

# Chapter 9 Vegetation and Wetland Resources

<b>Outstanding issues [yellow=info needed for completion from ICF or Integration; blue=QA/QC globals for ICF Editing]</b>
Integration/Authority: Revised Sacramento Discharge structure for Alternative 2 is not in this chapter. Preliminary information about the design of this structure was received on 4/23 and GIS files came after 4/27. We would not expect determinations to change as a result of the revisions to the design; however, impact analysis will need to be reviewed/potentially modified to account for the revisions.
Integration/Authority: for this chapter (as with Chapter 10 and ultimately 11) we reduced repetition and use the phrase “Same as Alternative 1” in the summary tables with respect to mitigation measures.

## 9.1 Introduction

This chapter describes the environmental setting, methods of analysis, and impact analysis for vegetation and wetland resources that would potentially be affected by the construction and operation of the Project. Vegetation and wetland resources are defined as natural communities, wetlands and non-wetland waters of the United States and of the State, special-status plant species, and invasive plant species.

The study area for vegetation and wetland resources consists of areas of disturbance under Alternatives 1, 2, and 3 plus a 300-foot-wide buffer. The offsite borrow areas that would be aggregate sources for dam construction are not included in the study area for vegetation and wetland resources because the offsite borrow areas are existing active locations. Therefore, obtaining aggregate from these offsite locations during Project construction would not result in additional impacts on vegetation and wetland resources.

Tables 9-1a and 9-1b summarize the CEQA determinations and NEPA conclusions for construction and operation impacts, respectively, between alternatives.

**Table 9-1a. Summary of Construction Impacts and Mitigation Measures for Vegetation and Wetland Resources**

Alternative	Level of Significance Before Mitigation	Mitigation Measures	Level of Significance After Mitigation
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			
No Project	NI NE	-	NI NE

Alternative	Level of Significance Before Mitigation	Mitigation Measures	Level of Significance After Mitigation
Alternative 1	S SA	<b>Mitigation Measure VEG-1.1:</b> Conduct Appropriately Timed Surveys for Special-Status Plant Species Prior to Construction Activities <b>Mitigation Measure VEG-1.2:</b> Establish Activity Exclusion Zones Around Special-Status Plants in Temporary Impact Areas and Compensate for Permanent Impacts on Special-Status Plants	LTSM NE
Alternative 2	S SA	Same as Alternative 1	LTSM NE
Alternative 3	S SA	Same as Alternative 1	LTSM NE
Impact VEG-2: Substantial adverse effect (i.e., loss or removal) on any riparian habitat or other sensitive natural community			
No Project	NI NE	-	NI NE
Alternative 1	S SA	<b>Mitigation Measure VEG-2.1:</b> Conduct Surveys for Sensitive Natural Communities and Oak Woodlands in the Project Area Prior to Construction Activities <b>Mitigation Measure VEG-2.2:</b> Avoid and Compensate for Adverse Effects on Sensitive Natural Communities	SU SA
Alternative 2	S SA	Same as Alternative 1	SU SA
Alternative 3	S SA	Same as Alternative 1	SU SA
Impact VEG-3: Substantial adverse effect (i.e., loss or removal) on state or federally protected wetlands			
No Project	NI NE	-	NI NE
Alternative 1	S SA	<b>Mitigation Measure VEG-3.1:</b> Avoid and Minimize Disturbance of Wetlands and Non-Wetland Waters During Construction Activities <b>Mitigation Measure VEG-3.2:</b> Compensate for Temporary and Permanent Impacts on State- or Federally Protected Wetlands <b>Mitigation Measure VEG-3.3:</b> Compensate for Temporary and Permanent Impacts on State- or Federally Protected Non-Wetland Waters	LTSM NE

<b>Alternative</b>	<b>Level of Significance Before Mitigation</b>	<b>Mitigation Measures</b>	<b>Level of Significance After Mitigation</b>
Alternative 2	S SA	Same as Alternative 1	LTSM NE
Alternative 3	S SA	Same as Alternative 1	LTSM NE
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			
No Project	NI NE	-	NI NE
Alternative 1	S SA	<p><b>Mitigation Measure VEG-2.1:</b> Conduct Surveys for Sensitive Natural Communities and Oak Woodlands in the Project Area Prior to Construction Activities</p> <p><b>Mitigation Measure VEG-4-1:</b> Avoid and Minimize Potential Adverse Effects on Oak Woodlands During Construction</p> <p><b>Mitigation Measure VEG-4-2</b> Compensate for Adverse Effects on Oak Woodlands</p>	SU SA
Alternative 2	S SA	Same as Alternative 1	SU SA
Alternative 3	S SA	Same as Alternative 1	SU SA
Impact VEG-5: Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan			
No Project	NI NE	-	NI NE

Alternative	Level of Significance Before Mitigation	Mitigation Measures	Level of Significance After Mitigation
Alternative 1	S SA	<p><b>Mitigation Measure VEG-2.1:</b> Conduct Surveys for Sensitive Natural Communities and Oak Woodlands in the Project Area Prior to Construction Activities</p> <p><b>Mitigation Measure VEG-2.2:</b> Avoid and Compensate for Adverse Effects on Sensitive Natural Communities</p> <p><b>Mitigation Measure VEG-3.1:</b> Avoid and Minimize Disturbance of Wetlands and Non-Wetland Waters During Construction Activities</p> <p><b>Mitigation Measure VEG-3.2:</b> Compensate for Temporary and Permanent Impacts on State- or Federally Protected Wetlands</p> <p><b>Mitigation Measure VEG-3.3:</b> Compensate for Temporary and Permanent Impacts on State- or Federally Protected Non-Wetland Waters</p> <p><b>Mitigation Measure VEG-4-1:</b> Avoid and Minimize Potential Adverse Effects on Oak Woodlands</p> <p><b>Mitigation Measure VEG-4.2</b> Compensate for Adverse Effects on Oak Woodlands</p>	LTSM NE
Alternative 2	S SA	Same as Alternative 1	LTSM NE
Alternative 3	S SA	Same as Alternative 1	LTSM NE
<b>Impact VEG-6: Introduction or increased spread of invasive plant species</b>			
No Project	NI NE	-	NI NE
Alternative 1	LTS NE	-	LTS NE
Alternative 2	LTS NE	-	LTS NE
Alternative 3	LTS NE	-	LTS NE

## Notes:

NI = CEQA determination of no impact

LTS = CEQA determination of less-than-significant impact

S = CEQA determination of significant impact

LTSM = CEQA determination of less than significant with mitigation

SU = CEQA determination of significant and unavoidable

B = NEPA conclusion of beneficial effects

NE = NEPA conclusion of no effect or no adverse effect

AE = NEPA conclusion of adverse effect

SA = NEPA conclusion of substantial adverse effect

**Table 9-1b. Summary of Operations Impacts and Mitigation Measures for Vegetation and Wetland Resources**

Alternative	Level of Significance Before Mitigation	Mitigation Measures	Level of Significance After Mitigation
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			
No Project	NI NE	-	NI NE
Alternative 1	S SA	<b>Mitigation Measure VEG-1.3:</b> Establish Activity Exclusion Zones Around Special-Status Plants Prior to Vegetation Maintenance Activities	LTSM NE
Alternative 2	S SA	Same as Alternative 1	LTSM NE
Alternative 3	S SA	Same as Alternative 1	LTSM NE
Impact VEG-2: Substantial adverse effect (i.e., loss or removal) on any riparian habitat or other sensitive natural community			
No Project	NI NE	-	NI NE
Alternative 1	S SA	<b>Mitigation Measure VEG-2.3:</b> Establish Activity Exclusion Zones Around Sensitive Natural Communities Prior to Vegetation Maintenance Activities	LTSM NE
Alternative 2	S SA	Same as Alternative 1	LTSM NE
Alternative 3	S SA	Same as Alternative 1	LTSM NE
Impact VEG-3: Substantial adverse effect (i.e., loss or removal) on state or federally protected wetlands			
No Project	NI NE	-	NI NE
Alternative 1	S SA	<b>Mitigation Measure VEG-3.4:</b> Establish Activity Exclusion Zones Around Wetlands and Non-Wetland Waters in Vegetation Maintenance Areas	LTSM NE
Alternative 2	S SA	Same as Alternative 1	LTSM NE
Alternative 3	S SA	Same as Alternative 1	LTSM NE

Alternative	Level of Significance Before Mitigation	Mitigation Measures	Level of Significance After Mitigation
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			
No Project	NI NE	-	NI NE
Alternative 1	S SA	<b>Mitigation Measure VEG-4.3:</b> Establish Activity Exclusion Zones Around Blue Oak Woodlands in Vegetation Maintenance Areas	LTSM NE
Alternative 2	S SA	Same as Alternative 1	LTSM NE
Alternative 3	S SA	Same as Alternative 1	LTSM NE
Impact VEG-5: Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan			
No Project	NI NE	-	NI NE
Alternative 1	NI NE	-	NI NE
Alternative 2	NI NE	-	NI NE
Alternative 3	NI NE	-	NI NE
Impact VEG-6: Introduction or increased spread of invasive plant species			
No Project	NI NE	-	NI NE
Alternative 1	LTS NE	-	LTS NE
Alternative 2	LTS NE	-	LTS NE
Alternative 3	LTS NE	-	LTS NE

## Notes:

NI = CEQA determination of no impact  
LTS = CEQA determination of less-than-significant impact  
S = CEQA determination of significant impact  
LTSM = CEQA determination of less than significant with mitigation  
SU = CEQA determination of significant and unavoidable  
B = NEPA conclusion of beneficial effects  
NE = NEPA conclusion of no effect or no adverse effect  
AE = NEPA conclusion of adverse effect  
SA = NEPA conclusion of substantial adverse effect

## 9.2 Environmental Setting

This section describes the environmental setting for the vegetation and wetland resources in the study area. The environmental setting is composed of the physical setting, vegetation and wetland resource types, sensitive natural communities, wetlands and non-wetland waters, special-status plant species, and invasive plant species.

Appendix 9A, *Special-Status Species*, provides the species lists used to determine the special-status plant species with the potential to occur in the study area, special-status plant table, and species accounts. Appendix 9B, *Vegetation and Wetland Methods and Information*, contains the methods and sources of information for identifying the land cover types in the study area, as well as descriptions of vegetation communities (including sensitive natural communities), wetlands, non-wetland waters, unvegetated land cover types, and invasive plants.

## 9.3 Physical Setting

The physical setting for the study area is composed of its geography, topography, hydrology, soils, and climate. The geographic subdivisions of California that encompass the study area are the Inner North Coast Ranges District of the Northwestern California Region and the Sacramento Valley Subregion of the Great Central Valley Region, which are both in the California Floristic Province (Baldwin et al. 2012). The study area occurs in the Coast Range foothills surrounding the Antelope Valley and in a long swath of the northwestern Sacramento Valley. The topography of the study area varies from west to east. The west side of the study area is characterized by low rolling foothills and elevations range from approximately 400 to 800 feet above mean sea level (msl) in the hills surrounding Antelope Valley to 200 feet above msl in the Funks Reservoir area. From the Funks Reservoir, the valley gently slopes to the study area's lowest point, which is approximately 30 feet above msl at the eastern edge of the study area, along the Sacramento River south of Dunnigan.

Streams in the central and eastern parts of the study area include Stone Corral Creek and its tributary Funks Creek, which cross Antelope Valley and drain to the Sacramento Valley. Antelope Creek extends north through Antelope Valley and drains to Stone Corral Creek. Wilson Creek and Grapevine Creek are in the western part of the study area. Wilson Creek, which follows the northern half of the South Road alignment, is tributary to Squaw Creek and the East Park Reservoir, which is west of and outside the study area. Grapevine Creek follows the southern half of the South Road alignment. The downstream section of Stone Corral Creek and most of Antelope Creek are supported by groundwater and remain inundated or saturated throughout the year, while the other named streams flow primarily during the winter and spring, with some reaches becoming dry during the summer and fall. Streams in the study area support riparian woodland and wetlands. Numerous unnamed intermittent and ephemeral streams also drain the study area, and many are tributary to the named streams. Canals in the study area that carry flows to and from reservoirs include the GCID Main Canal and the TC Canal. Numerous agricultural ditches supply water to orchards, rice fields, row crops, and vineyards in the study

area. Additional discussion of creek hydrology in the study area is provided in Chapter 5, *Surface Water Resources*.

The soils in the eastern portion of the study area were formed in flood basins and terraces (Natural Resources Conservation Service 2020a). Most of the soils that formed in the flood basins have been levelled for rice production and are subject to flood control improvements (Natural Resources Conservation Service 2006:16). They are generally clayey, and some have a high sodium content (Natural Resources Conservation Service 2020a). Soils in the western portion of the study area, including Antelope Valley, are on gentle to very steep slopes. Most of the soils are clayey (Natural Resources Conservation Service 2020a). Serpentine soils, which occur intermittently in the Coast Ranges, are upslope from the lower elevations and outside the study area. Chapter 12, *Geology and Soils*, provides additional information on soils in the project construction area.

The climate in the study area is characterized by hot, dry summers and cool, relatively wet winters, depending on the water year type. Data from two weather stations, one north (Stony Gorge Reservoir, California) and one east (Colusa 2 SSW, California) of the study area, were reviewed for temperature and precipitation averages (Natural Resources Conservation Service 2020a, 2020b). The average high temperatures range from between 95.2°F and 94°F in July to between 55.2°F and 55.6°F in January, and the average low temperatures range from between 32.4°F and 36.6°F in December to between 59.1°F and 60.3°F in July. The average annual precipitation is from 16.37 to 22.51 inches, with precipitation falling mostly as rain with less than 1 inch of snow, primarily between October and May (Natural Resources Conservation Service 2020b, 2020c).

### 9.3.1 Vegetation and Wetland Resource Types in the Study Area

The study area and vicinity are predominantly vegetated by natural and agricultural vegetation. Property access restrictions precluded field investigations of vegetation and wetland resources in the study area since the preparation of the 2017 Draft EIR/EIS. The information on the types and extent of vegetation and wetland resources in the study area presented in this RDEIR/SDEIS is primarily based on the results of previous surveys of parts of the study area conducted between 1998 and 2003 (California Department of Water Resources 2000a, California Department of Water Resources 2000b, Sites Project Authority and U.S. Bureau of Reclamation 2017) and on the interpretation of recent high-resolution aerial imagery of the entire study area.

The study area contains 28 mapped land cover types that are shown in Figure 9B-1 and are listed in Table 9B-1, which also provides acreage estimates for each type (Appendix 9B). All land cover type acreages are preliminary, particularly for the wetland and non-wetland water types, which are subject to change pending field review and verification by the U.S. Army Corps of Engineers (USACE) and State Water Resources Control Board (State Water Board).

The most abundant plant community in the study area is annual grassland, with areas of oak savanna and blue oak woodlands becoming more common as elevations increase from east to west and eventually transitioning to chamise and foothill pine in the westernmost part of the study area. Riparian woodland and wetlands are present along most of the major creeks including Antelope Creek, Funks Creek, Grapevine Creek, and Stone Corral Creek. Open water types in



the survey area include Funks Reservoir, GCID Main Canal, TC Canal, Salt Pond, and small ponds. Seasonal wetlands are located in grasslands and topographic lows where clay soils are present. To the east, agricultural areas containing rice and orchards are the most abundant land cover type.

### 9.3.2 Sensitive Natural Communities

Sensitive natural communities are habitats that are considered sensitive because of their high species diversity, high productivity, unusual nature, limited distribution, or declining status. Local, state, and federal agencies consider these habitats important and generally require compensation for loss of sensitive communities. The California Natural Diversity Database (CNDDDB) contains a current list of rare natural communities throughout the state (California Department of Fish and Wildlife 2020). U.S. Fish and Wildlife Service (USFWS) considers certain habitats, such as riparian and wetland communities, important to wildlife. The USACE and U.S. Environmental Protection Agency consider stream habitats important for water quality and wildlife. The acreages and rarity ranks for the sensitive natural communities identified in the study area are shown in Tables 9B-1 and 9B-2, respectively (Appendix 9B).

One sensitive natural community, upland riparian, is mapped in the study area. Upland riparian in the study area may be classified as either Fremont cottonwood forest (S3), Goodding’s willow – red willow riparian woodland and forest (S3), and/or California rose briar patches (G3 S3). This riparian community may also function as shaded riverine aquatic (SRA) cover for fish species, as described in detail in Chapter 11, *Aquatic Biological Resources*, for Impact FISH-1 under “Loss of Riparian Vegetation (Including SRA Cover) and Increased Water Temperature.”

Three other common upland vegetation types are also identified as having the potential to contain sensitive natural communities: (1) annual grassland with potential for California brome–blue wildrye prairie (G3 S3), gum plant patches (G2, G3 S2, S3), needlegrass–melic grass grassland (G3 S3), and white-tip clover swales (G3? S3?); (2) foothill pine with potential for foothill pine–herbaceous association (Provisional Alliance); and (3) oak savanna with potential for valley oak woodland and forest (G3 S3).

### 9.3.3 Wetlands and Non-Wetland Waters

Wetlands and non-wetland waters in the study area are subject to regulation as waters of the United States and waters of the state that fall in the jurisdictions of the USACE and the State Water Board, respectively. The wetland and non-wetland water resources regulated by these agencies may vary because of differences in federal and state laws and regulations. The regulations relating to wetlands and non-wetland waters are described in Chapter 4, *Regulatory and Environmental Compliance: Project Permits, Approvals, and Consultation Requirements*.

Wetland types identified in the study area that are subject to federal and/or state regulations include forested wetland, freshwater marsh, managed wetland, scrub-shrub wetland, and seasonal wetland. The forested wetland and scrub-shrub wetland types are riparian habitats that may also function as SRA cover for fish species, as described for Impact FISH-1 in Chapter 11, *Aquatic Biological Resources*.

Non-wetland waters identified in the study area that are subject to federal and/or state regulations include canal, ditch, pond, reservoir, ephemeral stream, intermittent stream, and perennial stream. The acreages of wetlands and non-wetland waters presented are preliminary, as the aquatic resources delineation has not been completed with onsite surveys or jurisdictional review by the USACE and State Water Board.

#### 9.3.4 Special-Status Plant Species

For the purpose of this RDEIR/SDEIS, special-status plant species are defined as those in one or more of the following categories.

- Species listed or proposed for listing as threatened or endangered under Endangered Species Act (ESA) (50 Code of Federal Regulations 17.12, and various notices in the Federal Register [FR]).
- Species that are candidates for possible future listing as threatened or endangered under ESA (85 FR 73164, November 16, 2020).
- Species listed or proposed for listing by the State of California as threatened or endangered under CESA (14 California Code of Regulations 670.5).
- Plants listed as rare under the California Native Plant Protection Act (California Fish and Game Code 1900 et seq.).
- Plants with a California Rare Plant Rank (CRPR) of 1 or 2, which are plants considered by CDFW and CNPS to be “rare, threatened, or endangered in California” (California Native Plant Society 2020).
- Plants with a CRPR of 3 or 4, which are plants identified by CDFW and CNPS about which more information is needed to determine their status, and plants of limited distribution and may be included as special-status species on the basis of local significance or recent biological information.

Table 9A-1 (Appendix 9A) lists the 42 special-status plant species that occur in or within 5 miles of the study area. Please refer to Table 9A-1 for the scientific names of the special-status species. The special-status species were identified based on the CNDDDB records query (California Department of Fish and Wildlife 2021), California Native Plant Society (CNPS) Inventory of Rare and Endangered Plants (2020) search, the USFWS species list (U.S. Fish and Wildlife Service 2021), and review of species distribution and habitat requirements data.

Surveys for special-status plant species were conducted between 1998 and 2003 in parts of the study area (California Department of Water Resources 2000a; Sites Project Authority and U.S. Bureau of Reclamation 2017), but not all parts of the study area were included in these surveys and more recent surveys have not been performed. Therefore, all species identified as present in the study area vicinity were evaluated for their potential to occur in the study area itself, based on the known range of each species and their habitat associations, as well as the previous survey data. The following sections focus on the two federally and/or state listed species with potential to occur in the study area. Twenty-eight of the non-listed species are not known to be present in the study area and have low or no potential to occur in the study area. These 28 species are not

addressed further. The other 12 non-listed, special-status plant species have moderate to high potential to occur in the study area.

#### **9.3.4.1 Keck's Checkerbloom**

Keck's checkerbloom (also referred to as Keck's checkermallow) is listed as endangered under ESA (65 FR 7764, February 16, 2000); it is not listed under CESA. The species was thought to be restricted to three sites in Fresno and Tulare Counties at the time of its listing, and critical habitat for the species is located in those counties (68 FR 12875–12880, March 18, 2003). Subsequent taxonomic studies have concluded that the species also occurs in the southern Inner North Coast Ranges in Colusa, Napa, Solano, and Yolo Counties (Hill 2015). There are 50 occurrences, five of which are within 5 miles of the study area. Keck's checkerbloom grows in grasslands and on grassy slopes in blue oak woodland, generally on clay soils, and sometimes on soils derived from serpentinite. Grasslands, blue oak woodland, and oak savanna in the study area are potential habitat for this species.

Botanical surveys of the Sites Reservoir project area were conducted prior to Keck's checkerbloom being listed and before it was recognized to occur in northern California. Consequently, these surveys identified all checkerbloom plants in the area as fringed checkerbloom (*Sidalcea diploscypha*) (California Department of Water Resources 2000a), a common species that is similar in appearance to Keck's checkerbloom, so that any potential occurrences of Keck's checkerbloom in the survey area were not mapped.

A species habitat model developed for Keck's checkerbloom can be used to predict locations of suitable habitat in the study area. The model presently considers annual grassland, blue oak woodland, and oak savanna communities where the soil map unit Cibo-Ayar-Altamont also occurs. This map unit includes soils with high clay content that represent potentially suitable microhabitat for Keck's checkerbloom.

#### **9.3.4.2 Palmate-Bracted Bird's Beak**

Palmate-bracted bird's-beak is federally listed as endangered (51 FR 23769, July 1, 1986). It is also state listed as endangered. This species was listed under the name *Cordylanthus palmatus* but is now known as *Chloropyron palmatum*. No critical habitat has been designated for this species. The species is known from 25 occurrences, eight of which are extirpated (i.e., destroyed) or possibly extirpated. These occurrences are present at widely separated locations in the Central Valley, ranging from Glenn County to Fresno County. Three occurrences are present within 5 miles of the study area. Habitat for the species is iodine bush scrub and alkaline meadow. Palmate-bracted bird's-beak was not found in the study area (California Department of Water Resources 2000a), and there is potential for this species to occur in alkali seasonal wetlands in the current study area. A species habitat model developed for palmate-bracted bird's-beak can be used to predict where suitable habitat is present in the study area. The model considers seasonal wetlands and intermittent streams where Capay soils are present. Capay soils are generally alkaline.

#### **9.3.5 Invasive Plant Species**

The California Invasive Plant Council defines invasive species as plants that are not native to an environment, and once introduced, establish, quickly reproduce and spread, and cause harm to

the environment, economy, or human health. Table 9B-5 (Appendix 9B) lists species of invasive plant species that have been observed in the study area or are documented from Glenn or Colusa Counties and occur in land cover types similar to those in the study area (California Invasive Plant Council 2021, CalFlora 2021). Please refer to that table for the scientific names of invasive plant species. Thirty-two of these species were identified in the study area during botanical resource surveys conducted between 1998 and 2003 (California Department of Water Resources 2000a; Sites Project Authority and U.S. Bureau of Reclamation 2017). Nearly all plant communities in the study area support invasive plant species, although some have more extensive invasive plant infestations than others. Annual grassland in the inundation area supports invasive grass species such as riggut and other bromes, hedgehog dogtail, and medusahead, as well as invasive forbs, such as yellow star-thistle, which is widespread (Sites Project Authority and U.S. Bureau of Reclamation 2017). Italian thistle, bull thistle, and other nonnative thistles are common in the grassland understory of oak woodland at the edges of the Sites Reservoir inundation area. Ruderal areas by roads in grassland understory of blue oak woodlands can become infested with milk thistle, olive, California bur-clover, cutleaf geranium, and invasive thistles and mustards. Edges of agricultural fields, ranches or homesteads, and roadsides through agricultural areas are also vulnerable to infestations of many invasive species. Wetlands in the study area may support hyssop loosestrife and Himalayan blackberry. Upland riparian habitat may support tree-of-heaven, giant reed, and tree tobacco.

## 9.4 Methods of Analysis

The methods for analysis of impacts on vegetation and wetland resources are organized into direct and indirect impacts. Direct impacts are those effects that would be directly caused by Project construction and operation even if it took time for the resulting effect to develop (e.g., filling of the reservoir over a 20-year period). Indirect impacts are those that would occur either later in time or at a distance from the area where direct impacts would occur but are reasonably foreseeable, such as erosion and alteration of existing hydrology. Direct and indirect impacts may be either permanent or temporary. Impacts on vegetation and wetland resources are generally considered temporary where they would be restored to preconstruction conditions within 1 year. The study area and land cover mapping area for vegetation and wetland resources includes a 300-foot-wide buffer outside of the temporary and permanent impact areas. The buffer area was assessed for potential temporary and indirect impacts on vegetation and wetland resources.

### 9.4.1 Construction

Direct permanent impacts on natural communities, wetlands, and non-wetland waters were assessed using the estimated amount of land cover that would be converted by Project construction. Construction impacts include both construction of new facilities and filling of the reservoir. Temporary impacts on natural communities, wetlands, and non-wetland waters were calculated using the estimated amount of land cover that would be temporarily disturbed during Project construction but would be restored to pre-Project conditions within 1 year of disturbance. Temporarily affected areas that would ultimately be inundated by the Sites Reservoir were included in the permanent impact area to avoid double counting acreages, and because these

areas would ultimately be permanently affected. The impact analysis assumed that the conditions on parcels of land surrounding the reservoir would be maintained similar to existing conditions (e.g., as grazing lands). In addition, temporary impacts on special-status plants from ground disturbance, even if followed by restoration, would constitute a permanent impact, unless the particular species benefits from disturbance.

Impacts on vegetation and wetland resources were calculated using geographic information system (GIS) software. The Project footprint and associated temporary impact areas were overlaid on the land cover mapping data to quantify the permanent and temporary impacts associated with the construction of the Project facilities.

Impacts on occurrences of special-status plants known to occur in the study area were based on previous survey results and CNDDDB occurrence data. Special-status plant species identified as having moderate to high potential to occur in the study area were included in the impact analysis. The full extent of impacts on special-status plants is currently unknown because recent botanical surveys for special-status plants have not been conducted throughout the study area. The extent of impacts cannot be calculated based on the current available data; therefore, the impact assessment is qualitative.

The following assumptions and alternative details regarding specific Project components were applied to the impact analysis:

- Construction of the TC Canal diversion pumps would not affect any areas of natural communities, wetlands, or non-wetland waters because construction would occur within the existing facility footprint. This area is not considered further in this analysis.
- Temporary impacts from the use of coffer dams in Stone Corral and Funks Creeks during dam construction are included in the impacts shown in Tables 9-2b and 9-4b.
- Impacts from construction of TRR East are included in the impacts shown in Tables 9-2a and 9-2b for Alternatives 1 and 3. Impacts from construction of TRR West are included in the impacts shown in Tables 9-4a and 9-4b for Alternative 2.
- Impacts in the north-south transmission line and the east-west transmission line would be primarily temporary for installation of new high-voltage electrical transmission lines to power the regulating reservoirs. Only one of the two alignments described in Chapter 2 would be constructed. Small areas for new transmission line towers would be required in the alignment, but specific locations are currently unknown. The maximum permanent impact from the towers would total less than 0.01 acre and is largely within annual grassland, therefore the potential permanent impact on special-status plants, sensitive natural communities, wetlands, and non-wetland waters would be much less than 0.01 acre. The entire area of the transmission line alignments is included in the temporary impacts shown in Tables 9-2b and 9-4b. Final Project design for placement of the new towers within the transmission line alignments would avoid special-status plants, sensitive natural communities, wetlands, and non-wetland waters to the extent feasible.
- Quarries located outside the inundation area would be regraded and allowed to revegetate at the bottoms, but they would not return to pre-Project conditions.

- Offsite borrow areas would be in existing commercial facilities and would not impact land cover.
- The inundation area would replace natural communities, wetlands, and non-wetland waters with open water. Alternative 1 or 3 would permanently flood a larger area than Alternative 2.
- The footprints for the Peninsula Hills, Stone Corral Creek, and day-use boat ramp/parking recreation areas represent the total area that could be used for recreation activities. Only part of each footprint would experience a permanent loss of vegetation for the construction of camp sites, picnic areas, hiking trails, potable water source, utility connections, and kiosk (at Peninsula Hills and Stone Corral Creek Recreation Areas), and toilets.
- New road construction would result in permanent loss of existing vegetation in the entire construction disturbance area, and improvements to existing roads would affect only the area to the edges of the right-of-way. The exact locations of the realigned Huffmaster Road, new Comm Road South, and new South Road are not yet finalized. Therefore, corridors have been used to identify potential direct and indirect impacts. For example, on the South Road a 400-foot-wide conceptual road alignment plus a 300-foot-wide buffer has been identified to allow for design flexibility. Because the final South Road corridor is unknown, the entire corridor was assumed to be permanently affected for the purposes of the impact analysis. Within the corridors, the actual permanent impact area would be only the footprint of roads and shoulders with additional temporarily affected areas for construction staging and equipment movement.

The following BMPs, which are described in Appendix 2D, *Best Management Practices*, are incorporated into the analysis of potential construction and operations impact on vegetation and wetland resources.

- Salvage, Stockpile, and Replace Topsoil and Prepare a Topsoil Storage and Handling Plan – requires evaluation of topsoil for salvaging suitability and storage and handling plans when topsoil cannot be used without stockpiling.
- Develop and Implement Stormwater Pollution Prevention Plan(s) (SWPPP) and Gain Coverage under Stormwater Construction General Permit (Storm Water and Non-Storm Water) – requires development and use of erosion control measures, sediment control measures, construction materials management measures, waste management measures, non-stormwater control measures, and post-construction stormwater management measures.
- Develop and Implement Spill Prevention and Hazardous Materials Management/Accidental Spill Prevention, Containment, and Countermeasure Plans (SPCCPs) and Response Measures – requires site-specific plans with measures to minimize effects from spills of hazardous or petroleum substances during construction and operation/maintenance.

- Worker Environmental Awareness Program (WEAP) – requires training of all construction crews and contractors on protection and avoidance of biological, cultural, archaeological, paleontological, and other sensitive resources.
- Construction Best Management Practices and Monitoring for Fish, Wildlife, and Plant Species Habitats, and Natural Communities – requires a construction monitoring plan for sensitive biological resources and in-water construction activities, use of exclusion fencing around sensitive biological resources, and measures for construction personnel to protect wildlife.
- Control of Invasive Plant Species during Construction and Operation – requires identification of invasive plant infestations, measures for handling removed invasive plants during construction, and control of invasive aquatic plants during operation of Sites Reservoir.

#### **9.4.2 Operation**

Because operation of the Project would not involve additional earth-moving or substantial disturbance of new areas beyond those that would be disturbed during construction, acreage impacts due to operation were not assessed. The operation phase would include primarily changes in water diversions to Sites Reservoir, energy generation and use, and routine tasks to maintain the facilities after construction according to operations and maintenance plans to be developed. Maintenance would include vegetation control and grazing around all facilities, recreation areas, and a 100-foot buffer around the facilities. These activities would affect undeveloped land where sensitive natural communities, wetlands and non-wetland waters, or special-status plants could occur. Public use of recreation areas could affect areas that support special-status plants, sensitive natural communities, or wetlands and non-wetland waters, impacts that could result during operation of recreation areas were considered.

#### **9.4.3 Thresholds of Significance**

An impact on vegetation resources (including wetlands and non-wetland waters) would be considered significant if the Project would:

- Have a substantial adverse effect, either directly or through habitat modifications, on any plant species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the CDFW or USFWS.
- Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by the CDFW or USFWS.
- Have a 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.
- Conflict with any local policies or ordinances protecting vegetation resources, such as a tree preservation policy or ordinance.

- Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan.
- Introduce or increase the spread of invasive plant species.

## 9.5 Impact Analysis and Mitigation Measures

**Impact VEG-1: Substantial adverse effect (i.e., loss or removal), either directly or through habitat modifications, of 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**

### *No Project*

The No Project Alternative would not construct or operate any new facilities. Special-status plants occur in the study area. Because the No Project Alternative would not construct or operate new facilities, there would be no temporary impacts on special-status plants from temporary construction staging or other disturbance or permanent impacts from placement of facilities that would remove special-status plants.

### Significance Determination

Under the No Project Alternative, no new facilities would be constructed or operated, and there would be no temporary or permanent impacts due to the Project. The No Project Alternative would have no impact on special-status plants.

### Alternatives 1 and 3

The extent of permanent and temporary impacts, quantified as described above in Section 9.3, *Methods of Analysis*, of Alternatives 1 and 3 is shown in Tables 9-2a and 9-2b. All land cover type acreages are preliminary, particularly for the wetland and non-wetland water types, which are subject to change pending field review and verification by the USACE and State Water Board.



**Table 9-2a. Alternatives 1 and 3 Acreages of Permanent Impacts on Special-Status Plant Habitats, Sensitive Natural Communities, and Wetland and Non-Wetland Water Types in Project Component Areas**

Project Components	Annual Grassland <sup>1</sup>	Blue Oak Woodland	Canal	Chamise Chaparral	Ditch	Foothill Pine <sup>1</sup>	Forested Wetland	Freshwater Marsh	Managed Wetland	Mixed Chaparral	Oak Savanna <sup>1</sup>	Pond	Reservoir	Scrub-Shrub Wetland	Seasonal Wetland	Perennial Stream	Intermittent Stream	Ephemeral Stream	Upland Riparian <sup>1</sup>
Sacramento River Diversion and Conveyance to Regulating Reservoirs	0	0	<1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Regulating Reservoirs and Conveyance Complex	6	0	2	0	1	0	0	<1	0	0	0	0	<1	<1	1	<1	<1	<1	0
Sites Reservoir Inundation Area	11,271	159	<1	<1	<1	0	2	38	0	0	282	36	0	6	256	23	164	22	46
Inlet/Outlet Works	23	0	0	0	0	0	0	0	0	0	2	0	0	0	<1	0	<1	<1	<1
Dams and Dikes	154	5	0	0	0	0	<1	1	0	0	4	<1	0	<1	11	1	3	1	2
Quarries and Rock Processing	409	0	0	0	0	0	0	<1	0	0	17	0	0	<1	2	0	4	2	0

Project Components	Annual Grassland <sup>1</sup>	Blue Oak Woodland	Canal	Chamise Chaparral	Ditch	Foothill Pine <sup>1</sup>	Forested Wetland	Freshwater Marsh	Managed Wetland	Mixed Chaparral	Oak Savanna <sup>1</sup>	Pond	Reservoir	Scrub-Shrub Wetland	Seasonal Wetland	Perennial Stream	Intermittent Stream	Ephemeral Stream	Upland Riparian <sup>1</sup>
Facilities																			
Conveyance to Sacramento River	0	0	<1	0	0	0	0	0	0	0	0	0	0	0	0	0	0		<1
Roads	772	97	<1	0	<1	0	3	2	0	1	122	2	0	2	60	<1	10	<1	5
Recreation Areas	460	79	0	0	0	0	0	0	0	0	239	<1	0	<1	<1	0	1	2	4
<b>Alternatives 1 and 3 Total Permanent Impacts</b>	13,095	340	2	<1	2	0	6	42	0	1	666	39	<1	8	329	25	182	27	57

<sup>1</sup> Sensitive natural community or may contain areas that are sensitive natural communities. In annual grassland, there is potential for California brome – blue wildrye prairie, gum plant patches, needlegrass – melic grass grassland, and white-tip clover swales. In foothill pine, there is potential for foothill pine-herbaceous. In oak savanna, there is potential for valley oak woodland and forest.

**Table 9-2b. Alternatives 1 and 3 Acreages of Temporary Impacts on Special-Status Plant Habitats, Sensitive Natural Communities, and Wetland and Non-Wetland Water Types in Project Component Areas**

Project Components	Annual Grassland <sup>1</sup>	Blue Oak Woodland	Canal	Chamise Chaparral	Ditch	Foothill Pine <sup>1</sup>	Forested Wetland	Freshwater Marsh	Managed Wetland	Mixed Chaparral	Oak Savanna <sup>1</sup>	Pond	Reservoir	Scrub-Shrub Wetland	Seasonal Wetland	Perennial Stream	Intermittent Stream	Ephemeral Stream	Upland Riparian <sup>1</sup>
Sacramento River Diversion and Conveyance to Regulating Reservoirs	0	0	<1	0	<1	0	1	0	0	0	0	0	0	1	0	0	0	0	<1
Regulating Reservoirs and Conveyance Complex	580	0	8	0	<1	0	<1	13	0	0	0	3	223	<1	15	<1	3	1	2
Inlet/Outlet Works	7	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
Dams and Dikes	42	2	0	0	0	0	<1	<1	0	0	<1	<1	0	0	2	0	0	<1	<1
Quarries and Rock Processing Facilities	155	0	0	0	0	0	0	1	0	0	1	1	0	<1	19	0	6	<1	0
Conveyance to Sacramento	0	0	<1	0	<1	0	0	0	6	0	0	0	0	0	0	0	3	0	2

Project Components	Annual Grassland <sup>1</sup>	Blue Oak Woodland	Canal	Chamise Chaparral	Ditch	Foothill Pine <sup>1</sup>	Forested Wetland	Freshwater Marsh	Managed Wetland	Mixed Chaparral	Oak Savanna <sup>1</sup>	Pond	Reservoir	Scrub-Shrub Wetland	Seasonal Wetland	Perennial Stream	Intermittent Stream	Ephemeral Stream	Upland Riparian <sup>1</sup>
River																			
Roads	144	21	0	1	0	0	1	<1	0	0	16	0	0	1	0	0	2	1	2
Recreation Areas	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<b>Alternatives 1 and 3 Total Temporary Impacts</b>	928	23	8	1	1	0	2	14	6	0	19	4	223	2	36	<1	14	2	6

<sup>1</sup> Sensitive natural community or may contain areas that are sensitive natural communities. In annual grassland, there is potential for California brome – blue wildrye prairie, gum plant patches, needlegrass – melic grass grassland, and white-tip clover swales. In foothill pine, there is potential for foothill pine-herbaceous. In oak savanna, there is potential for valley oak woodland and forest.

Construction

Construction of Alternative 1 or 3 would result in direct permanent loss of occupied habitat for bent-flowered fiddleneck and red-flowered bird's-foot trefoil in annual grassland, blue oak woodland, and oak savanna, and of occupied habitat for brittlescale and San Joaquin spearscale in alkali seasonal wetlands. Construction of Alternative 1 or 3 could also result in an undetermined loss of potential habitat for the special-status plants that were assessed as having a moderate to high probability of occurring in the study area (Table 9A-1 lists the special-status species, including their scientific names, and their habitat requirements): Bolander's horkelia, California alkali grass, Colusa layia, deep-scarred cryptantha, Keck's checkerbloom, Konocti manzanita, and Tracy's eriastrum. Potential habitats for these species include annual grassland, blue oak woodland, oak savanna, chamise, mixed chaparral, and seasonal wetland. For federally listed species (Keck's checkerbloom and palmate-bracted bird's-beak), habitat models have been used to identify impacts on suitable species habitat in the study area. Table 9-3 below shows the acreages of direct permanent and temporary impacts on the two modeled plant species. Tables 9-2a and 9-2b show the acreages of direct permanent and temporary impacts on habitats for other special-status plant species in each component area under Alternatives 1 and 3.

**Table 9-3. Acreages of Permanent and Temporary Impacts on Modeled Special-Status Plant Species Habitat in the Study Area**

	Alternative 1 and 3		Alternative 2	
	Permanent Impacts	Temporary Impacts	Permanent Impacts	Temporary Impacts
Keck's checkerbloom	10,094	700	9,735	682
Palmate-bracted bird's-beak	217	8	214	7

Preconstruction and construction measure BMPs are part of Alternatives 1 and 3 and would limit direct impacts on special-status plants. Construction workers would be trained on the importance of avoiding special-status species and require fencing of sensitive habitats and any occupied special-status plant habitats where avoidance is feasible. The BMPs would also restrict off-road driving in the construction area, where avoided special-status plants could be damaged or destroyed. BMPs for controlling invasive species by removing, bagging, and disposing at a waste facility would reduce the potential for the spread of invasive plant species into occupied special-status plant habitats. The BMPs would also limit indirect impacts on special-status plants by implementing a SWPPP that would protect habitats outside of the construction area from erosion and sedimentation.

These BMPs would not prevent the permanent loss of or degradation of habitat quality for special-status plants in the footprint for Alternatives 1 and 3. Under Alternative 1 or 3, construction of facilities would result in the loss and habitat modification for the four species known to occur in the affected area (bent-flowered fiddleneck, brittlescale, red-flowered bird's-foot trefoil, and San Joaquin spearscale) through direct removal and habitat quality degradation,

which could include disturbance of the seed bank and changes to soil structure and mycorrhizal (symbiotic fungal) systems. Permanent impacts on the species' habitats would result from earth moving and vegetation removal for construction of facilities associated with the regulating reservoirs and conveyance complex, Sites Reservoir and related facilities, recreation areas, and new roads, including Comm Road South and the realigned Huffmaster Road. These permanent impacts would include both the facility footprints and the temporary construction areas where earth-moving would occur. These facilities would result in the permanent loss of occupied special-status plant habitats, including annual grassland, blue oak woodland, oak savanna, and alkaline seasonal wetland in the construction footprint. Alternative 1 or 3 could also result in the direct permanent loss of occupied habitat for seven other special-status species with potential to occur in the construction footprint, including the two federally listed, modeled species, Keck's checkerbloom and palmate-bracted bird's-beak.

Under Alternative 1 or 3, construction activities would also result in the temporary disturbance of special-status plant habitat during construction and reduced habitat quality in the interim between the completion of construction and the establishment of habitat restoration plantings. Temporary impacts on potential special-status plant habitat would occur during construction activities for most facilities, except those associated with the Sacramento River diversion and conveyance to regulating reservoirs. Temporary impacts would result from equipment movement that does not affect living plants or disrupt the soil surface (e.g., driving over dead annual plants). Construction would result in temporary impacts on annual grassland, blue oak woodland, oak savanna, and seasonal wetland. There would be no temporary impacts on special-status plant habitat from the construction of the Sacramento River diversion and conveyance to regulating reservoirs because those facilities already exist and construction activities would be located within existing footprints.

Potential indirect impacts on special-status plants from the construction of Alternative 1 or 3 from changes in the hydrology of special-status plant habitat outside the construction area due to erosion and sedimentation from earth moving during construction would be avoided by implementation of BMPs and the SWPPP.

### Operation

Operation of the Sites Reservoir under Alternatives 1 and 3 would not result in additional impacts on special-status plant species beyond those described for construction, including ongoing recreational activities in the three recreation areas after construction and impacts on occupied special-status plant habitat from maintenance activities after construction. Additional operation-phase impacts could occur in undeveloped parts of the recreation areas due to visitor use of spaces outside of the constructed facility. The permanent footprint of these recreation areas is currently at a conceptual design stage, and the actual location of facilities is not yet known. Impacts shown in Table 9-2a include a substantially larger area than would ultimately be part of the recreation area footprints, and much of the designated recreation areas would remain undeveloped. Because the construction impact acreage assessed for the recreation areas includes all habitat in the recreation area boundaries, therefore, there would be no additional impact on occupied special-status plant habitat in the recreation areas due to operation.

Maintenance of Alternative 1 or 3 facilities could require access that is adjacent to occupied special-status plant habitat. Although 15-foot-wide maintenance roads would be constructed to provide access to the main dams, saddle dams and dikes, I/O Works, and Funks PGP, there is potential for maintenance equipment to cause erosion of or sedimentation into adjacent habitats in the buffer areas and adversely affect vegetation cover and occupied special-status plant habitat quality. The SWPPP would contain erosion and sedimentation control measures that would be required as part of maintenance activities to prevent erosion and sedimentation off site, and these effects would be avoided. Vegetation maintenance activities for land around facilities that involve grading, tilling, disking, or controlled burns could affect special-status plants or occupied special-status habitats if they are present in the vegetation maintenance areas.

#### CEQA Significance Determination and Mitigation Measures

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. Indirect impacts under Alternative 1 or 3 due to erosion and sedimentation in occupied special-status plant habitats located outside of the construction area would be avoided with implementation of applicable BMPs (e.g., implementation of a SWPPP). 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 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 and 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 and mapped, and 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 from erosion and sedimentation would be avoided and applicable BMPs (e.g., implementation of a SWPPP) would be implemented. Operation impacts on special-status plants from vegetation maintenance 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.

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

The Authority will employ 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 2021), or the most current protocols. Surveys will occur during the season that special-status plant species would be evident and identifiable, which generally is during their blooming period. 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 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 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 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 through consultation with a qualified biologist and with concurrence from CDFW or, for any federally listed species, from USFWS based on site-specific conditions.

Prior to any activities that would result in permanent impacts on special-status plants, the Authority will acquire and permanently protect compensation habitat for each affected species at a minimum 2:1 ratio (2 acres restored or created for every 1 acre filled), but the final compensation ratios will be based on site-specific information and determined through coordination with state and/or federal agencies (CDFW, USFWS) during permit processing. Compensation habitat will consist of existing off-site occupied habitat acquired in-fee, through conservation easements, or from a certified conservation bank. The Authority will monitor compensation habitat annually to verify that the habitat suitability is maintained. 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 habitat and determine and implement appropriate management measures to maintain the habitat. The Authority will submit annual monitoring reports to CDFW or, for any federally listed species, to USFWS for review and determination 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**

A qualified botanist employed by the Authority will conduct special-status plant surveys of vegetation maintenance areas in annual grassland, chaparral, oak woodland and savanna, and wetlands at a minimum of every 3 years. If any special-status plants are found in or within 50 feet of the vegetation maintenance areas, the Authority will fence and avoid the plants that could be affected by surface-disturbing maintenance activities.

NEPA Conclusion

The construction and operation effects under Alternative 1 or 3 would be the same as those described above for CEQA. Construction of Alternative 1 or 3 would result in a substantial adverse effect on special-status plant species, but through implementation of BMPs and the Mitigation Measures VEG-1.1 and VEG-1.2 construction effects would be reduced to no adverse effect. Operation of Alternative 1 or 3 could result in a substantial adverse effect on special-status plant species, but through implementation of BMPs and Mitigation Measure VEG-1.3 operation effects would be reduced to no adverse effect.

**Alternative 2**

The extent of Alternative 2 permanent and temporary impacts, quantified as described above in Section 9.3, *Methods of Analysis*, is shown in Tables 9-4a and 9-4b. All land cover type acreages are preliminary, particularly for the wetland and non-wetland water types, which are subject to change pending field review and verification by the USACE and State Water Board.

**Table 9-4a. Alternative 2 Acreages of Permanent Impacts on Special-Status Plant Habitats, Sensitive Natural Communities, and Wetland and Non-Wetland Water Types in Project Component Areas**

Project Components	Annual Grassland <sup>1</sup>	Blue Oak Woodland	Canal	Chamise Chaparral	Ditch	Foothill Pine <sup>1</sup>	Forested Wetland	Freshwater Marsh	Managed Wetland	Mixed Chaparral	Oak Savanna <sup>1</sup>	Pond	Reservoir	Scrub-Shrub Wetland	Seasonal Wetland	Perennial Stream	Intermittent Stream	Ephemeral Stream	Upland Riparian <sup>1</sup>
Sacramento River Diversion and Conveyance to Regulating Reservoirs	0	0	<1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	<1
Regulating Reservoirs and Conveyance Complex	181	0	3	0	<1	0	<1	4	0	0	0	0	<1	<1	2	<1	<1	<1	<1
Sites Reservoir Inundation Area	10,648	108	0	0	<1	0	3	38	0	0	209	36	0	9	251	22	160	16	42
Inlet/Outlet Works	24	0	0	0	0	0	0	0	0	0	2	0	0	0	<1	0	<1	<1	<1
Dams and Dikes	83	5	0	0	0	0	<1	<1	0	0	5	0	0	<1	8	1	3	<1	2
Quarries and Rock Processing Facilities	437	0	0	0	0	0	0	0	0	0	17	2	0	0	2	0	4	2	0

Conveyance to Sacramento River	0	0	<1	0	<1	0	0	0	0	0	0	0	0	0	0	<1	0	0	<1
Roads	832	131	1	141	<1	86	1	1	0	8	117	5	0	<1	61	<1	21	4	44
Recreation Areas	450	53	0	0	0	0	0	0	0	0	213	<1	0	<1	0	0	1	2	3
<b>Alternative 2 Total Permanent Impacts</b>	12,655	297	4	141	<1	86	4	43	0	8	563	43	<1	9	323	23	189	24	92

<sup>1</sup> Sensitive natural community or may contain areas that are sensitive natural communities. In annual grassland, there is potential for California brome – blue wildrye prairie, gum plant patches, needlegrass – melic grass grassland, and white-tip clover swales. In foothill pine, there is potential for foothill pine-herbaceous. In oak savanna, there is potential for valley oak woodland and forest.

**Table 9-4b. Alternative 2 Acreages of Temporary Impacts on Special-Status Plant Habitats, Sensitive Natural Communities, and Wetland and Non-Wetland Water Types in Project Component Areas**

Project Components	Annual Grassland <sup>1</sup>	Blue Oak Woodland	Canal	Chamise Chaparral	Ditch	Foothill Pine <sup>1</sup>	Forested Wetland	Freshwater Marsh	Managed Wetland	Mixed Chaparral	Oak Savanna <sup>1</sup>	Pond	Reservoir	Scrub-Shrub Wetland	Seasonal Wetland	Perennial Stream	Intermittent Stream	Ephemeral Stream	Upland Riparian <sup>1</sup>
Sacramento River Diversion and Conveyance to Regulating Reservoirs	0	0	<1	0	<1	0	1	0	0	0	0	0	0	1	0	0	0	0	<1

<b>Project Components</b>	<b>Annual Grassland<sup>1</sup></b>	<b>Blue Oak Woodland</b>	<b>Canal</b>	<b>Chamise Chaparral</b>	<b>Ditch</b>	<b>Foothill Pine<sup>1</sup></b>	<b>Forested Wetland</b>	<b>Freshwater Marsh</b>	<b>Managed Wetland</b>	<b>Mixed Chaparral</b>	<b>Oak Savanna<sup>1</sup></b>	<b>Pond</b>	<b>Reservoir</b>	<b>Scrub-Shrub Wetland</b>	<b>Seasonal Wetland</b>	<b>Perennial Stream</b>	<b>Intermittent Stream</b>	<b>Ephemeral Stream</b>	<b>Upland Riparian<sup>1</sup></b>
Regulating Reservoirs and Conveyance Complex	0	0	0	0	0	0	1	0	0	0	0	0	0	1	0	0	0	0	1
Sites Reservoir Inundation Area	550	0	3	0	<1	0	<1	9	0	0	0	3	223	<1	15	<1	3	1	0
Inlet/Outlet Works	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	<1
Dams and Dikes	34	2	0	0	0	0	<1	<1	0	0	2	<1	0	<1	2	0	<1	<1	0
Quarries and Rock Processing Facilities	98	0	0	1	0	0	<1	<1	0	0	1	<1	0	0	<1	0	1	0	2
Conveyance to Sacramento River	0	0	2	0	5	0	0	0	6	0	0	0	0	0	0	0	3	0	2
Roads	226	21	0	0	0	0	<1	1	0	0	16	1	0	<1	17	0	7	1	0
Recreation Areas	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5
<b>Alternative 2 Total</b>	908	23	5	1	5	0	2	10	6	0	20	4	223	2	34	<1	14	2	<1

<b>Project Components</b>	<b>Annual Grassland<sup>1</sup></b>	<b>Blue Oak Woodland</b>	<b>Canal</b>	<b>Chamise Chaparral</b>	<b>Ditch</b>	<b>Foothill Pine<sup>1</sup></b>	<b>Forested Wetland</b>	<b>Freshwater Marsh</b>	<b>Managed Wetland</b>	<b>Mixed Chaparral</b>	<b>Oak Savanna<sup>1</sup></b>	<b>Pond</b>	<b>Reservoir</b>	<b>Scrub-Shrub Wetland</b>	<b>Seasonal Wetland</b>	<b>Perennial Stream</b>	<b>Intermittent Stream</b>	<b>Ephemeral Stream</b>	<b>Upland Riparian<sup>1</sup></b>
<b>Temporary Impacts</b>																			

<sup>1</sup> Sensitive natural community or may contain areas that are sensitive natural communities. In annual grassland, there is potential for California brome – blue wildrye prairie, gum plant patches, needlegrass – melic grass grassland, and white-tip clover swales. In foothill pine, there is potential for foothill pine-herbaceous. In oak savanna, there is potential for valley oak woodland and forest.

Construction

Construction of Alternative 2 would result in direct permanent and temporary impacts and indirect impacts on special-status plant species. Table 9-3 shows the acreages of direct permanent and temporary impacts on the two modeled plant species. Tables 9-4a and 9-4b show the acreages of direct permanent and temporary impacts on each habitat type under Alternative 2. Overall, less acreage would be affected under Alternative 2 as compared to Alternative 1 or 3 but impacts on several habitats would be greater—chamise chaparral, foothill pine, mixed chaparral, pond, shrub-scrub wetland, intermittent stream, and upland riparian. The BMPs for Alternatives 1 and 3 would also apply to Alternative 2. While these preconstruction and construction measures are part of Alternative 2, their implementation would not prevent the permanent and direct loss or habitat quality degradation for special-status plant species in the Alternative 2 footprint.

Construction of Alternative 2 would result in the loss of special-status plant species through direct removal and habitat degradation. The Alternative 2 footprint contains adobe lily, as well as the four special-status plant species discussed for Alternatives 1 and 3. Permanent impacts on special-status plant species would result from construction of the same components as described for Alternatives 1 and 3 with two differences. First, additional permanent impacts from construction of the new South Road under Alternative 2 would result in the loss of annual grassland, chamise, mixed chaparral, blue oak woodland, oak savanna, and seasonal wetland. Second, permanent impacts on special-status plant habitats would be reduced due to the decreased reservoir size and inundation area. Under Alternative 2, temporary and indirect impacts would occur at the same facilities as those as described for Alternatives 1 and 3.

Operation

As described for Alternatives 1 and 3, there would be no additional impact from operation of the recreation areas on special-status plant species under Alternative 2, as the recreation areas would be the same between Alternatives 1, 2, and 3. Impacts of vegetation maintenance would also be the same between Alternatives 1, 2, and 3.

CEQA Significance Determination and Mitigation Measures

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. 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. Operation impacts on special-status plants would be the same as Alternatives 1 and 3. 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-1.3 would reduce the level of impact from vegetation maintenance to less than significant.

### NEPA Conclusion

The construction effects under Alternative 2 would be the same as those described above for CEQA. Construction of Alternative 2 would result in a substantial adverse effect on special-status plant species, but through implementation of BMPs and the Mitigation Measure VEG-1.1 and VEG-1.2 construction effects would be reduced to no adverse effect. Operation of Alternative 2 could result in a substantial adverse effect on special-status plant species. Through implementation of BMPs and Mitigation Measure VEG-1.3, operation effects would be reduced to no adverse effect.

### **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 Game or U.S. Fish and Wildlife Service**

#### *No Project*

The No Project Alternative would not construct or operate any new facilities, and there would be no temporary impacts on sensitive natural communities from temporary construction staging or other disturbance and no permanent impacts from placement of facilities in sensitive natural communities.

#### Significance Determination

Under the No Project Alternative, no new facilities would be constructed or operated, and there would be no temporary or permanent impacts due to the Project. The No Project Alternative would have no impact on state or federally protected sensitive natural communities.

#### *Alternatives 1 and 3*

##### Construction

Construction of Alternative 1 or 3 would result in direct permanent and temporary impacts on sensitive natural communities. Tables 9-2a and 9-2b show the acreages of permanent and temporary impacts on the sensitive natural community types in each component area under Alternatives 1 and 3. Indirect impacts due to construction of Alternative 1 or 3 could occur due to changes in hydrology of sensitive natural communities outside the construction area due to erosion and sedimentation during construction.

BMPs are incorporated into Alternatives 1 and 3 to avoid and minimize permanent and temporary impacts on sensitive natural communities. These BMPs would limit direct impacts on sensitive natural communities because they would train construction workers on the importance of preserving sensitive natural communities outside of the construction footprint and require fencing of sensitive natural communities where avoidance is feasible. The BMPs would also restrict off-road driving in the construction area, where avoided sensitive natural communities could be damaged or destroyed. BMPs for controlling invasive species by removing, bagging, and disposing at a waste facility would reduce the potential for the spread of invasive plant species into sensitive natural communities. The

BMPs would also limit indirect impacts on sensitive natural communities by implementing a SWPPP that would protect habitats outside of the construction area from erosion and sedimentation. Preconstruction and construction measures are part of Alternatives 1 and 3. The measures would not prevent the permanent loss or habitat quality degradation of sensitive natural communities in the footprint for Alternatives 1 and 3.

Sensitive natural community types include upland riparian habitat, sensitive natural communities in annual grasslands, and sensitive natural communities in oak savanna. All these sensitive natural community types would experience similar types of permanent, direct impacts associated with construction, including earth moving, vegetation removal, filling, and hydrological interruption. Construction activities would also result in the temporary disturbance of these sensitive natural community types during construction and reduced habitat quality in the interim between the completion of construction and the establishment of habitat restoration plantings. The impacts on riparian habitat that is also a component of SRA cover for fish are described for Impact FISH-1 in Chapter 11.

There would be no permanent or temporary impacts associated with the following sensitive communities and facilities because of the lack of the sensitive community in the area of the facility:

- no permanent impacts on upland riparian habitat from the construction of the Sacramento River diversion and conveyance to regulating reservoirs or the regulating reservoirs and conveyance complex
- no permanent or temporary impacts on annual grassland from the construction of the Sacramento River diversion or conveyance to the Sacramento River
- no permanent or temporary impacts on oak savanna from the construction of the Sacramento River diversion and conveyance to regulating reservoirs, regulating reservoirs and conveyance complex, conveyance to Sacramento River, or Comm Road South
- no temporary impact on upland riparian habitat, annual grassland, or oak savanna from the construction of new roads or recreation areas

### Operation

Operation of the Sites Reservoir under Alternative 1 or 3 would not result in additional impacts beyond those described for construction, including ongoing recreational activities in the three recreation areas after construction and impacts on sensitive natural communities from maintenance activities after construction. Additional operation-phase impacts could occur in undeveloped parts of the recreation areas due to visitor use of spaces outside of the constructed facility. As discussed for operation effects in Impact VEG-1, the construction impact acreages for the recreation areas are overestimated and there would be no additional operations impacts on sensitive natural communities in the recreation areas.

Maintenance of Alternatives 1 and 3 facilities would require access that is adjacent to sensitive natural communities. Although 15-foot-wide maintenance roads would be constructed to provide



access to the main dams, saddle dams and dikes, I/O Works, and Funks PGP, there is potential for maintenance equipment to cause erosion of or sedimentation into adjacent sensitive natural communities in the buffer areas and adversely affect vegetation cover or habitat quality. SWPPP and erosion and sedimentation control measures would be required as part of maintenance activities, and these effects would be avoided through implementation of these measures. Vegetation maintenance activities for land around facilities that involve grading, tilling, disking, or controlled burns could affect sensitive natural communities if they are present in the vegetation maintenance areas.

### CEQA Significance Determination and Mitigation Measures

Alternative 1 or 3 would result in significant impacts on state- and federally 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. Indirect impacts under Alternative 1 or 3 due to erosion and sedimentation into sensitive natural communities located outside of the construction area would be avoided with implementation of applicable BMPs (e.g., implementation of a SWPPP). The sensitive natural communities in the construction footprint are significant 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 reduce the level of impact on sensitive communities within annual grassland 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 on sensitive natural communities from erosion and sedimentation would be avoided and applicable BMPs (e.g., implementation of a SWPPP) would be implemented. 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. 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 employ 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. 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 1 year 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 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 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 in 250 feet of the community site. The size of activity exclusion zones may be reduced 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), but the final compensation ratios will be based on site-specific information and determined through coordination with state and/or federal agencies (CDFW, USFWS) during permit processing. In addition to mitigating the loss of riparian habitat, specific measures will be included 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. 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 will consist of existing off-site occupied habitat acquired in-fee, through conservation easements, or from a certified conservation bank. The Authority will monitor compensation communities annually to verify that the community suitability is maintained. 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 community and determine and implement appropriate management measures to maintain the community. The Authority will submit annual monitoring reports to CDFW or, for any federally protected communities, to USFWS for review and determination 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**

A biologist employed by the Authority will 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 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 exceed 0.1 acre, the Authority will implement additional compensatory mitigation based on the same requirements as described in Mitigation Measure VEG-2.2.

NEPA Conclusion

The construction and operation effects under Alternative 1 or 3 would be the same as those described above for CEQA. Construction of Alternative 1 or 3 would result in a substantial adverse effect on sensitive natural communities. Implementation of BMPs and the Mitigation Measures VEG-2.1 and VEG-2.2 would reduce the construction effects to no adverse effect for sensitive communities in annual grassland, but the effects would remain substantially adverse for upland riparian and oak savanna. Operation of Alternative 1 or 3 could result in a substantial adverse effects on sensitive natural communities. Implementation of BMPs and Mitigation Measure VEG-2.3 would reduce operation effects on sensitive natural communities to no adverse effect.

## *Alternative 2*

### Construction

The extent of Alternative 2 permanent and temporary impacts, quantified as described above in Section 9.3, *Methods of Analysis*, is shown in Tables 9-4a and 9-4b. All land cover type acreages are preliminary and subject to change pending field review. The BMPs for Alternatives 1 and 3 would also apply to Alternative 2. While these preconstruction and construction measures are part of Alternative 2, their implementation would not prevent the permanent loss or habitat quality degradation of sensitive natural communities in the Alternative 2 footprint.

Construction of Alternative 2 would result in the loss of sensitive natural communities through direct removal of vegetation and habitat quality degradation. Permanent and temporary impacts on sensitive natural communities would result from construction of the same facilities as described for Alternatives 1 and 3, with three differences. First, additional permanent impacts from construction of the new South Road under Alternative 2 would result in permanent loss of upland riparian, foothill pine woodland, and oak savanna. Second, permanent impacts resulting from fill of Sites Reservoir on sensitive natural communities would be smaller due to the decreased reservoir size and inundation area. Third, additional impacts from construction of the Sacramento River discharge would result in permanent loss of upland riparian. The effects on upland riparian that is also a component of SRA cover for fish are described for Impact FISH-1 in Chapter 11.

Under Alternative 2, temporary impacts would be as described for Alternatives 1 and 3, except for additional temporary loss of upland riparian at the Sacramento River discharge.

### Operation

As described for Alternatives 1 and 3, there would be no additional impact in recreation areas on sensitive natural communities under Alternative 2. All impacts on sensitive natural communities in the recreation areas have been included in the construction phase impacts, and additional impacts for access roads in the area of disturbance under Alternative 2 would be avoided during the operation phase by implementation of BMPs, including a SWPPP. The impacts of vegetation maintenance would also be the same between Alternatives 1, 2, and 3.

### CEQA Significance Determination and Mitigation Measures

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. 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 upland riparian, foothill pine woodland, and oak savanna.

Operation impacts on sensitive natural communities would be avoided and applicable BMPs (e.g., implementation of a SWPPP) 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 Mitigation Measure VEG-2.3 would reduce the level of impact from vegetation maintenance to less than significant.

### NEPA Conclusion

The construction effects under Alternative 2 would be the same as those described above for CEQA. Construction of Alternative 2 would result in a substantial adverse effect on sensitive natural communities, but through implementation of BMPs and the Mitigation Measures VEG-2.1 and VEG-2.2 construction effects would be reduced to no adverse effect for sensitive communities in annual grassland. Effects on upland riparian, foothill pine woodland, and oak savanna would remain significant and unavoidable. Operation of Alternative 2 could result in a substantial adverse effect on sensitive natural communities. Through implementation of BMPs and Mitigation Measure VEG-2.3, operation effects would be reduced to no adverse effect.

**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**

### *No Project*

The No Project Alternative would not construct or operate any new facilities. State and federally protected wetlands and non-wetland waters occur in the study area. Because the No Project Alternative would not construct or operate new facilities, there would be no temporary impacts on wetlands and non-wetland waters from temporary construction staging or other disturbance or permanent impacts from placement of facilities in wetlands or non-wetland waters.

### Significance Determination

Under the No Project Alternative, no new facilities would be constructed or operated, and there would be no temporary or permanent impacts due to the Project. The No Project Alternative would have no impact on state or federally protected wetlands and non-wetland waters.

### *Alternatives 1 and 3*

#### Construction

Construction of Alternative 1 or 3 would result in direct permanent and temporary impacts and indirect impacts on wetlands and non-wetland waters, including waters of the state regulated by the State Water Board and federally protected wetlands and non-wetland waters of the United States regulated by the USACE. Tables 9-2a and 9-2b show the acreages of direct permanent and temporary impacts on each wetland and non-wetland water type in each component area under Alternatives 1 and 3.

The Authority has incorporated BMPs into the design of Alternatives 1 and 3 to avoid and minimize permanent and temporary impacts on wetlands and non-wetland waters. These BMPs would limit direct impacts on wetlands and non-wetland waters because they would train construction workers on the importance of preserving wetlands and non-wetland waters outside of the construction footprint and require fencing of wetlands and non-wetland waters where avoidance is feasible. The BMPs would also restrict off-road driving in the construction area, where avoided wetlands and non-wetland waters could be damaged or destroyed. BMPs for controlling invasive species by removing, bagging, and disposing at a waste facility would reduce the potential for the spread of invasive plant species into wetlands and non-wetland waters. The BMPs would also limit indirect impacts on wetlands and non-wetland waters by implementing a SWPPP that would protect habitats outside of the construction area from erosion and sedimentation. While these preconstruction and construction measures are part of Alternatives 1 and 3, the measures would not prevent the permanent loss or habitat quality degradation of wetlands and non-wetland waters in the Alternatives 1 and 3 footprint.

### Wetlands

Construction of Alternative 1 or 3 would result in the loss of wetlands through direct removal, filling, and hydrological interruption and in habitat quality degradation. Permanent impacts on wetlands would result from earth moving and vegetation removal for construction of facilities associated with the regulating reservoirs and conveyance complex, Sites Reservoir and related facilities, conveyance to the Sacramento River, recreation areas, and new roads. Construction of the aforementioned facilities would result in the permanent loss of forested wetland, freshwater marsh, scrub-shrub wetland, and seasonal wetland in the Alternatives 1 and 3 footprint. The impacts on forested wetland or scrub-shrub wetland that is also a component of SRA cover for fish are described for Impact FISH-1 in Chapter 11. There would be no permanent impacts on wetlands from the construction of the Sacramento River diversion and conveyance to regulating reservoirs.

Because exact locations of construction-related activities are not known, construction of the new roads is expected to result in direct permanent loss of wetlands in the entire construction disturbance area. A substantial portion of these impacts would be avoided or be temporary if the wetlands were avoided or restored after construction. The maximum extent (in acres) of wetlands that would be affected by construction of the new roads is shown in Table 9-2a.

Under Alternatives 1 and 3, construction activities would also result in the temporary disturbance of wetlands during construction and reduced habitat quality in the interim between the completion of construction and the establishment of habitat restoration plantings. Temporary impacts on wetlands would occur during construction of the regulating reservoirs and conveyance complex, Sites Reservoir and related facilities, conveyance to Sacramento River, the day-use boat ramp/parking recreation area, and roads. Construction of most facilities would result in temporary impacts on freshwater marsh, managed wetland, scrub-shrub wetland, and seasonal wetland. There would be no temporary impacts on wetlands from the construction of the Sacramento River diversion and conveyance to regulating reservoirs.

Indirect impacts due to construction of Alternative 1 or 3 could occur due to changes in hydrology of wetlands outside the construction area due to erosion and sedimentation during construction.

### Non-Wetland Waters

Construction would result in the loss of non-wetland waters and habitat quality degradation through direct removal, filling, and hydrological interruption. Permanent impacts on non-wetland waters would result from earth moving and vegetation removal for construction of the regulating reservoirs, Sites Reservoir and related facilities, conveyance to Sacramento River, recreation areas, and new roads. Construction of these facilities would result in the permanent loss of canal, ditch, ephemeral stream, intermittent stream, perennial stream, pond, and a small area of Funks Reservoir in the footprint of Alternative 1 or 3. There would be no permanent impacts on non-wetland waters from the construction of the Sacramento River diversion and conveyance to regulating reservoirs.

Because exact locations of construction-related activities are not known, construction of the new roads is expected to result in direct permanent loss of non-wetland waters in the entire construction disturbance area. A substantial portion of these impacts would be avoided or be temporary if the non-wetland waters were avoided or restored after construction. The maximum extent (in acres) of non-wetland waters that would be affected by construction of the new roads is shown in Table 9-2a.

Construction activities would also result in the temporary disturbance of non-wetland waters during construction and reduced habitat quality in the interim between the completion of construction and the establishment of habitat restoration plantings. Temporary impacts on non-wetland waters would occur during construction of the Sacramento River diversion and conveyance to regulating reservoirs, Sites Reservoir and related facilities, conveyance to Sacramento River, the day-use boat ramp/parking recreation area, and roads. Construction of these facilities would result in temporary impacts on canal, ditch, ephemeral stream, intermittent stream, pond, and reservoir.

Indirect construction impacts, such as erosion and sedimentation, could change the hydrology of non-wetland waters outside the construction area.

### Operation

Operation of the Sites Reservoir under Alternative 1 or 3 would not result in additional impacts beyond those described for construction, including ongoing recreational activities in the three recreation areas after construction, and impacts on wetlands and non-wetland waters from maintenance activities after construction. As discussed for operation effects in Impact VEG-1, the construction impact acreages for the recreation areas are overestimated and there would be no additional operations impacts on wetlands and non-wetland waters in the recreation areas.

Maintenance of Alternatives 1 and 3 facilities would require access that is adjacent to wetlands and non-wetland waters. Although 15-foot-wide maintenance roads would be constructed to provide access to the main dams, saddle dams and dikes, I/O Works, and Funks PGP, there is

potential for maintenance equipment to cause erosion of or sedimentation into adjacent wetlands and non-wetland waters in the buffer areas and adversely affect vegetation cover or habitat quality. As part of the SWPPP, erosion and sedimentation control measures would be required as part of maintenance activities, and these effects would be avoided. Vegetation maintenance activities for land around facilities that involve grading, tilling, disking, or controlled burns could affect wetlands or non-wetland waters if they are present in the vegetation maintenance areas.

### CEQA Significance Determination and Mitigation Measures

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. While measures would be implemented before and during construction to 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 would ensure no net loss of wetlands and non-wetland waters in perpetuity.

Operation impacts on wetlands and non-wetland waters from erosion and sedimentation would be avoided and applicable BMPs (e.g., implementation of a SWPPP) would be implemented. 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 the BMP “Construction Best Management Practices and Monitoring for Fish, Wildlife, and Plant Species Habitats, and Natural Communities”.

- 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 wetland, stream, or pond. The size of activity exclusion zones may be reduced through consultation with a qualified biologist. Where temporary impacts on wetlands, streams, or ponds cannot be avoided, the impact will be compensated as a permanent impact.

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

For permanently affected 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. The compensation will be 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 not be duplicated. Where impacts on forested wetland and scrub-shrub wetland overlap with loss of SRA cover for fish, specific measures will be included to compensate for the loss of SRA cover (area and linear feet). The mitigation credits for SRA cover mitigation will apply toward wetland mitigation requirements (i.e., the acreage required for compensation 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 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 mitigation bank to allow for economy of scale and higher quality habitat due to large patch size. The Authority will provide written evidence to the resource agencies that compensation has been established through the purchase of mitigation credits.
- The Authority will employ 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 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 be adequate to 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 3 years, or 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 vegetative cover of wetland plants is equivalent to reference sites at the end of the monitoring period, the revegetation will be considered successful. If the survival criterion 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 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. The compensation will be 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 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 Authority will purchase offsite mitigation bank credits at a USACE-approved mitigation bank. Out-of-kind compensation may be used based for stream or pond (i.e., forested wetland [riparian], freshwater marsh, scrub-shrub wetland [riparian], or seasonal wetland), if approved by the regulatory agencies. 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 employ 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 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 3 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**

A wetland specialist employed by the Authority will 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. All requirements of the SWPPP will also be implemented to avoid indirect impacts on water quality. 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.

### NEPA Conclusion

The construction and operation effects under Alternatives 1 and 3 would be the same as those described above for CEQA, and the same mitigation measures would be implemented. Construction of Alternatives 1 and 3 would result in a substantial adverse effect on wetlands and non-wetland waters, but through implementation of BMPs and the Mitigation Measures VEG-3.1, VEG-3.2, and VEG-3.3, construction effects would be reduced to no adverse effect. Operation of Alternative 1 or 3 could result in substantial adverse effects on wetlands and non-wetland waters. Through implementation of BMPs and Mitigation Measure VEG-3.4, operation effects would be reduced to no adverse effect.

### *Alternative 2*

#### Construction

Construction of Alternative 2 would result in direct permanent and temporary impacts and indirect impacts on wetlands and non-wetland waters, including waters of the state regulated by the State Water Board and federally protected wetlands and non-wetland waters of the U.S. regulated by the USACE. Tables 9-4a and 9-4b show the acreages of direct permanent and temporary impacts on each wetland and non-wetland water type under Alternative 2. The BMPs for Alternatives 1 and 3 would also apply to Alternative 2. While these preconstruction and construction measures are part of Alternative 2, their implementation would not prevent the permanent loss or habitat quality degradation of wetlands and non-wetland waters in the Alternative 2 footprint.

Construction of Alternative 2 would result in the loss of wetlands and non-wetland waters and habitat quality degradation through direct removal, filling, and hydrological interruption. Permanent and temporary impacts on wetlands and non-wetland waters would result from construction of the same facilities as described for Alternatives 1 and 3 with two differences. First, additional impacts from construction of the new South Road under Alternative 2 would result in permanent loss of forested wetland, seasonal wetland, scrub-shrub wetland, ephemeral stream, and intermittent stream. Second, permanent impacts resulting from fill of Sites Reservoir on forested wetland, freshwater marsh, managed wetland, scrub-shrub wetland, and seasonal wetland would be smaller due to the decreased reservoir size and inundation area. The impacts on forested wetland or scrub-shrub wetland that is also a component of SRA cover for fish are described for Impact FISH-1 in Chapter 11.

Under Alternative 2, temporary and indirect impacts would be as described for Alternatives 1 and 3.

### Operation

As described for Alternatives 1 and 3, there would be no additional impacts from operation of the recreation areas for Alternative 2 on wetlands and non-wetland waters. The impacts of vegetation maintenance would also be the same between Alternatives 1, 2, and 3.

### CEQA Significance Determination and Mitigation Measures

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. 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 Alternatives 1 and 3. 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-3.4 would reduce the level of impact from vegetation maintenance to less than significant.

### NEPA Conclusion

The construction effects under Alternative 2 would be the same as those described above for CEQA, and the same mitigation measures would be implemented. Construction of Alternative 2 would result in a substantial adverse effect on wetlands and non-wetland waters, but through implementation of BMPs and the Mitigation Measures VEG-3.1, VEG-3.2, and VEG-3.3, construction effects would be reduced to no adverse effect. Operation of Alternative 2 could result in substantial adverse effects on wetlands and non-wetland waters. Through implementation of BMPs and Mitigation Measure VEG-3.4, operation effects would be reduced to no adverse effect.

### **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**

All local policies and ordinances that could pertain to the Project are described in Appendix 4A, Section 4A.5.3, *Local/Regional Policies and Regulations*.

### ***No Project***

The No Project Alternative would not construct or operate any new facilities. Therefore, there would be no conflict with local policies or ordinances that protect vegetation and wetland resources.

### ***Significance Determination***

Under the No Project Alternative, no new facilities would be constructed or operated, and there would be no temporary or permanent impacts due to the Project. The No Project Alternative would have no conflicts with local policies or ordinances.

### ***Alternatives 1 and 3***

#### ***Construction***

As described in Impacts VEG-1, VEG-2, and VEG-3, construction of Alternative 1 or 3 would affect vegetation and wetland resources. These resources are protected by policies in the Colusa County General Plan (Colusa County 2012), Glenn County General Plan (Glenn County 2020), Tehama County General Plan (Tehama County 2009), and Yolo County General Plan (County of Yolo 2009). General plan policies for these counties protect vegetation and wetland resources such as special-status plant species, riparian habitat, oak woodlands, wetlands, and streams. The Yolo County General Plan also protects large valley oaks (*Quercus lobata*), although there are none in the Alternatives 1 and 3 footprint in Yolo County, and promotes removal of invasive plant species.

As described under Impacts VEG-1, VEG-2, and VEG-3, BMPs are incorporated into Alternatives 1 and 3 to avoid and minimize permanent and temporary impacts on special-status species, sensitive natural communities, wetlands, and non-wetland waters.

The BMPs would not prevent the permanent loss or habitat quality degradation of special-status species habitats, sensitive natural communities, wetlands, and non-wetland waters in the footprint for Alternatives 1 and 3. As described for Impacts VEG-1, VEG-2, and VEG-3, construction of Alternative 1 or 3 facilities would result in permanent and temporary impacts on special-status species habitats, sensitive natural communities, wetlands, and non-wetland waters. One vegetation community not included in Impact VEG-2 as a sensitive natural community is blue oak woodland, which is protected by county policies, as well as the state Oak Woodlands Conservation Act. The extent of blue oak woodland that would be permanently and temporarily affected by construction of Alternative 1 or 3 is shown in Tables 9-2a and 9-2b.

In Glenn County, construction of the GCID Main Canal head gate and improvements would result in temporary impacts on upland riparian habitat and wetlands located in staging areas. In Colusa County, construction of the Sites Reservoir and related facilities would result in permanent and temporary impacts on special-status species habitats, sensitive natural communities, wetlands, non-wetland waters, and blue oak woodland. In Yolo County, construction of the Dunnigan Pipeline and CBD outlet would result in permanent and temporary impacts on upland riparian habitat, wetlands, and non-wetland waters. No vegetation or wetland

resources protected by policies in the Tehama General Plan would be affected by work at the RBPP, the only Alternative 1 or 3 facility in Tehama County, because no ground disturbance would occur.

### Operation

Operation under Alternative 1 or 3 in the recreation areas would not result in additional impacts or require additional mitigation measures. Vegetation maintenance activities for land around facilities that involve grading, tilling, disking, or controlled burns could affect blue oak woodland if it is present in the vegetation maintenance areas.

### CEQA Significance Determination and Mitigation Measures

Alternative 1 or 3 would have significant impacts on sensitive vegetation and wetland resources protected by local general plan policies. 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 identified ratios 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.

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

This mitigation measure is described for Impact VEG-2.

### **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-1.21 and WILD-1.22.
- Operation or parking of vehicles, digging, trenching, slope cuts, soil compaction, grading, paving, or placement of fill will be prohibited in at least 6 feet outside the driplines of retained oak woodland trees.
- Any off-site 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 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.

Prior to any activities that would result in permanent impacts on oak woodlands, the Authority will mitigate the loss of oak woodlands at a minimum 1:1 ratio (1 acre restored or created for every 1 acre removed), but the final compensation ratios will be based on site-specific information and determined through coordination with Colusa County during permit processing. 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 may 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 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. Success criteria for oak woodland plantings may include criteria such as survival of plantings, tree canopy cover, and plant density. If the 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**

A botanist employed by the Authority will 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.

### NEPA Conclusion

The construction and operation effects of Alternatives 1 and 3 would be the same as described above for CEQA. Construction of Alternative 1 or 3 would result in a substantial adverse effect on vegetation and wetland resources that are protected under local general plan policies. Implementation of BMPs and the Mitigation Measures VEG-2.1, VEG-4.1, and VEG-4.2 would reduce the construction effects, but the long-term effects would remain adverse. Operation of Alternative 1 or 3 could result in a substantial adverse effect on oak woodlands protected by general plan policies and the California Oak Woodland Conservation Act, but through implementation of BMPs and Mitigation Measure VEG-4.3 operation effects would be reduced to no adverse effect.

### *Alternative 2*

#### Construction

As described in impacts VEG-1, VEG-2, and VEG-3, construction of Alternative 2 would affect vegetation and wetland resources that are protected by policies in the Colusa County General Plan (Colusa County 2012), Glenn County General Plan (Glenn County 2020), Tehama County General Plan (Tehama County 2009), and Yolo County General Plan (County of Yolo 2009). General plan policies for these counties protect vegetation and wetland resources, including special-status species, riparian habitat, oak woodlands, wetlands, and streams. The BMPs for Alternatives 1 and 3 would also apply to Alternative 2. Blue oak woodland is protected by county policies, as well as the state Oak Woodlands Conservation Act, but is not included in Impact VEG-2 as a sensitive natural community. The extent of blue oak woodland that would be permanently and temporarily affected by construction is shown in Tables 9-4a and 9-4b. Loss of blue oak woodland would be less under Alternative 2 than under Alternative 1 or 3 due to the smaller size of the inundation area.

#### Operation

Operation of recreation areas for Alternative 2 would not result in additional impacts or require additional mitigation measures. All impacts on vegetation and wetland resources protected under local general plan policies have been included in the construction phase impacts for recreation areas, and additional impacts within access road areas throughout the Alternative 2 area would be avoided during the operation phase by implementation of BMPs, including a SWPPP. Impacts of vegetation maintenance would also be the same between Alternatives 1, 2, and 3.

### CEQA Significance Determination and Mitigation Measures

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. 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 Mitigation Measure VEG-4.3 would reduce the level of impact from vegetation maintenance to less than significant.

### NEPA Conclusion

The construction and operation effects of Alternative 2 would be the same as described above for CEQA and the same mitigation measures would be implemented. Construction of Alternative 2 would result in substantial adverse effects on vegetation and wetland resources protected by general plan policies, but through implementation of BMPs and the Mitigation Measures VEG-2.1, VEG-4.1, and VEG-4.2 would reduce the construction effects, but the long-term effects would remain substantially adverse. Operation of Alternative 2 could result in a substantial adverse effect on blue oak woodlands protected by general plan policies and the California Oak Woodland Conservation Act. Through implementation of BMPs and Mitigation Measure VEG-4.3, operation effects would be reduced to no adverse effect.

### **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**

#### *No Project*

The No Project Alternative would not construct or operate any new facilities. Therefore, there would be no conflict with adopted conservation plans.

### Significance Determination

Under the No Project Alternative, no new facilities would be constructed or operated, and there would be no temporary or permanent impacts due to the Project. The No Project Alternative would have no conflicts with any approved conservation plans.

### *Alternatives 1 and 3*

#### Construction

The Yolo County HCP/NCCP (Yolo Habitat Conservancy 2018) and the Yolo Bypass Wildlife Area Land Management Plan (Yolo Bypass Wildlife Area LMP) (California Department of Fish and Game 2008) are the only conservation plans that apply to Alternatives 1 and 3. These plans apply to the Dunnigan Pipeline and CBD outlet, which are the only parts of the Alternatives 1 and 3 footprint located in Yolo County. The construction of Alternatives 1 and 3 is not covered under the Yolo County HCP/NCCP, because the project was not included in the 2030 Countywide General Plan for Yolo County or in the covered activities of the Yolo County HCP/NCCP. Construction of the Dunnigan Pipeline and CBD outlet would create primarily

temporary impacts and a small area of permanent impact that would not conflict with the establishment of conservation areas under the HCP/NCCP. No construction would occur in the Yolo Bypass Wildlife Area under Alternatives 1 and 3, and potential impacts in the wildlife area would consist of only water releases that would not adversely affect vegetation or wetland resources.

As discussed in Impacts VEG-1, VEG-2, and VEG-3 for the conveyance to Sacramento River component, construction of Alternatives 1 and 3 in the Dunnigan Pipeline and CBD outlet footprint would have permanent and temporary impacts on sensitive natural communities, wetlands, and non-wetland waters that are habitats for covered species in the Yolo County HCP/NCCP, consisting of upland riparian, managed wetland, and intermittent stream. Mitigation Measures VEG-2.2, VEG-3.1, VEG-3.2, VEG-3.3, VEG-4.1, and VEG-4.2 for riparian habitat, wetlands, and streams would align with the conservation strategy of the Yolo County HCP/NCCP, in that they would require compensatory mitigation for impacts on these habitat types.

### Operation

Operation under Alternative 1 or 3 would not result in additional impacts or require additional mitigation measures. There would be no operation-related impacts due to conflicts with the Yolo County HCP/NCCP or Yolo Bypass Wildlife Area LMP.

### CEQA Significance Determination and Mitigation Measures

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. 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 these 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**

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

#### **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-3.1: Avoid and Minimize Disturbance of Wetlands and Non-Wetland Waters During Construction Activities**

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

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

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

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

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

NEPA Conclusion

The construction effects under Alternatives 1 and 3 would be the same as those described above for CEQA. Construction of Alternative 1 or 3 would result in a substantial adverse effect on vegetation and wetland resources that are protected under the adopted Yolo County HCP/NCCP or Yolo Bypass Wildlife Area LMP, but through implementation of BMPs and the Mitigation Measures VEG-2.1, VEG-2.2, VEG-3.1, VEG-3.2, VEG-3.3, VEG-4.1, and VEG-4.2 construction effects would be reduced to no adverse effect. Operation of Alternative 1 or 3 would have no additional effects on vegetation and wetland resources protected by the adopted Yolo County HCP/NCCP or Yolo Bypass Wildlife Area LMP.

***Alternative 2***

Construction

As described for Alternatives 1 and 3, construction of Alternative 2 in the Dunnigan Pipeline and CBD outlet footprint would have permanent and temporary impacts on habitats for covered species in the Yolo County HCP/NCCP. Impacts under Alternative 2 would be slightly larger, due to the extension of the pipeline alignment to the Sacramento River. As discussed for Alternatives 1 and 3, construction of the pipeline would not conflict with establishment of conservation areas under the Yolo County HCP/NCCP and the compensatory mitigation proposed for impacts on sensitive natural communities, wetland, and non-wetland waters would

align with the Yolo County HCP/NCCP conservation strategy. The BMPs identified in Section 9.3.1, *Construction*, would also apply to Alternative 2.

### Operation

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.

### CEQA Significance Determination and Mitigation Measures

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 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.

### NEPA Conclusion

The construction effects under Alternative 2 would be the same as those described above for CEQA and the same mitigation measures would be implemented. Construction of Alternative 2 would result in substantial adverse effects on special-status plant species habitats, sensitive natural communities, wetlands, and non-wetland waters protected by the Yolo County HCP/NCCP and Yolo Bypass Wildlife Area LMP. Through implementation of 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, potential conflicts with the adopted Yolo County HCP/NCCP or Yolo Bypass Wildlife Area LMP would be reduced to no adverse effect. Operation of Alternative 2 would have no additional conflicts with these plans.

### **Impact VEG-6: Introduction or increased spread of invasive plant species**

#### *No Project*

The No Project Alternative would not construct or operate any new facilities. Therefore, there would be no potential to introduce or increase the spread of invasive plant species.

### Significance Determination

Under the No Project Alternative, no new facilities would be constructed or operated, and there would be no temporary or permanent impacts due to the Project. The No Project Alternative would have no impact due to introduction or spread of invasive plant species.

## *Alternatives 1, 2, and 3*

### Construction and Operation

The Authority would incorporate BMPs into Alternatives 1, 2, and 3 to avoid and minimize permanent and temporary impacts due to the spread of invasive plants, including “Control of Invasive Plant Species during Construction and Operation” Additionally, the invasive plant species identified Table 9B-5 (Appendix 9B) are also very common and widespread throughout California and the Central Valley; consequently, there is a relatively low likelihood they would spread from the Alternatives 1, 2, and 3 footprints to places where they are not present and have an adverse effect on sensitive terrestrial natural communities, wetlands, or non-wetland waters.

During the operation of Alternative 1, 2, or 3, the use of the on-water recreation facilities and boat ramp could cause the spread of aquatic invasive plant species, such as Brazilian water weed (*Egeria densa*), water hyacinth (*Eichhornia crassipes*), and water milfoil (*Myriophyllum spicatum*) through boating on the Sites Reservoir. The reservoir would be in an area that was mostly terrestrial prior to inundation, and invasive aquatic species could be introduced from boats and boating equipment and become established in the reservoir. Conveyance of water from the Sites Reservoir into canals and downstream systems could further spread aquatic invasive plant propagules.

The operation of Alternative 1, 2, or 3 includes vegetation control that would limit the spread and introduction of invasive species around proposed facilities. Vegetation control activities that are part of Project operation would include the use of vegetation control and grazing around all facilities, recreation areas, and the Project buffer around all facilities. The Reservoir Management Plan would include protocols for invasive aquatic weed control.

### CEQA Significance Determination and Mitigation Measures

Construction and operation of Alternative 1, 2, or 3 would not result in the increased spread of invasive plants that would result in an adverse effect on sensitive terrestrial natural communities, wetlands, or non-wetland waters because of the low likelihood of spread. Implementation of BMPs and vegetation control measures as part of construction, and the Reservoir Management Plan for invasive weed control as part of operation would reduce the potential for introduction and spread. Therefore, the potential for introduction and increased spread of invasive plants is a less-than-significant impact.

### NEPA Conclusion

The construction and operation effects under Alternative 1, 2, or 3 would be the same as those described for CEQA. The potential effects associated with the introduction and increased spread of invasive plants would not be adverse.

## 9.6 References

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