include the geologic units or subunits encountered, descriptions of samplings, if any, and a list of identified fossils. A final section of the report will address any issues or concerns about the Project relating to paleontological resources mitigation activities, including any incidents of non-compliance or any changes to the monitoring plan by the Paleontological Resource Specialist. If no monitoring took place during the month, the report will include an explanation as to why monitoring was not conducted.

Mitigation Measure GEO-7.5: Ensure Implementation of the Paleontological Resources Monitoring and Mitigation Plan

The Authority, through the designated Paleontological Resource Specialist, will ensure that all components of the PRMMP are performed during construction.

Alternative 2

Most construction impacts would be the same under Alternative 2 as under Alternative 1 or 3 because most components would be the same.

The CDSM required for construction of the TRR East under Alternative 1 or 3, which would result in a **significant and unavoidable** impact, would not be required for construction of the TRR West under Alternative 2. Although more extensive excavation would be required for the Main and Extension reservoirs that comprise TRR West, all ground-disturbing activities could be accessed by paleontological monitors. Therefore, implementation of Mitigation Measures GEO-7.1–GEO-7.5 would reduce the impacts of excavation related to TRR West construction on paleontological resources to a less-than-significant level.

Although two impacts that would differ would be for the Dunnigan Pipeline and the Sites Lodoga Road and South Road, the finding of less than significant with mitigation would remain the same. For the Dunnigan Pipeline, the finding remains less than significant because the additional excavation would occur in the same geologic units. Implementation of Mitigation Measures GEO-7.1–GEO-7.5 would reduce these impacts to a less-than-significant level. For the Sites Lodoga Road and South Road, the excavation would still occur in geologic units not sensitive for paleontological resources.

3.5 Land Use

Impact LAND-1: Physical division of an established community

Alternative 1 and 3

Construction and operation of Alternatives 1 and 3 would not result in the physical division of established communities. While the Sites community would be inundated and displaced, the community would not be physically divided. There would be no physical division between the communities of Lodoga and Maxwell because a bridge would be built under Alternatives 1 and 3 that would connect Lodoga to Maxwell. No other components would create physical divisions within established communities because there are none where these components would be constructed. This impact would be less than significant.

Alternative 2

Construction and operation of Alternative 2 would result in the physical division of established communities. While the Sites community would be inundated and displaced, the community would not be physically divided. There would be a physical division for the community of Lodoga, even though the South Road would connect Lodoga to Maxwell, because the new access route would substantially increase travel time. There are no feasible mitigation measures for this impact. This impact would be **significant and unavoidable**.

3.6 Agriculture and Forestry Resources

Impact AG-1: Conversion of Prime Farmland, Unique Farmland, or Farmland of Statewide Importance, as shown on the maps prepared pursuant to the FMMP of the California Resources Agency, to nonagricultural use

Ground disturbance on Important Farmland as a result of construction-related activities associated with Alternative 1, 2, or 3 includes staging, vegetation removal, excavation, and grading. A total of 134 acres of Important Farmland would be temporarily disturbed under Alternative 1 or 3 and 232 acres under Alternative 2. Implementing BMP-10, BMP-13, and BMP-36 would result in restoration of Important Farmland disturbed during construction to preconstruction conditions. Accordingly, impacts from temporary use of Important Farmland during construction would be less than significant.

Permanent placement of underground Project facilities associated with Alternative 1, 2, or 3 on Important Farmland would not result in permanent conversion to nonagricultural uses in Glenn, Colusa, or Yolo Counties. Placement of aboveground Project facilities associated with the three alternatives would result in permanent conversion of Important Farmland as a result of direct placement on Important Farmland. A total of 152 acres of Important Farmland would be permanently converted to nonagricultural uses by Alternative 1 or 3 and 17 acres by Alternative 2. A total of 0.2 acre of Important Farmland would be permanently converted to nonagricultural uses as a result of remnant parcels due to road construction under Alternatives 1 and 3. Alternative 2 would not create remnant parcels of Important Farmland. Overall, Alternatives 1 and 3 would result in direct permanent conversion of approximately 0.02% of the total Important Farmland as classified under FMMP in the study area, and Alternative 2 would result in permanent conversion of less than 0.01%. Although the percentage of land affected by alternatives is small and the magnitude of the impact small, because the alternatives would result in permanent conversion of Important Farmland to nonagricultural uses, this impact would be significant.

Implementation of Mitigation Measure AG-1.1 for Alternatives 1, 2, and 3 would reduce impacts as a result of permanent conversion of Important Farmland to nonagricultural uses. This mitigation measure would require the Authority to fund acquisition of agricultural conservation easements in the same agricultural region (i.e., Glenn, Colusa, and Yolo Counties) in which the impacts occur. Purchasing agricultural conservation easements or donating to mitigation fees⁵ to preserve regional important farmland would only ensure continued productivity and preservation of existing Important Farmland. It is consistent with the Project objectives to support agriculture and provide a reliable water supply to agriculture. The measure would not replace or restore the acres of Important Farmland permanently converted to nonagricultural uses under each alternative. Therefore, while this measure is feasible and

⁵ The proposed conservancy program to receive mitigation fees for the Project is the California Farmland Conservancy Program (see Mitigation Measure AG-1.1). The California Farmland Conservancy Program is a statewide grant program under the auspices of the DOC. The program provides funding across California to protect agricultural lands under threat of conversion to nonagricultural uses through the acquisition of voluntary, permanent agricultural conservation easements. The program also provides funding for the improvement of lands protected by existing California Farmland Conservancy Program agricultural conservation easements or of lands protected by other qualified conservation easement programs, if the improvement will directly benefit lands protected by California Farmland Conservancy Program easements.

would partially mitigate the impact, it would not reduce impacts to less than significant. The impact would remain **significant and unavoidable** under all alternatives.

It is infeasible to restore Important Farmland converted as a result of facilities as a mitigation measure because the Project consists of permanent facilities that, once in place, cannot be easily removed. There is no ability to restore land used for this type of water infrastructure project like there is for other infrastructure projects, such as solar farms or oil and gas development. Once the use of the land as a solar farm or oil and gas well ceases after a period of time (e.g., 25 years), the majority of land can be restored to its previous agriculture use if the landowner decides and depending on the terms and conditions of lease agreements. There is no ability to contemplate such restoration under Alternative 1, 2, or 3.

Restoring existing vacant nonagricultural lands offsite from the Project that have been out of agricultural production into Important Farmland would replace the lost Important Farmland due to permanent footprints of facilities. However, Important Farmland restoration is infeasible as a mitigation measure due to several factors, including lack of available land, the price of land, and different socioeconomic decisions. In the last decade, it has become a trend of investors to purchase agricultural land in the hopes of selling to developers at a profit. Other investors see agribusiness as a stable long-term investment due to the fact that arable farmland per capita has decreased by nearly half over the last 50 years. These and other factors have caused the average price of farmland nationwide to double over the last 10 years. In Glenn and Colusa Counties, the price of productive farmland has risen to approximately \$9,000 and \$8,000 per acre, respectively (U.S. Department of Agriculture 2017). Further, unlike restoration/preservation for biological purposes, retaining or restoring agricultural land is dependent upon a multitude of socioeconomic decisions. The counties cannot mandate that restored agricultural mitigation land be farmed. Rather, the individual farmers/landowners make decisions based on crop prices, availability of labor, input prices (seed, fuel, pesticides, fertilizer), the price and availability of water, land productivity, and a host of other factors. In addition, while finding productive agricultural land is driven by the market, soils, and water availability, there are several other trends that are working against keeping land in agricultural production. After peaking at 6.8 million farms in 1935, the number of U.S. farms fell sharply until the early 1970s (U.S. Department of Agriculture 2021). Mirroring the reduction in farms is a trend downward in young farmers entering the industry; resulting in a corresponding upward trend in the average age of farmers, which has increased 7 years over the last 30 years (U.S. Department of Agriculture 2017). Further, during the same time period, mid-sized farms (50–999 acres) have largely disappeared, reflecting a trend toward consolidation and large corporate farms. Another trend is returns (profits) to farm operators (after expenses), which, adjusted for inflation, reached a peak in the mid-to-late 1940s but has generally trended downward from the 1950s through the 1990s. During the 1980s in particular, returns were approximately one-third of the peak in the late 1940s. These barriers to entry mean that there are no feasible methods to guarantee that farmland could be restored (as mitigation) and put into production at a point where farmers could profitably produce. It is equally as likely that restored land would be purchased and held by investors as a long-term investment or for sale to developers (Ecology Center 2015). Given the factors described above, restoration of existing nonvacant land to Important Farmland is infeasible as a mitigation measure.

Mitigation Measure AG-1.1: Purchase Agricultural Conservation Easements to Preserve Regional Important Farmland

Prior to the commencement of any Project activities that would result in the permanent conversion of Important Farmland, the Authority will enter into an agreement with the DOC California Farmland Conservancy Program to mitigate for the permanent conversion of Important Farmland through

purchase of agricultural easements. The Authority will fund the California Farmland Conservancy Program to enable them to (1) identify suitable agricultural land for mitigation of Project impacts and (2) fund the purchase of agricultural conservation easements from willing sellers. The Authority will coordinate with the California Farmland Conservancy Program to identify suitable lands and purchase agricultural conservation easements from willing sellers at a ratio of at least 1:1 to preserve Important Farmland in an amount commensurate with the quantity and quality of converted farmlands.

Impact AG-2: Conflict with existing zoning for agricultural use or a Williamson Act contract

Placement of underground pipelines on land zoned for agricultural use or in Williamson Act contracts would not result in a permanent change of land use from agricultural use. No impact would occur under construction and operations.

Placement of aboveground Project facilities on some land zoned for agricultural use would result in a permanent change of land use. As discussed in Chapter 14, *Land Use*, prior to the start of Project construction, coordination between the Authority and Glenn and Colusa Counties would occur regarding zoning ordinances. This land would not create an indirect impact through conflicts with zoning on adjacent parcels zoned for agricultural use because the new uses would be compatible with adjacent agriculture. Therefore, construction and operations impacts would be less than significant.

Placement of aboveground Project facilities on land under Williamson Act contract would result in removal of this land from contract and would also create remnant parcels. As shown in Table 15-17, Alternative 1 or 3 would remove a total of 13,868 acres from Williamson Act contract as a result of direct impact, and Alternative 2 would remove a total of 13,340 acres. This acreage of direct impact for Alternative 1 or 3 accounts for 1.37% of the land under Williamson Act contract in the study area. This acreage of direct impact for Alternative 2 accounts for 1.31% of the land under Williamson Act contract in the study area. In addition, placement of aboveground Project facilities could result in creation of remnant parcels of land under Williamson Act that are smaller than county requirements for such contracts, resulting in contract nonrenewal or cancellation for affected parcels. As shown in Table 15-18, Alternative 1 or 3 would create a total of 1,220 acres of remnant parcels of land currently under Williamson Act contract, and Alternative 2 would create a total of 1,299 acres of remnant parcels of land currently under Williamson Act contract. Alternative 2 would affect more acres than Alternative 1. Finally, some of this land is also Important Farmland as identified under Impact AG-1. Construction and operation of Alternative 1, 2, or 3 would both remove land from Williamson Act contract and create remnant parcels too small to remain under contract. Impacts would be significant.

As discussed under Impact AG-1, Alternatives 1, 2, and 3 are meant to increase water reliability to Storage Partners, including Reclamation, as evidenced by CEQA OBJ-1 and OBJ-3. Increased water supply reliability would allow some lands currently in Williamson Act contracts to remain in production during times it may have otherwise been fallowed or taken out of production for longer periods because of lack of water. However, this effect cannot be quantified, nor would it fully reduce permanent impacts on lands experiencing Williamson Act cancellation because the water could not be used on lands anticipated to experience Williamson Act cancellations.

Implementation of Mitigation Measure AG-2.1 would minimize impacts relating to Williamson Act contract nonrenewal or cancellation by requiring the Authority to comply with Government Code Section 51290–51293, including notifying the DOC of proposed acquisition and completed acquisition. Furthermore, implementation of Mitigation Measure AG-1.1 would minimize impacts on lands that are both Williamson Act and Important Farmland by requiring the Authority to fund acquisition of

agricultural conservation easements in the same agricultural region in which the impacts occur or donate mitigation fees, as discussed under Impact AG-1. With implementation of Mitigation Measure AG-2.1, the permanent removal of these lands from contracts, both directly and indirectly through contract cancellation, would occur over thousands of acres. In addition, as discussed under Impact AG-1, impacts would remain **significant and unavoidable** with implementation of Mitigation Measure AG-1.1. Therefore, impacts would remain **significant and unavoidable** under Alternative 1, 2, or 3 after the implementation of Mitigation Measures AG-2.1 and AG-1.1. There are no other feasible mitigation measures to address this impact for a project of this nature and magnitude because the lands are needed for the Project to be constructed and to operate.

Mitigation Measure AG-2.1: Minimize Impacts on Williamson Act–Contracted Lands, Comply with Government Code Sections 51290–51293, and Coordinate with Landowners and Agricultural Operators

To reduce impacts on lands under Williamson Act contract, the Authority will implement the measures below.

- The Authority will comply with Government Code Sections 51290–51293 with respect to acquiring lands under Williamson Act contract.
- Sections 51290(a)–51290(b) state that State policy, consistent with the purpose of the Williamson Act to preserve and protect agricultural land, is to avoid locating public improvements and any public utilities improvements in agricultural preserves, whenever practicable. If such improvements must be located within a preserve, they will be located on land that is not under contract.
- Whenever it appears that land within a preserve or under contract may be required for a public improvement, DOC and the local jurisdiction responsible for administering the preserve must be notified (Section 51291(b)).
- Within 30 days of being notified, DOC and the local jurisdiction will forward comments to the Authority, which the Authority must consider (Section 51291(b)).
- A public improvement may not be located within an agricultural preserve unless findings are made that (1) the location is not based primarily on the lower cost of acquiring land in an agricultural preserve and (2) for agricultural land covered under a contract for any public improvement, no other land exists within or outside the preserve where it is reasonably feasible to locate the public improvement (Sections 51921(a) and 51921(b)).
- The contract will be terminated when land is acquired by eminent domain or in lieu of eminent domain (Section 51295).
- The Authority will notify DOC within 10 working days upon completion of the acquisition (Section 51291(c)).
- The Authority will notify DOC and the local jurisdiction before completion of any proposed substantial changes to the public improvement (Section 51291(d)).
- If, after acquisition, the Authority determines that the property will not be used for the proposed public improvement, DOC and the local jurisdiction administering the involved preserve will be notified before the land is returned to private ownership. The land would be reenrolled in a new contract or encumbered by an enforceable restriction at least as restrictive as that provided by the Williamson Act (Section 51295).

- The Authority will coordinate with landowners and agricultural operators to sustain existing agricultural operations, at the landowners' discretion, within the study area until the individual agricultural parcels are needed for Project construction.

3.7 Navigation, Transportation and Traffic

Impact TRA-5: Substantially affect school bus travel

Alternatives 1 and 3

Based on qualitative analysis to verify that adequate school bus travel is maintained for Maxwell Unified School District throughout construction and during permanent operations, Alternative 1 or 3 would result in a less-than-significant impact.

Alternative 2

During construction, school bus travel would be maintained for Maxwell Unified School District as a result of the use of temporary construction roads and the use of existing roads that would remain open during construction. Construction impacts would be less-than-significant. Operations would result in longer travel time, which would substantially affect school bus travel. One potential measure to lessen this impact would be to shorten the length of the South Road; however, that is already presented in Alternatives 1 and 3 as the bridge crossing the Sites Reservoir. Another potential measure that was considered was the use of a ferry service that would connect both sides of Sites Reservoir to avoid the travel along the South Road for students and other users. However, it was determined that the reservoir is not expected to maintain a consistent water level year-round. Due to unforeseeable fluctuating water levels, the potential mitigation was considered unfeasible. There are no feasible mitigation measures and operation impacts would be **significant and unavoidable**.

3.8 Air Quality

Impact AQ-1: Result in a cumulatively considerable net increase of any criteria pollutant for which the Project region is nonattainment under an applicable federal or state ambient air quality standard during construction, or conflict with or obstruct implementation of the applicable air quality plan

Alternatives 1 and 3

Construction of Alternatives 1 and 3 would result in an exceedance of the applicable thresholds for CCAPCD and GCAPCD for NO_x and PM₁₀ for multiple years. Additionally, construction would result in an exceedance of the applicable YSAQMD threshold for PM₁₀ for multiple years. BMP-27 will minimize air quality impacts through application of onsite controls such as Tier 4 engines and 2010 or newer model year trucks to reduce construction emissions. Equipment with Tier 4 engines and 2010 or newer model year trucks are lower emitting than equipment and trucks without these characteristics, because they are manufactured in accordance with stricter emissions standards. Thus, the use of equipment and trucks with these characteristics would result in lower emissions for the same amount of use relative to older equipment and trucks. Impacts associated with fugitive dust emissions would be minimized through implementation of BMP-28, which would involve using soil stabilizers on unpaved road surfaces and watering visibly dry surfaces to control dust. The use of soil stabilizers and watering on road

surfaces would result in substantial reductions in fugitive PM emissions by causing dust particles to stick together and thus reducing the amount of loose dust that can be propelled from the ground into the air when trucks and equipment pass by. Reducing the amount of unpaved road surface is a strategy that can reduce fugitive dust-related emissions for some projects; however, because most of the road surfaces for Alternatives 1 and 3 are located in the inundation area, it is not feasible to use road paving to reduce emissions. Exhaust-related pollutants would be reduced through use of Tier 4 diesel engines in most equipment and the use of on-road engines from 2010 or newer. Other measures included in BMP-27 would reduce emissions, but these were not explicitly quantified and may include minimizing equipment idling time, maintaining all construction equipment in proper working condition, and any other components of the plan that are developed by the Authority in the future. Even with BMPs, exceedances of the applicable thresholds used by CCAPCD and GCAPCD for NO_x and PM₁₀ would occur, and exceedances of the PM₁₀ threshold would occur in YSAQMD as well. As such, Alternatives 1 and 3 would contribute a significant level of regional NO_x and particulate matter pollution in the SVAB.

To further reduce emissions from construction, implementation of Mitigation Measure AQ-1.1 would require that construction contractors use zero emission (ZE) or near zero emission (NZE) technology for construction vehicles and equipment to the maximum extent feasible. The use of such technology would reduce exhaust-related emissions from construction; however, the commercial availability of future electric equipment and vehicles is unknown, and thus emissions reductions achieved by Mitigation Measure AQ-1.1 cannot currently be quantified or included in the analysis. The best available equipment that is currently widely available (i.e., equipment with Tier 4 engines), as noted above, has been included in the modeling as noted in *Mass Emissions of Criteria Pollutants* in Section 20.3.1, *Construction*.

After implementation of Mitigation Measure AQ-1.1, implementation of Mitigation Measure AQ-1.2 would partially mitigate remaining NO_x and PM₁₀ emissions through offsets. The significance thresholds were established to prevent emissions from new projects from contributing to CAAQS or NAAQS violations. Offsetting emissions in sufficient quantities (i.e., below the thresholds) would prevent a project from contributing to a significant level of air pollution such that regional air quality within the air districts would be degraded. There are several current uncertainties with respect to the use of offsets and the ability to fully reduce emissions below thresholds. First, the air districts where most emissions will occur (CCAPCD and GCAPCD) do not currently have established offsets programs for indirect sources or for CEQA purposes (Ryan pers. comm.; Ledbetter pers. comm). Second, because there is no established program for indirect sources of emissions, it is unknown if the quantity of offsets potentially available in these two air districts would be sufficient to fully mitigate impacts. Currently established offsets programs in other air districts in the SVAB could be used to mitigate impacts because the Project's mass emissions affect and disperse within the entire SVAB and not just CCAPCD and GCAPCD. However, it is uncertain if other air districts in the SVAB with limited to no Project-related emissions would be amenable to offsetting emissions for a project not located within their jurisdiction. Further, it is anticipated that such an arrangement would require approval from that air district's board of directors, which would be at the discretion of individual board members and is thus uncertain. Because this would be an unconventional arrangement in addition to the other uncertainties discussed above, there is no assurance that emissions could be sufficiently reduced and thus mitigated through offsets.

Mitigation Measure AQ-1.2 would nevertheless be implemented to the maximum extent feasible, which would help reduce emissions. Mitigation Measure AQ-1.2 would first facilitate emissions reductions within the communities in close proximity to the study area because the Authority's first priority for implementing this mitigation would be to reduce emissions and improve public health in those nearby communities. This could include the Authority sponsoring the replacement of internal combustion

engine vehicles owned by municipal governments, school districts, nonprofits, or other community members with nonemitting or cleaner alternatives, such as electric vehicles. The Authority could also sponsor the replacement of older agricultural equipment with cleaner equipment because of the extent of agricultural land in the study area. The potential magnitude from emissions reductions projects is unknown, however, given the uncertainties discussed above.

Construction of Alternatives 1 and 3 would result in a cumulatively considerable net increase of criteria pollutants for which the region is nonattainment under an applicable federal or state ambient air quality standard. Construction of Alternatives 1 and 3 would also conflict with an applicable air quality plan. Construction impacts of Alternatives 1 and 3 would be **significant and unavoidable**, even with the implementation of Mitigation Measures AQ-1.1 and AQ-1.2.

Mitigation Measure AQ-1.1: Zero Emission and/or Near Zero Emission Vehicles and Off-Road Equipment

This mitigation measure will reduce the impact of Project construction emissions from on-road vehicles and off-road equipment through the following commitments.

- The Authority will require that all construction contractors use ZE or NZE technology for all light-duty on-road vehicles (e.g., passenger cars, light-duty trucks) associated with the Project to the maximum extent feasible.
- The Authority will require that all construction contractors use ZE or NZE technology for heavy-duty on-road vehicles (e.g., for hauling, material delivery and soil import/export) associated with the Project to the maximum extent feasible.
- The Authority will require that all Project construction contractors use ZE or NZE vehicles for off-road construction equipment use associated with the Project to the maximum extent feasible.

For all the above requirements, the Authority will require that construction contractors provide documentation to the Authority, on an annual basis at minimum, showing the percentage of vehicles and equipment that are ZE or NZE. Based on this reporting, the Authority will require that all construction contractors are meeting minimum percentages of ZE or NZE vehicles and equipment, and those minimum percentages will be determined at the time of construction. If local or state regulations mandate a faster transition to using ZE and/or NZE vehicles at the time of construction, the more stringent regulations will be applied. It is possible that such new regulations will be adopted; Executive Order N-79-20, issued by California Governor Newsom on September 23, 2020, states the following objectives:

- Light duty and passenger car sales be 100% zero-emission vehicles (ZEV) by 2035
- Full transition to ZEV short haul/drayage trucks by 2035
- Full transition to ZEV heavy-duty long-haul trucks, where feasible, by 2045
- Full transition to ZE off-road equipment by 2035, where feasible.

Mitigation Measure AQ-1.2: Offset Construction-Generated Criteria Pollutants in CCAPCD, GCAPCD, and YSAQMD.

Prior to issuance of construction contracts, the Authority will enter into a memorandum or multiple memoranda of understanding (MOU) with CCAPCD, GCAPCD, YSAQMD, TCAPCD, or other air district

located in the SVAB (collectively referred to as the Air Districts), to reduce NO_x and PM₁₀. Emissions above the CEQA thresholds will be reduced to the extent practicable and feasible, per the following criteria:

- The Authority will identify emissions offsets in geographies closest to the Project first (Maxwell, Willows, Colusa County, Glenn County) and only go to larger geographies (i.e., other counties in the SVAB) if adequate offsets cannot be found in closer geographies or the procurement of such offsets would create an undue financial burden. All offsets must occur within the SVAB. The Authority will provide the following justification for not using offsets in closer geographies in terms of either availability or cost prohibition.
- No mechanism or program will be available in the reasonably foreseeable future to track the quantity of offsets available in closer geographies, or it is otherwise not possible to accurately verify and account for the exchange of offsets.
- Lack of enough offsets available in closer geographies.
- Prohibitively costly offsets in closer geographies as defined by the Authority.
- Offsets in any geography within the SVAB would be infeasible based on these criteria as well (lack of enough offsets and/or prohibitively costly as defined above).

The mitigation offset fee amount will be determined at the time of mitigation to fund emissions reduction projects within the SVAB. The Air Districts may require an additional administrative fee to cover staff time, and that fee will be determined in the MOU(s). The mitigation offset fee will be determined by the Authority and the Air Districts based on the type of projects available at the time of mitigation. The fee is intended to fund emissions reduction projects to achieve reductions. Documentation of payment will be provided to the Authority or its designated representative.

The MOU will include details for the annual calculation of required offsets the Authority must achieve, funds to be paid, administrative fee, and the timing of the emissions reduction projects. Acceptance of this fee by the Air Districts will serve as an acknowledgment and commitment by Air Districts to: (1) implement an emissions reduction project(s) within a timeframe to be determined based on the type of project(s) selected after receipt of the mitigation fee designed to achieve the emission reduction objectives; and (2) provide documentation to the Authority or its designated representative describing the project(s) funded by the mitigation fee, including the amount of emissions reduced (tons per year) in the SVAB from the emissions reduction project(s). To qualify under this mitigation measure, the specific emissions reduction project(s) must result in emission reductions in the SVAB that are real, surplus, quantifiable, enforceable, and will not otherwise be achieved through compliance with existing regulatory requirements or any other legal requirement. Funding will need to be received prior to contracting with participants and should allow enough time to receive and process applications to fund and implement offsite reduction projects prior to commencement of Project activities being reduced. This will roughly equate to 1 year prior to the required mitigation; additional lead time may be necessary depending on the level of offsite emission reductions required for a specific year. Because all of the Air Districts where Project activities would occur are located in the SVAB, the offsets do not need to occur within the same Air District as the emissions exceedances.

Alternative 2

Construction of Alternative 2 would result in an exceedance of the applicable thresholds for CCAPCD and GCAPCD for NO_x and PM₁₀, and by YSAQMD for PM₁₀. Additionally, construction of Alternative 2 would result in substantial air pollutant emissions that could result in a conflict with applicable air quality plans.

Impacts associated with fugitive dust emissions would be minimized through implementation of BMP-28, which would include the use of soil stabilizers to reduce fugitive PM₁₀ emissions from unpaved roads. Exhaust-related pollutants would be reduced through use of Tier 4 diesel engines in most equipment and on-road engines from 2010 or newer, and other measures. Even with implementation of this BMP, exceedances of the applicable thresholds for CCAPCD, GCAPCD, and YSAQMD would occur, and Alternative 2 would contribute a significant level of regional NO_x and particulate matter pollution within the SVAB. As with Alternatives 1 and 3, Mitigation Measure AQ-1.1 would require that construction contractors use ZE or NZE technology for construction vehicles and equipment to the maximum extent feasible, but the commercial availability of future electric equipment and vehicles is unknown, and thus emissions reductions achieved by Mitigation Measure AQ-1.1 cannot currently be quantified or included in the analysis. Mitigation Measure AQ-1.2 would partially mitigate remaining NO_x and PM₁₀ emissions through offsets. However, the same uncertainties with respect to the implementation of offsets discussed for Alternatives 1 and 3 would also apply to Alternative 2. Construction of Alternative 2 would result in a cumulatively considerable net increase of criteria pollutants for which the region is nonattainment under an applicable federal or state ambient air quality standard. Construction of Alternative 2 would also conflict with applicable air quality plans. Construction impacts of Alternative 2 would be **significant and unavoidable**, even with implementation of Mitigation Measures AQ-1.1 and AQ-1.2.

Impact AQ-2: Result in a cumulatively considerable net increase of any criteria pollutant for which the Project region is nonattainment under an applicable federal or state ambient air quality standard during operations, or conflict with or obstruct implementation of the applicable air quality plan

Alternatives 1 and 3

Operation would result in an exceedance of the applicable thresholds for CCAPCD for ROG. The net increase in emissions would result in a cumulatively considerable net increase of a criteria pollutant. Although emissions in GCAPCD would be below the applicable threshold, this analysis conservatively concludes that the impact would be significant in GCAPCD because of the reservoir's location on the border of CCAPCD and GCAPCD. Implementation of Mitigation Measure AQ-2.1 would reduce emissions by implementing strategies to minimize the effects of boating activity.

Per Mitigation Measure AQ-2.1, the establishment of a recreational boat emissions minimization plan would outline strategies for the Authority to reduce ROG emissions from boats. The Authority would implement strategies to encourage users to minimize emissions from their boats. The effectiveness of the strategies cannot be quantified, however, and given the magnitude of the exceedance, this mitigation would not likely reduce emissions sufficiently to be below the applicable threshold. Mitigation Measure AQ-2.2 would be required to offset boating-related emissions to a level that is below the threshold. However, for the reasons discussed in Impact AQ-1 for Mitigation Measure AQ-1.1, there are considerable uncertainties with respect to the implementation of offsets in the study area. Given these uncertainties, there is no assurance that sufficient offsets could be obtained to fully mitigate the emissions generated during operations. Operation of Alternatives 1 and 3 would result in a

cumulatively considerable net increase of criteria pollutants for which the region is nonattainment under an applicable federal or state ambient air quality standard. Operation of Alternatives 1 and 3 would also conflict with applicable air quality plans. Operations impacts of Alternatives 1 and 3 would be **significant and unavoidable**, even with the implementation of Mitigation Measures AQ-2.1 and AQ-2.2.

Mitigation Measure AQ-2.1: Recreational Boat Emissions Minimization Plan

To reduce ROG emissions from recreational boats at the reservoir, the Authority will develop and implement an emissions reduction plan. The plan will include strategies that the Authority will implement during the operational lifetime of the recreational area at the reservoir that are likely to reduce emissions. The plan will be part of the Recreation Management Plan (Section 2D.8) and thus approved at the same time as the Recreation Management Plan. The strategies that the Authority could implement to reduce boat emissions include but are not limited to the following.

- Provide free or reduced launch fees for low-emitting or electric boats, to incentivize boats that are alternatively fueled.
- Post signage near launch areas encouraging users to turn off the boat engines when not in use.
- Track boat usage and type (i.e., motorized, electric, nonmotorized) at the reservoir on an annual basis by maintaining records of the number and types of boats operated at the reservoir. To maintain these records, the Authority will operate staffed kiosks at the reservoir, and boat users will be required to check in at these kiosks prior to launching their boats. Emissions from boat usage will be quantified based on the Authority's records, and the effectiveness of the minimization plan will be assessed based on the quantification results and relative to the applicable air district threshold at the time of operations.

Mitigation Measure AQ-2.2: Offset Operation-Generated Criteria Pollutants in CCAPCD and GCAPCD.

Prior to issuance of the commencement of recreational boating activities, the Authority will enter into a memorandum or multiple MOUs with CCAPCD, GCAPCD, YSAQMD, TCAPCD, or other air district located in the SVAB (collectively referred to as the Air Districts), to reduce ROG. Per Mitigation Measure AQ-2.1, the emissions from recreational boat use will be quantified. The emissions in excess of the applicable air district thresholds at the time of operations, including the total of all operations-related activity (e.g., boat use, maintenance activities, recreational visitor vehicle trips) will be offset to the maximum extent possible. Emissions above the CEQA thresholds will be reduced as much as possible, per the following criteria.

- The Authority will identify emissions offsets in geographies closest to the Project first (Maxwell, Willows, Colusa County, Glenn County) and only go to larger geographies (i.e., other counties in the SVAB) if adequate offsets cannot be found in closer geographies or the procurement of such offsets would create an undue financial burden. All offsets must occur within the SVAB. The Authority will provide the following justification for not using offsets in closer geographies in terms of either availability or cost prohibition.
 - No mechanism or program will be available in the reasonably foreseeable future to track the quantity of offsets available in closer geographies, or it is otherwise not possible to accurately verify and account for the exchange of offsets.
 - Lack of enough offsets available in closer geographies.

- Prohibitively costly offsets in closer geographies as defined by the Authority.
- Offsets in any geography within the SVAB would be infeasible based on these criteria as well (lack of enough offsets and/or prohibitively costly as defined above).
- The mitigation offset fee amount will be determined at the time of mitigation to fund emissions reduction projects within the SVAB. The Air Districts may require an additional administrative fee to cover staff time, and that fee will be determined in the MOU(s). The mitigation offset fee will be determined by the Authority and the Air Districts based on the type of projects available at the time of mitigation. The fee is intended to fund emissions reduction projects to achieve reductions. Documentation of payment will be provided to the Authority or its designated representative.
- The MOU will include details for the annual calculation of required offsets the Authority must achieve, funds to be paid, administrative fee, and the timing of the emissions reduction projects. Acceptance of this fee by the Air Districts will serve as an acknowledgment and commitment by Air Districts to: (1) implement an emissions reduction project(s) within a timeframe to be determined based on the type of project(s) selected after receipt of the mitigation fee designed to achieve the emission reduction objectives; and (2) provide documentation to the Authority or its designated representative describing the project(s) funded by the mitigation fee, including the amount of emissions reduced (tons per year) in the SVAB from the emissions reduction project(s). To qualify under this mitigation measure, the specific emissions reduction project(s) must result in emission reductions in the SVAB that are real, surplus, quantifiable, enforceable, and will not otherwise be achieved through compliance with existing regulatory requirements or any other legal requirement. Funding will need to be received prior to contracting with participants and should allow enough time to receive and process applications to fund and implement offsite reduction projects prior to commencement of Project activities being reduced. This will roughly equate to 1 year prior to the required mitigation; additional lead time may be necessary depending on the level of offsite emission reductions required for a specific year. Because all of the Air Districts where Project activities would occur are located in the SVAB, the offsets do not need to occur within the same Air District as the emissions exceedances.

Alternative 2

Operation of Alternative 2 would result in an exceedance of the applicable thresholds for CCAPCD for ROG. The net increase in emissions would result in a cumulatively considerable net increase of a criteria pollutant. The impact is conservatively assumed to be significant in GCAPCD as well, because of the reservoir's location on the border of CCAPCD and GCAPCD. As with Alternatives 1 and 3, implementation of Mitigation Measure AQ-2.1 could reduce emissions by implementing strategies to minimize the effects of boating activity but not sufficiently to be below the applicable threshold. Mitigation Measure AQ-2.2 would be required to offset emissions from the boats to be below the threshold. However, for the reasons discussed in Impact AQ-1 for Mitigation Measure AQ-1.1, there are considerable uncertainties with respect to the implementation of offsets in the study area. Given these uncertainties, there is no assurance that sufficient offsets could be obtained to fully mitigate the emissions generated during operations. Operation of Alternative 2 would result in a cumulatively considerable net increase of criteria pollutants for which the region is nonattainment under an applicable federal or state ambient air quality standard. Operation of Alternative 2 would also conflict with applicable air quality plans. Operation impacts of Alternatives 2 would be **significant and unavoidable**, even with the implementation of Mitigation Measures AQ-2.1 and AQ-2.2.

Impact AQ-4b: Expose sensitive receptors to localized criteria pollutant emissions

Alternatives 1 and 3

Construction of Alternatives 1 and 3 would contribute substantially to existing PM violations of the CAAQS and NAAQS and would cause a new violation of the NAAQS. The modeling results shown in Table 20-17 reflect that fugitive dust emissions would be minimized through implementation of BMP-28, which would involve using soil stabilizers on unpaved road surfaces and watering visibly dry surfaces. As noted above, the use of soil stabilizers and watering on road surfaces would result in substantial reductions in fugitive PM emissions. However, given the magnitude of unpaved road travel that would be required for construction, the fugitive PM emissions would result in several localized impacts even with the implementation of BMP-28 to reduce dust. Mitigation Measure AQ-1.2 would result in the purchase of emissions offsets, but this measure, which would mitigate regional impacts associated with PM, would not mitigate localized impacts from PM. Sensitive receptors and/or other members of the public could be exposed to the concentrations shown in Table 20-17, regardless of whether an equal amount of emissions is offset somewhere else in the SVAB. As a result, the localized PM impacts cannot be mitigated, and the Project would expose sensitive receptors to substantial concentrations of localized criteria pollutants. This impact would be **significant and unavoidable**.

Operations of Alternative 1 and 3 would not expose sensitive receptors to substantial concentrations of localized criteria pollutants, because emissions, particularly PM emissions, would be substantially less than construction. Maintenance and recreational activities would result in emissions of local criteria pollutants that are below the applicable thresholds, and thus localized exceedances of the NAAQS or CAAQS are not anticipated. This impact would be less than significant.

Alternative 2

Construction of Alternative 2 would contribute substantially to existing PM violations of the CAAQS and NAAQS and would cause a new violation of the NAAQS. The modeling results shown in Table 20-18 reflect the implementation of BMP-28 to reduce fugitive dust emissions. Nevertheless, Alternative 2 would result in several localized impacts even with this BMP that will be implemented to reduce dust. Mitigation Measure AQ-1.2 would result in the purchase of emissions offsets, but, as noted above, this measure would not mitigate localized impacts from PM. As a result, the localized PM impacts cannot be mitigated, and Alternative 2 would expose sensitive receptors to substantial concentrations of localized criteria pollutants. This impact would be **significant and unavoidable**.

Operation of Alternative 2 would not expose sensitive receptors to substantial concentrations of localized criteria pollutants, because emissions, particularly PM emissions, would be substantially less than construction. Maintenance and recreational activities would result in emissions of local criteria pollutants that are below the applicable thresholds, and thus localized exceedances of the NAAQS or CAAQS are not anticipated. This impact would be less than significant.

3.9 Greenhouse Gases

Impact GHG-1: Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment or conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of greenhouse gases

Alternative 1

The impact would be significant for Alternative 1, because construction and operations emissions would generate substantial emissions of GHGs that constitute a net increase in emissions and thus do not meet the carbon-neutral threshold. The net increase in emissions could also conflict with the State's plans to reduce GHG emissions, resulting in a potentially significant impact with respect to the Project conflicting with plans or policies adopted for the purpose of reducing GHG emissions. Implementation of Mitigation Measure GHG-1.1 would reduce or offset these emissions to net zero through a GHG Reduction Plan.

Per Mitigation Measure GHG-1.1, the Authority would develop and implement a GHG Reduction Plan that would reduce the Project's GHG emissions to net zero. First, the Authority would implement these strategies to reduce GHG emissions, which would reduce emissions by utilizing electric power instead of generators; developing a Project-specific ride share program for employees; and using electric or alternatively fueled equipment instead of diesel equipment. For emissions that would not be reduced through these strategies, Mitigation Measure GHG-1.1 provides additional methods for achieving the net-zero goal.

For emissions that cannot otherwise be reduced, the Authority would offset those emissions so that there is no net increase in GHG emissions from construction or operations activities of Alternative 1. Mitigation Measure GHG-1.1 specifies the requirements for using GHG credits for CEQA purposes.

This measure ensures Alternative 1 GHG emissions would not result in a significant GHG impact, because there would be no net increase in emissions. Further, with implementation of Mitigation Measure GHG-1.1, Alternative 1 would not conflict with any plans adopted for the purpose of reducing GHG emissions, because there would be no net increase in emissions. Accordingly, this impact would be less than significant with mitigation.

Mitigation Measure GHG-1.1: Achieve Net-Zero Emissions Through a GHG Reduction Plan

To achieve net-zero emissions, the Authority will develop a GHG Reduction Plan to reduce Project emissions from onsite and offsite sources. The Authority will retain a qualified consultant to develop a GHG Reduction Plan to reduce GHG emissions resulting from construction and operational activities to net zero. Net additional GHG emissions from the construction period and annual emissions from operations have been quantified as part of this analysis. Construction emissions total to 348,648 to 351,362 metric tons of CO₂e depending on the alternative and variant of the Project. Annual operational emissions could be a maximum of 72,736 metric tons CO₂e, which corresponds to Alternative 1A, but are expected to continually decrease in future years as the electric power sector transitions to more renewable sources of energy. This yields a reduction commitment of up to 351,362 metric tons CO₂e total for construction and up to 72,736 metric tons of CO₂e annually needed to meet the net-zero performance standard. These maximum values of 72,736 metric tons CO₂e and 351,362 metric tons CO₂e correspond to Alternatives 1A and 2, respectively. Table 21-6 summarizes the reduction by alternative.

Table 21-6 Summary of Metric Ton Reduction (metric tons CO2e)

Year	Alternatives 1A		Alternative 1B		Alternative 2		Alternative 3	
	Variant 1 ^a	Variant 2 ^b	Variant 1	Variant 2	Variant 1	Variant 2	Variant 1	Variant 2
Total Construction Emissions Commitment	348,648	348,796	348,648	348,796	351,317	351,362	348,648	348,796
Maximum Annual Operational Emissions Commitment (Long-Term Average)	60,610	60,610	59,573	59,573	59,003	59,003	56,613	56,613
Maximum Annual Operational Emissions Commitment (Dry and Critically Dry)	72,736	72,736	72,070	72,070	71,056	71,056	67,778	67,778

Notes:

CO₂e = carbon dioxide equivalent.

^a Variant 1 assumes the Project would connect to existing Western Area Power Administration utility infrastructure.

^b Variant 2 assumes the Project would connect to existing Pacific Gas and Electric utility infrastructure.

As noted in the text of this measure, below, the net-zero performance standard may be achieved based on actual emission calculations, and thus the Authority’s reduction commitment may differ from the values included in this analysis.

The GHG Reduction Plan will include the following content and adhere to the following requirements.

- 1) *Emissions Quantities and Reduction Commitments*: GHG emissions from construction and operations must be reduced to net zero on a continual basis throughout construction and operations. Advanced planning for GHG reductions will be necessary to ensure that the net effect of Project emissions and this mitigation is that the Project will not result in any increase in GHG emissions relative to the No Project Alternative throughout the construction and operational period. The Authority will thus need to proactively assess upcoming construction activity and implement early investment in GHG reduction efforts prior to construction (to ensure that the emissions that are being mitigated through other measures are only those that are unavoidable).
 Since some of the planning will be reliant on the estimated GHG reduction value of future actions during construction and operation (as discussed below) there may be an emissions credit debt if emissions are higher than expected or if certain measures do not achieve the reductions that were anticipated. Conversely, if emissions are lower than expected or measures achieve higher reductions than expected, the Authority may bank credits for the next year of construction and/or operations.

- 2) *Plan Development*: The GHG Reduction Plan will identify the amount of GHG emissions anticipated during each construction phase. Amendments to the GHG Reduction Plan may be made during the construction period for the purpose of giving the Authority flexibility to adapt to changing technologies that have increasing effectiveness at reducing emissions and/or changes in expected construction emissions or available mitigation approaches. For operations, the GHG Reduction Plan may be developed and implemented in 5-year increments and can be amended to include more cost effective or environmentally beneficial technologies. This analysis presents an estimate of annual GHG emissions generated by Project construction and operations. Although the emissions provided in this analysis could be used to inform the required mitigation commitment, the methods used to quantify emissions are conservative. This analysis does not account for any GHG reduction measures that may be implemented by the Authority pursuant to this measure. Accordingly, this EIR likely overestimates actual GHG emissions that would be generated by the Project. The Authority may therefore reanalyze GHG emissions for construction and/or operation of the Project to update the required reduction commitment to achieve net zero.

Updated emissions analysis conducted for the GHG Reduction Plan will be performed using approved emissions models and methods available at the time of that analysis. Updated emissions analysis conducted for the GHG Reduction Plan will, at a minimum, consider the categories and types of emission sources included in this Final EIR/EIS; additional categories and types of emission sources should be considered for inclusion based on then-available scientific information. The analysis must use the latest available engineering data for the Project, inclusive of any required BMPs or GHG emissions reduction measures. Consistent with the methodology used in this analysis, emission factors may account for enacted regulations that will influence future year emissions intensities (e.g., fuel efficiency standards for on-road vehicles). Net emissions from changes in operations emissions will be quantified using approved methods at the time of analysis and applicable activity data for each component of operations (such as maintenance activities, recreational vehicle trips, recreational boating, public services and utilities, water conveyance, and land use, including water storage).

- 3) *GHG Reduction Strategies*: The construction component and each operational increment in the GHG Reduction Plan will identify the GHG reduction measures that will be implemented during that period to achieve the net-zero performance standard. GHG reduction measures must be verifiable and feasible to implement. The GHG Reduction Plan will identify the entity responsible for implementing each measure and the estimated GHG reduction that will be achieved by implementation of the measure. If the selected measures are shown to result in reductions that exceed total net emissions of that period, the estimated surplus can be applied as a credit for future periods.

The constituent measures in the GHG Reduction Plan are summarized in this section. Implementation of BMP-29 is a required Project design feature that must be incorporated into the GHG Reduction Plan. The Authority will prioritize strategies to reduce emissions in the following order (1) onsite measures for construction or operations that are not already part of BMP-29, (2) offsite measures, and (3) carbon credits. The order of priority for the location of selected measures will be (1) within the Project footprint, (2) within communities in the vicinity of the Project site, (3) in the Sacramento Valley Air Basin, (4) in the State of California, and (5) in the United States. If the GHG Reduction Plan proposes GHG reduction strategies that do not conform to the priorities outlined above, it must present substantial

evidence to justify the deviation or explain why higher priority locations were deemed infeasible as defined under CEQA. In addition, the Authority will seek opportunities to implement GHG reduction measures in environmental justice communities (as defined in this Final EIR/EIS) in and near the Project site and report on the effort and outcomes in the annual reporting required in this measure.

The Authority will be responsible for determining the measures necessary to ensure the performance standard to mitigate the significant GHG impact is met.

The list of measures presented in this section is not exclusive. The Authority may include additional measures to reduce GHG emissions to the extent that the measures become commercially available, have documented reliability in real-world conditions and become cost effective. This may include new equipment and vehicle systems (e.g., autonomous construction equipment, fuel-cells), new energy systems (e.g., battery storage), or other technologies (e.g., carbon capture and storage).

- a. Construction Best Management Practices and Other Onsite Measures. The Authority will reduce onsite GHG emissions as much as feasible through implementation of the measures identified below. These measures include a list of strategies to reduce GHG emissions from construction. Two measures that have a higher potential to reduce emissions include the use of electric equipment and vehicles instead of diesel-powered vehicles and the use of vehicles that use alternative fuels, such as compressed natural gas, liquified natural gas, propane, or biodiesel. These measures are not reflected in the emissions modeling results, because the future availability of electric-powered construction equipment and vehicles and alternative fuels in the California market is uncertain. As such, a mandate to use all-electric equipment and vehicles and alternative fuels cannot be made at this time. The Authority and its construction contractors will prioritize the use of electric or hybrid-electric off-road construction equipment and vehicles over diesel equipment. These measures, or other equivalent measures, will be implemented by the Authority and their construction contractors prior to or during construction. The Authority would review all designs and plans to ensure incorporation of these measures or the equivalent. In addition, the Authority will deploy a construction monitor during construction to monitor implementation of the required measures. Construction monitors will report regularly (at least quarterly) to the Authority on contractor compliance and will record inspection records in the Project file.
 - i. Preconstruction and Final Design Considerations: Preconstruction and final design considerations would be designed to ensure unique characteristics of facility construction are taken into consideration when determining if specific equipment, procedures, or material requirements are feasible and efficacious for reducing GHG emissions. Examples of requirements and considerations are identified below.
 - Consider Project characteristics, including location, Project workflow, site conditions, and equipment performance requirements, to determine whether specifications of the use of equipment with repowered engines, electric drive trains, or other high efficiency technologies are appropriate and feasible for the Project or specific elements of the Project.

- Ensure that all economically feasible avenues have been explored for providing an electrical service drop to the construction site for temporary construction power. When generators must be used, consider use of alternative fuels, such as propane or solar, to power generators to the maximum extent feasible, as specified in construction contracts.
 - Minimize idling time by requiring that equipment be shut down after 3 minutes when not in use (5 minutes required by the State airborne toxics control measure [Title 13, Section 2485 of the California Code of Regulations]). Provide clear signage that posts this requirement for workers at the entrances to the site and provide a plan for the enforcement of this requirement.
 - Maintain all construction equipment in proper working condition and perform all preventive maintenance. Required maintenance includes compliance with all manufacturer's recommendations, proper upkeep and replacement of filters and mufflers, and maintenance of all engine and emissions systems in proper operating condition. Maintenance schedules shall be detailed in an Air Quality Control Plan prior to commencement of construction.
 - Implement a tire inflation program on each jobsite to ensure that equipment tires are correctly inflated. Check tire inflation when equipment arrives onsite and every 2 weeks for equipment that remains onsite. Check vehicles used for hauling materials offsite weekly for correct tire inflation. Procedures for the tire inflation program shall be documented in an Air Quality Management Plan prior to commencement of construction.
 - Develop a Project-specific ride share program to encourage carpools and shuttle vans.
 - Reduce electricity use in temporary construction offices by using high efficiency lighting and requiring that heating and cooling units be Energy Star compliant. Require that all contractors implement procedures for turning off computers, lights, air conditioners, heaters, and other equipment each day at close of business, wherever feasible.
 - For material deliveries to Project sites where the haul distance exceeds 100 miles and a heavy-duty class 7 or class 8 semi-truck or 53-foot or longer box type trailer is used for hauling, a SmartWay26 certified truck will be used to the maximum extent feasible.
 - Develop a Project-specific construction debris recycling and diversion program to achieve a documented 50% diversion of construction waste.
 - During all activities, diesel-fueled portable equipment with maximum power greater than 25 horsepower shall be registered under the CARB's Statewide Portable Equipment Registration Program.
- b. Offsite Measures. For GHG emissions that cannot be reduced through the construction BMPs and other onsite measures discussed above, the Authority will reduce emissions as much as feasible through offsite measures. The GHG Reduction Plan will identify

offsite measures that are suitable to reduce emissions. Offsite strategies include those that reduce emissions from an emissions source(s) that is not located in the Project area and may or may not be associated with the Project.

- i. For construction electricity and water conveyance–related energy, the Authority will increase the proportion of renewable energy purchases for the Project’s electricity needs to the highest amount that is feasible. The Authority is planning on purchasing 60% of the Project’s power needs from renewable, carbon-free sources starting in 2030. To fully reduce the emissions from construction electricity and water conveyance electricity, the Authority would need to purchase 100% of energy needs from carbon-free sources. If the Authority determines that it is infeasible to purchase 100% carbon-free energy for construction and/or operations, carbon credits would be required to reduce the remaining emissions.
- ii. The GHG Reduction Plan may identify other strategies that reduce emissions from sources that are not affiliated with the Project. The Authority can take credit for reductions that result from projects it sponsors, to achieve the net-zero goal. For example, the Authority could directly sponsor emissions-reducing projects, such as the following.
 - replacing diesel school buses with electric buses.
 - planting trees in local communities.
 - providing support to local businesses or homeowners to install solar photovoltaic systems, other renewable energy projects, or energy efficiency improvements. Energy efficient improvements could include installing energy efficient appliances and cool roofs on buildings.
 - working with local communities to implement transportation-related emissions-reducing projects. These may include sponsoring bike- or car-share programs, providing support to public transit systems, or contributing to infrastructure and streetscape improvements for pedestrians and bicycles.
- c. Carbon Credits. For all emissions that cannot otherwise be reduced through onsite or offsite measures, the purchase and retirement of carbon credits would be required. A carbon credit enables development projects to compensate for their GHG emissions and associated environmental impacts by financing reductions in GHG emissions elsewhere. GHG credits derived from completed prior actions are referred to as “GHG offsets” or “carbon offsets.” GHG credits derived from future contracted actions are referred to as “GHG future credits” or GHG (future mitigation units [FMUs]). Carbon credits are classified as either compliance or voluntary. Compliance credits can be purchased by covered entities subject to the cap-and-trade regulation to meet predetermined regulatory targets. Voluntary credits are not associated with the cap-and-trade regulation and are purchased with the intent to voluntarily meet carbon-neutral or other environmental obligations.

The Authority may purchase carbon credits from a voluntary GHG credit provider that has an established protocol that requires projects generating GHG credits to

demonstrate that the reduction of GHG emissions is real, permanent, quantifiable, verified, enforceable, and additional (per the definition in California Health & Saf. Code §§ 38562(d)(1) and (2)). Definitions for these terms are as follows.

- i. **Real.** Estimated GHG reductions should not be an artifact of incomplete or inaccurate emissions accounting. Methods for quantifying emission reductions should be conservative to avoid overstating a project's effects. The effects of a project on GHG emissions must be comprehensively accounted for, including unintended effects (often referred to as "leakage").⁶
- ii. **Additional.** GHG reductions must be additional to any that would have occurred in the absence of the Climate Action Reserve or of a market for GHG reductions generally. "Business as usual" reductions (i.e., those that would occur in the absence of a GHG reduction market) should not be eligible for registration.
- iii. **Permanent.** To function as GHG credits, GHG reductions must effectively be "permanent." This means, in general, that any net reversal in GHG reductions must be fully accounted for and compensated through the achievement of additional reductions.
- iv. **Quantifiable.** The ability to accurately measure and calculate GHG reductions or GHG removal enhancements relative to a project baseline in a reliable and replicable manner for all GHG emission sources, GHG sinks, or GHG reservoirs included within the credit project boundary, while accounting for uncertainty, activity-shifting leakage, and market-shifting leakage.
- v. **Verified.** GHG reductions must result from activities that have been verified. Verification requires third-party review of monitoring data for a project to ensure the data are complete and accurate.
- vi. **Enforceable.** The emission reductions from credits must be backed by a legal instrument or contract that defines exclusive ownership, and the legal instrument can be enforced within the legal system in the country in which the credit project occurs or through other compulsory means. Please note that per this mitigation measure, only credits originating within the United States are allowed.

Carbon credits must also meet the following requirements:

- i. Carbon credits may be in the form of GHG offsets for prior reductions of GHG emissions verified through protocols or forecasted mitigation units for future committed GHG emissions meeting protocols.
- ii. All credits will be documented per protocols functionally equivalent in terms of stringency to CARB's protocol for offsets in the cap-and-trade program. If using credits not from CARB protocols, the Authority must provide the protocols from

⁶ To ensure that GHG reductions are real, CARB requires the reduction be "a direct reduction within a confined project boundary."

the credit provider and must document why the protocols are functionally equivalent in terms of stringency to CARB protocols.

- iii. The Authority will identify carbon credits in geographies closest to the Project first and only go to larger geographies (i.e., California, United States) if adequate credits cannot be found in closer geographies or the procurement of such credits would create an undue financial burden. The Authority will provide the following justification for not using credits in closer geographies in terms of either availability or cost prohibition.
 - Lack of enough credits available in closer geographies (e.g., Northern Sacramento Valley).
 - Prohibitively costly credits in closer geographies defined as credits costing more than 300% the amount of the current costs of credits in the regulated CARB offset market or of the current costs of credits in the Compliance Offset Program, which is part of CARB's broader cap-and-trade program.
- iv. Documentation submitted supporting carbon credit proposals will be prepared by individuals qualified in GHG credit development and verification, and such individuals will certify the following:
 - Proposed credits meet the criteria in California Health and Safety Code Sections 38562(d)(1) and (d)(2).
 - Proposed credits meet the definitions for the criteria provided in this measure.
 - The protocols used for the credits meet or exceed the standards for stringency used in CARB protocols for offsets under the California cap-and-trade system.

Monitoring, reporting, and enforcement requirements for implementation of the GHG Reduction Plan will include the following components.

- 1) *Phased Analysis and Plan Amendments:* As described above, the GHG Reduction Plan may be developed and implemented over five-year increments for Project operations. Prior to the start of each five-year increment, the Authority will update the GHG Reduction Plan to calculate the amount of GHG emissions anticipated in the upcoming five-year period, as well as emissions from prior periods (if needed to cover any deficits) and the projected total net emissions of the Project. The GHG Reduction Plan will identify the specific GHG reduction measures that will be implemented to meet the net-zero performance standard for the upcoming five-year period and include quantification of the expected reductions that will be achieved by each measure. All emissions and reductions will be quantified in accordance with the requirements outlined in *Plan Development* above.

The Authority will retain a third-party expert to assist with the review and approval of the GHG Reduction Plan. Subsequent amendments to the GHG Reduction Plan will identify reductions that have been achieved during prior phases and determine if those reductions exceed emissions generated by the Project. If the GHG reduction measures implemented by

the Authority result in a surplus of reductions above the net-zero performance standard, the balance of those reductions may be credited to subsequent phases.

- 2) *Timing and Execution:* The Authority will prepare the GHG Reduction Plan prior to issuance of the first construction or grading permit for the Project. For Project operations, the GHG Reduction Plan will be prepared prior to the end of construction and prior to the start of the next five-year phase of operations. The Authority Board of Directors will formally adopt the completed GHG Reduction Plan and make it publicly available on its website prior to its adoption.

BMPs and selected onsite construction measures will be included in construction-permits and contractor bid packages and/or agreements. Offsite measures that the Authority chooses to implement will be completed or in progress before completion of construction or before the end of the calendar year (for Project operations) in which the measure(s) are intended to reduce emissions. If GHG credits are purchased, the Authority will enter the necessary contract(s) to purchase credits prior to the start of construction or prior to the start of the calendar year (for Project operations). All credits must be retired before completion of construction or the calendar year (for Project operations).

- 3) *Monitoring and Reporting:* The Authority will retain a third-party expert to assist with review and approval of annual reports. Through the third-party expert, the Authority will conduct annual monitoring and reporting to ensure that the reduction measures included in the plan achieve sufficient emission reductions to reduce Project emissions to net zero. Each annual report should describe the GHG reduction strategies that were implemented over the prior year; summarize past, current, and anticipated Project phasing; document compliance with GHG Reduction Plan requirements; and identify corrective actions needed to ensure that the GHG Reduction Plan achieves the net-zero performance standard. If GHG credits have been purchased to reduce emissions for the reporting year, the annual report must include copies of the credit retirement verification.

The reports will be finalized and posted in a publicly accessible location online by December 31st of the following year.

Alternative 2

Alternative 2 would result in greater construction GHG emissions than Alternative 1, because of South Road construction. For operations, Alternative 2 would result in less emissions than Alternative 1A and Alternative 1B for all water year types. The water conveyance and land use change emissions are the dominant sources of emissions for operations, so the relative level of emissions between alternatives is primarily governed by the amount of energy consumed for water conveyance and the difference in land use change emissions, which are based on the alternatives' surface areas. Because Alternative 2 would have a smaller surface area than Alternative 1, it would result in less land use change emissions and thus less emissions overall. Construction and operation of Alternative 2 would result in both direct and indirect GHG emissions that would be a potentially substantial net increase in emissions to the atmosphere, and this impact would be potentially significant. The net increase in emissions could also conflict with the State's plans to reduce GHG emissions, resulting in a potentially significant impact with respect to the Project conflicting with plans or policies adopted for the purpose of reducing GHG emissions.

Mitigation Measure GHG-1.1 would ensure that Alternative 2 GHG emissions would not result in a significant GHG impact, because there would be no net increase in emissions. Further, Alternative 2 would not conflict with any plans adopted for the purpose of reducing GHG emissions, because there would be no net increase in emissions. Accordingly, this impact would be less than significant with mitigation.

Alternative 3

Alternative 3 would result in the same construction GHG emissions as Alternative 1, because the construction footprint would be the same. For operations, Alternative 3 would result in the lowest emissions of all alternatives, because the water conveyance emissions, a dominant source of emissions, would be the lowest. Therefore, construction GHG impacts for Alternative 3 would be the same as those for Alternative 1 and less than those for Alternative 2. Alternative 3 would result in operations GHG emissions lower than Alternative 1 or 2. Construction and operation of the Alternative 3 would result in both direct and indirect GHG emissions that would be a potentially substantial net increase in emissions to the atmosphere, and this impact would be potentially significant. The net increase in emissions could also conflict with the State's plans to reduce GHG emissions, resulting in a significant impact with respect to conflicting with plans or policies adopted for the purpose of reducing GHG emissions.

Mitigation Measure GHG-1.1 would ensure Alternative 3 GHG emissions would not result in a significant GHG impact, because there would be no net increase in emissions. Further, the Alternative 3 would not conflict with any plans adopted for the purpose of reducing GHG emissions, because there would be no net increase in emissions. Accordingly, this impact would be less than significant with mitigation.

3.10 Cultural Resources

Impact CUL-1: Cause a substantial adverse change in the significance of a historic built resource

Alternatives 1 and 3

Construction activities in the Sites Reservoir and TRR East inundation areas for Alternatives 1 and 3 would result in impacts on potentially NRHP-/CRHR-eligible historic built resources including 18 potentially NRHP-/CRHR-eligible resources. These areas would be inundated, and any resources located in these areas would be destroyed. The Authority will implement Mitigation Measure CUL-1.1 to evaluate the NRHP/CRHR eligibility of historic built resources located in the inundation areas and describe their current conditions so that the qualities that may convey their significance may be treated. If historic built resources are determined to be NRHP-/CRHR-eligible, the Authority will implement Mitigation Measure CUL-1.4 to perform resource-specific treatment procedures for the NRHP-/CRHR-eligible historic built resources. This measure will preserve some historical values of the resources, for instance by recording architectural data or relocating structures. Implementing Mitigation Measure CUL-1.4 would reduce the impact from Project construction on NRHP-/CRHR-eligible historic built resources in the inundation areas, but the impact would remain significant because resources identified as NRHP-/CRHR-eligible per Mitigation Measure CUL-1.1 would be destroyed.

Construction activities for Alternatives 1 and 3 that would occur outside the inundation areas for Sites Reservoir and TRR East would result in impacts on the GCID Historic District's Main Canal, the CVP Historic District's TC Canal and Funks Reservoir, and potentially NRHP-/CRHR-eligible historic built resources (including 62 known potentially NRHP-/CRHR-eligible resources). These areas would not be

inundated, and the resources would not be destroyed. Construction activities have the potential to physically change these resources or their settings and to materially alter the qualities that may convey their significance. The Authority will implement Mitigation Measure CUL-1.1 to evaluate the NRHP/CRHR eligibility of historic built resources located outside the inundation areas for Sites Reservoir and TRR East and describe their current conditions so that the qualities that may convey their significance may be avoided, protected, or treated.

If NRHP-/CRHR-eligible historic built resources are determined to be present outside the inundation areas through application of Mitigation Measure CUL-1.1, the Authority will implement Mitigation Measure CUL-1.2 to incorporate feasible avoidance measures in the design of Alternatives 1 and 3 (e.g., moving a new road alignment) to avoid NRHP-/CRHR-eligible historic built resources. Avoidance is the primary means of mitigating impacts on NRHP-/CRHR-eligible historic built resources located outside of the inundation areas, and application of this measure would reduce the impact on NRHP/CRHR-eligible built resources located outside of the inundation areas to less than significant.

If NRHP-/CRHR-eligible historic built resources outside the inundation areas cannot be feasibly avoided through the application of Mitigation Measure CUL-1.2, the Authority will apply Mitigation Measure CUL-1.3 to implement feasible resource-specific protection measures for NRHP-/CRHR-eligible historic built resources, such as installing exclusion fencing around them during construction. Protection is the secondary means of mitigating impacts on NRHP-/CRHR-eligible historic built resources located outside of the inundation areas, and application of this measure would reduce the impact on NRHP/CRHR-eligible built resources located outside of the inundation areas to less than significant because the qualities that qualify a resource as an NRHP-/CRHR-eligible historic built resource would be protected and would not be impaired.

For NRHP-/CRHR-eligible historic built resources outside the inundation areas, if after implementation of Mitigation Measures CUL-1.1 through CUL-1.3, the qualities that qualify a resource as an NRHP-/CRHR-eligible historic built resource would still be impaired, the Authority will implement Mitigation Measure CUL-1.4. The resource-specific treatment procedures would preserve some historical values of the NRHP/CRHR-eligible built resource, for instance by recording architectural data or interpreting historical information for the public. Application of Mitigation Measure CUL-1.4 would reduce the impact on resources located outside of the inundation areas to less than significant because the qualities that would be impaired by the Project would be captured and made available for continued public understanding of the resource.

Operation of Alternative 1 or 3 would have no impact on historic built resources because operations would not change the qualities that convey the historical significance of the GCID Historic District or the CVP Historic District and would not physically change any of the potentially NRHP/CRHR-eligible built resources in the study area. Impacts would not occur during the operation of Alternative 1 or 3.

Mitigation Measure CUL-1.1: Identify NRHP/CRHR-Eligible Built Resources

The Authority will implement NRHP/CRHR-eligible built resources identification in the study area. The work will be conducted by an SOI-qualified architectural historian, and the actions listed below will be completed prior to construction. The Authority will document the results in a confidential technical study.

- Relocate and map previously recorded potentially NRHP-/CRHR-eligible historic built resources.

- Locate and map potentially NRHP-/CRHR-eligible historic built resources in areas that have not been accessible previously.
- Evaluate the NRHP/CRHR eligibility of recorded historic built resources.
- Assess resource-specific impacts on significant historic built resources for resources that are NRHP/CRHR eligible and would be affected.

Mitigation Measure CUL-1.2: Avoid NRHP/CRHR-Eligible Built Resources

The Authority will avoid NRHP/CRHR-eligible built resources in the study area by performing the tasks listed below. The work will be conducted in consultation with an SOI-qualified architectural historian.

- The Authority will develop feasible Project design specifications to avoid NRHP-/CRHR-eligible historic built resources.
- The Authority will develop and implement feasible Project construction protocols to avoid NRHP-/CRHR-eligible historic built resources, including workers' cultural resources sensitivity training, prior to and during construction activities.
- The Authority will develop and implement feasible Project operations protocols that avoid NRHP-/CRHR-eligible historic built resources during operation activities.

Mitigation Measure CUL-1.3: Protect NRHP/CRHR-Eligible Built Resources

The Authority will develop and implement protocols to protect NRHP/CRHR-eligible built resources in the study area. The work will be conducted in consultation with an SOI-qualified architectural historian.

- The Authority will develop feasible protection measures for NRHP-/CRHR-eligible historic built resources prior to and during construction activities and during operation activities.
- The Authority will develop resource-specific protection plans that involve measures such as designating NRHP/CRHR-eligible built resources to be protected as Environmentally Sensitive Areas, installing exclusion fencing, conducting historic built resource monitoring where construction or operations would be in the vicinity of a known NRHP/CRHR-eligible built resource, and treating impairments that may be identified through monitoring.

Mitigation Measure CUL-1.4: NRHP/CRHR-Eligible Built Resources Treatment

The Authority will develop and implement NRHP/CRHR-eligible built resources treatments in the study area. Prior to construction, the Authority will develop resource-specific treatment plans in consultation with interested parties who are associated with or identify with the NRHP-/CRHR-eligible historic built resources and with an SOI-qualified architectural historian. These resource-specific treatment plans may be Historic American Buildings Survey recordation, interpretive exhibits at recreation areas, educational modules for public schools, NRHP/CRHR nominations, or relocation of historic structures.

The Authority will implement the treatment plans prior to and during construction, and following construction, depending on the details of the resource-specific treatment, in consultation with an SOI-qualified architectural historian. Resource-specific treatments may require ongoing work during and after construction.

Alternative 2

Alternative 2 would result in construction impacts on the potentially NRHP/CRHR-eligible built resources including 18 potentially NRHP-/CRHR-eligible resources that are located in the reservoir inundation areas, and the impacts would be similar to Alternatives 1 and 3 because the types of resources are the similar and the total number of resources is the same. Application of Mitigation Measures CUL-1.1 through CUL-1.4 would reduce the impacts, but impacts would remain significant on those resources identified as NRHP-/CRHR-eligible per Mitigation Measure CUL-1.1 because they would be destroyed. Impacts would be **significant and unavoidable**.

Alternative 2 would result in construction impacts on historic built resources that are located outside of the reservoir inundation areas, including the GCID Historic District, CVP Historic District, and potentially NRHP/CRHR-eligible built resources including 67 potentially NRHP-/CRHR-eligible resources, and the impacts would be similar to Alternatives 1 and 3 because the types of resources are the same and would be affected in similar ways. Significant impacts would be reduced to less than significant with Mitigation Measures CUL-1.1 through CUL-1.4 because the resources would not be inundated and would not be destroyed.

In contrast to Alternatives 1 and 3, Alternative 2 would also result in construction impacts on the Sacramento River Levees because construction activities would physically alter the levee structure. The Authority will implement Mitigation Measure CUL-1.1 to evaluate and describe the resource's current conditions so that the qualities that convey its significance may be avoided, protected, or treated. The Authority will implement Mitigation Measure CUL-1.2 to incorporate feasible avoidance measures in the design of Alternative 2 (e.g., moving a new road alignment) to avoid the resource. Avoidance is the primary means of mitigating impacts on NRHP-/CRHR-eligible historic built resources located outside of the inundation areas, and application of this measure would potentially reduce the impact to less than significant. If the resource cannot be feasibly avoided through the application of Mitigation Measure CUL-1.2, the Authority will apply Mitigation Measure CUL-1.3 to implement feasible resource-specific protection measures, such as installing exclusion fencing around the resource during construction. Protection is the secondary means of mitigating impacts on NRHP-/CRHR-eligible historic built resources located outside of the inundation areas, and application of this measure would potentially reduce the impact to less than significant. If the resource cannot be feasibly avoided or protected, the Authority will implement Mitigation Measure CUL-1.4. The resource-specific treatment procedures would preserve some historical values of the resource, for instance by recording architectural data. Application of Mitigation Measure CUL-1.4 would reduce the impact to the resource to less than significant because the resource would not be destroyed.

Operation of Alternative 2 would have no impact on historic built resources because operations would not change the qualities that convey the historical significance of the GCID Historic District or the CVP Historic District or the Sacramento River Levees and would not physically change any of the potentially NRHP/CRHR-eligible built resources in the study area. Impacts would not occur during the operation of Alternative 2.

Impact CUL-2: Cause a substantial adverse change in the significance of an archaeological resource

Alternatives 1 and 3

Construction associated with the inundation areas of Sites Reservoir and TRR East and operations associated with the fluctuating WSE on potentially NRHP-/CRHR-eligible archaeological resources within the inundation areas would destroy or otherwise render resources unavailable under Alternative 1 or 3. Construction impacts on archaeological resources outside of the reservoir inundation areas consist of ground disturbance from construction of new facilities for Alternatives 1 and 3.

Construction and operation of Alternative 1 or 3 would result in impacts on potentially NRHP-/CRHR-eligible archaeological resources by materially altering or destroying them. Altering or destroying these resources would reduce or eliminate their potential to yield information useful in archaeological research, and the basis for the significance of these resources, through excavation and disruption of the spatial associations that contain meaningful information. These resources may also be significant under other register criteria; indirect effects such as introduction of new elements or inconsistent changes to the setting may also diminish the significance of these resources. Implementation of Mitigation Measures CUL-2.1, CUL-2.2, CUL-2.3, and CUL-2.4 would reduce impacts on known and previously unknown potentially NRHP-/CRHR-eligible archaeological resources outside the inundation areas. Mitigation Measure CUL-2.1 requires identification of NRHP-/CRHR-eligible archaeological resources. For those archaeological resources identified as NRHP-/CRHR-eligible, Mitigation Measure CUL-2.2 requires avoidance. For those archaeological resources identified as NRHP-/CRHR-eligible under Mitigation Measure CUL-2.1 that cannot be avoided, implementation of Mitigation Measures CUL-2.3 and 2.4 will protect and treat them, respectively. Although Mitigation Measures CUL-2.1 to CUL-2.4 would reduce impacts on archaeological resources identified to be NRHP-/CRHR-eligible, it is not known whether avoidance is feasible in all cases and thus impacts would remain **significant and unavoidable**.

Mitigation Measures CUL-2.2 through CUL-2.4 would be implemented to reduce impacts on NRHP-/CRHR-eligible archaeological resources in the reservoir inundation areas for Sites Reservoir and TRR East, and any as-of-yet to be identified resources. However, implementation of these mitigation measures would not fully reduce or avoid impacts for NRHP-/CRHR-eligible archaeological resources in the reservoir inundation areas identified under Mitigation Measure CUL-2.1 to a less-than-significant level because they would be altered or destroyed due to inundation and fluctuating WSE. Construction and operation impacts on potentially NRHP-/CRHR-eligible archaeological resources would be **significant and unavoidable**.

Mitigation Measure CUL-2.1: Identify NRHP/CRHR-Eligible Archaeological Resources

The Authority will identify NRHP-/CRHR-eligible archaeological resources in the study area. The work will be conducted by a Registered Professional Archaeologist. The following will occur as part of the identification.

- Relocate and map previously recorded archaeological resources that are potentially NRHP/CRHR-eligible. Upon access to previously inaccessible areas, all previously recorded archaeological resources will be located and their boundaries mapped with sub-meter accuracy Global Positioning System (GPS) units to identify their exact location in relation to Project components that have the potential to affect the resources.

- Locate and map archaeological resources that are potentially NRHP/CRHR-eligible in areas that have not been accessible previously. Upon access to previously inaccessible areas, pedestrian surveys will be conducted to identify archaeological resources that are potentially NRHP/CRHR-eligible. The surveys will be conducted using transects spaced no greater than 94 feet (30 meters) apart. All newly identified archaeological resources will be recorded on applicable DPR 523-series forms and resource boundaries, features, and diagnostic artifacts outside of features or concentrations will be recorded using sub-meter accuracy GPS units to identify their exact location in relation to Project components that have the potential to impact the resources.
- Evaluate the NRHP/CRHR eligibility of recorded archaeological resources. Once all previously and newly recorded archaeological resources have been documented, each resource will be evaluated for NRHP and CRHR eligibility. As discussed in Appendix 4A, *Regulatory Requirements*, cultural resources are eligible for the NRHP and CRHR if they have integrity and meet one or more of the four criteria as defined in the regulations for the NRHP (Section 4A.18.1.3, *National Register of Historic Places*) and CRHR (Section 4A.18.2.2, *California Register of Historical Resources*). Eligibility will be assessed using a combination of (but not limited to) archival, ethnographic, and tribal research, including tribal coordination and assistance, resource condition assessment, subsurface testing, and laboratory analysis. If the resource is evaluated as not eligible, no further action is required, and avoidance is preferred.
- Assess impacts on NRHP-/CRHR-eligible archaeological resources. NRHP-/CRHR-eligible archaeological resources will be individually analyzed in relation to the Project components within or near those NRHP-/CRHR-eligible resources. Thresholds of significance identified in Section 22.3.1 will be applied.

Mitigation Measure CUL-2.2: Avoid NRHP/CRHR-Eligible Archaeological Resources

The Authority will avoid NRHP/CRHR-eligible archaeological resources in the study area by performing the tasks listed below. The work will be conducted by a Registered Professional Archaeologist.

- The Authority will develop feasible Project design specifications to avoid NRHP/CRHR-eligible archaeological resources. If Project design allows modification, design changes will be implemented to avoid NRHP-/CRHR-eligible archaeological resources or avoid impacts on significant values of the resources (features, artifacts, or any other elements of the resource which make the resource NRHP-/CRHR-eligible).
- The Authority will develop and implement feasible Project construction protocols to avoid NRHP-/CRHR-eligible archaeological resources, including workers' cultural resources sensitivity training. Prior to construction activities in the vicinity of NRHP-/CRHR-eligible archaeological resources, the Authority will require a qualified archaeologist to provide a cultural resources sensitivity training tailboard to all construction personnel working in the vicinity of the resources. The training will identify the sensitivity, nature, and components of the resource, and inform the construction personnel of necessary protocol in the case of an unanticipated discovery. Tribes will also be invited to participate in and lead part of the workers' cultural resources sensitivity training.
- The Authority will develop and implement feasible Project operations protocols that avoid NRHP-/CRHR-eligible archaeological resources. Similar to the workers' cultural resources sensitivity training during construction activities, all personnel in charge of managing the operations will be required to have cultural resources sensitivity training for the resources near Project facilities and have a familiarity with the resource locations and identifications so that

future operations or changes in operations can avoid those resources. Tribes will also be invited to participate in and lead part of the cultural resources sensitivity training.

Mitigation Measure CUL-2.3: Protect NRHP/CRHR-Eligible Archaeological Resources

The Authority will develop feasible Project protection of NRHP/CRHR-eligible archaeological resources during construction and operations.

- The Authority will develop protections protocols to ensure that qualified staff perform monitoring during Project-related ground disturbance to protect known resources, to identify any unanticipated discoveries, and to implement the Post-Review Discovery Procedure.
- The Authority will develop resource-specific protection plans considering at a minimum Environmentally Sensitive Area delineation and physical fencing, and requiring archaeological monitoring where construction or operation would be in the vicinity of a known NRHP-/CRHR-eligible archaeological resource. The resource-specific protection plans will establish the methods and standards for when and how Environmentally Sensitive Area delineations will be required and when archaeological monitoring activities will be conducted for specific types of sites that will need to be protected. The resource-specific protection plans will establish the methods and standards for when Tribal monitoring activities will be invited and conducted for specific activities and/or types of sites that will need to be protected. The plans will also identify the roles and responsibilities of monitors and construction crews and specify communication protocols and reporting requirements.

Mitigation Measure CUL-2.4: NRHP/CRHR-Eligible Archaeological Resources Treatment

The Authority will develop and implement resource-specific treatment plans in consultation with Tribes and other interested parties who are associated with or identify with the resource. The resource-specific archaeological treatment plans will ensure that all NRHP-/CRHR-eligible archaeological resources potentially affected by the Project will be treated according to best practices and professional standards, in a traditionally and culturally sensitive manner, and that treatment options will include a range of interventions from avoidance and minimization of impacts to mitigation for the loss of the physical resource. Treatment may include, but would not be limited to, data recovery, site capping, analysis of existing artifact collections, or interpretive displays, among other things. Appropriate treatment will be determined based on resource type, resource location, types of impacts on the resource, and results of consultation with Tribes, interested parties, and agencies.

Alternative 2

The construction impacts in the inundation zone would be of a similar character as the impacts for Alternatives 1 and 3, but fewer potentially NRHP-/CRHR-eligible archaeological resources would be affected due to the smaller size of the reservoir facilities under Alternative 2. The construction impacts outside the inundation zone also would be of a similar character as the impacts for Alternatives 1 and 3, but a greater number of archaeological resources would be affected due to construction of Project facilities under Alternative 2 that are not part of Alternatives 1 and 3, namely the South Road and the Dunnigan Pipeline facilities. As with Alternatives 1 and 3, Alternative 2 also poses the potential for encountering currently unknown resources during ground-disturbing activities that are not visible from the ground surface.

As with Alternatives 1 and 3, the operations impacts of Alternative 2 would be significant and would therefore require mitigation, as specified in Mitigation Measures CUL-2.1, CUL-2.2, CUL-2.3, and CUL-

2.4. Implementation of these mitigation measures would reduce impacts to less than significant to resources outside the new reservoir inundation areas. However, the mitigation measures would not prevent permanent destruction of NRHP-/CRHR-eligible archaeological resources in the reservoir inundation areas and would not reduce impacts to a less-than-significant level and thus the impacts would be **significant and unavoidable**.

Impact CUL-3: Disturb any human remains, including those interred outside of formal cemeteries

Construction of Alternatives 1, 2, and 3 would disturb human remains interred in known cemeteries within the Sites Reservoir inundation area. Furthermore, construction of Alternatives 1, 2, and 3 could disturb currently unknown human remains interred within the Sites Reservoir inundation area. Implementation of Mitigation Measures CUL-3.1 would reduce this impact; however, the impacts would remain **significant and unavoidable**. Operations of Alternative 1, 2, or 3 could disturb unknown human remains within the Sites Reservoir inundation area within the fluctuation zone. Implementation of Mitigation Measures CUL-3.1 and CUL-3.2 would reduce this impact; however, the impact would remain **significant and unavoidable**.

Mitigation Measure CUL-3.1: Cemetery Relocation Plan

The Authority will develop a Cemetery Relocation Plan for relocating two known, dedicated cemeteries located in the inundation area. This will be part of Reclamation's Programmatic Historic Properties Management Plan that would be prepared in consultation with SHPO.

Avoidance of the disturbance and/or inundation of two known cemeteries is not expected to be feasible except under the No Project Alternative. The Cemetery Relocation Plan will ensure that all remains in these two cemeteries are treated with respect and in accordance with the wishes of identifiable descendants. The Cemetery Relocation Plan will also ensure that state and county health and safety codes are followed for those interments that are relocated.

Two dedicated cemeteries in the inundation area will be relocated to a site or sites approved for interment of human remains per requirements of the California Health and Safety Code (Sections 7500–7527). This procedure will be developed through consultation and coordination with descendants and other parties with demonstrated interest in the occupants of the cemeteries. The procedure will outline legal requirements, such as acquiring a written order from the local health department or county superior court before human remains may be moved, and other rules and regulations adopted by the board of health or health officer of the county.

Mitigation Measure CUL-3.2: Avoid, Protect, and Treat Human Remains

The Authority will avoid and protect any human remains encountered during pre-construction, construction, post-construction, operations, and maintenance. The Authority will follow appropriate state guidelines for halting Project activities at the discovery location, contacting the appropriate county coroner to report the discovery, and proceeding with implementation of Project policies regarding Native American consultation or implementation of a burial treatment plan. See Appendix 4A, *Regulatory Resources*, Sections 4A.18.1, *Federal Policies and Regulations*, and 4A.18.2, *State Policies and Regulations*.

The Authority and its qualified contractors will prepare a plan for treating human remains and/or grave goods encountered during archaeological investigations, Project construction, or Project operations. The

Burial Treatment Plan will identify ways to avoid or reduce the likelihood of encountering as yet unidentified remains.

The Burial Treatment Plan will ensure that the Authority and its contractors respond to unanticipated discovery of human remains with respect and in accordance with the wishes of identifiable descendants. The Burial Treatment Plan will also ensure that state and county health and safety codes are followed for those interments that are relocated.

This procedure will identify legal requirements and best practices for treating Native American and non-Native American remains encountered outside of a dedicated cemetery. The Native American portion of the Burial Treatment Plan will be developed in consultation with consulting Tribes and may include individual Tribes' burial treatment plans.

The Authority and its qualified contractors will complete preparation of the Burial Treatment Plan within 6 months of issuance of the NOD/ROD, adopt the plan prior to selection of the construction contractor, and fully implement the plan prior to any soil disturbance within 500 feet of remains.

3.11 Tribal Cultural Resources

Impact TCR-1: Substantial adverse change in the significance of a tribal cultural resource that is listed or eligible for listing in the California Register of Historical Resources or other local register or that the Authority has determined to be significant pursuant to criteria set forth in subdivision (c) of Public Resources Code Section 5024.1.

Modifications to existing Sacramento River diversion facilities and conveyances to regulating reservoirs would have no impact because these facilities are already in place. Operation of Alternative 1 or 3 would generally not result in substantial changes in river flows and flows would be within the historical range experienced by the rivers; therefore, most impacts related to river flows would be less than significant. Impacts related to juvenile salmonid rearing and/or migration habitat would be limited through pulse flow protection measures applied to precipitation-generated pulse flow events from October through May, a fish monitoring program to inform real-time operational adjustments, and a minimum flow criterion at Wilkins Slough. Accordingly, impacts on juvenile salmonids would be less than significant with mitigation incorporated under Alternative 1 or 3.

Construction of the reservoir and new facilities under Alternatives 1 and 3 would result in disturbance or destruction of tribal cultural resources. Implementing mitigation measures, such as those described below, could reduce some, but not all, impacts of construction and operation of Alternative 1 or 3 to a less-than-significant level. Mitigation Measures TCR-1.2 and TCR-1.3 reflect measures described in the *Treatment Protocol for Handling Human Remains and Cultural Items Affiliated with the Yocha Dehe Wintun Nation* and will be applied to any tribal cultural resource identified by any Tribe. Known cemeteries and habitation sites that are tribal cultural resources would be permanently altered or destroyed by inundation of the reservoir or construction of other facilities. Impacts would be **significant and unavoidable**.

Mitigation Measure TCR-1.1: Implement Mitigation Measures Recommended in Public Resources Code Section 21084.3 to Avoid Damaging Effects on Tribal Cultural Resources

- (1) Avoidance and preservation of the resources in place, including, but not limited to, planning and construction to avoid the resources and protect the cultural and natural

context, or planning greenspace, parks, or other open space, to incorporate the resources with culturally appropriate protection and management criteria.

- (2) Treating the resource with culturally appropriate dignity, taking into account the tribal cultural values and meaning of the resource, including, but not limited to, the following:
 - (A) Protecting the cultural character and integrity of the resource.
 - (B) Protecting the traditional use of the resource.
 - (C) Protecting the confidentiality of the resource.
- (3) Permanent conservation easements or other interests in real property, with culturally appropriate management criteria for the purposes of preserving or utilizing the resources or places.

Mitigation Measure TCR-1.2: Tribal Monitoring

Tribal monitors will be permitted to observe all ground-disturbing activities.

Mitigation Measure TCR-1.3: Implement Agreed-Upon Protocol for the Treatment of Human Remains and Cultural Items

If unanticipated discoveries of National Register of Historic Places (NRHP)/CRHR-eligible resources occur on federal land, the federal land manager will be immediately contacted, and the federal agency will follow its own process for complying with the federal Native American Graves Protection and Repatriation Act and other federal obligations, as directed under Title 43 of Code of Federal Regulations, Part 10.

If NRHP/CRHR-eligible sites or cultural items, other than human remains, are discovered on non-federal land, the Authority will work with the consulting Tribes to determine affiliation and develop appropriate treatment.

If human remains or associated grave goods are discovered during or after environmental review, the Authority will provide for the following actions:

- Immediately notify the County coroner and cease ground-disturbing activities in that location.
- If the County coroner determines the remains are those of a Native American, the coroner will notify the NAHC to establish the most likely descendant and contact the culturally affiliated Tribe.
- Allow the designated Tribal member(s) to inspect the site of the discovery and determine how the human remains and grave goods should be treated with appropriate dignity and respect.
- The location of a reburial will be recorded with the California Historic Resources Inventory System.
- The Authority, its contractors and consultants, and the coroner will not disclose the location of the original burial or reburial site.
- Treatment of all cultural items, including ceremonial items and archaeological items will reflect the religious beliefs, customs, and practices of the culturally affiliated Tribe. All cultural items, including ceremonial items and archaeological items, discovered during Project construction and

operation will be turned over to the Tribe for appropriate treatment, unless otherwise ordered by a court or agency of competent jurisdiction. The Authority will waive any and all claims to ownership of Tribal cultural items, including ceremonial items and archaeological items that may be found.

- Work of Tribal monitors and treatment of human remains will proceed in accordance with treatment plans developed in consultation with the most likely descendant of the culturally affiliated Tribe as identified by the NAHC.

The following mitigation measures above under Impacts CUL-2 and CUL-3, would also be implemented and would apply to tribal cultural resources.

Mitigation Measure CUL-2.1: Identify NRHP/CRHR-Eligible Archaeological Resources

Mitigation Measure CUL-2.2: Avoid NRHP/CRHR-Eligible Archaeological Resources

Mitigation Measure CUL-2.3: Protect NRHP/CRHR-Eligible Archaeological Resources

Mitigation Measure CUL-2.4: NRHP/CRHR-Eligible Archaeological Resources Treatment

Mitigation Measure CUL-3.1: Cemetery Relocation Plan

Mitigation Measure CUL-3.2: Avoid, Protect, and Treat Human Remains

3.12 Visual Resources

Impact VIS-1: Substantially degrade the existing visual character or quality of public views of the site and its surroundings

Alternatives 1 and 3

Construction of most of the features associated with either Alternative 1 or 3 would blend with the existing landscape, would not affect sensitive viewers, or would include implementation of BMP-17 to minimize visual changes. However, although the Sites Reservoir would eventually serve as a visual amenity to the region for future viewer groups, it is conservatively assumed that the construction of the reservoir and its associated facilities under either Alternative 1 or 3 would substantially degrade the existing visual character and visual quality of the area and adversely affect existing viewers at this location. This degradation is because existing viewer groups associated with the site may be highly sensitive to changes that would occur at the site. These viewers may respond negatively to the demolition of residential and ranch structures, removal of oak woodlands, and alteration of the visual character of the foothill environment in a manner that would replace such features and transform the existing visual character to a reservoir and associated features even though the reservoir would serve as a visual amenity to the region for future viewer groups. Such a transformation in the visual character of the study area as a result of the central feature of Alternatives 1 and 3 cannot be mitigated. Therefore, impacts to the existing visual character and quality resulting from construction would be **significant and unavoidable**. No feasible mitigation is available to reduce the visual impacts from a new reservoir facility of this nature and magnitude.

Operation of either Alternative 1 or 3 would not result in a notable change to the visual environment because activities associated with operations and maintenance would not be visible, would not affect

sensitive viewers, would blend with activities already occurring at or near the Alternatives 1 and 3 facilities, or would be within historical operational ranges for water levels at existing facilities. Therefore, impacts to the existing visual character and quality resulting from operation would be less than significant.

Alternative 2

Visual impacts from construction of Alternative 2 would be similar to the visual impacts from construction of Alternatives 1 and 3, with several distinctions. First, the maximum water surface elevation of the reservoir under Alternative 2 would be approximately 20 feet lower than for Alternatives 1 and 3. This would not be a notable difference and the overall perceived scale of the reservoir and the resulting degree of visual impact to the landscape would be the same under Alternative 2 compared to Alternatives 1 and 3. As with Alternatives 1 and 3, it is conservatively assumed that construction of the reservoir and associated facilities would result in a **significant and unavoidable** visual impact. No feasible mitigation is available to address the visual impacts of a reservoir facility of this nature and magnitude.

Access roads for Alternative 2 would be similar to those for Alternatives 1 and 3. However, Huffmaster Road and Sites Lodoga Road would be realigned, and the South Road would be constructed around the southern end of Sites Reservoir instead of a bridge being constructed over the reservoir. New roads would provide visual access to high quality views of oak woodland and grassland areas where no public access currently exists. Improvements to existing roadways would be limited to shoulder improvements, intersection widening, and structural improvements that would not be substantial and would blend with the existing roadway corridors, largely retaining their rural character. Therefore, impacts resulting from roadway construction and roadway improvements would be less than significant.

In addition, Alternative 2 would involve the Sacramento River discharge, and associated clearing of vegetation and installation of riprap, that are not part of Alternative 1 or 3. This would constitute a notable change to the Sacramento River and result in a **significant and unavoidable** visual impact from construction under Alternative 2. No mitigation is available to reduce the visual impacts from the nature and size of this feature.

Operation of Alternative 2 would be very similar to Alternatives 1 and 3 and therefore would not result in a notable change to the visual environment. The activities associated with operations and maintenance would not be visible, would not affect sensitive viewers, would blend with activities already occurring at or near the Alternative 2 facilities, or would be within historical operational ranges for water levels at existing facilities. Therefore, impacts to the existing visual character and quality of the study area resulting from operation would be less than significant.

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Table A-1. Summary of Significant Impacts with CEQA Determinations and Mitigation Measures

Impact	Alternative	CEQA Finding	Mitigation Measure	Finding with Mitigation
Surface Water Quality				
Impact WQ-1: Violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface water quality during construction				
<i>Construction</i>	No Project	NI	-	-
	1, 2, 3	S	Mitigation Measure WQ-1.1: Methylmercury Management	SU
Impact WQ-2: Violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface water quality during operation				
<i>Operation</i>	No Project	NI	-	-
	1, 2, 3	S	Mitigation Measure WQ-1.1: Methylmercury Management Mitigation Measure WQ-2.1: Prevent Metal Impacts in Stone Corral Creek Associated with Sites Reservoir Discharge Mitigation Measure WQ-2.2: Prevent Net Detrimental Metal and Pesticide Effects Associated with Moving Colusa Basin Drain Water Through the Yolo Bypass	SU
Vegetation and Wetland Resources				
Impact VEG-1: Substantial adverse effect (i.e., loss or removal), either directly or through habitat modifications, on plant species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service				
<i>Construction</i>	No Project	NI	-	-
	1, 2, 3	S	Mitigation Measure VEG-1.1: Conduct Appropriately Timed Surveys for Special-Status Plant Species Prior to Construction Activities Mitigation Measure VEG-1.2: Establish Activity Exclusion Zones Around Special-Status Plants in Temporary Impact Areas and Compensate for Permanent Impacts on Special-Status Plant Species	LTSM
<i>Operation</i>	No Project	NI	-	-
	1, 2, 3	S	Mitigation Measure VEG-1.3: Establish Activity Exclusion Zones Around Special-Status Plants Prior to Vegetation Maintenance Activities	LTSM

Impact	Alternative	CEQA Finding	Mitigation Measure	Finding with Mitigation
Impact VEG-2: Substantial adverse effect (i.e., loss or removal) on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, and regulations or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service				
<i>Construction</i>	No Project	NI	-	-
	1, 2, 3	S	Mitigation Measure VEG-2.1: Conduct Surveys for Sensitive Natural Communities and Oak Woodlands in the Project Area Prior to Construction Activities Mitigation Measure VEG-2.2: Avoid and Compensate for Adverse Effects on Sensitive Natural Communities	SU
<i>Operation</i>	No Project	NI	-	-
	1, 2, 3	S	Mitigation Measure VEG-2.3: Establish Activity Exclusion Zones Around Sensitive Natural Communities Prior to Vegetation Maintenance Activities	LTSM
Impact VEG-3: Substantial adverse effect (i.e., loss or removal) on state or federally protected wetlands (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means				
<i>Construction</i>	No Project	NI	-	-
	1, 2, 3	S	Mitigation Measure VEG-3.1: Avoid and Minimize Disturbance of Wetlands and Non-Wetland Waters During Construction Activities Mitigation Measure VEG-3.2: Compensate for Temporary and Permanent Impacts on State- or Federally Protected Wetlands Mitigation Measure VEG-3.3: Compensate for Temporary and Permanent Impacts on State- or Federally Protected Non-Wetland Waters	LTSM
<i>Operation</i>	No Project	NI	-	-
	1, 2, 3	S	Mitigation Measure VEG-3.4: Establish Activity Exclusion Zones Around Wetlands and Non-Wetland Waters Prior to Vegetation Maintenance Activities	LTSM
Impact VEG-4: Conflict with any local policies or ordinances protecting vegetation resources (including wetlands and non-wetland waters), such as a tree preservation policy or ordinance				
<i>Construction</i>	No Project	NI	-	-
	1, 2, 3	S	Mitigation Measure VEG-1.2: Establish Activity Exclusion Zones Around Special-Status Plants in Temporary Impact Areas and Compensate for	SU (oak woodlands) LTSM (all others)

Impact	Alternative	CEQA Finding	Mitigation Measure	Finding with Mitigation
			Permanent Impacts on Special-Status Plant Species Mitigation Measure VEG-2.1: Conduct Surveys for Sensitive Natural Communities and Oak Woodlands in the Project Area Prior to Construction Activities Mitigation Measure VEG-2.2: Avoid and Compensate for Adverse Effects on Sensitive Natural Communities Mitigation Measure VEG-3.1: Avoid and Minimize Disturbance of Wetlands and Non-Wetland Waters During Construction Activities Mitigation Measure VEG-3.2: Compensate for Temporary and Permanent Impacts on State- or Federally Protected Wetlands Mitigation Measure VEG-3.3: Compensate for Temporary and Permanent Impacts on State- or Federally Protected Non-Wetland Waters Mitigation Measure VEG-4.1: Avoid and Minimize Potential Adverse Effects on Oak Woodlands During Construction Mitigation Measure VEG-4.2: Compensate for Adverse Effects on Oak Woodlands	
<i>Operation</i>	No Project	NI	-	-
	1, 2, 3	S	Mitigation Measure VEG-4.3: Establish Activity Exclusion Zones Around Blue Oak Woodlands Prior to Vegetation Maintenance Activities	LTSM
Impact VEG-5: Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan				
<i>Construction</i>	No Project	NI	-	-
	1, 2, 3	S	Mitigation Measure VEG-2.1: Conduct Surveys for Sensitive Natural Communities and Oak Woodlands in the Project Area Prior to Construction Activities Mitigation Measure VEG-2.2: Avoid and Compensate for Adverse Effects on Sensitive Natural Communities Mitigation Measure VEG-3.1: Avoid and Minimize Disturbance of Wetlands and Non-Wetland Waters During Construction Activities	LTSM

Impact	Alternative	CEQA Finding	Mitigation Measure	Finding with Mitigation
			<p>Mitigation Measure VEG-3.2: Compensate for Temporary and Permanent Impacts on State- or Federally Protected Wetlands</p> <p>Mitigation Measure VEG-3.3: Compensate for Temporary and Permanent Impacts on State- or Federally Protected Non-Wetland Waters</p> <p>Mitigation Measure VEG-4.1: Avoid and Minimize Potential Adverse Effects on Oak Woodlands During Construction</p> <p>Mitigation Measure VEG-4.2: Compensate for Adverse Effects on Oak Woodlands</p>	
Wildlife Resources				
<p>Impact WILD-1: Substantial adverse effect (i.e., loss or removal), either directly or through habitat modifications, on wildlife species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service.</p>				
<i>Construction</i>	No Project	NI	-	-
	1, 3	S	<p>Mitigation Measure WILD-1.1: Assess Habitat Suitability and Survey Suitable Habitat for Vernal Pool Branchiopods</p> <p>Mitigation Measure WILD-1.2: Avoid and Minimize Potential Effects on Vernal Pool Branchiopods and Western Spadefoot</p> <p>Mitigation Measure WILD-1.3: Compensate for Impacts on Occupied Vernal Pool Branchiopod Habitat</p> <p>Mitigation Measure WILD-1.6: Conduct Surveys for Suitable Valley Elderberry Longhorn Beetle Habitat</p> <p>Mitigation Measure WILD-1.7: Fence Elderberry Shrubs to be Protected</p> <p>Mitigation Measure WILD-1.8: Transplant Permanently Affected Elderberry Shrubs and Compensate for Loss of Valley Elderberry Longhorn Beetle and its Habitat</p> <p>Mitigation Measure WILD-1.10: Assess Habitat Suitability and Survey for Presence of Monarch Butterfly Nectar and Larval Host Plants</p> <p>Mitigation Measure WILD-1.11: Compensate for Loss of Monarch Butterfly Nectar and Larval Host Plants</p> <p>Mitigation Measure WILD-1.12: Assess Habitat Suitability and Survey for Presence of Crotch</p>	SU (golden eagle) LTSM (other species)

Impact	Alternative	CEQA Finding	Mitigation Measure	Finding with Mitigation
			<p>Bumble Bee and Western Bumble Bee Food Plants</p> <p>Mitigation Measure WILD-1.13: Compensate for Loss of Crotch Bumble Bee and Western Bumble Bee Habitat</p> <p>Mitigation Measure WILD-1.14: Assess Habitat Suitability and Survey Suitable Habitat for Western Spadefoot, California Red-legged Frog, and Western Pond Turtle</p> <p>Mitigation Measure VEG-2.2: Avoid and Compensate for Adverse Effects on Sensitive Natural Communities</p> <p>Mitigation Measure VEG-3.2: Compensate for Temporary and Permanent Impacts on State- or Federally Protected Wetlands</p> <p>Mitigation Measure WILD-1.17: Implement California Red-legged Frog Protective Measures</p> <p>Mitigation Measure WILD-1.18: Compensate for Permanent and Temporary Losses of Occupied California Red-legged Frog Aquatic and Upland Habitats</p> <p>Mitigation Measure WILD-1.19: Conduct Preconstruction Surveys for Western Pond Turtle and Monitor Initial In-Water Work</p> <p>Mitigation Measure VEG-3.1: Avoid and Minimize Disturbance of Wetlands and Non-Wetland Waters During Construction Activities</p> <p>Mitigation Measure VEG-3.3: Compensate for Temporary and Permanent Impacts on State- or Federally Protected Non-Wetland Waters</p> <p>Mitigation Measure WILD-1.20: Implement Protective Measures for Giant Gartersnake</p> <p>Mitigation Measure WILD-1.21: Compensate for Permanent and Temporary Losses of Giant Gartersnake Aquatic and Upland Habitats</p> <p>Mitigation Measure WILD-1.22: Conduct Vegetation Removal During the Non-Breeding Season of Nesting Migratory Birds</p> <p>Mitigation Measure WILD-1.23: Conduct Preconstruction Surveys for Non-Raptor Nesting Migratory Birds and Implement Protective Measures if Found</p>	

Impact	Alternative	CEQA Finding	Mitigation Measure	Finding with Mitigation
			<p>Mitigation Measure WILD-1.24: Conduct Surveys for Western Burrowing Owl Prior to Construction and Implement Avoidance and Minimization Measures if Found</p> <p>Mitigation Measure WILD-1.25: Restore Temporarily Disturbed Habitat and Compensate for the Permanent Loss of Occupied Burrowing Owl Habitat</p> <p>Mitigation Measure WILD-1.28: Conduct Focused Surveys for Golden Eagle and Bald Eagle and Implement Protective Measures if Found</p> <p>Mitigation Measure WILD-1.29: Compensate for the Loss of Eagle Nest Trees</p> <p>Mitigation Measure VEG-4.1: Avoid and Minimize Potential Adverse Effects on Oak Woodlands During Construction</p> <p>Mitigation Measure VEG-4.2: Compensate for Adverse Effects on Oak Woodlands</p> <p>Mitigation Measure WILD-1.30: Conduct Focused Surveys for Nesting Swainson’s Hawk, White-tailed Kite, and Other Raptors Prior to Construction and Implement Protective Measures During Construction</p> <p>Mitigation Measure WILD-1.31: Compensate for the Permanent Loss of Foraging Habitat for Swainson’s Hawk</p> <p>Mitigation Measure AG-1.1: Purchase Agricultural Conservation Easements to Preserve Regional Important Farmland</p> <p>Mitigation Measure WILD-1.32: Conduct Surveys and Implement Protection Measures for Special-Status Bat Species Prior to Building/Structure Demolition</p> <p>Mitigation Measure WILD-1.33: Conduct Surveys and Implement Protection Measures for Special-Status Bat Species Prior to Tree Trimming and Removal</p> <p>Mitigation Measure WILD-1.34: Compensate for Permanent Impacts on Occupied Roosting Habitat</p> <p>Mitigation Measure WILD-1.35: Implement Protective Measures to Avoid and Minimize Potential Impacts on American Badger</p>	

Impact	Alternative	CEQA Finding	Mitigation Measure	Finding with Mitigation
	2	S	Same as Alternative 1, plus: Mitigation Measure WILD-1.4: Evaluate and Survey Potential Habitat for Antioch Dunes Anthicid and Sacramento Anthicid Beetles and Implement Protective Measures Mitigation Measure WILD-1.5: Compensate for the Loss of Occupied Antioch Dunes Anthicid and Sacramento Anthicid Beetle Habitat	SU (golden eagle), LTSM (other species)
Operation	No Project	NI	-	-
	1, 2, 3	S	Mitigation Measure WILD-1.9: Protect Special-Status Invertebrates and Their Host and Food Plants from Herbicide and Pesticide Use Mitigation Measure WILD-1.15: Design and Construct Wildlife Crossings for New Roadways at Suitable Locations Mitigation Measure WILD-1.16: Monitor and Maintain Wildlife Crossings Mitigation Measure WILD-1.26: Protect Special-Status Wildlife from Rodenticide Use Mitigation Measure WILD-1.27: Construct Overhead Power Lines and Associated Equipment Following Suggested Practices to Reduce Bird Collisions with Power Lines Mitigation Measure WQ-1.1: Methylmercury Management	LTSM
Impact WILD-2: Substantial interference with the movement of a native resident or migratory wildlife species or with established native resident or migratory wildlife corridors, or impediment of the use of native wildlife nursery sites				
Construction	No Project	NI	-	-
	1, 3	S	Same as for Impact WILD-1	SU
	2	S	Same as for Impact WILD-1	SU
Operation	No Project	NI	-	-
	1, 2, 3	S	Same as for Impact WILD-1	SU
Impact WILD-3: Conflict with any local policies or ordinances protecting wildlife resources				
Construction	No Project	NI	-	-
	1, 3	S	Same as for Impact WILD-1 and WILD-2	LTSM
	2	S	Same as for Impacts WILD-1 and WILD-2	LTSM
Operation	No Project	NI	-	-
	1, 2, 3	S	Same as for Impacts WILD-1 and WILD-2	LTSM

Impact	Alternative	CEQA Finding	Mitigation Measure	Finding with Mitigation
Impact WILD-4: Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan				
<i>Construction</i>	No Project	NI	-	-
	1, 3	S	Same as for Impact WILD-1	LTSM
	2	S	Same as for Impact WILD-1	LTSM
<i>Operation</i>	No Project	NI	-	-
	1, 2, 3	S	Same as for Impact WILD-1	LTSM
Aquatic Biological Resources				
Impact FISH-1: Construction effects on special-status fish				
<i>Construction</i>	No Project	NI	-	-
	1, 2, 3	S	<p>Mitigation Measure VEG-2.1: Conduct Surveys for Sensitive Natural Communities and Oak Woodlands in the Project Area Prior to Construction Activities</p> <p>Mitigation Measure VEG-2.2: Avoid and Compensate for Adverse Effects on Sensitive Natural Communities</p> <p>Mitigation Measure VEG-3.2: Compensate for Temporary and Permanent Impacts on State- or Federally Protected Wetlands</p> <p>Mitigation Measure VEG-3.3: Compensate for Temporary and Permanent Impacts on State- or Federally Protected Non-Wetland Waters</p>	LTSM
Impact FISH-8: Operations effects on delta smelt				
<i>Operation</i>	No Project	NI	-	-
	1, 2, 3	S	<p>Mitigation Measure FISH-8.1: Prevent Detrimental Dissolved Oxygen and Water Temperature Effects on Fish Associated with Moving Colusa Basin Drain Water Through the Yolo Bypass</p> <p>Mitigation Measure WQ-2.2: Prevent Net Detrimental Metal and Pesticide Effects Associated with Moving Colusa Basin Drain Water Through the Yolo Bypass</p>	LTSM
Impact FISH-9: Operations effects on longfin smelt				
<i>Operation</i>	No Project	NI	-	-
	1, 2, 3	S	Mitigation Measure FISH-9.1: Tidal Habitat Restoration for Longfin Smelt	LTSM

Impact	Alternative	CEQA Finding	Mitigation Measure	Finding with Mitigation
Geology and Soils				
Impact GEO-7: Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature				
<i>Construction</i>	No Project	NI	-	-
	1, 3	S	Mitigation Measure GEO-7.1: Retain a Qualified Paleontological Resource Specialist Prior to the Start of Construction Mitigation Measure GEO-7.2: Consultation with the Paleontological Resource Specialist Prior to and During Project Construction Mitigation Measure GEO-7.3: Prepare and Implement a Paleontological Resources Monitoring and Mitigation Plan Mitigation Measure GEO-7.4: Conduct Monitoring During Project Construction and Prepare Monthly Reports Mitigation Measure GEO-7.5: Ensure Implementation of the Paleontological Resources Monitoring and Mitigation Plan	SU
	2	S	Same as Alternative 1	LTSM
Land Use				
Impact LAND-1: Physical division of an established community				
<i>Construction and Operation</i>	No Project	NI	-	-
	1, 3	LTS	-	-
	2	S	No feasible mitigation measures identified	SU
Agriculture and Forestry Resources				
Impact AG-1: Conversion of Prime Farmland, Unique Farmland, or Farmland of Statewide Importance, as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to nonagricultural use.				
<i>Operation</i>	No Project	NI	-	-
	1, 2, 3	S	Mitigation Measure AG-1.1: Purchase Agricultural Conservation Easements to Preserve Regional Important Farmland	SU
Impact AG-2: Conflict with existing zoning for agricultural use or a Williamson Act contract				
	No Project	NI	-	-

Impact	Alternative	CEQA Finding	Mitigation Measure	Finding with Mitigation
Construction and Operation	1, 2, 3	S	<p>Mitigation Measure AG-1.1: Purchase Agricultural Conservation Easements to Preserve Regional Important Farmland</p> <p>Mitigation Measure AG-2.1: Minimize Impacts on Williamson Act-Contracted Lands, Comply with Government Code Sections 51290–51293, and Coordinate with Landowners and Agricultural Operators</p>	SU
Navigation, Transportation, and Traffic				
Impact TRA-5: Substantially affect school bus travel				
Operation	No Project	NI	-	-
	1, 3	LTS	-	-
	2	S	No feasible mitigation measures identified	SU
Air Quality				
Impact AQ-1: Result in a cumulatively considerable net increase of any criteria pollutant for which the Project region is nonattainment under an applicable federal or state ambient air quality standard during construction, or conflict with or obstruct implementation of the applicable air quality plan				
Construction	No Project	NI	-	-
	1, 2, 3	S	<p>Mitigation Measure AQ-1.1: Zero Emission and/or Near Zero Emission Vehicles and Off-Road Equipment</p> <p>Mitigation Measure AQ-1.2: Offset Construction-Generated Criteria Pollutants in CCAPCD, GCAPCD, and YSAQMD</p>	SU
Impact AQ-2: Result in a cumulatively considerable net increase of any criteria pollutant for which the Project region is nonattainment under an applicable federal or state ambient air quality standard during operations, or conflict with or obstruct implementation of the applicable air quality plan				
Operation	No Project	NI	-	-
	1, 2, 3	S	<p>Mitigation Measure AQ-2.1: Recreational Boat Emissions Minimization Plan</p> <p>Mitigation Measure AQ-2.2: Offset Operation-Generated Criteria Pollutants in CCAPCD and GCAPCD</p>	SU
Impact AQ-4b: Expose sensitive receptors to localized criteria pollutant emissions				
Construction	No Project	NI	-	-
	1, 2, 3	S	No feasible mitigation measures identified	SU
Greenhouse Gas Emissions				
Impact GHG-1: Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment or conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases				

Impact	Alternative	CEQA Finding	Mitigation Measure	Finding with Mitigation
<i>Construction and Operation</i>	No Project	NI/NE	-	-
	1, 2, 3	S	Mitigation Measure GHG-1.1: Achieve Net-Zero Emissions Through a GHG Reduction Plan	LTSM
Cultural Resources				
Impact CUL-1: Cause a substantial adverse change in the significance of a historic built resource				
<i>Construction</i>	No Project	NI/NE	-	-
	1, 2, 3	S	Mitigation Measure CUL-1.1: Identify NRHP/CRHR-Eligible Built Resources Mitigation Measure CUL-1.2: Avoid NRHP/CRHR-Eligible Built Resources Mitigation Measure CUL-1.3: Protect NRHP/CRHR-Eligible Built Resources Mitigation Measure CUL-1.4: NRHP/CRHR-Eligible Historic Built Resources Treatment	SU
Impact CUL-2: Cause a substantial adverse change in the significance of an archaeological resource				
<i>Construction and Operation</i>	No Project	NI	-	-
	1, 2, 3	S	Mitigation Measure CUL-2.1: Identify NRHP/CRHR-Eligible Archaeological Resources Mitigation Measure CUL-2.2: Avoid NRHP/CRHR-Eligible Archaeological Resources Mitigation Measure CUL-2.3: Protect NRHP/CRHR-Eligible Archaeological Resources Mitigation Measure CUL-2.4: NRHP/CRHR-Eligible Archaeological Resources Treatment	SU
Impact CUL-3: Disturb any human remains, including those interred outside of formal cemeteries				
<i>Construction and Operation</i>	No Project	NI	-	-
	1, 2, 3	S	Mitigation Measure CUL-3.1: Cemetery Relocation Plan Mitigation Measure CUL-3.2: Avoid, Protect, and Treat Human Burials	SU
Tribal Cultural Resources				
Impact TCR-1: Substantial adverse change in the significance of a tribal cultural resource that is listed or eligible for listing in the California Register of Historical Resources or other local register or that the Authority has determined to be significant pursuant to criteria set forth in subdivision (c) of Public Resources Code Section 5024.1.				
	No Project	NI	-	-

Impact	Alternative	CEQA Finding	Mitigation Measure	Finding with Mitigation
Construction and Operation	1, 2, 3	S	<p>Mitigation Measure TCR-1.1: Implement Mitigation Measures Recommended in Public Resources Code Section 21084.3 to Avoid Damaging Effects on Tribal Cultural Resources</p> <p>Mitigation Measure TCR-1.2: Tribal Monitoring</p> <p>Mitigation Measure TCR-1.3: Implement Agreed-Upon Protocol for the Treatment of Human Remains and Cultural Items</p> <p>Mitigation Measure CUL-2.1: Identify NRHP/CRHR-Eligible Archaeological Resources</p> <p>Mitigation Measure CUL-2.2: Avoid NRHP/CRHR-Eligible Archaeological Resources</p> <p>Mitigation Measure CUL-2.3: Protect NRHP/CRHR-Eligible Archaeological Resources</p> <p>Mitigation Measure CUL-2.4: NRHP/CRHR-Eligible Archaeological Resources Treatment</p> <p>Mitigation Measure CUL-3.1: Cemetery Relocation Procedure</p> <p>Mitigation Measure CUL-3.2: Avoid, Protect, and Treat Human Burials</p>	SU
Visual Resources				
Impact VIS-1: Substantially degrade the existing visual character or quality of public views of the site and its surroundings				
Construction	No Project	NI	-	-
	1, 2, 3	S	No feasible mitigation measures identified	SU

Notes:

CCAPCD = Colusa County Air Pollution Control District
 GCAPCD = Glenn County Air Pollution Control District

 YSAQMD = Yolo-Solano Air Quality Management District
 GHG = greenhouse gas

NI = CEQA determination of no impact
 LTS = CEQA determination of less-than-significant impact
 LTSM = CEQA determination of less than significant with mitigation
 S = CEQA determination of significant impact
 SU = CEQA determination of **significant and unavoidable**