Appendix 3A
# Initial Study

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The appendix is presented in its entirety from the Draft Environmental Impact Report (DEIR), with revisions to text presented as a strikethrough or underline. Text shown with a strikethrough has been deleted from the DEIR. Text that has been added is presented as single underlined. Deleted figures are shown with a dashed border. Added figures do not have unique formatting.

# 3A.1 Introduction

## 3A.1.1 Background

The Long-Term Operation of the State Water Project (Proposed Project) would continue the California Department of Water Resources' (DWR's) ongoing long-term State Water Project (SWP) operations consistent with applicable laws, contractual obligations, and agreements. DWR proposes long-term operation of the SWP that will allow DWR to continue to store, divert, and convey water in accordance with its existing water rights to deliver water pursuant to water contracts and agreements up to full contract quantities. DWR is seeking to optimize water supply and improve operational flexibility while protecting fish and wildlife.

DWR operates the SWP in coordination with the Central Valley Project (CVP), under the Coordinated Operation Agreement between the federal government and the State of California (authorized by Public Law 99–546), as amended on December 12, 2018. The CVP and SWP operate pursuant to water rights permits and licenses that are issued by the State Water Resources Control Board (State Water Board). The CVP and SWP water rights allow appropriation of water by directly using and/or diverting water to storage for later withdrawal and use, or use and rediversion to storage farther downstream for later consumptive use. Among the conditions of those water rights are requirements for projects either to bypass or withdraw water from storage and to help satisfy specific water quality, quantity, and operations criteria in source rivers and within the Sacramento–San Joaquin Delta (Delta).

DWR also operates the SWP in compliance with the existing federal Endangered Species Act (ESA) and California Endangered Species Act (CESA) authorizations for long-term SWP operations, including:

- California Department of Fish and Wildlife (CDFW) 2020 Incidental Take Permit (ITP) for the Long-Term Operation of the State Water Project in the Sacramento-San Joaquin Delta (ITP No. 2081-2019-066-00)
- National Marine Fisheries Service 2019 Biological Opinion on Long-Term Operation of the CVP and the SWP
- U.S. Fish and Wildlife Service 2019 Biological Opinion for the Reinitiation of Consultation on the Coordinated Operations of the CVP and SWP

As a part of ongoing litigation, a federal court has issued orders temporarily modifying certain ESA operational requirements, with which DWR's SWP operations also comply.

DWR intends to seek a new ITP from CDFW, pursuant to Section 2081 of the California Fish and Game Code. The new ITP will cover species that are listed under CESA and are subject to incidental take from long-term operation of the SWP. The four CESA-listed fish species covered in the ITP application include Delta Smelt (*Hypomesus transpacificus*), Longfin Smelt (*Spirinchus thaleichthys*) Bay-Delta Distinct Population Segment, Sacramento River winter-run Chinook Salmon evolutionarily significant unit (ESU; *Oncorhynchus tshawytscha*), and Central Valley spring-run Chinook Salmon ESU (*O. tshawytscha*). In addition, White Sturgeon (*Acipenser transmontanus*) may obtain protection under CESA as a candidate species in 2024 and potentially become a CESA-listed species in 2025. Therefore, DWR is also seeking to include White Sturgeon in the new ITP to conservatively prepare for the species potentially being protected as a candidate for listing and potentially becoming CESA-listed during the duration of the ITP. CDFW is expected to rely on this Initial Study (IS) and Environmental Impact Report (EIR) when issuing a decision on the DWR ITP application.

DWR is the lead agency for compliance with the California Environmental Quality Act (CEQA) and has prepared this IS. The IS has been prepared pursuant to CEQA, California Public Resources Code, Section 21000 et seq., and the State CEQA Guidelines, Title 14 of the California Code of Regulations, Section 15000 et seq.

DWR has prepared this IS to identify potential significant environmental issues, and to narrow the scope of the EIR that was prepared to address the environmental consequences of the Proposed Project. In accordance with Section 15063(c)(3) of the State CEQA Guidelines, this IS presents an analysis addressing a full range of environmental topics and determines whether potential significant environmental effects may occur from the Proposed Project. This IS is neither intended nor required to include the level of detail that must be included in an EIR.

The environmental topics that are determined to have no impact or a less-than-significant impact in this IS will be eliminated from further consideration in the EIR. Only the environmental topics that are determined to have a potentially significant impact from the Proposed Project will be further discussed in the EIR.

## 3A.1.2 Project Objectives

The underlying purpose of the Proposed Project is to obtain incidental take authorization from CDFW pursuant to CESA to allow DWR to continue the long-term operation of the SWP consistent with applicable laws, contractual obligations, and agreements. Consistent with this underlying purpose, DWR's Project objectives are to store, divert, and convey water in accordance with DWR's existing water rights to deliver water pursuant to water contracts and agreements up to full contract quantities and to optimize water supply and improve operational flexibility while protecting fish and wildlife based on the best available scientific information.

### 3A.1.2.1 Anticipated Permits and Approvals

DWR operates the SWP in accordance with applicable statutes and regulations, including applicable water rights permits issued by the State Water Board, the Coordinated Operation Agreement with the U.S. Bureau of Reclamation, biological opinions issued by the U.S. Fish and Wildlife Service and National Marine Fisheries Service, and the ITP for the Long-Term Operation of the State Water Project in the Sacramento–San Joaquin Delta, among other requirements. In accordance with Section 2081(b) of the California Fish and Game Code, CDFW may issue an ITP to authorize take that is

otherwise prohibited by Section 2080 of the California Fish and Game Code as long as the Project meets the conditions set forth in Sections 2081(b) and 2081(c).

~~Additionally, DWR anticipates the State Water Board issuing a water rights time extension for DWR's Feather River/Delta water right permits 16478, 16479, 16481, 16482, 16477, and 16480 to allow long-term operations consistent with the diversion rates and quantities modeled for this Proposed Project.~~

### 3A.1.2.2 Document Organization

This IS is organized as follows:

- Chapter 1, "Introduction," describes the background of the Proposed Project, Project objectives, and the organization of this document, and summarizes the findings of the environmental impact analysis.
- Chapter 2, "Project Description," refers the reader to Chapter 2, "Project Description," in the EIR.
- Chapter 3, "Initial Study Checklist," identifies the environmental resource topics evaluated under CEQA and describes the environmental setting, significance criteria, and results of the analysis of potential environmental impacts of the Proposed Project. This chapter also identifies and summarizes the overall significance of any potential impacts on natural and cultural resources, cumulative impacts, and impacts on humans.
- Chapter 4, "References," lists the sources of information cited in this IS, including literature citations and personal communications.
- Chapter 5, "Document Preparation," lists the individuals who prepared this document.

## 3A.1.3 Summary of Findings

Chapter 3 of this IS contains the CEQA Environmental Checklist, which presents a brief discussion of each resource topic potentially affected and identifies the potential environmental impacts that would occur with the Proposed Project. The analysis focuses on potential effects in the Sacramento River from the confluence with the Feather River to the Delta, the Delta, and Suisun Marsh and Suisun Bay from the continued operation of SWP facilities and issuance of the ITP.

In accordance with Section 15063(c)(3) of the State CEQA Guidelines, the purpose of preparing an IS is to assist preparation of an EIR by focusing the EIR on the effects determined to be potentially significant, identifying resources that would be affected but determined not to be significant, and explaining the reasons for determining that potentially significant effects would not be significant.

Based on the information and analyses presented, this IS identifies and discusses those environmental resources that would not be affected by the long-term operation of the SWP under a new ITP. The Proposed Project would result in no impacts on the following resource topics:

- Aesthetics
- Agriculture and Forestry Resources
- Air Quality
- Biological Resources (Terrestrial)
- Cultural Resources
- Land Use and Planning
- Mineral Resources
- Noise
- Population and Housing
- Public Services

- Energy
- Geology and Soils
- Greenhouse Gas Emissions
- Hazards and Hazardous Materials
- Recreation
- Transportation/Traffic
- Utilities and Service Systems
- Wildfire

The Proposed Project would have the potential to adversely affect the environment; the proposed long-term operation of the SWP would have the potential for adverse effects on the following resource topics:

- Biological Resources (Aquatic Biological Resources): The Proposed Project may result in a significant adverse effect on aquatic biological resources in the Delta. These biological resources would include Delta Smelt, winter-run Chinook Salmon, spring-run Chinook Salmon, and Longfin Smelt, as well as other special-status and recreationally and commercially important species, along with their associated habitat, population abundance, and viability.
- Hydrology and Water Quality: The Proposed Project may result in a significant adverse effect on water quality in the Delta. Because of the direct relationship between surface water hydrology and water quality in the Delta, both topics are discussed in the EIR.
- Tribal Cultural Resources: The Proposed Project could affect a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American Tribe. Although the Tribal consultation process undertaken between DWR and Tribes requesting consultation was not complete at the time this IS was prepared, impacts from the Proposed Project could be significant and are discussed in the EIR.

# 3A.2 Project Description

The underlying purpose of the Long-Term Operations of the State Water Project (SWP) facilities in the Delta, Suisun Marsh, and Suisun Bay (Proposed Project) is to obtain incidental take authorization from the California Department of Fish and Wildlife pursuant to the California Endangered Species Act to allow the California Department of Water Resources (DWR) to continue the long-term operation of the SWP consistent with applicable laws, contractual obligations, and agreements. Consistent with the underlying purpose of the long-term operations of the SWP, DWR's Project objectives are to store, divert, and convey water in accordance with DWR's existing water rights to deliver water pursuant to water contracts and agreements up to full contract quantities and to optimize water supply and improve operational flexibility while protecting fish and wildlife based on the best available scientific information.

DWR has prepared an extensive description of the Proposed Project, which is found in Chapter 2, "Project Description," of the Environmental Impact Report (EIR). Please refer to Chapter 2 in the EIR for the Project description analyzed in this Initial Study.

# 3A.3 Initial Study Checklist

## 3A.3.1 Aesthetics

**Table 3A-1. Potential Impacts on Aesthetics**

| Environmental Issues | Environmental Impact Significance |
|---|---|
| **I. AESTHETICS.**<br>Except as provided in Public Resources Code Section 21099, would the project: | - |
| a) Have a substantial adverse effect on a scenic vista? | No Impact |
| b) Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway? | No Impact |
| c) In nonurbanized areas, substantially degrade the existing visual character or quality of public views of the site and its surroundings? (Public views are those that are experienced from publicly accessible vantage point). If the project is in an urbanized area, would the project conflict with applicable zoning and other regulations governing scenic quality? | No Impact |
| d) Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area? | No Impact |

Note: "-" indicates blank cell

### 3A.3.1.1 Environmental Setting

The visual appearance of the landscape is dependent on the underlying landform and its land cover. Natural landscape elements include topography, geology, hydrology, vegetation, and wildlife. Engineered landscape elements include buildings, roads, infrastructure, and settlement patterns. The visual character of a particular landscape is established by the interaction of these physical elements. The visual quality of the landscape considers the vividness, intactness, and unity of the viewshed, along with considerations related to viewer sensitivity (i.e., the number and type of viewers and the frequency and duration of views) (Federal Highway Administration 1988; U.S. Forest Service 1995).

#### Visual Character

##### Sacramento River Region

The Sacramento Valley is a 10,502-square-mile (27,200-square-kilometer) swath of land running up the center of Northern California. It comprises nine counties in whole or in part: Butte, Colusa, Glenn, Placer, Sacramento, Solano, Sutter, Yolo, and Yuba. The area is defined by the Sacramento River, which runs through its heart and draws on scores of mountain tributaries to the east and west. The portion of the Sacramento River Region within the Project area includes the Sacramento River from the confluence with the Feather River to the Sacramento–San Joaquin Delta (Delta).

The most visible, defining feature of the valley is the Sacramento River. The largest river in California, it originates further north, near Mt. Shasta in Siskiyou County. From there, the waterway heads south-by-southeast, gaining in size and losing altitude as it runs through Shasta and Tehama

counties. The grade flattens as the river enters the valley proper, where the waterway serves as the boundary between Butte and Glenn counties. It eventually makes its way into the San Francisco Bay complex, between Solano and Contra Costa counties (Swan 2023).

Defining activities within the Sacramento River Region include agricultural activities, which generally include row crops, rice, tree crops, and pasture. Rice tends to be cultivated in areas where non-permeable subsoils, such as clay hardpan, prevent water from draining and roots from penetrating deep into the earth. The other three agricultural segments do best in permeable soils.

#### Delta

The Delta, which extends west to the San Francisco Bay, marks the confluence of the Sacramento and San Joaquin rivers. Major waterways and sloughs provide connections between the Sacramento, San Joaquin, Mokelumne, Cosumnes, and Calaveras rivers to the southeast. The smaller waterways traverse a landscape that includes more than 50 named islands and tracts, with hundreds of smaller islands, which vary in size from a few acres to several thousand acres. The larger islands are protected by flood control levees. Most of these levees are armored with large boulders to prevent erosion and scour. Viewed from the water, the armoring on the levees appears in sharp contrast to the water and surrounding vegetation, decreasing the visual quality. The height of the levees restricts views of the interior of the islands from most locations on the water.

The Delta region is nearly flat, with only a few scattered stands of trees. Most of the Delta is used for agricultural purposes. Visible flood management and irrigation facilities include levees and other impoundments, pumping plants, and control gate structures. Transportation infrastructure is limited, with only a few scattered roads and bridges that access the larger islands.

#### Suisun Marsh and Suisun Bay

Suisun Marsh and Suisun Bay are characterized by tidal and freshwater wetlands and riparian woodlands. Upland areas, such as the Montezuma Hills, provide a backdrop with rolling hills and occasional oak woodlands. Much of Suisun Marsh is managed wetland that provides habitat for fish and resident and migrating birds and waterfowl.

### Wild and Scenic Rivers

The National Wild and Scenic Rivers System was created by the U.S. Congress in 1968 (Public Law 90-542; 16 U.S. Code [USC], Section 1271 et seq.) to preserve certain rivers with outstanding natural, cultural, and recreational values in a free-flowing condition and to protect the rivers and their immediate environments.

The California Wild and Scenic Rivers Act (California Public Resources Code [PRC], Section 5093.50 et seq.) was enacted in 1972 to preserve designated rivers or river segments that are free-flowing and possess extraordinary wildlife, fishery, scenic, or recreational values. The act designates rivers or segments of rivers in the state as wild, scenic, or recreational for preserving the highest and most beneficial uses of those rivers.

After a river is designated as wild and scenic, existing recreation, agricultural practices, residential development, and other permitted uses (e.g., power generation and diversion under existing, permitted water rights) may continue. New uses that would substantially degrade the visual character are prohibited. Protection of the river is provided through regulation and programs of federal, state, local, or tribal governments, and through voluntary stewardship by landowners and river users. There are no designated wild and scenic rivers in the Project area.

## State Scenic Highways

The California Scenic Highway Program is intended to protect and enhance California's natural beauty, and to protect the social and economic values provided by the state's scenic resources. The program is administered by the California Department of Transportation (Caltrans). A variety of roadways throughout the state have been officially designated as "scenic corridors." Other roadways have been classified as "eligible" but have not been granted "scenic" status. A state-designed scenic corridor requires, at a minimum, the following actions that are designed to protect the existing visual quality (California Department of Transportation 2023):

- Regulation of land use and density of development
- Detailed land and site planning
- Control of outdoor advertising, including a ban on billboards
- Careful attention to and control of earthmoving and landscaping
- Careful attention to design and appearance of structures and equipment

Table 3A-2 shows designated and eligible scenic highway corridors in the vicinity of State Water Project (SWP) or Central Valley Project (CVP) facilities or waterbodies.

**Table 3A-2. List of Eligible and Officially Designated State Scenic Highways**

| Project Region | Description | Type of Designation |
|---|---|---|
| **Sacramento River Region** | | |
| Sacramento County | SR 160 from Freeport south to the border with Contra Costa County (paralleling the Sacramento River and crossing the Delta) | State |
| Contra Costa County | SR 160 from the border with Sacramento County to the intersection with SR 4, and south on SR 4 to Sellers Avenue (crossing the Delta and the lower San Joaquin River) | Eligible |
| **Delta Region** | | |
| Sacramento County | SR 160 from Freeport south to the border with Contra Costa County (paralleling the Sacramento River and crossing the Delta) | State |
| Contra Costa County | SR 160 from the border with Sacramento County to the intersection with SR 4, and south on SR 4 to Sellers Avenue (crossing the Delta and the lower San Joaquin River) | Eligible |
| **Suisun Marsh Region** | | |
| Solano County | SR 37 from Vallejo to Sears Point (crossing a portion of the northern San Francisco Bay) | Eligible |

Sources: California Department of Transportation 2017, 2019

Notes:

SR = State Route

## 3A.3.1.2 Discussion

Would the Project:

**a) Have a substantial adverse effect on a scenic vista?**

The Proposed Project would not involve any new construction of water facilities, infrastructure, or result in land disturbance. Furthermore, no changes in land use (i.e., conversion from agricultural land to nonagricultural land) are anticipated because of the Proposed Project. Therefore, ***no impact*** on an existing scenic vista would occur.

Section 3A.3.10, "Hydrology and Water Quality," of this Initial Study (IS) concludes that the proposed long-term operation of the SWP would remain within the historical range of past SWP operations and would not result in altering downstream surface water flows in ways that would alter existing visual resources or scenic vistas. ***No impact*** on an existing scenic vista would occur.

**b) Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?**

For the same reasons described in response to (a), the proposed long-term operation of the SWP would not substantially damage scenic resources within a designated state scenic highway. ***No impact*** on an existing scenic resource or views along a state scenic highway would occur.

**c) In non-urbanized areas, substantially degrade the existing visual character or quality of public views of the site and its surroundings? (Public views are those that are experienced from a publicly accessible vantage point.) If the project is in an urbanized area, would the project conflict with applicable zoning and other regulations governing scenic quality?**

The proposed long-term operation of the SWP would not involve any new construction of water facilities, infrastructure, or land disturbance. No changes in land use (i.e., conversion from agricultural land to nonagricultural land uses) are anticipated because of the proposed long-term operation of the SWP.

For these reasons, the proposed long-term operation and maintenance of existing SWP facilities would have no effect on the existing visual character of the SWP facilities or their surroundings. The proposed long-term operation of the SWP would not reduce the scenic attributes or degrade the visual quality of associated streams and rivers or the surrounding landscape that would conflict with applicable zoning and other regulations governing scenic quality. ***No impact*** on the visual character of the landscape or the quality of public views would occur.

**d) Create a new source of substantial light or glare that would adversely affect day or nighttime views in the area?**

The Proposed Project would not involve any new construction of water facilities, infrastructure, or land disturbance that could require new nighttime lighting or create new sources of glare. The proposed long-term operation of the SWP also would not require new nighttime lighting or create new sources of glare. ***No impact*** would occur.

# 3A.3.2 Agriculture and Forestry Resources

**Table 3A-3. Potential Impacts on Agriculture and Forestry Resources**

| Environmental Issues | Environmental Impact Significance |
|---|---|
| **II. AGRICULTURE AND FORESTRY RESOURCES.** In determining whether impacts on agricultural resources are significant environmental effects, lead agencies may refer to the California Agricultural Land Evaluation and Site Assessment Model (1997) prepared by the California Department of Conservation as an optional model to use in assessing impacts on agriculture and farmland. In determining whether impacts on forest resources, including timberland, are significant environmental effects, lead agencies may refer to information compiled by the California Department of Forestry and Fire Protection regarding the state's inventory of forestland, including the Forest and Range Assessment Project and the Forest Legacy Assessment Project, as well as the forest carbon measurement methodology provided in the forest protocols adopted by the California Air Resources Board. Would the project**:** | - |
| a) Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use? | No Impact |
| b) Conflict with existing zoning for agricultural use or a Williamson Act contract? | No Impact |
| c) Conflict with existing zoning for, or cause rezoning of, forestland (as defined in Public Resources Code Section 12220[g]), timberland (as defined by Public Resources Code Section 4526), or timberland zoned Timberland Production (as defined by Government Code Section 51104[g])? | No Impact |
| d) Result in the loss of forestland or conversion of forestland to non-forest use? | No Impact |
| e) Involve other changes in the existing environment that, because of their location or nature, could result in the conversion of Farmland to non-agricultural use or forestland to non-forest use? | No Impact |

Note: "-" indicates blank cell

## 3A.3.2.1 Environmental Setting

### Agricultural Resources

California ranks as the leading agricultural state in the United States in terms of farm-level sales. In 2017, California's farm-level sales totaled nearly $50 billion and accounted for 13 percent of total U.S. agricultural sales. Tulare and Kern counties rank among the leading agricultural counties in the nation (Congressional Research Service 2015).

According to the 2017 Census of Agriculture (the most recent census for which data were available at the time of writing, as the 2022 Census will not be released until 2024), there are approximately 24.523 million acres of farmland in California, and these acres represent slightly less than a quarter of California's total land area (U.S. Department of Agriculture 2019). The acreage of farmland includes approximately:

- 9.6 million acres of cropland
- 11.6 million acres of permanent pasture and rangeland
- 1.85 million acres of pastured or unpastured woodlands
- 1.47 million acres in farmsteads, buildings, livestock facilities, roads, ponds and wastelands, etc.

The acreage of farmland, including irrigated farmland, in California has decreased over the past 20 years, down from approximately 8.89 million acres of farmland in 1997 to approximately 7.84 million acres of land in 2017 (U.S. Department of Agriculture 2019).

The SWP plays an important role in California's agriculture, as approximately 34 percent of SWP water is used to irrigate approximately 750,000 acres of farmland, mostly within the San Joaquin Valley (Water Education Foundation 2023).

Approximately 12.2 million acres of California farmland reported enrollment in California Land Conservation Act (Williamson Act) contracts in 2022 (California Department of Conservation 2022). The Department of Conservation's Farmland Mapping and Monitoring Program identifies the suitability of agricultural lands in the state of California. The classifications of Prime Farmlands, Farmlands of Statewide Importance, Unique Farmland, Farmland of Local Importance, and Grazing Land are based on both land use and soil. Approximately 5.1 million acres of irrigated farmland in the state was identified as Prime Farmland in 2012, the most recent year for which statewide data were available (California Department of Conservation 2015).

The following discussion summarizes agricultural land use and irrigation practices within the Project area, itemized by county and leading commodities.

### Sacramento River

The Sacramento River Region includes Sutter, Yolo, and Sacramento counties. Table 3A-4 shows the acreages of total agricultural land, irrigated land, prime farmland, farmland of statewide importance, unique farmland, farmland of local importance, and land under Williamson Act contracts for each of the three counties.

**Table 3A-4. Sacramento River Region Agricultural Land Uses**

| Land Use | Sacramento County | Yolo County | Sutter County |
|---|---|---|---|
| Total Agricultural Land (acres)[a] | 260,212 | 459,662 | 332,120 |
| Total Irrigated Land (acres)[a] | 100,399 | 234,703 | 282,114 |
| Prime Farmland (acres)[b] | 86,964 | 243,961 | 159,205 |
| Farmland of Statewide Importance (acres)[b] | 44,004 | 19,320 | 103,035 |
| Unique Farmland (acres)[b] | 15,580 | 43,932 | 15,770 |
| Farmland of Local Importance (acres)[b] | 55,048 | 49,731 | 0 |
| Williamson Act Contracts (acres)[c] | 174,656 | NR | NR |
| Leading Commodities[d] | Grapes (Wine), Milk, Poultry, Pears (Bartlett) | Almonds, Tomatoes, Grapes (Wine), Field Crops | Rice, Walnuts, Plums, Nursery |

Notes:

[a] Total agricultural land and irrigated land data are from the 2017 Census of Agriculture (U.S. Department of Agriculture 2019).

[b] Important farmland data are from the 2016–2018 Farmland Mapping and Monitoring Program Inventory (California Department of Conservation 2019).

[c] Williamson Act Contract data are from 2015 Reported Acreage (California Department of Conservation 2016).

[d] Commodity data are from the 2017–2018 California Agriculture Statistics Review (California Department of Food and Agriculture 2018).

NR = not reported

### Delta

The Delta Region includes portions of Sacramento, Yolo, Solano, San Joaquin, Contra Costa, and Alameda counties. Of these six counties, San Joaquin County has the highest acreage of total agricultural land, irrigated land, prime farmland, and land under Williamson Act contracts (Table 3A-5).

### Suisun Marsh and Suisun Bay

Suisun Marsh and Suisun Bay are in portions of Solano and Contra Costa counties. Both of these counties are included in Table 3A-5, and Solano County has the highest acreage of total agricultural land and land enrolled in Williamson Act contracts.

**Table 3A-5. Delta Region and Suisun Marsh and Suisun Bay Region Agricultural Land Uses**

| Land Use | Sacramento County | Yolo County | Solano County | San Joaquin County | Contra Costa County | Alameda County |
|---|---|---|---|---|---|---|
| Total Agricultural Land (acres)[a] | 260,212 | 459,662 | 342,593 | 772,762 | 155,572 | 183,282 |
| Total Irrigated Land (acres)[a] | 100,399 | 234,703 | 110,396 | 487,147 | 22,625 | 7,511 |
| Prime Farmland (acres)[b] | 86,964 | 243,961 | 131,737 | 381,984 | 25,174 | 3,277 |
| Farmland of Statewide Importance (acres)[b] | 44,004 | 19,320 | 6,934 | 82,163 | 7,592 | 1,125 |
| Unique Farmland (acres)[b] | 15,580 | 43,932 | 11,076 | 85,694 | 3,291 | 2,097 |
| Farmland of Local Importance (acres)[b] | 55,048 | 49,731 | 0 | 65,944 | 61,016 | 0 |
| Williamson Act Contracts (acres)[c] | 174,656 | NR | 271,041 | 499,654 | 42,137 | 138,245 |
| Leading Commodities[d] | Grapes (Wine), Milk, Poultry, Pears (Bartlett) | Almonds, Tomatoes, Grapes (Wine), Field Crops | Walnuts, Nursery, Almonds, Tomatoes | Grapes (Wine), Milk, Almonds, Walnuts | Cattle & Calves, Tomatoes, Corn (Sweet), Grapes (Wine) | Grapes, Cattle, Nursery, Pasture |

Notes:

[a] Total agricultural land and irrigated land data are from the 2017 Census of Agriculture (U.S. Department of Agriculture 2019).

[b] Important farmland data are from the 2016–2018 Farmland Mapping and Monitoring Program Inventory (California Department of Conservation 2019).

[c] Williamson Act Contract data are from 2015 Reported Acreage (California Department of Conservation 2016).

[d] Commodity data are from the 2017–2018 California Agriculture Statistics Review (California Department of Food and Agriculture 2018).

NR = not reported

## Forestry Resources

Forestland is defined by PRC Section 12220(g) as land that can support 10 percent native tree cover and woodland vegetation of any species, including hardwoods, under natural conditions and that allows management of one or more forest resources, including timber, aesthetics, fish and wildlife, biodiversity, water quality, recreation, and other public benefits. Approximately 33 million acres of forest are present in California, mostly found in mountainous areas, including the Cascade Range, the Sierra Nevada, and the Coast Ranges, and in the cool, mesic fog belt along California's north and central coasts (U.S. Department of Agriculture 2016).

Timberland is defined as forestland that is producing or capable of producing more than 20 cubic feet of wood per acre per year but excludes reserved forestland (areas permanently reserved from wood products use through statute or administrative designation). In California, timberlands account for 50 percent of California's total forestland area. The principal timberlands include

California mixed conifer, ponderosa pine, Douglas fir, and redwood forests. Unreserved forestland, consisting of forestland not withdrawn from harvest by statute or administration regulation, makes up approximately 30 percent of forestland area. Reserved forestland, consisting of areas permanently reserved from wood products use through statute or administrative designation, makes up approximately 18 percent of forestland area. Reserved forestland includes national forest wilderness areas, national parks, and monuments (U.S. Department of Agriculture 2016).

The following discussion describes forestland resources for each region.

### Sacramento River Region

Among the counties in the Sacramento River Region, Yolo County has the largest amount of forest area, with 66,600 acres. Sacramento County has the smallest amount of forest area, with 9,700 acres (Table 3A-6).

**Table 3A-6. Sacramento Region Forestland**

| County | Unreserved Forest Area (thousand acres) | Reserved Forest Area (thousand acres) | Total Forest Area (thousand acres) |
|---|---|---|---|
| Sacramento | 9.7 | N/A | 9.7 |
| Sutter | 27.5 | N/A | 27.5 |
| Yolo | 66.6 | N/A | 66.6 |

Source: U.S. Department of Agriculture 2016

### Delta Region

The Delta Region includes portions of Sacramento, Yolo, Solano, San Joaquin, Contra Costa, and Alameda counties. Among the counties in the Delta Region, Alameda County has the largest amount of total forest area, with 106,200 acres, and the largest amount of unreserved forest area. Sacramento County has the smallest amount of total forest area, with 9,700 acres (Table 3A-7).

**Table 3A-7. Delta Region and Suisun Marsh and Suisun Bay Region Forestland**

| County | Unreserved Forest Area (thousand acres) | Reserved Forest Area (thousand acres) | Total Forest Area (thousand acres) |
|---|---|---|---|
| Alameda | 86.6 | 19.7 | 106.2 |
| Contra Costa | 23.9 | 19.3 | 43.2 |
| Sacramento | 9.7 | N/A | 9.7 |
| San Joaquin | 24.6 | N/A | 24.6 |
| Solano | 26.5 | 1.5 | 28.0 |
| Yolo | 66.6 | N/A | 66.6 |

Source: U.S. Department of Agriculture 2016

### Suisun Marsh and Suisun Bay

Suisun Marsh and Suisun Bay are in portions of Solano and Contra Costa counties. In the Suisun Marsh and Suisun Bay, Contra Costa County has the largest amount of total forest area, with 43,2000 acres. Solano County has the smallest amount of total forest area, with 28,000 acres (Table 3A-7).

## 3A.3.2.2 Discussion

Would the Project:

**a) Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?**

The proposed long-term operation of the SWP would not involve any new construction of water facilities, infrastructure, or land disturbance, and would therefore not have any direct impact on land uses in the Project area. Proposed water deliveries to agricultural land uses as part of the long-term operation of the SWP would be consistent with historic deliveries, which fluctuate depending on water year type, water demands, and cropping patterns. The proposed long-term operation of the SWP would increase exports at the Harvey O. Banks Pumping Plant (Banks Pumping Plant) by 52 thousand acre-feet (taf). This increased water supply would be divided by the SWP water contractors, including those receiving agricultural water supplies.

Because the proposed long-term operation of the SWP would remain within the historic range of deliveries, the Proposed Project would not cause indirect changes to agricultural lands. Therefore, there would be no conversion of lands designated as Prime Farmland, Farmland of Statewide Importance, or Unique Farmland as a result of the proposed long-term operation of the SWP. Thus, ***no impact*** would occur.

**b) Conflict with existing zoning for agricultural use or a Williamson Act contract?**

As discussed under (a), the proposed long-term operation of the SWP would not have any direct or indirect impact on agricultural land uses in the Project area, as the Proposed Project would not involve any new construction of water facilities, infrastructure, or land disturbance, and water deliveries would be consistent with historic deliveries. Therefore, the proposed long-term operation of the SWP would not conflict with existing agricultural land use or Williamson Act contracts. Therefore, ***no impact*** would occur.

**c) Conflict with existing zoning for, or cause rezoning of, forestland (as defined in Public Resources Code Section 12220[g]), timberland (as defined by Public Resources Code Section 4526), or timberland zoned Timberland Production (as defined by Government Code Section 51104[g])?**

The proposed long-term operation of the SWP would not involve any new construction of water facilities, infrastructure, or land disturbance, and would not change existing land uses in the Project area. Therefore, the proposed long-term operation of the SWP would not conflict with existing forest land zoning or cause rezoning of forestland or timberland. Thus, ***no impac***t would occur.

**d) Result in the loss of forestland or conversion of forestland to non-forest use?**

The proposed long-term operation of the SWP would not involve any new construction of water facilities, infrastructure, or land disturbance, and would not require any changes to SWP facilities that would convert forestland to non-forest uses. Therefore, the Proposed Project would not result in the loss of forestland or conversion of forestland to non-forest uses. ***No impact*** would occur.

**e) Involve other changes in the existing environment that, because of their location or nature, could result in the conversion of Farmland to non-agricultural use or forestland to non-forest use?**

The proposed long-term operation of the SWP would not involve any new construction of water facilities, infrastructure, or land disturbance, and would not directly change existing land uses within the Project area. The proposed long-term operation of the SWP would continue the conveyance of irrigation water to areas north and south of the Delta and would not reduce water deliveries to agricultural lands currently served by the SWP. Proposed water deliveries under the long-term operation of the SWP would be within the historic range of water deliveries. Therefore, the Proposed Project would not cause indirect changes that would result in conversion of farmland to nonagricultural use.

The Proposed Project would not involve any construction activities or changes to SWP facilities that would convert forestland to non-forest uses. This Project would not conflict with existing zoning for forestland, timberland, or Timberland Production Zone, nor would it result in the conversion of forestland to non-forest use. Thus, ***no impact*** on existing farmland or forestry resources would occur.

## 3A.3.3 Air Quality

**Table 3A-8. Potential Impacts on Air Quality**

| Environmental Issues | Environmental Impact Significance |
|---|---|
| **III. AIR QUALITY.** Where available, the significance criteria established by the applicable air quality management district or air pollution control district may be relied upon to make the following determinations. Would the project: | - |
| a) Conflict with or obstruct implementation of the applicable air quality plan? | No Impact |
| b) Result in a cumulatively considerable net increase in any criteria pollutant for which the project region is in non-attainment status under an applicable federal or state ambient air quality standard? | No Impact |
| c) Expose sensitive receptors to substantial pollutant concentrations? | No Impact |
| d) Result in other emissions (such as those leading to odors) that would adversely affect a substantial number of people? | No Impact |

Note: "-" indicates blank cell

### 3A.3.3.1 Environmental Setting

California is divided geographically into 15 different air basins to manage the state's air quality on a regional basis. Air quality is defined as the concentration of pollutants in relation to their impact on human health. Ambient concentrations of air pollutants are determined by the amount of emissions released by pollutant sources and the ability of the atmosphere to transport and dilute such emissions. Natural factors that affect transport and dilution include terrain, wind, atmospheric stability, and the presence of sunlight. Therefore, existing air quality conditions in the Project area are influenced by factors such as topography, meteorology, and climate, as well as the quantity of emissions released by air pollutant sources.

Individual air pollutants at certain concentrations may adversely affect human or animal health, reduce visibility, damage property, and reduce the productivity or vigor of crops and natural vegetation. Six air pollutants have been identified by the U.S. Environmental Protection Agency (EPA) and the California Air Resources Board (CARB) as being of concern, both on a nationwide and statewide level: ozone; carbon monoxide (CO); nitrogen dioxide ($NO_2$); sulfur dioxide ($SO_2$); lead; and particulate matter (PM), which is subdivided into two classes based on particle size: PM equal to or less than 10 micrometers in diameter (PM10), and PM equal to or less than 2.5 micrometers in diameter (PM2.5). Because the air quality standards for these air pollutants are regulated using human and environment health-based criteria, they commonly are referred to as "criteria air pollutants."

Air quality in the Project area is regulated by federal and state agencies, including EPA and CARB. CARB regulates air quality in California through local air pollution control districts and air quality management districts. Local air districts administer air quality laws and regulations within the air basins. The local air districts have permitting authority over all stationary sources of air pollutants within their district boundaries and provide the primary review of environmental documents that are prepared for projects with air quality issues. Areas are classified under the federal Clean Air Act and California Clean Air Act as attainment, nonattainment, or maintenance (previously nonattainment and currently attainment) for each criteria pollutant, based on whether the federal and state air quality standards have been achieved.

The following subsections briefly describe the existing environmental setting by air basin for the Project area. The counties within each air basin in the Project area are shown in Table 3A-9, along with nonattainment designations to characterize existing ambient air quality. Nonattainment designations indicate that concentrations of pollutants measured in ambient air exceed the applicable ambient air quality standards.

**Table 3A-9. Air Quality Status in the Project Area, 2023**

| County | Air Basin | Air District | Federal Nonattainment Designations | State Nonattainment Designations |
|---|---|---|---|---|
| Alameda | San Francisco Bay Area | Bay Area | Ozone, PM2.5 | Ozone, PM10, PM2.5 |
| Contra Costa | San Francisco Bay Area | Bay Area | Ozone, PM2.5 | Ozone, PM10, PM2.5 |
| Sacramento | Sacramento Valley | Sacramento Metro | Ozone, PM2.5 | Ozone, PM10 |
| San Joaquin | San Joaquin Valley | San Joaquin Valley | Ozone, PM2.5 | Ozone, PM10, PM2.5 |
| Solano | Sacramento Valley, San Francisco Bay Area | Yolo-Solano and Bay Area | Ozone, PM2.5 | Ozone, PM10, PM2.5 |
| Sutter | Sacramento Valley | Feather River | Ozone | Ozone, PM10 |
| Yolo | Sacramento Valley | Yolo-Solano | Ozone, PM2.5 | Ozone, PM10 |

Sources: California Air Resources Board 2023

Notes:

PM10 = PM equal to or less than 10 micrometers in diameter

PM2.5 = PM equal to or less than 2.5 micrometers in diameter

"-" indicates blank cell

## Sacramento Valley Air Basin

The Sacramento Valley Air Basin encompasses nine air districts and 11 counties, including all of Shasta, Tehama, Glenn, Colusa, Butte, Sutter, Yuba, Sacramento, and Yolo counties; the westernmost portion of Placer County; and the northeastern half of Solano County. The air basin is bounded by tall mountains, including the Coast Range to the west, the Cascade Range to the north, and the Sierra Nevada to the east. This air basin is in the northern portion of the Project area.

When air stagnates or is trapped by an inversion layer in the valley, ambient pollutant concentrations can reach or exceed threshold levels. On-road vehicles are the largest source of smog-forming pollutants, and PM emissions primarily are from area sources, such as fugitive dust from paved and unpaved roads and vehicle travel (California Air Resources Board 2013).

## San Francisco Air Basin

The San Francisco Bay Area Air Basin consists of a single air district and nine counties, including all of Napa, Marin, San Francisco, Contra Costa, Alameda, San Mateo, and Santa Clara counties; the southern portion of Sonoma County; and the southwestern portion of Solano County (California Air Resources Board 2013). The hills of the Coast Ranges bound the San Francisco and San Pablo bays and the inland valleys of the air basin. This air basin includes the southwest portion of the Delta and Suisun Bay and Marsh within the Project area.

The San Francisco Bay Area Air Basin includes the second largest urban area in California, hosting industry, airports, international ports, freeways, and surface streets. On-road vehicles are the largest source of smog-forming pollutants, and PM10 emissions primarily are from area sources, such as fugitive dust from paved and unpaved roads and vehicle travel (California Air Resources Board 2013). Air quality in the San Francisco Bay Area often is good because sea breezes blow clean air from the Pacific Ocean into the air basin, but transport of pollutants from the San Francisco Bay Area can exacerbate air quality problems in the downwind portions of the San Francisco Bay Area Air Basin as well as in the Sacramento Valley and San Joaquin Valley air basins.

## San Joaquin Valley Air Basin

The San Joaquin Valley Air Basin encompasses eight counties, including all of San Joaquin, Stanislaus, Madera, Merced, Fresno, Kings, and Tulare counties, and western Kern County. It is bounded on the west by the Coast Ranges, on the east by the Sierra Nevada, and in the south by the Tehachapi Mountains. This air basin is in the southwest portion of the Project area.

The area is dominated by agricultural and other localized industries, such as forest products, oil and gas production, and oil refining. On-road vehicles are the largest source of smog-forming pollutants, and PM10 emissions primarily are from sources such as agricultural operations and fugitive dust from paved and unpaved roads and vehicle travel (California Air Resources Board 2013). Air quality issues may be exacerbated under dry conditions. When water supplies and irrigation levels are decreased in urban, rural, and agricultural areas, increased potential exists for the formation and transport of fugitive dust.

## 3A.3.3.2 Discussion

Would the Project:

**a) Conflict with or obstruct implementation of the applicable air quality plan?**

The proposed long-term operation of the SWP would not result in construction of new facilities or infrastructure or include any other construction activities. Therefore, the proposed long-term operation of the SWP would not create a new source of air pollutant emissions or increase pollutant emissions that are associated with historical and current SWP operations. No new sources of pollutant emissions would be created that would violate applicable air quality standards or contribute to an existing or projected air quality violation. ***No impact*** would occur.

**b) Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is nonattainment under an applicable federal or state ambient air quality standard?**

The proposed long-term operation of the SWP would not result in construction of new facilities or infrastructure or include any other construction activities. Continued operation of the SWP would modify surface water hydrology to a limited extent and flows would remain within the range of historical operations. Because no new construction activities would occur and SWP operations would only modify surface water hydrology within the range of historical conditions, the Proposed Project would not alter physical SWP facilities or result in SWP operations that would contribute to a cumulatively considerable net increase of criteria pollutants, and therefore the Proposed Project would not produce additional pollutants in the Project area. Consequently, ***no impact*** would occur.

**c) Expose sensitive receptors to substantial pollutant concentrations?**

The Proposed Project does not include construction of new facilities or infrastructure or include any other construction activities. Continued operation of the SWP would modify surface water hydrology to a limited extent and flows would remain within the range of historical operations. Because no new construction activities would occur and SWP operations would only modify surface water hydrology within the range of historical conditions, the proposed long-term operation of the SWP would not produce additional pollutant emissions in the Project area and, therefore, would not expose sensitive receptors to pollutants. ***No impact*** would occur.

**d) Result in other emissions (such as those leading to odors) adversely affecting a substantial number of people?**

The Proposed Project does not include construction of new facilities or infrastructure or include any other construction activities. Continued operation of the SWP would modify surface water hydrology to a limited extent and flows would remain within the range of historical operations. Because no new construction activities would occur and SWP operations would only modify surface water hydrology within the range of historical conditions, the proposed long-term operation of the SWP would not result in other emissions that would affect a substantial number of people. ***No impact*** would occur.

**e) Create objectionable odors affecting a substantial number of people?**

The Proposed Project does not include construction of new facilities or infrastructure or include any other construction activities. Continued operation of the SWP would modify surface water hydrology to a limited extent and flows would remain within the range of historical operations. Because no new construction activities would occur and SWP operations would only modify surface water hydrology within the range of historical conditions, the proposed long-term operation of the SWP would not involve any activity or operation that would produce odors that could affect a substantial number of people. ***No impact*** would occur.

# 3A.3.4 Biological Resources

## 3A.3.4.1 Aquatic Biological Resources

**Table 3A-10. Potential Impacts on Aquatic Biological Resources**

| Environmental Issues | Environmental Impact Significance |
|---|---|
| **IV. AQUATIC BIOLOGICAL RESOURCES.** Would the project: | - |
| a) Have a substantial adverse effect, either directly or through habitat modifications, on any 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? | Potentially Significant Impact |
| b) Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified 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 Impact |
| c) 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? | No Impact |
| d) Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites? | Potentially Significant Impact |
| e) Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance? | No Impact |
| f) 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 Impact |

Note: "-" indicates blank cell

## Environmental Setting

The geographic area potentially affected by the Proposed Project includes regions that could be affected directly or indirectly by SWP operations in the Delta. The potentially affected area encompasses the following:

- Sacramento River from the confluence with the Feather River downstream to the Delta
- The Delta
- Suisun Marsh and Suisun Bay

### Fish and Aquatic Species for Detailed Consideration

For this analysis, fish and aquatic species included for detailed consideration include species that are included in one or more of the following categories:

- Species listed by the federal government as threatened or endangered
- Species listed by the state as threatened or endangered
- Species that are proposed formally for federal listing or are candidates for federal listing as threatened or endangered
- Species that are candidates for state listing as threatened or endangered
- Species that meet the definitions of rare, threatened, or endangered under the California Environmental Quality Act (CEQA)
- Species identified by the California Department of Fish and Wildlife (CDFW) as species of special concern, species designated by California statute as fully protected (e.g., California Fish and Game Code, Sections 4,700 [mammals] and 5,515 [fish])
- Species that are recreationally or commercially important

A total of 24 fish and aquatic species were identified with potential to occur in locations that could be directly or indirectly affected by the Proposed Project. The fish and aquatic species meeting these criteria are listed in Table 3A-11.

**Table 3A-11. Special-Status and Commercially or Recreationally Important Fish and Aquatic Species Potentially Affected by Proposed Long-Term State Water Project Operations**

| Common Name | Scientific Name | Federal Status [a] | State Status [a] | Economically Important [b] | Recreationally Important [b] |
|---|---|---|---|---|---|
| Pacific Lamprey | *Entosphenus tridentatus* | N/A | SSC | N/A | N/A |
| River Lamprey | *Lampetra ayresi* | N/A | SSC | N/A | N/A |
| White Sturgeon | *Acipenser transmontanus* | N/A | SSC [d] | Economically Important | Recreationally Important |
| Green Sturgeon, *Southern DPS* | *Acipenser medirostris* | FT | SSC | N/A | N/A |
| Steelhead, *Central Valley DPS* | *Oncorhynchus mykiss* | FT | N/A | Economically Important | Recreationally Important |
| Chinook Salmon, *Central Valley fall-run ESU* | *Oncorhynchus tshawytscha* | SC | SSC | Economically Important | Recreationally Important |
| Chinook Salmon, *Central Valley late-fall-run ESU* | *Oncorhynchus tshawytscha* | SC | SSC | Economically Important | Recreationally Important |
| Chinook Salmon, *Sacramento River winter-run ESU* | *Oncorhynchus tshawytscha* | FE | SE | N/A | N/A |
| Chinook Salmon, *Central Valley spring-run ESU* | *Oncorhynchus tshawytscha* | FT | ST | Economically Important | Recreationally Important |
| Longfin Smelt | *Spirinchus thaleichthys* | FC | ST | N/A | N/A |
| Delta Smelt | *Hypomesus transpacificus* | FT | SE | N/A | N/A |
| Sacramento Hitch | *Lavinia exilicauda exilicauda* | N/A | SSC | N/A | N/A |
| Sacramento Splittail | *Pogonichthys macrolepidotus* | N/A | SSC | N/A | N/A |
| Hardhead | *Mylopharodon conocephalus* | N/A | SSC | N/A | N/A |
| Central California Roach | *Lavinia symmetricus* | N/A | SSC | N/A | N/A |
| Starry Flounder | *Platichthys stellatus* | N/A | N/A | Economically Important | Recreationally Important |
| Northern Anchovy | *Engraulis mordax* | N/A | N/A | Economically Important | Recreationally Important |
| Striped Bass | *Morone saxatilis* | N/A | N/A | Economically Important | Recreationally Important |
| Largemouth Bass | *Micropterus salmoides* | N/A | N/A | Economically Important | Recreationally Important |
| Smallmouth Bass | *Micropterus dolomieu* | N/A | N/A | Economically Important | Recreationally Important |
| Spotted Bass | *Micropterus punctulatus* | N/A | N/A | Economically Important | Recreationally Important |
| American Shad | *Alosa sapidissima* | N/A | N/A | Economically Important | Recreationally Important |
| Threadfin Shad | *Dorosoma petenense* | N/A | N/A | Economically Important | Recreationally Important |
| Killer Whale, Southern Resident DPS [c] | *Orcinus orca* | FE | N/A | N/A | N/A |

Sources: California Department of Fish and Wildlife 2024; U.S. Fish and Wildlife Service 2017; Moyle et al. 2015

Notes:

"-" indicates blank cell

DPS = Distinct Population Segment; ESU = Evolutionarily Significant Unit; N/A = not applicable

[a] Listing Statuses:

FC = Federal candidate for listing

FE = Federally listed as endangered

FT = Federally listed as threatened

SC = Federal species of concern (National Marine Fisheries Service)

SE = State listed as endangered

SSC = State species of special concern

ST = State listed as threatened

[b] Species considered important because of existing regulatory management that limits commercial or recreational harvesting.

[c] Killer Whales of the Southern Resident DPS (federal status FE) are included because of their known relationship to the abundance of the salmon population.

[d] White Sturgeon have been petitioned for listing under the California Endangered Species Act and may become candidates for listing during 2024.

### Aquatic Resources within the Geographic Areas Potentially Affected by the Proposed Project

The fish species, waterbodies, and aquatic habitat within the areas potentially affected by the Proposed Project are described in detail in Appendix 6A, "Environmental Setting Background Information," of the EIR. Therefore, discussions of these species, waterbodies, and aquatic habitat are not repeated in this IS.

## Discussion

Would the Project:

### a) Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service?

The Proposed Project potentially could affect flows in the Sacramento River below the Feather River confluence, which could affect migratory habitat for special-status anadromous species. In addition, hydrodynamic conditions in the Delta could be altered by the Proposed Project, which could increase the entrainment potential of special-status and commercially and recreationally important fish species.

These hydrologic and hydrodynamic changes potentially could substantially affect habitat conditions, and increased entrainment potential could substantially and directly affect individuals and populations. Therefore, potential effects on the special-status species listed in Table 3A-11 and their habitat will be evaluated in the EIR. The impact would be ***potentially significant***.

**b) Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, or regulations or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service?**

Riparian habitat and other sensitive natural communities are addressed in Section 3A.3.4.2, "Terrestrial Biological Resources," of this IS.

**c) 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?**

Federally protected wetlands are addressed under "Wildlife Habitats" in Section 3A.3.4.2 of this IS.

**d) Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?**

The Proposed Project potentially could affect flows in the Sacramento River below the Feather River confluence, which could affect migratory habitat for special-status anadromous species. In addition, hydrodynamic conditions would be altered by the Proposed Project, which could increase the entrainment potential of special-status and commercially or recreationally important migratory or resident fish species.

These hydrologic and hydrodynamic changes potentially could substantially affect habitat conditions, and increased entrainment potential could affect individuals and populations substantially and directly. The impact could be ***potentially significant***. Therefore, potential effects on the special-status species and their habitats that are listed in Table 3A-11 will be evaluated in the EIR.

**e) Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?**

The proposed long-term operation of the SWP would not conflict with any local policies or ordinances such as the Delta Plan, Delta Protection Element of the Sacramento County General Plan, and Suisun Marsh Preservation Agreement that protect fish and aquatic resources in the Sacramento River downstream of the confluence with the Feather River or in the Delta because the SWP operations criteria, adaptive management actions, and governance included in the Proposed Project are consistent with local plans and ordinances. ***No impact*** would occur.

**f) Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?**

The Proposed Project would not conflict with the provisions of an adopted habitat conservation plan, natural community conservation plan, or other approved local, regional, or state habitat conservation plan protecting fish and aquatic resources in the Sacramento River below the confluence with the Feather River or in the Delta because no aquatic species are covered by adopted habitat conservation and natural community conservation plans within the Project area. ***No impact*** would occur.

## 3A.3.4.2 Terrestrial Biological Resources

**Table 3A-12. Potential Impacts on Terrestrial Biological Resources**

| Environmental Issues | Environmental Impact Significance |
|---|---|
| **IV. TERRESTRIAL BIOLOGICAL RESOURCES** Would the Project: | - |
| a) Have a substantial adverse effect, either directly or through habitat modifications, on any 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 Impact |
| b) Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified 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 Impact |
| c) 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? | No Impact |
| d) Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites? | No Impact |
| e) Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance? | No Impact |
| f) 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 Impact |

Note: "-" indicates blank cell

### Environmental Setting

#### Sacramento River

The Sacramento River from the Feather River confluence downstream to the Delta is primarily a confined, narrow channel that is largely restricted from meander by levees and revetment (California Department of Water Resources 2015a, 2015b). The levees at the channel margin have blocked the river's access to historical wetlands and seasonally inundated floodplains. A narrow zone of riparian and upland vegetation is typically found on the river side of the levees and agriculture is the primary land use along the river until the cities of Sacramento and West Sacramento are reached, where the urban landscape prevails. Tributaries to this reach of the Sacramento River are primarily drainage canals, and tidal influence extends up the Sacramento River to Verona.

The Sacramento River was historically bordered by extensive riparian habitat. Prior to the construction and operation of reservoirs, winter rainfall events caused extensive flooding and spring snowmelt that watered and fertilized the riparian corridor, enabling up to 500,000 acres of riparian forest to grow along the river (Katibah 1984). Riparian recruitment models and establishment models (Mahoney and Rood 1998) as well as empirical field studies (Scott et al. 1997) emphasize that hydrologic and fluvial processes play a central role in controlling the elevational and lateral extent of riparian plant species. These processes are important for pioneer species, such as cottonwood and willows, that establish at elevations close to the active river channel. Within the reach of the Sacramento River potentially affected by the Proposed Project, it is believed that riparian forests, including valley oak woodlands, historically occurred on the natural levees on both sides of the river. This band of riparian habitat was once connected to the riparian vegetation growing along the Sacramento River's many tributaries and sloughs without being interrupted by today's levees. Today, much of the total runoff is captured and stored in reservoirs for gradual release during the summer and fall months, contributing to a reduction in riparian forest.

### Delta

The Delta overlies the western portions of the Sacramento River and San Joaquin River watersheds. The Delta is a network of islands, channels, and marshland at the confluence of the Sacramento and San Joaquin rivers. The major waterways entering the Delta are the Sacramento River, flowing from the north, the San Joaquin River, flowing from the south, and eastside tributaries (the Cosumnes, Mokelumne, and Calaveras rivers).

The Delta once was composed of extensive freshwater and brackish marshes, with tules and cattails, broad riparian thickets of scrub willows, buttonwillow, and native brambles. In addition, it had extensive riparian forests of Fremont cottonwood, valley oak, Oregon ash, boxelder, white alder, and Goodding's black willow. Upland, nonriparian stands of valley oak and coast live oak occurred in a mosaic with seasonally flooded herbaceous vegetation, including vernal pools and alkali wetlands (San Francisco Estuary Institute 2012).

Substantial areas of the Delta have been modified by agricultural, urban and suburban, and recreational land uses (San Francisco Estuary Institute 2012). Over the past 150 years, levees were constructed in the Delta to provide lands for agricultural, municipal, industrial, and recreational land uses. The remaining natural vegetation is fragmented and largely restricted to the edges of waterways, flooded islands, and small protected areas such as parks, wildlife areas, and nature reserves (Hickson and Keeler-Wolf 2007). A substantial portion of the emergent wetlands exist as thin strips along the margins of constructed levees (San Francisco Estuary Institute 2012). Current habitat along the Delta waterways includes seasonal wetlands, tidal wetlands, managed wetlands, riparian forests, and riparian scrub.

Seasonal wetlands historically occurred along the riparian corridor at elevations that were inundated during high-flow events. Many of the levees were constructed along the riparian corridor edges; therefore, the historical seasonal wetlands were substantially modified (San Francisco Estuary Institute 2012). Adjacent areas of perennial wetlands on the water side of the riparian corridor were modified as levees were constructed and channels enlarged. In many of these areas, the perennial wetlands were replaced by seasonal wetlands.

Alkali-related habitats occur near salt-influenced seasonal and perennial wetlands. Alkali seasonal wetlands occur on fine-textured soils that contain relatively high concentrations of dissolved salts. These types of soils typically are found at the historical locations of seasonal ponds in the Yolo Basin, in and around the CDFW Tule Ranch Preserve, and upland in seasonal drainages that receive salts in runoff from upslope salt-bearing bedrock, such as areas near Suisun Marsh and Clifton Court Forebay (CCF). Alkali wetlands include saltgrass (*Distichlis spicata*), alkali weed (*Cressa truxilensis*), saltbush (*Extriplex californica*), alkali heath (*Frankenia salina*), and iodine bush (*Allenrolfea occidentalis*). Small stands of alkali sink scrub (also known as valley sink scrub) are characterized by iodine bush.

The tidal brackish wetlands occur either in relatively substantial tracts of complex tidal wetlands or in narrow bands of fringing tidal wetlands (Siegel et al. 2010). Fringing tidal marsh exists along the outboard side of exterior levees and generally has formed since diking for managed wetlands began. Fringing tidal wetlands vary in size and vegetation composition, exhibit less geomorphic complexity, and have a low area-to-edge ratio. Fringing tidal marshes lack connection with the upland transition, often are found in small, discontinuous segments, and can limit movement of terrestrial marsh species.

Plant zones in complex tidal wetlands are influenced by inundation regime and salinity. Tidal wetlands can be divided into three zones: low marsh, middle marsh, and high marsh. The low tidal wetland zone is tidally inundated once or twice per day. At the lowest elevations, vegetation is inhibited by frequent, prolonged, and often deep inundation, and by disturbance from waves or currents. The dominant plant species are bulrushes.

The middle tidal wetland zone is inundated tidally at least once per day; this zone has relatively little cover and offers no refuge from higher tides, which completely flood the vegetation of the middle marsh. The dominant plant species are pickleweed, saltgrass, and bulrush.

The high tidal wetland zone receives intermittent inundation during the monthly tidal cycle, with the higher elevations being inundated only during the highest tides. Historically, the high marsh was an expansive transitional zone between the tidal wetlands and adjacent uplands. The high marsh and associated upland transition zone have been affected by land use changes (e.g., managed wetlands, agriculture). The dominant plants are native species, such as saltgrass, pickleweed, and Baltic rush, and nonnative species, including perennial pepperweed, poison hemlock, and fennel.

Managed wetlands are found primarily in Cache Slough and near the confluence of the Mokelumne and Sacramento rivers within the historical limits of the high tidal marsh and adjacent uplands that were diked and leveled for agricultural purposes and later managed to enhance habitat values for specific wildlife species (CALFED Bay-Delta Program 2000a, 2000b). Managed wetlands are considered seasonal wetlands because they may be flooded and drained several times throughout the year. Watergrass and smartweed typically are the dominant species in managed wetlands that use fresher water. Bulrush, cattail, and tule are the dominant species in managed wetlands that employ late drawdown management. Pickleweed, fat hen, and brass buttons are typical in the higher elevations of the managed wetlands. In marshes with higher soil salinity, pickleweed, saltgrass, and other salt-tolerant species are dominant.

Riparian forest areas still are present in some portions of the Delta, along many of the major and minor waterways, oxbows, and levees (CALFED Bay-Delta Program 2000a, 2000b). Riparian forest and woodland communities, which are dominated by tree species, are limited mostly to narrow bands along sloughs, channels, rivers, and other freshwater features throughout the Delta. Isolated patches of riparian vegetation also are found on the interior of reclaimed Delta islands, along drainage channels, along pond margins, and in abandoned, low-lying fields. Cottonwoods and willows, Oregon ash, boxelder, and California sycamore are the most typical riparian trees in Central California. Valley oak and black walnut are typical in riparian areas in the Delta.

Riparian scrub in the Delta a consists of woody riparian shrubs in dense thickets (San Francisco Estuary Institute 2012). Riparian scrub thickets usually are associated with higher, sloping, and better drained edges of marshes or topographic high areas, such as levee remnants and elevated flood deposits, and along shorelines of ponds or banks of channels in tidal or nontidal freshwater habitats. Willow-dominated habitat types appear to be increasing in extent in recent years; willows line many miles of artificial levees where waterways historically flowed into freshwater emergent wetland. Nonnative Himalaya blackberry thickets are a typical element of riparian scrub communities along levees and riparian zones.

**Suisun Marsh and Suisun Bay**

Suisun Marsh is a tidally influenced brackish marsh about 35 miles northeast of San Francisco in southern Solano County. The Suisun Bay is located between the confluence of the Sacramento and San Joaquin rivers and the Carquinez Strait. Suisun Bay is characterized by broad shallow body of water with marshy shores and is filled with numerous marshy islands. Both the Suisun Marsh and Suisun Bay are a critical part of the Delta estuary ecosystem. The Delta, Suisun Marsh, Suisun Bay, and greater San Francisco Bay make up the largest estuary on the west coast of North and South America (California Department of Water Resources 2009).

Substantial areas of the Suisun Marsh and Suisun Bay have been modified by agricultural, urban and suburban, and recreational land uses (U.S. Bureau of Reclamation et al. 2011; San Francisco Estuary Institute 2012). Over the past 150 years, levees were constructed in the Suisun Marsh to provide lands for agricultural, municipal, industrial, and recreational land uses. The remaining natural vegetation is fragmented and largely restricted to the edges of waterways, flooded islands, and protected areas such as parks, wildlife areas, and nature reserves (Hickson and Keeler-Wolf 2007). A substantial portion of the emergent wetlands exist as thin strips along the margins of constructed levees (San Francisco Estuary Institute 2012). Current habitat along the Suisun Marsh and Suisun Bay waterways includes seasonal wetlands, tidal wetlands, managed wetlands, riparian forests, and riparian scrub.

Managed wetlands are found within the Suisun Marsh, within the historical limits of the high tidal marsh and adjacent uplands that were diked and leveled for agricultural purposes and later managed to enhance habitat values for specific wildlife species (CALFED Bay-Delta Program 2000a, 2000b). Diked managed wetlands and uplands are the most typical land cover type in the Suisun Marsh area. Managed wetlands are considered seasonal wetlands because they may be flooded and drained several times throughout the year. Watergrass and smartweed typically are the dominant species in managed wetlands that use fresher water. Bulrush, cattail, and tule are the dominant species in managed wetlands that employ late drawdown management. Pickleweed, fat hen, and brass buttons are typical in the higher elevations of the managed wetlands. In marshes with higher soil salinity, pickleweed, saltgrass, and other salt-tolerant species are dominant.

Consistent with the Delta, riparian scrub in the Suisun Marsh and Suisun Bay consists of woody riparian shrubs in dense thickets (San Francisco Estuary Institute 2012). Riparian scrub thickets usually are associated with higher, sloping, and better drained edges of marshes or topographic high areas, such as levee remnants and elevated flood deposits, and along shorelines of ponds or banks of channels in tidal or nontidal freshwater habitats. Willow-dominated habitat types appear to be increasing in extent in recent years; willows line many miles of artificial levees where waterways historically flowed into freshwater emergent wetland. Nonnative Himalayan blackberry thickets are a typical element of riparian scrub communities along levees and riparian zones.

**Wildlife Habitats**

The value of a site to wildlife is influenced by a combination of the physical and biological features of the immediate environment. Species diversity is a function of abiotic and biotic conditions and may be greatly affected by human use of the land. The wildlife habitat quality of an area, therefore, ultimately is determined by the type, size, and diversity of the vegetation communities present and their degree of disturbance. For example, as a plant community is degraded by the loss of understory diversity, creation of openings, or reduction in area, generally a loss of structural diversity occurs. Degradation of the structural diversity of a community typically diminishes wildlife habitat quality and usually results in a reduced ability to support a variety of wildlife species. Wildlife habitats typically are distinguished by vegetation type, with varying combinations of plant species providing different resources for use by wildlife. Because the Project area spans such a wide geographical area, many sites are high in structural and species diversity, while many other sites are not.

Riparian, freshwater marsh, and other wetland and aquatic habitats are very productive for wildlife because they offer water, food, and cover for a variety of species. Wildlife species that use freshwater and seasonal wetlands include reptiles and amphibians, such as garter snakes, western toad, Pacific chorus frog, and bullfrog; and avian species, such as green heron, mallard, and red-winged blackbird.

Within riverine systems, backwater ponds, wetlands, and open water support wildlife species, such as pied-billed grebe, American bittern, green heron, great blue heron, great egret, duck species, American coot, common merganser, double-crested cormorant, American wigeon, Canada goose, western grebe, and gull species, as well as white-tailed kite, wood duck, yellow warbler, warbling vireo, dusky-footed woodrat, western gray squirrel, deer mouse, California vole, long-tailed weasel, and other mammals that use the adjacent woodlands and grasslands.

Riparian scrub, woodlands, and forests provide high value for wildlife and support a wide range of species of birds, mammals, reptiles, amphibians, and invertebrates. Riparian habitats support breeding, foraging, and roosting habitat for tree swallow, bushtit, white-breasted nuthatch, Nuttall's woodpecker, downy woodpecker, acorn woodpeckers, spotted towhee, northern flicker, yellow warbler, western scrub jay, white-tailed kite, Cooper's hawk, red-shouldered hawk, American kestrel, great horned owl, song sparrow, black phoebe, European starling, western bluebird, and tree swallow. Scrub habitat in particular supports species such as California quail, western scrub-jay, bushtit, special-status bird species, including waterfowl and shorebirds, California Ridgway's rail, California black rail, and other wading birds. This zone also provides nesting and foraging habitat for Suisun song sparrow and salt marsh common yellowthroat (U.S. Bureau of Reclamation et al. 2011).

The high tidal marsh provides habitat for special-status plants, including Suisun marsh aster, soft bird's beak, and Suisun thistle (Siegel et al. 2010). The high marsh zone provides foraging and nesting habitat for waterfowl, shorebirds, California Ridgway's rail, California black rail, and other birds. It also provides foraging and nesting habitat for special-status species, such as salt marsh harvest mouse and Suisun shrew, and it provides escape cover for salt marsh harvest mouse and Suisun shrew during periods when the middle and lower portions of the high tidal wetland zone are inundated (U.S. Bureau of Reclamation et al. 2011).

As in other locations in the Project area, riparian trees along the Sacramento River, in the Delta, and in Suisun Marsh are used for nesting, foraging, and protective cover by many bird species, and riparian canopies provide nesting and foraging habitat for a variety of mammals. Understory shrubs provide cover for ground-nesting birds that forage among the vegetation and leaf litter. Willow thickets provide habitat for a wide range of wildlife species, including song sparrow, lazuli bunting, and valley elderberry longhorn beetle.

Many managed wetlands in the Delta and Suisun Marsh are managed specifically as habitat for wintering waterfowl species. Commonly referred to as "brood ponds," these wetlands are flooded during the spring and summer but may experience a two- to six-month dry period each year. These semi-permanent wetlands provide breeding ducks, ducklings, and other wetland wildlife with protection from predators and abundant invertebrate food supplies (California Department of Fish and Game and Yolo Basin Foundation 2008). Permanent wetlands remain flooded throughout the year. Because of year-round flooding, permanent wetlands support a diverse, but usually not abundant, population of invertebrates. Permanent managed wetlands provide deep water habitat for diving ducks, such as ruddy duck, scaup, and goldeneye, and for other water birds, including pied-billed grebe, coot, and moorhen. They often have dense emergent cover on their edges, which is the preferred breeding habitat for marsh wren and red-winged blackbird, and roosting habitat for black-crowned night heron, white-faced ibis, and egret.

### Special-Status Species

For this analysis, special-status species are plants and wildlife that fall within any of the following categories:

- Species listed by the federal government as threatened or endangered
- Species listed by the state as threatened, endangered, or rare (rare status is for plants only)
- Species that are formally proposed for federal listing or are candidates for federal listing as threatened or endangered
- Species that are candidates for state listing as threatened or endangered
- Species that meet the definitions of rare, threatened, or endangered under CEQA
- Species identified by the U.S. Fish and Wildlife Service as Birds of Conservation Concern
- Species identified by CDFW as species of special concern, species designated by California statute as fully protected (e.g., California Fish and Game Code, Sections 3511 [birds], 4700 [mammals], 5050 [reptiles and amphibians], and 5515 [fish]), or bird species on the CDFW Watch List

- Species, subspecies, and varieties of plants considered by CDFW and the California Native Plant Society (CNPS) to be rare, threatened, or endangered in California. The CNPS Inventory of Rare and Endangered Plants of California assigns California Rare Plant Ranks (CRPR) categories for plant species of concern. Only plant species in CRPR categories 1 and 2 are considered special-status plant species in this document.
    - CRPR 1A — Plants presumed to be extinct in California.
    - CRPR 1B — Plants that are rare, threatened, or endangered in California and elsewhere.
    - CRPR 2 — Plants that are rare, threatened, or endangered in California but more common elsewhere.

Attachment 1 provides the complete lists of species recorded within 5 miles of the Project area (California Department of Fish and Wildlife 2023a; California Native Plant Society 2023; U.S. Fish and Wildlife Service 2023).

Tables 3A-13 and 3A-14 list the species that are discussed in this IS. These are species with the potential to occur in areas in the Project area that may be directly or indirectly affected by the Proposed Project because they occur (1) along rivers downstream from SWP facilities, (2) in riparian corridors in the Delta, or (3) in marsh, riparian, or other wetland habitat along the periphery of Suisun Bay. The geographic scope includes the Sacramento River from the Feather River confluence downstream to, and including, the Delta and Suisun Marsh. Special-status plant and wildlife species are included in Tables 3A-13 and 3A-14 if they potentially could be directly or indirectly affected because of:

- Potential changes to river banks and riparian vegetation (changes in flows could affect special-status plant and wildlife species and their habitat that occur along river and stream banks or in riparian vegetation)
- Potential changes to existing marshes and associated special-status species in the Delta or Suisun Marsh (changes in flows may result in loss of tidal marsh or wetland habitat or changes in salinity)

**Table 3A-13. Special-Status Wildlife Species**

| Common Name | Scientific Name | Status Federal/State/CDFW |
|---|---|---|
| Valley elderberry longhorn beetle | *Desmocerus californicus dimorphus* | FT/–/– |
| Western pond turtle | *Emys marmorata* | PT/–/SSC |
| Giant garter snake | *Thamnophis gigas* | FT/ST/– |
| Tricolored blackbird (nesting colony) | *Agelaius tricolor* | BCC/ST/– |
| Short-eared owl (nesting) | *Asio flammeus* | –/–/SSC |
| Swainson's hawk (nesting) | *Buteo swainsoni* | BCC/ST/– |
| Northern harrier | *Circus hudsonius* | BCC/–/SSC |
| Western yellow-billed cuckoo (nesting) | *Coccyzus americanus occidentalis* | FT/SE/– |
| Yellow warbler | *Dendroica petechia brewsteri* | BCC/–/SSC |
| White-tailed kite (nesting) | *Elanus leucurus* | –/–/FP |
| Saltmarsh common yellowthroat | *Geothlypis trichas sinuosa* | BCC/–/SSC |
| Bald eagle (nesting and wintering) | *Haliaeetus leucocephalus* | BCC/FD/SE/FP |
| California black rail | *Laterallus jamaicensis coturniculus* | BCC/ST/FP |
| Song sparrow "Modesto" population | *Melospiza melodia* | –/–/SSC |
| Suisun song sparrow | *Melospiza melodia maxillaris* | –/–/SSC |
| California Ridgway's rail | *Rallus obsoletus* | FE/SE/FP |
| Bank swallow (nesting) | *Riparia riparia* | –/ST/– |
| California least tern | *Sternula antillarum browni* | FE/SE/FP |
| Least Bell's vireo (nesting) | *Vireo bellii pusillus* | FE/SE/– |
| Yellow-headed blackbird | *Xanthocephalus xanthocephalus* | –/–/SSC |
| Riparian (= San Joaquin Valley) woodrat | *Neotoma fuscipes riparia* | FE/–/SSC |
| Salt marsh harvest mouse | *Reithrodontomys raviventris* | FE/SE/FP |
| Suisun shrew | *Sorex ornatus sinuosus* | –/–/SSC |
| Riparian brush rabbit | *Sylvilagus bachmani riparius* | FE/SE/– |

Sources: California Department of Fish and Wildlife 2023a; U.S. Fish and Wildlife Service 2023

Notes:

"-" indicates blank cell

**Status Codes:**

Federal—U.S. Fish and Wildlife Service:

BCC = bird species of conservation concern

FE = federally endangered

FT = federally threatened

PT = proposed threatened

FD = federal delisted

– = no status

State—California Department of Fish and Wildlife:

SE = state endangered

ST = state threatened

FP = California fully protected species

PT = proposed threatened

SSC = California species of special concern

– = no status

**Table 3A-14. Special-Status Plants**

| Common Name | Scientific Name | Status Federal/State/CDFW |
|---|---|---|
| Bolander's water hemlock | *Cicuta maculata* var. *bolanderi* | –/–/2B.1 |
| Bristly sedge | *Carex comosa* | –/–/2B.1 |
| Coulter's goldfields | *Lasthenia glabarata* ssp. *coulteri* | –/–/1B.1 |
| Delta button-celery | *Eryngium racemosum* | –/SE/1B.1 |
| Delta mudwort | *Limosella australis* | –/–/2B.1 |
| Delta tule pea | *Lathyrus jepsonii* var. *jepsonii* | –/–/1B.2 |
| Eel-grass pondweed | *Potamogeton zosteriformis* | –/–/2B.2 |
| Long-styled sand-spurrey | *Spergularia macrotheca* var. *longistyla* | –/–/1B.2 |
| Lyngbye's sedge | *Carex lyngbyei* | –/–/2B.2 |
| Mason's lilaeopsis | *Lilaeopsis masonii* | –/SR/1B.1 |
| Saline clover | *Trifolium hydrophilum* | –/–/1B.2 |
| Sanford's arrowhead | *Sagittaria sanfordii* | –/–/1B.2 |
| Slough thistle | *Cirsium crassicaule* | –/–/1B.1 |
| Soft salty bird's-beak | *Chloropyron molle* ssp. *molle* | FE/SR/1B.2 |
| Suisun Marsh aster | *Symphyotrichum lentum* | –/–/1B.2 |
| Suisun thistle | *Cirsium hydrophilum* var. *hydrophilum* | FE/–/1B.1 |
| Watershield | *Brasenia schreberi* | –/–/2B.3 |
| Woolly rose-mallow | *Hibiscus lasiocarpos* var. *occidentalis* | –/–/1B.2 |
| Wright's trichocoronis | *Trichocoronis wrightii* var. *wrightii* | –/–/2B.1 |

Sources: California Department of Fish and Wildlife 2023; California Native Plant Society 2023; U.S. Fish and Wildlife Service 2023

Notes:

"-" indicates blank cell

**Status Codes:**

Federal—U.S. Fish and Wildlife Service:

FE = federally listed endangered

– = no status

State—California Department of Fish and Wildlife:

SE = state listed endangered

SR = state listed rare

– = no status

California Rare Plant Ranks (CRPRs)

1B = plant species considered rare, threatened, or endangered in California and elsewhere

2B = plant species considered rare, threatened, or endangered in California but common elsewhere

California Rare Plant Rank Extensions

.1 = seriously threatened in California (>80% of occurrences are threatened/high degree and immediacy of threat)

.2 = moderately threatened in California (20–80% of occurrences are threatened/moderate degree and immediacy of threat)

.3 = not very threatened in California (less than 20% of occurrences threatened/low degree and immediacy of threat or no current threats known)

## Discussion

Would the Project:

**a) Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service?**

The Proposed Project would not involve construction of water facilities, infrastructure, or other projects that would result in disturbance to habitat supporting terrestrial plant and wildlife species, wetlands, or other sensitive plant communities. The Proposed Project would continue the conveyance of water to areas north and south of the Delta and would not reduce water deliveries to agricultural lands. Therefore, conditions would not change for wildlife species that rely on agricultural lands. Under the Proposed Project, flows in the Sacramento River would generally be similar to Baseline Conditions, and hydrodynamic conditions would not differ such that riparian habitat or other existing plant or wildlife communities supporting special-status species would be altered substantially adjacent to the Sacramento River downstream of the confluence with the Feather River, within the Delta, or in Suisun Marsh. Section 3A.3.10 further discusses the hydrologic changes associated with the Proposed Project. Furthermore, SWP operations under the Proposed Project, would be required to meet Suisun Marsh Preservation Agreement (SMPA) and D-1641 salinity standards in Suisun Marsh, consistent with the range allowed under existing operations.

Tables 3A-15 and 3A-16 describe the impacts of the Proposed Project on focal special-status wildlife and plant species analyzed in this IS (i.e., those that could potentially occur adjacent to the Sacramento River downstream of the confluence with the Feather River, and in wetland and marsh habitat in the Delta and Suisun Marsh) and the rationale for determining potential impacts. As detailed within those tables, the Proposed Project would not result in impacts on any of the analyzed species. Therefore, ***no impact*** would occur.

**Table 3A-15. Special-Status Wildlife Species and Potential for Impact**

| Common Name | Habitat/Distribution | Potential For Impact |
|---|---|---|
| Valley elderberry longhorn beetle | Found only in association with its host plant, blue elderberry (*Sambucus nigra* ssp. *caerulea*). In the Central Valley, the elderberry shrub is found primarily in riparian vegetation. Known to occur in elderberry shrubs along the lower Sacramento River and in the northern and southern Delta. Occurrences also recorded at Caswell Memorial State Park and other locations along the Stanislaus River. | None. No water facilities or infrastructure are proposed that would result in disturbance to elderberry shrubs, nor would SWP operations change flows or surface water elevations outside the range of historical conditions. Therefore, SWP operations-related changes in flows would not affect riparian habitat where elderberry shrubs could occur. |

| Common Name | Habitat/Distribution | Potential For Impact |
|---|---|---|
| Western pond turtle | Inhabits slow-moving streams, sloughs, ponds, irrigation and drainage ditches, and adjacent upland areas. Known to occur in suitable habitat throughout the Delta. | None. No water facilities or infrastructure are proposed that would result in disturbance to western pond turtle habitat, nor would SWP operations change flows or water surface elevations outside the range of historical conditions. Therefore, SWP operations-related changes in flows would not affect aquatic or upland habitat for this species. |
| Giant garter snake | Marshes, ponds, sloughs, small lakes, low-gradient streams, and other waterways, and in agricultural wetlands, including irrigation and drainage canals, rice fields, and adjacent uplands. Current distribution extends from near Chico in Butte County south to the Mendota Wildlife Area in Fresno County. Known to occur in the northern Delta, including White Slough/Caldoni Marsh. | None. No water facilities or infrastructure are proposed that would result in disturbance to giant garter snake habitat, nor would SWP operations change flows or water surface elevations outside the range of historical conditions. Therefore, SWP operations-related changes in flows would not affect aquatic or upland habitat for this species. |
| Tricolored blackbird (nesting colony) | Nests colonially in tules, cattails, willows, thistles, blackberries, and other dense vegetation. Forages in grasslands and agricultural fields. Suitable nesting and foraging habitat is present throughout the Delta, although nesting records are more common north and south of the Project area. Known to occur in the vicinity of Stone Lakes NWR. | None. No water facilities or infrastructure are proposed that would result in disturbance to tricolored blackbird habitat, nor would SWP operations change flows or surface elevations outside the range of historical conditions. Therefore, SWP operations-related flows would not affect habitat for this species. |
| Short-eared owl (nesting) | Widespread winter migrant, found primarily in the Central Valley, in the western Sierra Nevada foothills, and along the coastline. Usually found in open areas with few trees, such as annual and perennial grasslands, prairies, dunes, meadows, irrigated lands, and saline and fresh emergent wetlands. Known to occur year-round on Grizzly Island in Suisun marsh. Breeding range includes coastal areas in Del Norte and Humboldt counties, the Delta, northeastern Modoc plateau, the east side of the Sierra from Lake Tahoe south to Inyo County, and the San Joaquin Valley. | None. No water facilities or infrastructure are proposed that would result in disturbance to short-eared owl habitat, nor would SWP operations change flows or surface elevations outside the range of historical conditions. Therefore, SWP operations-related flows would not affect habitat for this species. |
| Swainson's hawk (nesting) | Nests in riparian woodlands, roadside trees, tree rows, isolated trees, woodlots, and trees in farmyards and rural residences. Forages in grasslands and agricultural fields in the Central Valley. Known to nest along the Sacramento River and throughout the Delta. | None. No water facilities or infrastructure are proposed that would result in disturbance to nesting or foraging habitat, nor would SWP operations change flows or surface water elevations outside the range of historical conditions. Therefore, SWP operations-related changes in flows would not affect habitat for the species. |

| Common Name | Habitat/Distribution | Potential For Impact |
|---|---|---|
| Northern harrier | Nests on the ground among herbaceous vegetation, such as grasses or cattails; forages in grasslands, agricultural fields, and marshes. Year-round resident of California. Breeds throughout the Project area. | None. No water facilities or infrastructure are proposed that would result in disturbance to nesting or foraging habitat, nor would SWP operations change flows or surface water elevations outside the range of historical conditions. Therefore, SWP operations-related changes in flows would not affect habitat for the species. SWP operations would be required to maintain salinity in Suisun Marsh within the range regulated under existing conditions. |
| Western yellow-billed cuckoo (nesting) | Nests in large patches of valley, foothill, and desert riparian forest with densely foliaged deciduous trees and shrubs, especially willows; other associated vegetation includes cottonwood trees, blackberry, nettle, and wild grape. Breeding pairs recorded in the upper Sacramento and Feather rivers, north of the Project area. Occurrences also recorded in Sutter Basin and near Walnut Grove in the Delta. | None. No water facilities or infrastructure are proposed that would result in disturbance to riparian habitat nor would SWP operations change flows or surface water elevations outside the range of historical conditions. Therefore, SWP operations-related changes in flows would not affect riparian habitat. |
| Yellow warbler | Nests in riparian woodland and riparian scrub habitats. Forages in a variety of wooded and shrub habitats during migration. No recent nesting records, but potential nesting habitat present in riparian vegetation along the lower Sacramento River and in the Delta; known to occur during migration in suitable habitat on the San Luis NWR south of the project area. Likely to use riparian woodlands during migration. | None. No water facilities or infrastructure are proposed that would result in disturbance to riparian habitat, nor would SWP operations change flows or surface water elevations outside the range of historical conditions. Therefore, SWP operations-related changes in flows would not affect riparian habitat. |
| White-tailed kite (nesting) | Nests in woodlands and isolated trees; forages in grasslands, shrub lands and agricultural fields. Common to uncommon and a year-round resident in the Central Valley, in other lowland valleys, and along the entire length of the coast. Suitable nesting and foraging habitat is present along the lower Sacramento River, and in the Delta and Suisun Marsh. | None. No water facilities or infrastructure are proposed that would result in disturbance to nesting or foraging habitat, nor would SWP operations change flows or surface water elevations outside the range of historical conditions. Therefore, SWP operations-related changes in flows would not affect suitable habitat for the species. |
| Saltmarsh common yellowthroat | Occurs in primarily brackish marsh with dense and continuous wetland or riparian vegetation down to the water surface; however, to a lesser degree, also uses woody swamp/riparian and freshwater marsh. Often found in rush, tall grass, and willow-dominated communities. Endemic to the greater San Francisco Bay Area. Known to occur in Suisun Marsh and on | None. No water facilities or infrastructure are proposed that would result in disturbance to brackish marsh or riparian habitat, nor would SWP operations change flows or surface water elevations outside the range of historical conditions. Therefore, SWP operations-related changes in flows would not affect suitable habitat for the species. SWP operations |

| Common Name | Habitat/Distribution | Potential For Impact |
|---|---|---|
| | Sherman Island at the eastern limit of the subspecies range in the Delta. | would be required to maintain salinity in Suisun Marsh within the range regulated under existing conditions. |
| Bald eagle (nesting and wintering) | Requires large bodies of water or free-flowing rivers with abundant fish and adjacent snags or other perches for foraging. Observed along the lower Sacramento River and throughout the Delta and Suisun Marsh. | None. No water facilities or infrastructure are proposed in areas supporting bald eagle nesting habitat, nor would SWP operations change flows or water surface elevations in rivers or streams outside the range of historical conditions. Therefore, SWP operations-related changes in flows would not affect eagle foraging habitat or riparian nesting habitat. |
| California black rail | Nests and forages in saline, freshwater, or brackish emergent marshes with gently grading slopes and upland refugia with vegetative cover beyond the high-water line. The species persists in remaining tidal marshes in the San Francisco Bay estuary, Tomales Bay, Bolinas Lagoon, the Delta, Morro Bay, the Salton Sea, and the lower Colorado River. The species has also been found more recently at several inland freshwater sites in the Sierra Nevada foothills in Butte, Yuba, and Nevada counties, and most recently in Placer County. Known occurrences in Suisun Marsh and in the central Delta watercourses. | None. No water facilities or infrastructure are proposed that would result in disturbance to tidal marshes or riparian habitat, nor would SWP operations change flows or water surface elevations outside the range of historical conditions. Therefore, SWP operations-related changes in flows would not affect suitable habitat for the species. SWP operations would be required to maintain salinity in Suisun Marsh within the range regulated under existing conditions. |
| Song sparrow "Modesto" population | Nests and forages primarily in emergent marsh, riparian scrub, and early successional riparian forest habitats, and infrequently in mature riparian forest and sparsely vegetated ditches and levees. Year-round range includes the Delta east of Suisun Marsh, the Sacramento Valley, and the northern San Joaquin Valley. Known occurrences throughout the Delta. | None. No water facilities or infrastructure are proposed that would result in disturbance to tidal marshes or riparian habitat, nor would SWP operations change flows or water surface elevations outside the range of historical conditions. Therefore, SWP operations-related changes in flows would not affect suitable habitat for the species. |
| Suisun song sparrow | Nests and forages in brackish water marshes dominated by cattails, tules, and pickleweed. Year-round range is confined to tidal salt and brackish marshes of the Suisun Bay area from the Carquinez Strait east to Antioch at the confluence of the San Joaquin and Sacramento rivers. Also known to occur on Sherman Island. | None. No water facilities or infrastructure are proposed that would result in disturbance to tidal marshes or riparian habitat, nor would SWP operations change flows or water surface elevations outside the range of historical conditions. Therefore, SWP operations-related changes in flows would not affect suitable habitat for the species. SWP operations would be required to maintain salinity in Suisun Marsh within the range regulated under existing conditions. |

| Common Name | Habitat/Distribution | Potential For Impact |
|---|---|---|
| California Ridgway's rail | Nests and forages in dense cordgrass and cattail marshes with vegetated refugia during the highest tides. Year-round near coastal range, surrounds San Francisco and San Pablo bays, and documented at several locations in Suisun Bay. | None. No water facilities or infrastructure are proposed that would result in disturbance to tidal marshes, nor would SWP operations change flows or water surface elevations outside the range of historical conditions. Therefore, SWP operations-related changes in flows would not affect suitable habitat for the species. SWP operations would be required to maintain salinity in Suisun Marsh within the range regulated under existing conditions. |
| Bank swallow (nesting) | Neotropical migrant found primarily in riparian and other lowland habitats in California west of the deserts during the spring-fall period. In summer, restricted to riparian, lacustrine, and coastal areas with vertical banks, bluffs, and cliffs with fine-textured or sandy soils into which it digs nesting holes. Approximately 75% of the current breeding population in California occurs along banks of the Sacramento and Feather rivers in the northern Central Valley. Limited potential to nest in much of the Project area because revetment and vegetation make banks unsuitable for nesting. | None. No water facilities or infrastructure are proposed that would result in disturbance to river banks supporting bank swallow colonies. SWP operations would not change the amplitude of peak or low flows outside the range of historical conditions or alter seasonal trends in hydrology relative to existing conditions. Therefore, SWP operations-related changes in flows would not suitable habitat for the species. |
| California least tern | Nests in loose colonies on barren or sparsely vegetated sandy or gravelly substrates above the high tide line along the coastline and in lagoons and bays of the California coast. Foraging typically occurs in shallow estuaries or lagoons or in the shallow tidal zone of the open ocean and bays. The San Francisco Bay estuary through to the Delta is considered to be at the northern limit of the species range where some small colonies occur. Known to occur at the Pittsburg Power Plant. | None. No water facilities or infrastructure are proposed that would result in disturbance to nesting habitat or foraging habitat, SWP operations change flows or water surface elevations outside the range of historical conditions. Therefore, SWP operations-related changes in flows would not affect suitable habitat for the species. |
| Least Bell's vireo (nesting) | Nests in dense, low, shrubby vegetation, generally early successional stages in riparian areas, particularly cottonwood-willow forest, but also in brushy fields, young second-growth forest or woodland, scrub oak, coastal chaparral, and mesquite brush lands, often near water in arid regions. Singing males observed in Yolo Bypass Wildlife Area. Successfully nested at the San Joaquin River NWR in 2005 and 2006 south of the Project area. | None. No water facilities or infrastructure are proposed that would result in disturbance to riparian habitat, nor would SWP operations change flows or surface water elevations outside the range of historical conditions. Therefore, SWP operations-related changes in flows would not affect riparian habitat. |

| Common Name | Habitat/Distribution | Potential For Impact |
|---|---|---|
| Yellow-headed blackbird | Nests in freshwater emergent wetlands with dense vegetation and deep water, often along borders of lakes or ponds. Breeds east of the Cascade Range and Sierra Nevada, the Central Valley, portions of the Coast ranges, and in Southern California in the Imperial and Colorado River valleys. Migrates south to winter; some winter in the southern Central Valley and in Imperial Valley. Known occurrences in the Delta. | None. No water facilities or infrastructure are proposed that would result in disturbance to wetlands, nor would SWP operations change flows or surface water elevations outside the range of historical conditions. Therefore, SWP operations-related changes in flows would not affect suitable habitat for the species. |
| Riparian (= San Joaquin Valley) woodrat | Historically found in riparian habitat along the San Joaquin, Stanislaus, and Tuolumne rivers. Now known only from Caswell Memorial State Park on the Stanislaus River near its confluence with the San Joaquin River in a very low-gradient portion of the river. | None. No water facilities or infrastructure are proposed that would result in disturbance to riparian habitat at Caswell State Park, nor would SWP operations change flows or surface water elevations outside the range of historical conditions. Therefore, SWP operations-related changes in flows would not affect riparian habitat for the species. |
| Salt marsh harvest mouse | Occurs primarily in tidal brackish emergent wetlands dominated by pickleweed and at higher elevation refugia. Grasslands adjacent to pickleweed marsh are used, but only when new grass growth affords suitable cover in spring and summer. Year-round range includes the marshes surrounding Suisun, San Pablo, and San Francisco bays, with the Collinsville-Antioch area forming the eastern limit of the range. Known to occur throughout Suisun Marsh. Occurrences within the Delta are restricted to salt and brackish tidal marshes along the northern edge of the Sacramento River and the southern edge of the San Joaquin River as far east as the vicinity of Collinsville and Antioch, west of Sherman Island. | None. No water facilities or infrastructure are proposed that would result in disturbance to tidal marshes, nor would SWP operations change flows or water surface elevations outside the range of historical conditions. Therefore, SWP operations-related changes in flows would not affect suitable habitat for the species. SWP operations would be required to maintain salinity in Suisun Marsh within the range regulated under existing conditions. |
| Suisun shrew | Historically known from tidal wetlands of Solano, Napa, and eastern Sonoma counties. Currently limited to the northern borders of San Pablo and Suisun bays. Known occurrences within Suisun Marsh and suitable habitat may be present in the western Delta on Sherman Island. | None. No water facilities or infrastructure are proposed that would result in disturbance to tidal marshes, nor would SWP operations change flows or water surface elevations outside the range of historical conditions. Therefore, SWP operations-related changes in flows would not affect suitable habitat for the species. SWP operations would be required to maintain salinity in Suisun Marsh within the range regulated under existing conditions. |

| Common Name | Habitat/Distribution | Potential For Impact |
|---|---|---|
| Riparian brush rabbit | Historical distribution may have extended along portions of the San Joaquin River and its tributaries on the valley floor from at least Stanislaus County to the Delta. Currently restricted to several populations at Caswell Memorial State Park, near Manteca in San Joaquin County, along the Stanislaus River, along Paradise Cut (a channel of the San Joaquin River in the southern part of the Delta), and a recent reintroduction on private lands adjacent to the San Joaquin River NWR. | None. No water facilities or infrastructure are proposed that would result in disturbance to riparian habitat at Caswell State Park, nor would SWP operations change flows or surface water elevations outside the range of historical conditions. Therefore, SWP operations-related changes in flows would not affect riparian habitat for the species. |

Sources: California Department of Fish and Wildlife 2023a; U.S. Fish and Wildlife Service 2023; eBird 2023

Note:

NWR = National Wildlife Refuge

### Table 3A-16. Special-Status Plants

| Common Name | Habitat/Distribution | Potential for Impact |
|---|---|---|
| Bolander's water hemlock | Coastal fresh or brackish marshes and swamps in Contra Costa, Sacramento, Marin, and Solano counties. Present in the north and central Delta and in Suisun Marsh. | None. No water facilities, or infrastructure are proposed that would result in disturbance to coastal or brackish wetlands, nor would changes occur in flows, surface water elevations, or salinities that would affect habitat supporting this species. |
| Bristly sedge | Coastal prairie, marshes and swamps (lake margins), valley and foothill grassland throughout California and elsewhere. | None. No water facilities or infrastructure are proposed that would result in disturbance to marsh habitat for this species. |
| Coulter's goldfields | Marshes and swamps (coastal salt), playas, vernal pools in scattered locations in Southern California and in Solano, Yolo, and Tehama counties. | None. No water facilities or infrastructure are proposed that would result in disturbance to marsh habitat for this species. |
| Delta button-celery | Vernally mesic clay depressions in riparian scrub. Extant occurrences recorded along the San Joaquin River in Merced County, and in the South Delta. Reclamation (2010) concluded this species could potentially occur near New Melones Reservoir. | None. No water facilities or infrastructure are proposed that would result in disturbance to riparian habitat for this species. |
| Delta mudwort | Brackish or freshwater marshes and swamps, riparian scrub in the Delta: Contra Costa, Sacramento, San Joaquin, and Solano counties; and Oregon. | None. No water facilities or infrastructure are proposed that would result in disturbance to marsh or riparian habitat for this species. |
| Delta tule pea | Freshwater and brackish marshes and swamps in the Delta region. Known from the north, central, and west Delta, and Suisun Marsh. CNDDB documents occurrences at Snodgrass, Barker, Lindsey, Hass, and Cache sloughs; Delta Meadows Park; and Calhoun Cut. | None. No water facilities or infrastructure are proposed that would result in disturbance to freshwater or brackish wetlands, nor would changes occur in flows, surface water elevations, or salinities that would affect habitat supporting this species. |

| Common Name | Habitat/Distribution | Potential for Impact |
|---|---|---|
| Eel-grass pondweed | Freshwater marshes and swamps in scattered locations in Contra Costa County and elsewhere in Northern California, Oregon, Utah, Washington, and elsewhere. | None. No water facilities or infrastructure are proposed that would result in disturbance to marsh habitat for this species. |
| Long-styled sand-spurrey | Alkaline marshes and swamps, meadows and seeps in Alameda, Contra Costa, Napa, and Solano counties. | None. No water facilities or infrastructure are proposed that would result in disturbance to marsh habitat for this species. |
| Lyngbye's sedge | Freshwater and brackish marshes and swamps in Solano County, on the North Coast from Del Norte to Marin counties, Oregon, and elsewhere. | None. No water facilities or infrastructure are proposed that would result in disturbance to freshwater or brackish wetlands, nor would changes occur in flows, surface water elevations, or salinities that would affect habitat supporting this species. |
| Mason's lilaeopsis | Brackish or freshwater marshes and swamps, riparian scrub in Delta region. Known and locally common in certain regions of Delta and in Suisun Marsh. CNDDB documents occurrences of this species in Barker, Lindsey, Cache, and Snodgrass sloughs as well as in Calhoun Cut. | None. No water facilities or infrastructure are proposed that would result in disturbance to freshwater or brackish wetlands or riparian scrub, nor would changes occur in flows, surface water elevations, or salinities that would affect habitat supporting this species. |
| Saline clover | Marshes and swamps, valley and foothill grassland (mesic, alkaline), vernal pools in the Sacramento Valley and in central western California. | None. No water facilities or infrastructure are proposed that would result in disturbance to marsh habitat for this species. |
| Sanford's arrowhead | Shallow freshwater marshes and swamps in scattered locations in the Central Valley and the Coast Ranges. | None. No water facilities or infrastructure are proposed that would result in disturbance to marsh habitat for this species. |
| Slough thistle | Chenopod scrub, marshes and swamps (sloughs), riparian scrub in the San Joaquin Valley in San Joaquin, Kings, and Kern counties. | None. No water facilities or infrastructure are proposed that would result in disturbance to marsh or riparian habitat for this species. |
| Soft salty bird's-beak | Coastal salt marshes and swamps in Contra Costa, Napa, and Solano counties. | None. No water facilities or infrastructure are proposed that would result in disturbance to coastal marshes, nor would changes occur in flows, surface water elevations, or salinities that would affect habitat supporting this species. |
| Suisun Marsh aster | Endemic to the Delta, generally occurs in marshes and swamps, often along sloughs, from 0 to 3 meters in elevation. Brackish and freshwater marshes and swamps in the Delta region. Known from many areas of the Delta and from Suisun Marsh. | None. No water facilities or infrastructure are proposed that would result in disturbance to brackish or freshwater marshes, nor would changes occur in flows, surface water elevations, or salinities that would affect habitat supporting this species. |

| Common Name | Habitat/Distribution | Potential for Impact |
|---|---|---|
| Suisun thistle | Salt marshes and swamps. Two known occurrences in Grizzly Island Wildlife Area and Peytonia Slough Ecological Reserve. Present at Suisun Marsh. | None. No water facilities or infrastructure are proposed that would result in disturbance to salt marshes and swamps, nor would changes occur in flows, surface water elevations, or salinities that would affect habitat supporting this species. |
| Watershield | Freshwater marshes and swamps in scattered occurrences in north and central California; widespread across United States. | None. No water facilities or infrastructure are proposed that would result in disturbance to marsh habitat for this species. |
| Woolly rose-mallow | Freshwater marshes and swamps in scattered locations in the Central and southern Sacramento Valley and Delta, from Butte to San Joaquin County. | None. No water facilities or infrastructure are proposed that would result in disturbance to marsh habitat for this species. |
| Wright's trichocoronis | Alkaline marshes and swamps, meadows and seeps, riparian forest, vernal pools in scattered locations in the Central Valley, Southern Coast, and Texas. | None. No water facilities or infrastructure are proposed that would result in disturbance to marsh or riparian habitat for this species. |

Sources: California Department of Fish and Wildlife 2023a; California Native Plant Society 2023; U.S. Fish and Wildlife Service 2023

Note:

CNDDB = California Natural Diversity Database

**b) Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, or regulations or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service?**

Proposed long-term operation of the SWP would remain within the historical range of past SWP operations and would not result in changes in reservoir surface elevations or downstream surface water flows that would alter riparian habitat, freshwater marshes, or other sensitive natural communities. Therefore, ***no impact*** would occur.

**c) 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?**

Proposed long-term operation of the SWP would not involve construction of water facilities, infrastructure, or other projects that would result in adverse effects on wetlands, marshes, vernal pools, or other federally protected wetlands. Additionally, the proposed long-term operations of the SWP would only modify surface water hydrology and exports to a limited extent that would remain within the range of historical operations. Therefore, ***no impact*** would occur.

**d) Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?**

Proposed long-term operation of the SWP would not involve construction of water facilities, infrastructure, or other projects that may affect terrestrial wildlife movement or nursery sites, and would not result in alterations in habitat that would interfere with terrestrial wildlife movement and migratory wildlife corridors, or impede the use of native terrestrial wildlife nursery sites. Therefore, ***no impact*** would occur.

**e) Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?**

Proposed long-term operation of the SWP would not involve activities that would conflict with local policies or ordinances protecting biological resources because the SWP operations criteria, adaptive management actions, and governance included in the Proposed Project are consistent with local plans and ordinances. Therefore, ***no impact*** would occur.

**f) Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?**

Proposed long-term operation of the SWP would not conflict with the provisions of an adopted habitat conservation plan, natural community conservation plan, or other approved local, regional, or state habitat conservation plan protecting special-status plants and wildlife or sensitive natural communities. Therefore, ***no impact*** would occur.

## 3A.3.5 Cultural Resources

**Table 3A-17. Potential Impacts on Cultural Resources**

| Environmental Issues | Environmental Impact Significance |
|---|---|
| **V. CULTURAL RESOURCES.** Would the Project: | - |
| a) Cause a substantial adverse change in the significance of a historical resource as defined in Section 15064.5? | No Impact |
| b) Cause a substantial adverse change in the significance of an archaeological resource pursuant to Section 15064.5? | No Impact |
| c) Disturb any human remains, including those interred outside of formal cemeteries? | No Impact |

Note: "-" indicates blank cell

## 3A.3.5.1 Environmental Setting

### Prehistoric Context

The area of the Proposed Project has a long and complex cultural history with distinct regional patterns that extend back more than 11,000 years (U.S. Bureau of Reclamation 1997, as cited in U.S. Bureau of Reclamation 2019). The presence of prehistoric peoples in the area is represented by the distinctive fluted spear points called Clovis points. These artifacts have been found on the margins of extinct lakes in the San Joaquin Valley. The Clovis points are found on the same surface with the bones of animals that are now extinct, such as mammoths, sloths, and camels. The subsequent period from about 10,000 to 8,000 Before Present (B.P.) was characterized by a small number of sites with stemmed spear points instead of fluted spear points.

Approximately 8,000 years ago, many California cultures shifted the main focus of their subsistence strategies from hunting to seed gathering, as evidenced by the increase in food-grinding implements found in archaeological sites dating to this period. By approximately 4,000 B.P., people possibly from the Great Basin were hunting and gathering seasonally in the Sierra Nevada and the Sacramento Valley. The earliest evidence of widespread villages and permanent occupation of the lower Sacramento Valley and Suisun Marsh comes from several sites assigned to the Windmiller Pattern (previously, "Early Horizon"), dated circa 4,500 to 2,500 B.P. (Ragir 1972, as cited in U.S. Bureau of Reclamation 2019; U.S. Bureau of Reclamation 1997, as cited in U.S. Bureau of Reclamation 2019; U.S. Bureau of Reclamation et al. 2010, as cited in U.S. Bureau of Reclamation 2019).

In the last 3,000 years, the archaeological record becomes more complex, as specialized adaptations to locally available resources were developed and populations expanded. Many sites dating to this period contain mortars and pestles or are associated with bedrock mortars, implying that the occupants exploited acorns intensively. The range of subsistence resources that were used increased, exchange systems expanded, and social stratification and craft specialization occurred, as indicated by well-made artifacts such as charm stones and beads, which have often been found with burials.

In the Bay–Delta region from 5,000 to 2,500 B.P., dense settlements extended from the coastal marshes to the interior grasslands and woodlands (Zone 7 Water Agency 2006, as cited in U.S. Bureau of Reclamation 2019). From about 2,500 to 950 B.P., coastal communities relied on shellfish, and major shell mounds were created near these communities, including near the present Alameda County shorelines and some interior valleys. In the Sacramento Valley, the last 1,500 years is characterized by intensified hunting, fishing, and gathering subsistence with larger communities, highly developed trade networks, elaborate ceremonial and mortuary practices, and social stratification. Interaction among groups became more developed through time.

From approximately 1,650 to 950 B.P., evidence indicates that the people of the eastern San Joaquin Valley may have interacted with people in the Delta area, and from approximately 450 to 100 B.P., the people of the eastern San Joaquin Valley may have interacted with people in the Central Coast and Southern California areas (U.S. Bureau of Reclamation 1997, as cited in U.S. Bureau of Reclamation 2019).

## Ethnographic Context

This section presents brief ethnographic sketches for each native cultural group whose traditional territories occur in the study area. The Proposed Project area encompasses lands occupied by more than 40 distinct Native American cultural groups. Although most California Tribes shared similar elements of social organization and material culture, linguistic affiliation and territorial boundaries primarily distinguish them from each other. Before European settlement of California, an estimated 310,000 native Californians spoke dialects of as many as 80 mutually unintelligible languages, representing six major North American language stocks (Cook 1978 as cited in U.S. Bureau of Reclamation 2019; Moratto 1984; U.S. Bureau of Reclamation 1997 as cited in U.S. Bureau of Reclamation 2019; Shipley 1978).

### Ethnography

#### *Patwin*

The Patwin lived along the western side of the Sacramento Valley, from what is now Princeton to Benicia, including Suisun Marsh (Kroeber 1925; U.S. Bureau of Reclamation 1997, as cited in U.S. Bureau of Reclamation 2019; U.S. Bureau of Reclamation et al. 2010, as cited in U.S. Bureau of Reclamation 2019). Within this large area, the Patwin traditionally are divided into the River, Hill, and Southern Patwin groups. Settlements generally were on high ground along the Sacramento River or tributary streams, or in the eastern Coast Range valleys (Johnson 1978; U.S. Bureau of Reclamation 1997, as cited in U.S. Bureau of Reclamation 2019; U.S. Bureau of Reclamation et al. 2010, as cited in U.S. Bureau of Reclamation 2019).

#### *Miwok*

The Miwok cultures included the Coast Miwok, Lake Miwok, and Eastern Miwok divisions. The Eastern Miwok included five separate groups (i.e., Bay, Plains, Northern Sierra, Central Sierra, and Southern Sierra) who inhabited the area from present-day Walnut Creek in Contra Costa County and the Delta, along the lower Mokelumne and Cosumnes rivers and along the Sacramento River from present-day Rio Vista to Freeport, the foothill and mountain areas of the upper Mokelumne River and Calaveras River watersheds, the upper Stanislaus River and Tuolumne River watersheds, and the upper Merced River and Chowchilla River watersheds, respectively (Levy 1978; U.S. Bureau of Reclamation 1997, as cited in U.S. Bureau of Reclamation 2019; Shipley 1978).

The Coast Miwok people lived along the lower San Joaquin River and San Pablo Bay and in the interior of present-day Contra Costa and Alameda counties (U.S. Bureau of Reclamation 1997, as cited in U.S. Bureau of Reclamation 2019; East Contra Costa County Habitat Conservation Plan Association and U.S. Fish and Wildlife Service 2006, as cited in U.S. Bureau of Reclamation 2019; Kelly 1978, as cited in U.S. Bureau of Reclamation 2019). The Bay Miwok villages were in the San Ramon Valley, and other settlements were on the western slopes of the Diablo Range (Contra Costa Water District et al. 2009, as cited in U.S. Bureau of Reclamation 2019). The Miwok people may have held lands on the peak of Mount Diablo.

***Yokuts***

Yokuts were a large and diverse group of people in the San Joaquin Valley and Sierra Nevada foothills of central California, including the Southern San Joaquin Valley Yokuts, Northern San Joaquin Valley Yokuts, and Foothill Yokuts (U.S. Bureau of Reclamation 1997, as cited in U.S. Bureau of Reclamation 2019; San Joaquin River Restoration Program 2011, as cited in U.S. Bureau of Reclamation 2019). The three subdivisions of the Yokuts languages belong to the Yokutsan family, or Penutian stock (Shipley 1978).

The Southern Valley Yokuts inhabited the southern San Joaquin Valley from present-day Fresno to the Tehachapi Mountains (Wallace 1978a). The Northern Valley Yokuts inhabited the northern San Joaquin Valley from Bear Creek to the San Joaquin River near present-day Mendota, the western San Joaquin Valley near present-day San Luis Reservoir, and what is now eastern Contra Costa and Alameda counties (East Contra Costa County Habitat Conservation Plan Association and U.S. Fish and Wildlife Service 2006, as cited in U.S. Bureau of Reclamation 2019; Wallace 1978b; U.S. Bureau of Reclamation and California Department of Parks 2013, as cited in U.S. Bureau of Reclamation 2019). The Foothill Yokuts inhabited the western slopes of the Sierra Nevada foothills, from the Fresno River to the Kern River (Spier 1978, as cited in U.S. Bureau of Reclamation 2019; U.S. Bureau of Reclamation and California Department of Parks 2013, as cited in U.S. Bureau of Reclamation 2019).

## Historical Context

In 1579, Sir Francis Drake and Spanish explorers led expeditions into the San Francisco Bay Area. However, initial contact between Europeans and Native Americans occurred with Spanish missionaries and soldiers, who entered California from the south in 1769, eventually founding 21 missions along the California coast (U.S. Bureau of Reclamation 1997, as cited in U.S. Bureau of Reclamation 2019).

Numerous expeditions traveled through the San Joaquin Valley between 1769 and 1848 but did not establish major settlements (U.S. Bureau of Reclamation 2010, as cited in U.S. Bureau of Reclamation 2019). Europeans, Americans, and Canadians initially may have entered the Sacramento Valley in the late 1700s and early 1800s as part of missionary or military expeditions (U.S. Bureau of Reclamation 1997, 2005, as cited in U.S. Bureau of Reclamation 2019; U.S. Bureau of Reclamation et al. 2006, as cited in U.S. Bureau of Reclamation 2019; Placer County 2007, as cited in U.S. Bureau of Reclamation 2019). Fur trappers moved through this area from the 1820s to 1840s.

When Mexico became independent from Spain in 1822, the mission lands were divided by government grants into large ranchos, often consisting of tens of thousands of acres (Delta Stewardship Council 2011, as cited in U.S. Bureau of Reclamation 2019). During the Spanish and Mexican periods, explorers entered the region. In 1848, the Treaty of Guadalupe Hidalgo transferred the lands of California from the Mexican Republic to the United States and initiated what is called the American Period in California history (U.S. Bureau of Reclamation 1997, as cited in U.S. Bureau of Reclamation 2019).

To support growth, extensive transportation systems were created to enable wagon routes, steamboats on the major rivers, and numerous railroads (U.S. Bureau of Reclamation 1997, as cited in U.S. Bureau of Reclamation 2019). During the latter part of the 19th century, American ranchers amassed large tracts of former rancho land, and several great cattle empires were formed. With development of irrigation and improved transportation in the 1880s, new crops, including vegetables, fruits, and nuts, were added to the grains obtained from dry farming.

Following the discovery of gold in the Sacramento Valley, settlements occurred in the Delta to provide support services and agricultural products for those traveling to the gold fields and the Sacramento and San Francisco areas. Passage of the Swamp and Overflow Act in 1850 led to the transfer of lands from the U.S. government in the Delta to the State of California, which subsequently sold the land to individuals. The new settlers in the Delta constructed levees to protect the lands from periodic flooding and drained other lands to reduce the potential for mosquito-borne diseases (Delta Stewardship Council 2011, as cited in U.S. Bureau of Reclamation 2019; U.S. Bureau of Reclamation et al. 2010, as cited in U.S. Bureau of Reclamation 2019).

Urban water supply and irrigation capabilities further expanded in the 1950s and 1960s with multiple water projects. The SWP includes water, power, and conveyance systems. The principal facilities of the SWP are Oroville Reservoir and its related facilities, San Luis Dam and its related facilities, and facilities in the Delta; the Suisun Marsh Salinity Control Gates (SMSCG); the California Aqueduct, including its terminal reservoirs; and the North and South Bay Aqueducts.

The SWP facilities in the Delta provide for delivery of water supply to areas within and immediately adjacent to the Delta and to regions south of the Delta. The main SWP Delta features are the Suisun Marsh facilities, the Banks Pumping Plant, the John E. Skinner Delta Fish Protective Facility, and the Barker Slough Pumping Plant (BSPP).

### Known Cultural Resources

No physical or record surveys were conducted for this IS because no site-specific construction actions or other ground-disturbing activities are proposed. The resources described in this subsection indicate the types of resources that occur in areas served by SWP water and adjacent areas.

## 3A.3.5.2 Discussion

Would the Project:

**a) Cause a substantial adverse change in the significance of a historical resource as defined in Section 15064.5?**

The Proposed Project would not alter water flow and water levels outside the range of historical conditions, would not include installation of additional barriers beyond those that already are in place, and would not involve any construction or land-disturbing activities. The Proposed Project includes continuation of existing actions in removing aquatic weeds at the CCF and sediment that builds up at the BSPP intake gates and disposing of those materials at existing spoils locations at the BSPP or landfills, as described in Chapter 2 of the EIR, “Project Description.” Sediment disposal sites are located on previously disturbed areas that were associated with construction and maintenance at the BSPP, including regular graveling and grading. All access routes are existing, maintained gravel roadways. Staging for the activities will occur within existing graveled and paved surfaces at the BSPP. Therefore, ***no impact*** would occur.

**b) Cause a substantial adverse change in the significance of an archaeological resource pursuant to Section 15064.5?**

The Proposed Project would not alter water flow and water levels outside the range of historical conditions, would not include installation of additional barriers beyond those that already are in place, nor involve any construction or land-disturbing activities. The Proposed Project would continue water operations and continue the removal of aquatic weeds at the CCF and sediment at the BSPP, which would not result in impacts on archaeological resources. Therefore, ***no impact*** would occur.

**c) Disturb any human remains, including those interred outside of formal cemeteries?**

The Proposed Project would not alter water flow and water levels outside the range of historical conditions, would not include installation of additional barriers beyond those that already are in place, nor involve any construction or land-disturbing activities. The Proposed Project includes continuation of existing actions including water operations, and continued removal of aquatic weeds and sediment from SWP facilities, which would not result in impacts on human remains. Such activities would not alter undisturbed lands or waterway channels. Therefore, ***no impact*** would occur.

## 3A.3.6 Energy

**Table 3A-18. Potential Impacts on Energy**

| Environmental Issues | Environmental Impact Significance |
|---|---|
| **VI. ENERGY.**<br>Would the Project: | - |
| a) Result in potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources, during project construction or operation | No Impact |
| b) Conflict with or obstruct a state or local plan for renewable energy or energy efficiency? | No Impact |

Note: "-" indicates blank cell

### 3A.3.6.1 Environmental Setting

This section describes the existing sources and amounts of energy used by the SWP and the types and amounts of energy generated by SWP facilities; it also describes energy use and generation by hydroelectric generation facilities and power demands for the SWP and how these facilities may be affected from the proposed long-term operation of the SWP evaluated in this IS. The Proposed Project could affect SWP power generation and energy demands through potential changes in operation of the SWP facilities.

Water and energy are often managed separately, despite the important links between the two. Water is used in the production of nearly every major energy source, and energy is used in multiple ways and at multiple stems in water delivery and treatment systems, as well as in wastewater collection and treatment. Approximately 12 percent of California's total energy use is related to water.

The sources of energy used to power water activities are also directly linked to the volume of associated greenhouse gas (GHG) emissions. The primary environmental impact of wasteful, inefficient, or unnecessary consumption of energy resources is the increased emission of GHGs and the associated impacts on climate change. The potential climate change impacts from GHG emissions associated with the proposed long-term operation of the SWP are discussed in Section 3A.3.8. Therefore, this section focuses on whether proposed long-term operation of the SWP would result in wasteful, inefficient, or unnecessary consumption of energy or would conflict with relevant renewable energy or energy efficiency plans.

## Relevant Regulations

The National Energy Policy, established in 2001 by the National Energy Policy Development Group, is designed to help the private sector and state and local governments promote dependable, affordable, and environmentally sound production and distribution of energy for the future (National Energy Policy Development Group 2001). Key issues addressed by the energy policy are energy conservation, repair and expansion of energy infrastructure, and ways of increasing energy supplies while protecting the environment.

The 2008 update to the 2005 Energy Action Plan II is the state's principal energy planning and policy document (State of California 2008). The updated document examines the state's ongoing actions in the context of global climate change and examines policy changes in the areas of energy efficiency, demand response, renewable energy, electricity reliability and infrastructure, electricity market structure, natural gas supply and infrastructure, research and development, and climate change. The 2005 Energy Action Plan II continues the goals of the original 2003 Energy Action Plan, describes a coordinated implementation plan for state energy policies, and identifies specific action areas to ensure that California's energy resources are adequate, affordable, technologically advanced, and environmentally sound.

In accordance with the 2008 Plan update, the first-priority actions to address California's increasing energy demands are energy efficiency and demand response (i.e., reduction of customer energy usage during peak periods to address system reliability and support the best use of energy infrastructure). Additional priorities include the use of renewable sources of power and distributed generation (i.e., the use of relatively small power plants near or at centers of high demand). To the extent that these actions are unable to satisfy the increasing energy demand and transmission capacity needs, clean and efficient fossil-fired generation is supported. California first established a state Renewables Portfolio Standard (RPS) in 2002 under Senate Bill (SB) 1078, when it set an RPS standard of 20 percent before 2017 for investor-owned utilities. California later accelerated this RPS requirement in 2006 under SB 107, when it moved the date up to 2010. In 2011, California expanded this requirement to include publicly owned municipal power (i.e., Sacramento Municipal Utility District) and increased the RPS requirement to 33 percent by 2020 under SB X1-2.

The RPS program required investor-owned utilities, electric service providers, and community choice aggregators to increase procurement from eligible renewable resources to 33 percent of total procurement by 2020. In 2015, passage of SB 350 created a 50 percent RPS requirement by 2030. During the 2017 legislative session, SB 100 was enacted and established a 60 percent RPS requirement by 2030, with a state policy requirement of 100 percent carbon-free by 2045. This also was captured in Gubernatorial Executive Order (EO) B-55-18 on carbon neutrality. For the state's RPS requirements, renewable energy resources do not include hydropower facilities over 30 megawatts (MW), in accordance with Section 399.12(e) of the California Public Utilities Code and

PRC Section 25741. However, hydropower generation is not precluded from counting toward the California carbon-free policy.

As described in PRC Section 25741(1)(a), a renewable electrical generation facility is defined as a facility that meets all of the following criteria: the facility uses biomass, solar thermal, photovoltaic, wind, geothermal, fuel cells using renewable fuels, small hydroelectric generation of 30 MW or less, digester gas, municipal solid waste conversion, landfill gas, ocean wave, ocean thermal, or tidal current, and any additions or enhancements to the facility using that technology. Section 14(1)(b) of the California Public Utilities Code, as amended, states that an existing conduit hydroelectric facility of 30 MW or less shall be an eligible renewable energy resource.

Assembly Bill (AB) 32 required California to reduce its total GHG emissions to 1990 levels by 2020, which represented about a 30 percent decrease from 2018 levels. In September 2007, CARB approved a list of nine Discrete Early Actions to reduce GHG emissions. CARB's Discrete Early Actions included maximizing energy-efficient building and appliance standards; pursuing additional efficiency efforts, including new technologies and new policy and implementation mechanisms; and pursuing comparable investment in energy efficiency by all retail providers of electricity in California (including both investor-owned and publicly owned utilities).

## Existing SWP Energy Use and Generation Facilities

The SWP is one of the largest electricity users in California (California Department of Water Resources 2019a). The amount of energy the SWP uses each year varies with the amount of water that moves through its network of pumping stations to meet the annual water allocations and water contractor demand. The amount of water delivered fluctuates each year because of the amount of water available in each year. Several factors are considered for water allocation, including what percentage DWR approves of the SWP water contractor allocation requests and the annual hydrological conditions. For example, Dry years in Northern California usually result in reductions of water delivery and power generation; therefore, full deliveries cannot be made and less power is used.

Table 3A-19 shows energy consumption and water delivery volumes for the most recent six years for which data are available (2011 through 2016), and the total water delivered is higher during Wet years, and lower during Dry or Critical years. Over this six-year period, annual energy use ranged between approximately 2,800 and 8,600 gigawatt-hours (GWh) per year. When controlling for fluctuations in the volume of water delivered each year, energy consumption during this period ranged from approximately 1.40 to 2.42 GWh per taf, with an average of 1.83 GWh per taf.

**Table 3A-19. Historical SWP Energy Use and Water Delivery from 2011 through 2016**

| Year | Total Energy Consumed (GWh) | Total Water Delivered (taf) | Average Energy/Water (GWh/taf) | Hydrological Conditions[a] |
|---|---|---|---|---|
| 2016 | 6,600 | 3,338 | 1.977 | Below Normal/Dry |
| 2015 | 3,490 | 2,104 | 1.659 | Critical/Critical |
| 2014 | 2,790 | 1,992 | 1.401 | Critical/Critical |
| 2013 | 5,740 | 3,371 | 1.703 | Dry/Critical |
| 2012 | 7,410 | 3,067 | 2.416 | Below Normal/Dry |
| 2011 | 8,550 | 4,631 | 1.846 | Wet/Wet |
| **Average** | **-** | **-** | **1.834** | **-** |

Sources: California Department of Water Resources 2014, 2015a, 2015b, 2016a, 2017, 2019a, 2019b
Notes:
"-" indicates blank cell
GWh = gigawatt-hour(s)
taf = thousand acre-feet
[a] Hydrological conditions are reported for the Sacramento Valley and San Joaquin Valley respectively, for the corresponding water year. Water years run from October through September.

The majority of the energy used by the SWP is needed for pumping plants in the Delta, at the San Luis Reservoir, and along the California Aqueduct. From the Delta through the San Joaquin Valley to Southern California reservoirs, the SWP uses electricity to lift water to elevations as high as 1,926 feet before gravity can foster the rest of its conveyance from north to south. The SWP pumps are operated through an extensive computerized network to maximize efficiency. Pumping is minimized during on-peak hours, when power prices are highest. Maximum pumping is scheduled during off-peak periods (nights, weekends, and holidays), when power costs are lower.

Minor amounts of energy (e.g., electricity, natural gas, vehicle fuels) are also used during construction of individual projects, maintenance activities (e.g., flood protection, erosion repairs, annual equipment and facilities inspection and maintenance), and business practices (e.g., heating and cooling of DWR buildings, electricity used within buildings, business travel by DWR employees).

## SWP Energy Generation

The SWP is the third-largest generator of hydroelectricity in California, generating between 4,000 and 7,000 GWh per year (approximately 14 percent of California's hydropower generation). The SWP includes five hydroelectric power plants and four pumping-generating plants, as summarized in Table 3A-20. The total capacity of SWP generation facilities is more than 1,500 MW. Energy generation is highly variable due to changes in annual hydrologic conditions. Power generated by the SWP is transmitted by Pacific Gas and Electric Company (PG&E), Southern California Edison, and California Independent System Operator through other facilities (California Department of Water Resources 2019a).

**Table 3A-20. SWP Hydroelectric Generation Facilities**

| Year | Hydrological Conditions[a] |
|---|---|
| Oroville Facilities | - |
| Hyatt Pumping-Generating Plant | 645 |
| Thermalito Diversion Dam Power Plant | 3 |
| Thermalito Pumping-Generating Plant | 114 |
| William R. Gianelli (San Luis) Pumping-Generating Plant (SWP share) | 222 |
| Alamo Power Plant | 15 |
| Mojave Siphon Power Plant | 29 |
| Devil Canyon Power Plant | 235 |
| Warne Power Plant | 67 |
| Castaic Power Plant (joint development with LADWP) | 214 |
| **TOTAL CAPACITY** | **1,544** |

Sources: California Department of Water Resources 2016b
Notes:
"-" indicates blank cell
LADWP = Los Angeles Department of Water and Power

The SWP power generation facilities were developed to meet SWP energy use loads, but do not generate sufficient energy to meet its total operating load. The energy needed to operate the SWP therefore comes from a combination of its own hydroelectric generating plants and power purchased from and exchanged with other utilities. In a normal year, SWP generation facilities supply about two-thirds of the SWP's necessary operating power (California Department of Water Resources 2019a). For example, in 2016, (the most recent year for which data are available), the SWP used 6,600 GWh of energy, approximately 2,600 GWh of which were purchased by DWR (California Department of Water Resources 2019a).

DWR uses a portfolio of energy resources to make up the difference in energy between the electricity that SWP facilities generate and the amount of electricity needed to run the SWP. The composition of the SWP power portfolio varies throughout the year and from year to year, but the SWP power portfolio's electricity sources generally can be categorized as generation from large hydroelectric facilities, nonrenewable energy facilities, and thermal generation facilities, as well as purchased energy (California Department of Water Resources 2012). Table 3A-21 summarizes the capacity and types of third-party energy sources under contract to the SWP (California Department of Water Resources 2016b).

**Table 3A-21. Non-SWP-Owned Energy Resources**

| Facility and Fuel Type | Fuel Type | DWR's Share of Capacity (megawatts) | DWR's Share of Energy (gigawatt hours) | Contract Status |
|---|---|---|---|---|
| Pine Flat | Hydro | 165 | 431 | Active |
| MWD Phase I | Small Hydro | 30 | 128 | Active |
| Reid Gardner | Coal | 235 | 1,024 | Terminated in 2013 |
| Lodi Energy Center – Combined Cycle Combustion Turbine | Natural Gas | 99 | 422 | Active |
| NCPA Geothermal 1 & 2; Ameresco Ox Mountain Energy | Geothermal; Landfill Gas | 34 | 182 | Active |
| Dominion – Camelot | Solar | 45 | 130 | Active |
| SPower – Solverde 1 | Solar | 85 | 240 | Active |
| SunPower – Pearblossom | Solar | 9.5 | 28 | Active |
| MWD | Small Hydro | 51.4 | 95 | Active |
| **TOTAL (Active Contracts)** | **-** | **519** | **1,656** | **-** |

Sources: California Department of Water Resources 2016b

Notes:

"-" indicates blank cell

DWR = California Department of Water Resources

MWD = Metropolitan Water District of Southern California

NCPA = Northern California Power Agency;

The SWP also markets energy in excess of the SWP demands to local utilities, such as PG&E and members of the Western Systems Power Pool. The SWP has power contracts with electric utilities and the California Independent System Operator that act as exchange agreements with the utility companies for transmission and power sales and purchases.

## Other Energy Resources for the State Water Project

Other energy supplies have been obtained by DWR from other utilities and energy marketers under agreements that allow DWR to buy, sell, or exchange energy on a short-term hourly basis or a long-term multi-year basis (California Department of Water Resources 2019a). DWR has a long-term purchase agreement with the Kings River Conservation District for approximately 400 million kilowatt-hours of energy from the 165-MW hydroelectric Pine Flat Power Plant. DWR also purchases energy from four hydroelectric plants with 29 MW of installed capacity that are owned and operated by the Metropolitan Water District of Southern California (MWD) (California Department of Water Resources 2012).

DWR also purchases energy under short-term purchase agreements from utilities and energy marketers of the Western Systems Power Pool. In addition, the 1988 Coordination Agreement between DWR and MWD enables DWR to purchase and exchange energy (California Department of Water Resources 2012).

## SWP Energy Reduction and Efficiency Efforts

Operation of the SWP is responsible for approximately 99 percent of all GHG emissions by DWR (California Department of Water Resources 2016b). Most of these emissions come from non-hydropower electricity used by the pumping plants to move water from the Delta to other parts of the state. Because energy generation and use are a major component of GHG management, many of the GHG reduction strategies used by DWR focus on:

- Minimizing energy use
- Maximizing hydroelectric generation
- Increasing use of renewable energy supplies
- Using SWP lands for building renewable energy projects

As discussed in more detail in Section 3A.3.8, DWR developed a Climate Action Plan (CAP) to guide DWR's programs, projects, and activities in response to a changing climate (California Department of Water Resources 2012). The CAP demonstrates how DWR will make substantial reductions in its GHG emissions in the near term (present to 2020), and how it will continue to reduce emissions beyond 2020 to achieve its long-term (2050) GHG emissions reduction goal. Since publication of the CAP, DWR has further reduced its emission reduction targets to 50 percent below 1990 levels by 2020 and 100 percent below 1990 levels by 2045 (California Department of Water Resources 2019c). The CAP identifies 11 GHG emissions reduction measures to meet near-term and long-term goals, which include:

- Termination of its participation and associated delivery of electricity from a coal-fired power plant
- Efficiency improvements to DWR's existing facilities
- Purchase and development of renewable and high-efficiency electricity supplies
- Comprehensive improvements to DWR's construction practices
- Improvements to DWR's business activities that will reduce GHG emissions

Some of these measures (e.g., cessation of use of electricity from coal-fired power plants) have already been completed; others (e.g., efficiency improvements to existing facilities, construction practices, and business activities) are ongoing.

### 3A.3.6.2 Discussion

Would the Project:

**a) Result in potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources, during project construction or operation?**

The proposed long-term operation of the SWP would not involve construction of new or modification of existing SWP facilities, and therefore no construction-related energy would be used. SWP energy consumption for operational purposes would continue to vary on an annual basis due to fluctuations in water deliveries and would remain within the range of energy consumption historically used by the SWP. Over time, the sources of energy used to power the SWP would become more renewable, and the efficiency of energy use would improve through compliance with DWR adopted plans, policies, and legislative mandates requiring increased reliance on renewable resources and energy efficiency. Therefore, the Proposed Project would not include any changes that would result in wasteful, inefficient, or unnecessary consumption of energy resources that would potentially result in significant environmental impacts. Because there would be an increase in energy efficiency over time, ***no impact*** would occur.

**b) Conflict with or obstruct a state or local plan for renewable energy or energy efficiency?**

The proposed long-term operation of the SWP would be similar in scale and intensity to existing and historical operations. DWR would continue to implement energy efficiency measures in accordance with the CAP, and long-term operation of the SWP would not hinder implementation of the CAP. As discussed further in Section 3A.3.8, "Greenhouse Gas Emissions," the CAP is consistent with state and local plans for renewable energy and energy efficiency; therefore, the Proposed Project would not conflict with or obstruct such a plan. ***No impact*** would occur.

## 3A.3.7 Geology and Soils

**Table 3A-22. Potential Impacts on Geology and Soils**

| Environmental Issues | Environmental Impact Significance |
|---|---|
| **VII. GEOLOGY AND SOILS.** Would the Project: | - |
| a) Directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving: | - |
| i) Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault? (Refer to California Geological Survey Special Publication 42.) | No Impact |
| ii) Strong seismic ground shaking? | No Impact |
| iii) Seismic-related ground failure, including liquefaction? | No Impact |
| iv) Landslides? | No Impact |

| Environmental Issues | Environmental Impact Significance |
|---|---|
| b) Result in substantial soil erosion or the loss of topsoil? | No Impact |
| c) Be located on a geologic unit or soil that is unstable, or that would become unstable because of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction, or collapse? | No Impact |
| d) Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994, as updated), creating substantial direct or indirect risks to life or property? | No Impact |
| e) Have soils incapable of adequately supporting the use of septic tanks or alternative waste water disposal systems where sewers are not available for the disposal of waste water? | No Impact |
| f) Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature? | No Impact |

Note: "-" indicates blank cell

## 3A.3.7.1 Environmental Setting

### Geology and Paleontology

#### Sacramento River, Delta, and Suisun Marsh and Suisun Bay Regions

The Sacramento River Region extends from above Shasta Lake in the north to the Delta in the south. This region includes the Sacramento River, Clear Creek, Feather River, and American River watersheds. The faulted and folded sediments of the Coast Ranges extend eastward beneath most of the Central Valley. The igneous and metamorphic rocks of the Sierra Nevada extend westward beneath the eastern Central Valley. The valley floor is an alluvial plain, composed of late Mesozoic- and Cenozoic-era sediments, deposited by wind and rivers flowing out of the Coast Ranges and the Sierra Nevada.

The Delta is a flat-lying river delta that evolved at the inland margin of the San Francisco Bay Estuary as two overlapping and coalescing geomorphic units: the Sacramento River Delta to the north and the San Joaquin River Delta to the south. During large river-flood events, silts and sands were deposited adjacent to the river channel, which formed as a tidal marsh with few natural levees and was dominated by tidal flows, allowing landward accumulation of sediment behind the bedrock barrier at the Carquinez Strait. The sediment formed marshlands, which consisted of numerous islands that were surrounded by hundreds of miles of channels. Tule marshes became established on peat and organic soils in many portions of the Delta, including Suisun Marsh. Additional peat and other organic soils continue to form from repeated inundation and accumulation of sediment and marsh vegetation.

Table 3A-23 shows the geologic formations in the Sacramento River Valley, Delta, and Suisun Marsh and Suisun Bay regions. Table 3A-23 also shows the results of the paleontological sensitivity assessment for these regional geographic areas, based on a review of geologic maps, a literature review, and a paleontological resources records search that was performed at the University of California, Berkeley Museum of Paleontology on April 16, 2019.

In its standard guidelines for assessment and mitigation of adverse impacts on paleontological resources, the Society of Vertebrate Paleontology (SVP) (1996) established three categories of sensitivity for paleontological resources: high, low, and undetermined. Areas where fossils have been found previously are considered to have a high sensitivity and a high potential to produce fossils. Areas that are not sedimentary in origin and have not been known to produce fossils in the past typically are considered to have low sensitivity. Areas that have not had any previous paleontological resource surveys or fossil finds are considered to be of undetermined sensitivity until surveys and mapping are performed to determine their sensitivity. In keeping with the SVP significance criteria, all vertebrate fossils generally are categorized as being of potentially significant scientific value.

An individual vertebrate fossil specimen may be considered unique or significant if it is identifiable and well preserved, and it meets one of the following criteria:

- Type specimen (i.e., the individual from which a species or subspecies has been described)
- Member of a rare species
- Species that is part of a diverse assemblage (i.e., a site where more than one fossil has been discovered), wherein other species are also identifiable and important information regarding the life history of individuals can be drawn
- Skeletal element different from, or a specimen more complete than, those now available for its species
- Complete specimen (i.e., all or substantially all of the entire skeleton is present)

**Table 3A-23. Regional Geology and Paleontological Sensitivity**

| Project Area | Geologic Description | Paleontological Sensitivity |
|---|---|---|
| **Sacramento River Region** | | |
| Sacramento River | Mesozoic bedrock, Cenozoic marine sediments, Holocene peat and organic soils, and alluvium | Low |
| | Pleistocene alluvium (weakly to moderately consolidated, poorly sorted, interbedded clay, stilt, sand, and gravel) | High |
| **Delta Region** | | |
| Sacramento–San Joaquin Delta | Mesozoic bedrock, Holocene peat and organic soils, alluvium, levee and channel deposits, Bay Mud, and Merritt Sand (Pleistocene beach and dune sand deposits) | Low |
| | Pleistocene alluvium (weakly to moderately consolidated, poorly sorted, interbedded clay, stilt, sand, and gravel) | High |
| **Suisun Marsh and Bay Region** | | |
| Suisun Marsh | Holocene intertidal deposits composed of Bay Mud and medium-grained alluvium | Low |

Sources: Fraticelli et al. 2012; Saucedo and Wagner 1992; Gutierrez 2011; Helley et al. 1979; Helley and Harwood 1985; University of California Museum of Paleontology 2019; Jefferson 1991a, 1991b; The Paleontology Portal n.d.; Hotz 1971; Irwin 1997, 2009; Wagner et al. 1991; Dundas et al. 1996; Bateman 1992; Marchand and Allwardt 1981; Lettis 1982; Barnosky and Holroyd n.d.; Bailey et al. 1964

Notes:

"-" indicates blank cell

The value or importance of different fossil groups depends on the age and depositional environment of the rock unit that contains the fossils, their rarity, the extent to which they already have been identified and documented, and the ability to recover similar materials under more controlled conditions (e.g., for a research project). Marine invertebrates generally are common; the fossil record is well developed and well documented, and they generally would not be considered a unique paleontological resource. Identifiable vertebrate marine and terrestrial fossils generally are considered scientifically important because they are relatively rare.

As shown in Table 3A-23, in general, mountainous areas that are composed of bedrock (which formed from magma deep below the earth's surface) and rocks formed from volcanic activity on the Earth's surface do not contain fossils. Metamorphic rocks, which have been altered from their original condition by conditions of high temperature and pressure, contain few fossils, most of which are invertebrates. Therefore, with only a few exceptions (such as the Mehrten Formation, Hosselkus Limestone, and narrow bands of Pleistocene alluvial deposits immediately adjacent to river and stream channels), most of the rocks found in the Klamath Mountains, Coast Ranges, and Sierra Nevada do not contain unique paleontological resources requiring CEQA evaluation.

Most vertebrate fossils are found in sedimentary deposits. Fossils become a part of sedimentary rocks when sediments such as mud, clay, silt, sand, and pebbles cover plant and animal organisms and preserve their characteristics through time. The surface of the Sacramento River Valley and Delta, and extending in some places to depths of more than 2,000 feet below the surface, is composed of sedimentary deposits. Many of the rock formations that fill the Sacramento River Valley and Delta are known to have produced numerous vertebrate fossils (e.g., Turlock Lake, Riverbank, and Modesto Formations) or large numbers of plant assemblages (e.g., Ione Formation), and therefore are considered to be of high paleontological sensitivity. Geologic units that are of Holocene age (i.e., 11,700 years B.P. to present day) contain only the remains of extant, modern taxa (if any fossil resources are present), which are not considered "unique" paleontological resources.

## Seismicity

Seismicity in Northern California primarily is controlled by the San Andreas Fault Zone—which runs 150 miles from the Gulf of California through the Coast Ranges and ends offshore, north of Point Reyes—and the Cascadia subduction zone. The Cascadia subduction zone runs from Vancouver Island in Canada to Cape Mendocino in Northern California. The Pacific, North American, and Gorda tectonic plates meet at the Mendocino Triple Junction, located in the Pacific Ocean just west of Cape Mendocino. Along the Cascadia subduction zone, the Gorda Plate is being actively subducted (overridden) and driven underneath the North American Plate. The San Andreas Fault Zone occurs along portions of the active tectonic plate boundary and the historic tectonic plate boundary where the Farallon Plate became subducted underneath the North American Plate millions of years ago.

Over time, as subduction continues to occur, more of the Pacific Plate comes into contact with the North American Plate, resulting in strain along the rock strata. In some cases, this strain is relieved by very slow movement of the rocks past one another (known as fault creep). Periodically, the strain buildup becomes great enough so that an earthquake occurs. In recent years, scientists with the California Geological Survey (CGS) and U.S. Geological Survey have determined that many of the faults along the Northern California coast that were once thought to operate independently of one another actually are interconnected strands of the San Andreas Fault Zone (Field and the 2014 Working Group on California Earthquake Probabilities 2015).

Surface fault rupture is fault movement that breaks to the surface of the Earth, either suddenly during earthquakes or slowly because of fault creep, and is from tectonic movement that originates deep in the Earth. “Active” or “Holocene-active” faults (i.e., faults showing evidence of displacement during the last 11,700 years) are more likely to result in both surface fault rupture and strong seismic ground shaking than pre-Holocene faults. Surface fault rupture and strong seismic ground shaking can severely damage buildings, roads, bridges, and underground pipelines. Strong seismic ground shaking also can trigger potentially damaging landslides (in areas of steep or unstable slopes) and liquefaction (in areas composed of young, unconsolidated, water-saturated sediments such as Bay mud).

Northern California’s active faults occur along the west coast because of ongoing strain from the interaction of the Pacific and North American continental plates. Active faults in the Sierra Nevada, on the other hand, are less common, primarily because most of the strain of tectonic plate movement today is relieved by faults in the Coast Ranges, which are closer to the boundary where the tectonic plates make contact with one another. The Central Valley generally does not contain active faults, and therefore is subject to a very low level of seismic activity. Therefore, most of the Sacramento River Valley and is not subject to seismic hazards.

## Soils

The types of soils in the Project area vary, depending on the parent material. Soils in mountainous areas generally consist of a thin veneer overtop of bedrock. Soils in the foothills are somewhat more developed, but generally reflect volcanic and metamorphic origins, have lower fertility, and consist primarily of grasslands. Soils in the valley bottomlands are rich in organic matter and are very fertile. The Sacramento River Valley and Delta are some of the most productive agricultural areas in the world; more than half of the fruits, vegetables, and nuts grown in the U.S. come from these regions. Soils in the Delta are rich in peat and decaying plant matter.

The different soil types all have different characteristics related to wind and water erosion, permeability, drainage, clay content, stormwater runoff potential, salinity, pH, and suitability for agricultural crops. Descriptions of the soil characteristics for all of the soil types in the Project area are beyond the scope of this analysis. However, Table 3A-24 shows a generalized description of soils in the Project regions.

**Table 3A-24. Generalized Description of Soils**

| Project Area | Description of Soils |
|---|---|
| Sacramento River Valley | Foothill soils include serpentine soils (which include magnesium, nickel, cobalt, chromium, iron, and asbestos); sedimentary sandstones; shales; conglomerates; and sandy loam, loam, and clay loam soils above bedrock. |
| Sacramento River Valley | Terrace lands include brownish loam, silt loam, and/or clayey loam soils. The soils generally are loamy along the Sacramento Valley terraces. Along the eastern boundary of Sacramento valley, the terraces primarily are red silica–iron-cemented hardpan and clays, sometimes with calcium carbonate. |
| Sacramento River Valley | Surface soils of the Sacramento River Valley include alluvial and aeolian soils. The alluvial soils include calcic brown and noncalcic brown alluvial soils on deep alluvial fans and floodplains. The calcic brown soil primarily is made of calcium carbonate and is alkaline (also known as “calcareous” soils). The noncalcic brown soils do not contain calcium carbonate and are either slightly acidic or neutral in chemical properties. |

| Project Area | Description of Soils |
|---|---|
| Sacramento River Valley | Aeolian soils (i.e., sand and silt-sized particles) are more susceptible to wind erosion than alluvial soils. Non-irrigated soils that have been disturbed by cultivation or other activities throughout the Sacramento River Valley are more susceptible to wind erosion and subsequent blowing dust than soils with more soil moisture. |
| Delta - Suisun Marsh and Bay | Basin floor/basin rim soils consist of organic-rich saline soils and poorly drained clays, clay loams, silty clay loams, and muck along the San Francisco Bay shoreline. Well-drained sands and loamy sands and poorly drained silty loams, clay loams, and clays occur on gently sloping alluvial fans of the Delta that surround the floodplain and valley lands. Drained loams, silty loams, silty clay loams, and clay loams interbedded with sedimentary rock and some igneous rock occur in the foothills. Terrace loams are along the southeastern edge of the Bay–Delta above the valley land. Soils in the Suisun Marsh consist of peaty and clayey muck, which are composed of fine-grained sediments that are poorly drained. |

Source: U.S. Bureau of Reclamation 2019

## 3A.3.7.2 Discussion

Would the Project:

**a) Directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving:**

**i) Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault? (Refer to California Geological Survey Special Publication 42.)**

The proposed long-term operation of the SWP would not involve any new construction of water facilities, infrastructure, or other land disturbance. Thus, the Proposed Project would not directly or indirectly cause an increased risk of loss, injury, or death from surface fault rupture. ***No impact*** would occur.

**ii) Strong seismic ground shaking?**

The proposed long-term operation of the SWP would not involve any new construction of water facilities, infrastructure, or land disturbance. Thus, the Proposed Project would not directly or indirectly cause an increased risk of loss, injury, or death from strong seismic ground shaking. ***No impact*** would occur.

**iii) Seismic-related ground failure, including liquefaction?**

The proposed long-term operation of the SWP would not involve any new construction of water facilities, infrastructure, or land disturbance. Thus, the Proposed Project would not directly or indirectly cause an increased risk of loss, injury, or death from seismic-related ground failure, including liquefaction. ***No impact*** would occur.

**iv) Landslides?**

The proposed long-term operation of the SWP would not involve any new construction of water facilities, infrastructure, or land disturbance. Thus, the Proposed Project would not directly or indirectly cause an increased risk of loss, injury, or death from seismically induced landslides. ***No impact*** would occur.

**b) Result in substantial soil erosion or the loss of topsoil?**

The proposed long-term operation of the SWP would not involve any new construction of water facilities, infrastructure, or land disturbance. Furthermore, no changes in land use (i.e., conversion from agricultural land to non-agricultural land) are anticipated because of the Proposed Project. ***No impact*** would occur.

**c) Be located on a geologic unit or soil that is unstable, or that would become unstable because of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction, or collapse?**

The proposed long-term operation of the SWP would not involve any new construction of water facilities, infrastructure, or land disturbance. Therefore, unstable geologic units or soils would not result in damages to new facilities. ***No impact*** would occur.

**d) Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994, as updated), creating direct or indirect substantial risks to life or property?**

The proposed long-term operation of the SWP would not involve any new construction of water facilities, infrastructure, or land disturbance. Therefore, the Proposed Project would not be located on expansive soil that could create direct or indirect substantial risks to life or property. ***No impact*** would occur.

**e) Have soils incapable of adequately supporting the use of septic tanks or alternative waste water disposal systems where sewers are not available for the disposal of waste water?**

The proposed long-term operation of the SWP would not require the use of septic systems or alternative waste water disposal systems. ***No impact*** would occur.

**f) Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?**

The proposed long-term operation of the SWP would not involve any new construction of water facilities, infrastructure, or land disturbance. Thus, the Proposed Project would not directly or indirectly destroy a unique paleontological resource or site, and the Proposed Project would not directly or indirectly destroy a unique geologic feature. ***No impact*** would occur.

## 3A.3.8 Greenhouse Gas Emissions

**Table 3A-25. Potential Impacts on Greenhouse Gas Emissions**

| Environmental Issues | Environmental Impact Significance |
|---|---|
| **VIII. GREENHOUSE GAS EMISSIONS.** Would the Project: | - |
| a) Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment? | No Impact |
| b) Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases? | No Impact |

Note: "-" indicates blank cell

### 3A.3.8.1 Environmental Setting

GHG emissions and their climate-related impacts are not limited to specific geographic locations but occur on global or regional scales. Whereas many pollutants with localized air-quality effects have relatively short atmospheric lifetimes of one or several days, GHGs have long atmospheric lifetimes and may persist for years. GHG emissions contribute cumulatively to the overall heat-trapping capability of the atmosphere, and the effects of global warming, also known as climate change, are manifested in different ways across the globe. Therefore, from the standpoint of CEQA, the impacts of GHG emissions on global climate change are inherently cumulative.

Increases in GHG concentrations in the Earth's atmosphere are thought to be the main cause of human-induced climate change. GHGs naturally trap heat by impeding the release of solar radiation that is reflected back into space after hitting Earth. Some GHGs occur naturally and are necessary for keeping the Earth's surface inhabitable. However, increases in the concentrations of these gases in the atmosphere during the last 100 years have decreased the amount of solar radiation that is reflected back into space, intensifying the natural greenhouse effect and resulting in the increase in the average global temperature (California Department of Water Resources 2010).

The atmospheric concentration of GHGs is believed to be affecting the intensity of climate change, and the current levels are already leading to increases in global temperatures and other local climate impacts including increased precipitation variability and extended droughts. The primary human-made processes that release these GHGs include the burning of fossil fuels for transportation, heating, and electricity generation; agricultural practices that release methane ($CH_4$), such as livestock grazing and crop residue decomposition; and industrial processes that release smaller amounts of gases with a high global warming potential, such as sulfur hexafluoride ($SF_6$), perfluorinated chemicals (PFCs), and hydrofluorocarbons (HFCs) (California Department of Water Resources 2010). Deforestation and land cover conversion have also been identified as contributing to climate change by reducing the Earth's capacity to remove carbon dioxide ($CO_2$) from the air and altering the Earth's albedo, or surface reflectance, allowing more solar radiation to be absorbed.

Scientific methods to rapidly reduce the impacts of climate change emphasize the need to immediately reduce emissions of short-lived climate pollutants (SLCPs), which include black carbon (soot), $CH_4$, and fluorinated gases (F-gases, including HFCs). About 40 percent of current net climate forcing can be attributed to these pollutants. Action to reduce these powerful super pollutants would provide immediate benefits by enabling reductions in long-lived GHGs to further unfold (California Air Resources Board 2017).

#### Potential Effects of Climate Change in California

Warming of the atmosphere has broad implications for the environment. In California, one of the effects of climate change could be increases in temperature that could affect the timing and quantity of precipitation. California has experienced warming during the 20th century, and annual maximum temperatures are projected to increase throughout the 21st century (California Governor's Office of Planning and Research et al. 2018a:23). California receives most of its precipitation in the winter months, and a warmer environment would raise the elevation of snowpack and result in reduced spring snowmelt and more winter runoff. These effects on precipitation and water storage in the snowpack could have broad implications for the environment in California. Overall precipitation is projected to continue to be variable, and annual precipitation may increase broadly in the north and decrease in the southernmost regions of California (California Governor's Office of Planning and

Research et al. 2018:25). These wetter conditions in the northern regions are expected to be more notable under the Representative Concentration Pathway (RCP) 8.5 GHG concentration trajectory compared to the RCP 4.5 trajectory, particularly in the central California coast, due to the increased heavy precipitation extremes (Scripps Institution of Oceanography 2018:22).

As described in the 2020 California Water Resilience Portfolio (California Natural Resources Agency et al. 2020:14–15), these trends may affect California water resources in various ways, including those listed below.

- Increased risk of intense storms and flooding, rising sea levels, and storm surges, making coastal communities vulnerable to coastal flooding and seawater intrusion. Water resources in the Bay Area and Delta may be adversely affected, for example, by increased salinity.
- Decreased snowpack in areas such as the Cascade and Sierra Nevada ranges may lead to increased "flashy winter runoff and flood risks" and lower spring and summer stream flow (California Natural Resources Agency et al. 2020:14–15). Additionally, more intense drought may affect areas dependent on surface water flows and may affect water resources (e.g., degrading water quality in estuaries). Updated water infrastructure and management—for example, to capture water in high-flow periods to mitigate impacts in dry periods—will be key to managing increased variability of water bursts and prolonged periods of dry conditions.
- Increased wildfire risk in fire-prone areas heightens the risk of catastrophic fire impacts on water supply and quality.
- Decreased water quality in estuaries during droughts.
- Increased saltwater intrusion in the Bay Area and the Delta as sea level rises.

For calculating emissions, CARB uses a metric developed by the Intergovernmental Panel on Climate Change (IPCC) to account for these differences and to provide a standard basis for calculations (California Air Resources Board 2018). The metric, called the global warming potential (GWP), is used to compare the future climate impacts of emissions of various long-lived GHGs. The GWP of each GHG is indexed to the heat-trapping capability of $CO_2$ and allows comparison of the global warming influence of each GHG relative to $CO_2$. The GWP is used to translate emissions of each GHG to emissions of carbon dioxide equivalents ($CO_2e$). In this way, emissions of various GHGs can be summed, and total GHG emissions can be inventoried in common units of metric tons per year of $CO_2e$. Most international inventories, including the United States inventory, use GWP values from the IPCC Fourth Assessment Report, per international consensus (Intergovernmental Panel on Climate Change 2007; U.S. Environmental Protection Agency 2012).

The California Global Warming Solutions Act of 2006 (AB 32) requires California to reduce statewide emissions to 1990 levels by 2020. EO B-30-15, signed by Governor Jerry Brown in 2015, established a goal for 2030 of reducing GHG emissions by 40 percent below 1990 levels.

In December 2007, in accordance with AB 32, CARB adopted an emission limit for 2020 of 427 metric tons per year of $CO_2e$. Increases in the statewide renewable energy portfolio and reductions in importation of coal-based electrical power contributed to meeting California's near-term GHG emission reduction goals. CARB estimates that a reduction of 82 million metric tons net $CO_2e$ emissions below the business-as-usual levels would be required by 2020 to meet the 1990 levels (California Air Resources Board 2018). This amounts to an approximately 16 percent reduction from projected business-as-usual levels in 2020. California met this goal in 2016.

Building on the achievement of SB 32, SB 1383 (Lara, Chapter 395, Statutes of 2016) requires CARB to implement SB 605 (Lara, Chapter 523, Statutes of 2014), which requires CARB to develop a plan to specifically target and reduce emissions of SLCPs. SB 1383 also sets targets for statewide reductions in SLCP emissions of 40 percent below 2013 levels by 2030 for $CH_4$ and HFCs, and SLCP emissions of 50 percent below 2013 levels by 2030 for anthropogenic black carbon. SB 1383 also provides specific direction for reductions from dairy and livestock operations and from landfills by diverting organic materials (California Air Resources Board 2017).

At a September 2008 meeting, the World Climate Research Programme Working Group on Coupled Modelling agreed to promote a new set of coordinated climate model experiments. These experiments comprise the sixth phase of the Coupled Model Intercomparison Project (CMIP6) (World Climate Research Programme 2019). The objective of CMIP6 is to better understand past, present, and future climate changes arising from natural, unforced variability or in response to changes in radiative forcing in a multi-model context.

## DWR Climate Action Plan

DWR developed a CAP to guide DWR's programs, projects, and activities in response to a changing climate (California Department of Water Resources 2012). The CAP demonstrates how DWR will make substantial reductions in its GHG emissions in the near term (present to 2020), and how it will continue to reduce emissions beyond 2020 to achieve its long-term (2050) GHG emissions reduction goal. Since publication of the CAP, DWR has further reduced its emission reduction targets to 50 percent below 1990 levels by 2020 and 100 percent below 1990 levels by 2045 (California Department of Water Resources 2019d). The CAP identifies 11 GHG emissions reduction measures to meet near-term and long-term goals, which include:

- Termination of its participation and associated delivery of electricity from a coal-fired power plant
- Efficiency improvements to DWR's existing facilities
- Purchase and development of renewable and high-efficiency electricity supplies
- Comprehensive improvements to DWR's construction practices
- Improvements to DWR's business activities that will reduce GHG emissions

## Greenhouse Gas Emissions

The majority of DWR GHG emissions are emitted by non-hydroelectric generation facilities that are needed to convey water through the SWP system, including power used for contract water deliveries, environmental water deliveries, and water transfers (California Department of Water Resources 2012). Typically, the SWP power supply portfolio constitutes about 98 percent of all GHG emissions from DWR activities.[1]

[1] DWR uses a portfolio of energy resources to make up the difference in energy between the electricity that SWP facilities generate and the amount of electricity needed to run the SWP. The composition of the SWP power portfolio varies throughout the year and from year to year, but the SWP power portfolio's electricity sources generally can be categorized as generation from large hydroelectric facilities, non-renewable energy facilities, and thermal generation facilities, as well as purchased energy (California Department of Water Resources 2012).

Construction activities, initiated and completed as individual projects, represent approximately 1 percent of SWP total GHG emissions. Although the GHG emissions from an individual construction project can be considered to be limited and short-term, the combined GHG emissions from all DWR construction activities also are similar to a long-term source of annual emissions (California Department of Water Resources 2012).

DWR's maintenance activities contribute approximately 0.5 percent of SWP total GHG emissions. Maintenance activities support flood protection maintenance, which includes routine maintenance activities, small erosion repairs, and sediment removal projects, and SWP maintenance, which includes landscaping and weed control, annual equipment and facilities inspection and maintenance, additional routine activities performed annually as needed, and weir operations and maintenance (California Department of Water Resources 2012).

Business practices contribute approximately 0.5 percent of SWP total GHG emissions. Business practices include all emissions attributable to the day-to-day administrative and personnel operations of DWR, including the heating and cooling of buildings used by DWR, electricity purchases to run buildings used by DWR, and business travel by DWR employees (California Department of Water Resources 2012).

Table 3A-26 shows the 1990 and 2014 to 2018 total annual emissions for operational activities, construction activities, maintenance, and business practices, and quantifies the emissions reductions required to meet 2030 emissions reduction goal.

**Table 3A-26. DWR Greenhouse Gas Emissions and Reduction Goals ($mtCO_2e$) [a]**

| Emissions | Operational | Construction | Maintenance | Business Practices | Total Annual Emissions |
|---|---|---|---|---|---|
| Estimated 1990 Emissions | 2,692,000 | 28,200 | 8,200 | 17,500 | 2,746,000 |
| Estimated 2014–2018 Average | 536,508 | 115,751 | 8,200 | 16,498 | 668,758 (76% below 1990 levels) |
| 2030 Emissions Reduction Goal | 461,500 | 13,110 | 14,383 | | 488,993 (82% below 1990 levels) |

Source: California Department of Water Resources 2020

Notes:

$mtCO_2e$ = metric ton of carbon dioxide equivalent

[a] The estimates and projections were developed using observed data from historical operations, assumptions about past and future conditions, expert judgment, and complex operational models (California Department of Water Resources 2012:Appendix G).

## 3A.3.8.2 Discussion

Would the Project:

**a) Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?**

The long-term operation of the SWP would not generate new sources of GHGs that would significantly affect the environment because the Proposed Project would not construct new facilities or physically alter existing facilities. The long-term operation of the SWP would continue to be in compliance with the CAP goals established by DWR. Thus, ***no impact*** would occur.

**b) Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases?**

The Proposed Project would not conflict with any adopted plan, policy, or regulation addressing GHGs because it would not include construction of new facilities or modifications to existing facilities. ***No impact*** would occur.

## 3A.3.9 Hazards and Hazardous Materials

**Table 3A-27. Potential Impacts on Hazards and Hazardous Materials**

| Environmental Issues | Environmental Impact Significance |
|---|---|
| **IX. HAZARDS AND HAZARDOUS MATERIALS.** Would the project: | - |
| a) Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials? | No Impact |
| b) Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment? | No Impact |
| c) Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school? | No Impact |
| d) Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code § 65962.5 and, as a result, would it create a significant hazard to the public or the environment? | No Impact |
| e) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project result in a safety hazard or excessive noise for people residing or working in the project area? | No Impact |
| f) Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan? | No Impact |
| g) Expose people or structures, either directly or indirectly, to a significant risk of loss, injury or death involving wildland fires? | No Impact |

Note: "-" indicates blank cell

## 3A.3.9.1 Environmental Setting

### Hazardous Materials Transport, Handling, and Cleanup

EPA regulates the generation, transportation, treatment, storage, and disposal of hazardous substances under the federal Resource Conservation and Recovery Act (RCRA), as amended by the Hazardous and Solid Waste Amendments of 1984. The California Environmental Protection Agency (CalEPA) is authorized by EPA to enforce and implement federal hazardous materials laws and regulations at the state level. The California Department of Toxic Substances Control (DTSC), which is part of CalEPA, protects Californians from exposure to hazardous waste, primarily under the authority of RCRA and the California Health and Safety Code.

The California Hazardous Materials Business Plan Program, administered by CalEPA, requires preparation of hazardous materials business plans and disclosure of hazardous materials inventories. A business plan must include an inventory of hazardous materials handled, facility floor plans showing where hazardous materials are stored, an emergency response plan, and provisions for employee training in safety and emergency response procedures (California Health and Safety Code, Division 20, Chapter 6.95, Article 1). Statewide, CalEPA has primary regulatory responsibility for management of hazardous materials, with delegation of authority to local jurisdictions that enter into agreements with the state.

The California Occupational Safety and Health Administration (Cal/OSHA) assumes primary responsibility for developing and enforcing workplace safety regulations in California. Cal/OSHA regulations pertaining to the use of hazardous materials in the workplace (California Code of Regulations [CCR], Title 8) include requirements for safety training, availability of safety equipment, accident and illness prevention programs, hazardous substance exposure warnings, and preparation of emergency action and fire prevention plans. Cal/OSHA enforces hazards communication program regulations that contain training and information requirements, including procedures for identifying and labeling hazardous substances, communicating hazard information related to hazardous substances and their handling, and preparation of health and safety plans to protect workers and employees at hazardous waste sites.

The U.S. Department of Transportation regulates transportation of hazardous materials between states. State agencies with primary responsibility for enforcing federal and state regulations and responding to hazardous materials transportation emergencies are the California Highway Patrol (CHP) and Caltrans. Together, these agencies determine container types to be used and license hazardous waste haulers for transportation of hazardous waste on public roads.

Cleanup of hazardous material spills is regulated by CalEPA, DTSC, the State Water Resources Control Board (State Water Board), Caltrans, the Governor's Office of Emergency Services, and the local Certified Unified Program Agency.

### Cortese-Listed Hazardous Materials Sites

The provisions of Government Code Section 65962.5 commonly are referred to as the "Cortese List" (after the legislator who authored the legislation that enacted it). The Cortese List is a planning document that is used by the state and local agencies to comply with CEQA requirements in providing information about the location of hazardous materials release sites. Government Code Section 65962.5 requires CalEPA to develop an updated Cortese List annually, at minimum. The State Water Board and DTSC are responsible for a portion of the information contained in the

Cortese List. Other state and local government agencies are required to provide additional hazardous material release information for the Cortese List.

Cortese-listed sites in the Project area are located in major urban centers, such as Sacramento, Stockton, Tracy, and throughout the Bay Area.

## Hazards Associated with Agricultural Land Uses

Parts of the Project area, particularly the Delta and Sacramento River regions, historically have been and currently are being used mainly for agricultural purposes. Agricultural land use typically involves the application of pesticides and herbicides as well as the use of fuels, lubricants, and other fluids associated with operation and maintenance of agricultural equipment, the residues of which may remain in soils for years. Other agricultural hazards include underground storage tanks for chemicals and fuels, wells, and underground piping that can contain asbestos.

## Wildfires

In general, wildfire is a serious hazard in undeveloped land with extensive areas of non-irrigated vegetation. In accordance with PRC Sections 4201–4204 and Government Code Sections 51175–51189, the California Department of Forestry and Fire Protection (CAL FIRE) has mapped areas of significant fire hazards, based on fuels, terrain, weather, and other relevant factors. The zones are referred to as fire hazard severity zones and represent the risks associated with wildland fires. Urban development within very high fire-hazard risk zones must comply with specific building and vegetation requirements that are intended to reduce property damage and loss of life within these areas.

CAL FIRE manages the State Responsibility Areas (SRAs), and local fire districts manage Local Responsibility Areas. First responders typically are the local fire districts. The U.S. Forest Service provides wildfire protection, both independently and cooperatively with CAL FIRE. In addition, the National Park Service and Bureau of Land Management (BLM) provide resource management and fire protection on portions of federal lands.

Firefighting actions frequently involve helicopter transport of water from reservoirs located close to wildfires in the Project area, including reservoirs owned by the U.S. Bureau of Reclamation (Reclamation) and DWR. See Section 3A.3.20, “Wildfire,” for additional details.

## Handling of Hazardous Materials Near Schools

The California Education Code contains various provisions governing the siting of new public kindergarten through 12th grade (K–12) schools (e.g., California Education Code Sections 17211, 17212, and 17212.5). In addition, the California Department of Education’s (CDE) School Facilities and Planning Division has developed screening and ranking procedures based on criteria commonly affecting school selection (California Education Code Section 17251(b), 5 CCR Section 14001(c)).

The foremost consideration in the selection of school sites is safety, including proximity to airports, proximity to high-voltage power transmission lines, presence of toxic and hazardous substances, hazardous air emissions, and facilities handling hazardous materials within 0.25 mile, and proximity to railroads. Certain health and safety requirements are governed by state statutes and CDE regulations.

School-aged children (i.e., grades K–12) are considered to be particularly sensitive to adverse effects resulting from exposure to hazardous materials, substances, or waste. For this reason, PRC Section 21151.4 requires that lead agencies evaluate projects proposed within 0.25 mile of a school to determine whether release of hazardous air emissions or handling of hazardous substances associated with project implementation would pose a human health or safety hazard.

In general, K–12 schools in the Project area are concentrated in urban centers. However, a few schools are located along rivers in the Sacramento and San Joaquin valleys and in rural portions of the interior of the Delta.

## 3A.3.9.2 Discussion

Would the Project:

**a) Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?**

Because the proposed long-term operation of the SWP would not involve any new construction of water facilities, infrastructure, or land disturbance, no construction-related hazards from routine transport, use, or disposal of hazardous materials would occur. Continued operation of SWP facilities would involve the storage, use, and transport of limited amounts of hazardous materials (e.g., fuel, lubricants, paint, herbicides). Transportation of hazardous materials on area roadways is regulated by CHP and Caltrans, and use of these materials is regulated by CalEPA, as outlined in Title 22 of the CCR. DWR would continue to transport these limited amounts of hazardous materials according to regulations put in place by these agencies. ***No impact*** would occur.

**b) Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?**

Because the proposed long-term operation of the SWP would not involve any new construction of water facilities, infrastructure, or land disturbance, no construction-related hazards from accidental release of hazardous materials would occur. Continued operation of SWP facilities would involve the ongoing use of minor amounts of hazardous materials (e.g., fuel, lubricants, paint). In addition, as described in Chapter 2, "Project Description," DWR is proposing to continue to treat the existing aquatic weed assemblage and harmful algal blooms at the CCF with multiple aquatic herbicides.

Control of aquatic vegetation would improve fish salvage efficiency at the John E. Skinner Delta Fish Protective Facility and decrease debris management issues, both of which would promote salmonid survival. None of these materials would be acutely hazardous.

The storage and use of these chemicals is regulated at the federal and state level by agencies, including EPA, the Occupational Safety and Health Administration, Cal/OSHA, CalEPA, DTSC, and the State Water Board. Regulations promulgated and enforced by these agencies are designed to safeguard human health, protect water quality and aquatic life, prevent accidental spills, and regulate cleanup of accidental spills if they do occur. Therefore, proposed long-term operation of the SWP would not create a substantial hazard through accidental release of hazardous materials into the environment. ***No impact*** would occur.

**c) Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?**

Because the proposed long-term operation of the SWP would not involve any new construction of water facilities, infrastructure, or land disturbance, no construction-related hazards from accidental release of hazardous materials would occur. Continued operation of SWP facilities would involve the ongoing use of minor amounts of hazardous materials, such as fuel, lubricants, herbicides, and paint. None of these materials would be acutely hazardous, and minor operation of existing facilities and equipment would not generate emissions to a level that would result in adverse health effects on workers or nearby school children. ***No impact*** would occur.

**d) Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?**

The proposed long-term operation of the SWP would not involve any new construction of water facilities, infrastructure, or other types of construction or land disturbance. Because no new construction or land disturbance is proposed, there is no potential for hazardous materials sites to be disturbed. ***No impact*** would occur. Consequently, a list of hazardous materials sites was not compiled.

**e) For a project located within an airport land use plan or, where such a plan has not been adopted, within 2 miles of a public airport or public use airport, would the project result in a safety hazard or excessive noise for people residing or working in the project area?**

The proposed long-term operation of the SWP would not involve any new construction of water facilities, infrastructure, or other types of construction or land disturbance that would place new buildings in proximity to airport hazards. Continued operation of the SWP would not increase the amount of bird habitat, and therefore would not increase the potential for wildlife-aircraft strikes, and the Proposed Project would not involve any activities that would cause other safety hazards to aircraft or to SWP personnel on the ground or excessive noise for people residing or working in the Project area. ***No impact*** would occur.

**f) Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?**

The proposed long-term operation of the SWP would not involve any new construction of water facilities, infrastructure, or land disturbance that would place new buildings or result in roadway closures that could impede emergency response or evacuation plans. Continued operation of the SWP would not involve any activities that would impede emergency response or evacuation plans. ***No impact*** would occur.

**g) Expose people or structures, either directly or indirectly, to a significant risk of loss, injury, or death involving wildland fires?**

The Proposed Project would not involve any new construction of water facilities, infrastructure, or land disturbance that would place new buildings in high fire hazard areas. Some SWP facilities are located in rural areas where a high fire hazard risk exists because of the surrounding terrain and the amount of vegetation. As previously stated, CAL FIRE manages the SRAs, and the U.S. Forest Service provides wildfire protection, both independently and cooperatively with CAL FIRE. In addition, the U.S. Forest Service and BLM provide resource management and fire protection on portions of federal lands. The proposed long-term operation of the SWP would not include any actions that would increase wildland fire probability. ***No impact*** would occur.

## 3A.3.10 Hydrology and Water Quality

**Table 3A-28. Potential Impacts on Hydrology and Water Quality**

| Environmental Issues | Environmental Impact Significance |
|---|---|
| **X. HYDROLOGY AND WATER QUALITY.** Would the project: | - |
| a) Violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or ground water quality? | Potentially Significant Impact |
| b) Substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the basin? | No Impact |
| c) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner which would:<br>i) result in a substantial erosion or siltation on- or off-site;<br>ii) substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or offsite;<br>iii) create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff; or<br>iv) impede or redirect flood flows? | No Impact |
| d) In flood hazard, tsunami, or seiche zones, risk release of pollutants due to project inundation? | No Impact |
| e) Conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan? | No Impact |

Note: "-" indicates blank cell

## 3A.3.10.1 Environmental Setting

### Hydrology

This section describes the surface water resources and water supplies managed by the SWP, and potential changes to surface water resources that could occur by implementing the Proposed Project. Changes to SWP operations, through the Proposed Project, may result in changes to surface water hydrology in the lower Sacramento River, downstream from the Feather River confluence, the Delta, and Suisun Bay and Marsh.

#### Sacramento River

Flows from the Sacramento River, Feather River, Sutter Bypass, and Natomas Cross Canal join upstream from Verona. When these flows exceed 62,000 cubic feet per second (cfs), a large portion of the flow enters the Yolo Bypass, a natural overflow area west of the Sacramento River. The Sacramento River Flood Control Project modified the basin, allowing Sacramento River flood flows to enter the Yolo Bypass over the Fremont and Sacramento weirs. The Yolo Bypass conveys floodwaters around the Sacramento metropolitan area and reconnects to the Sacramento River at Rio Vista (California Department of Water Resources 2013a). Tributaries entering the Yolo Bypass include flows from the Cache Creek Detention Basin, Willow Slough, and Putah Creek. Flows also enter the Yolo Bypass from the Colusa Basin, including flows from the Colusa Basin Drain through the Knights Landing ridge cut.

The Proposed Project has the potential to influence flows on the lower Sacramento River, downstream from the Feather River confluence. Releases from Oroville Dam flow down the Feather River, and the combined flows of the Sacramento and Feather Rivers continue southward toward the Delta. Simulated results from the Baseline Conditions CalSim 3 model and recent historical observed data of flows in the Sacramento River at Freeport (near the northern boundary of the Delta) are shown in Figures 3A-1 and 3A-2. Simulated results are based on a 100-year simulation period. Figure 3A-1 presents the average monthly flows from 100-year CalSim 3 model results in box-and-whisker format indicating the range of hydrology simulated at Freeport for each month. Lines showing historical observed flows at Freeport (water years [WY] 2008 to 2021) are overlaid atop the box-and-whisker plot. Figure 3A-2 presents CalSim 3 model results of Freeport flow during critical water years as black points and historical data of critical water years in the 2008 to 2021 period as lines. These figures illustrate that the 100-year hydrology and simulated operations in CalSim 3 generally encompasses the recent historical flows. Despite being generally representative of historical range, CalSim 3 and other models used in this analysis cannot be compared to historical data. CalSim 3 applies constant regulations, facilities, and demands to 100 years of hydrologic data. As shown in the figures, flows in the Sacramento River generally peak during winter and spring storm events and stay low in summer and fall months.

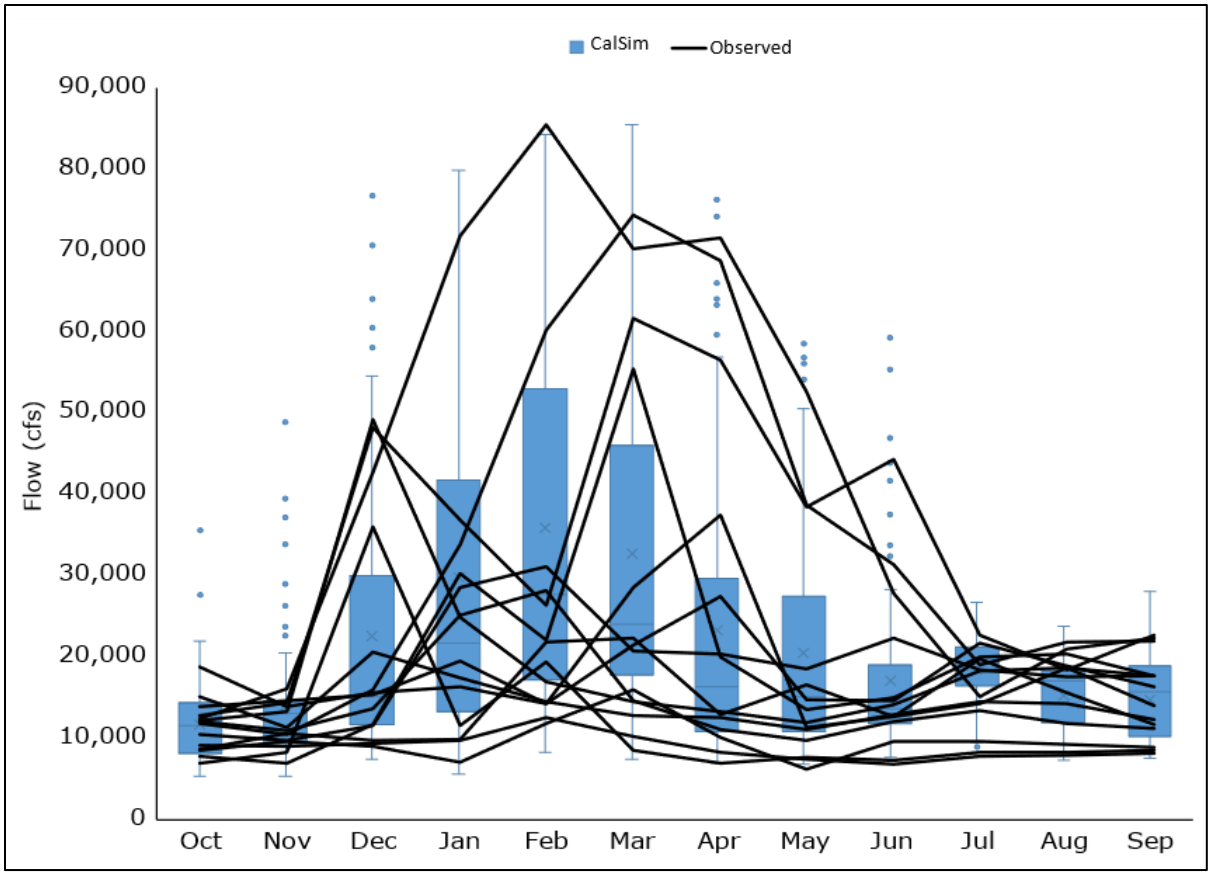



**Figure 3A-1. Sacramento River at Freeport, Historical and Modeled Baseline Conditions Flow**

### Sacramento and San Joaquin Bay-Delta

The Delta and Suisun Marsh and Suisun Bay encompass about 1,315 square miles and convey about 40 percent of water draining from the state (California Department of Water Resources et al. 2013). The Delta and Suisun Marsh and Bay are a complex of channels and islands at the confluence of the Sacramento and San Joaquin rivers. The SWP uses the Delta to convey water to state and federal pumps in the south Delta that export water to areas south of the Delta. Inflows to the Delta occur primarily from the Sacramento River system (including the Yolo Bypass), the San Joaquin River, and eastside tributaries that flow directly into the Delta (Mokelumne, Calaveras, and Cosumnes rivers). About 77 percent of the water enters the Delta from the Sacramento River system, about 15 percent enters from the San Joaquin River system, and about 8 percent enters from the eastside tributaries (Mokelumne, Calaveras, and Cosumnes rivers) (California Department of Water Resources 1994).

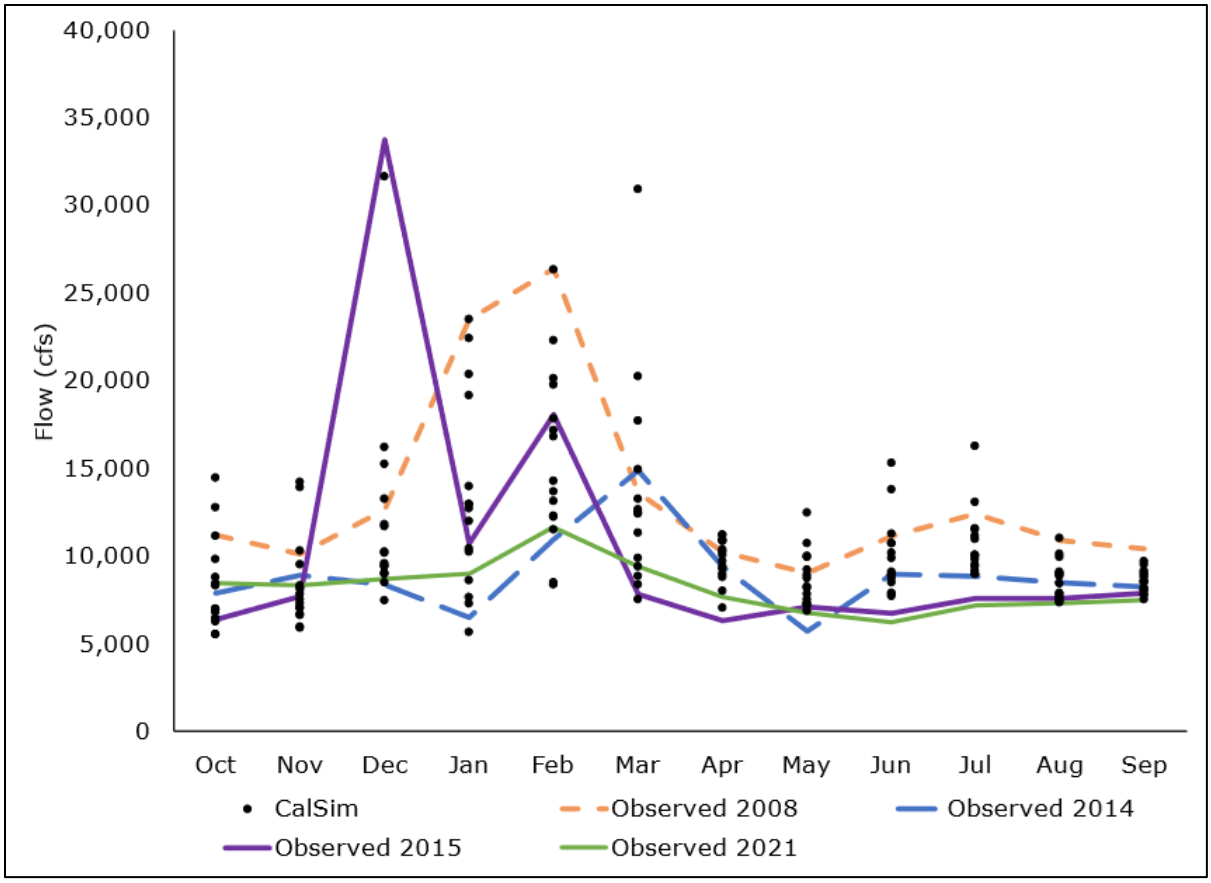



**Figure 3A-2. Sacramento River at Freeport, Critical Year Historical and Modeled Baseline Conditions Flow**

Water flow paths in the north Delta and central Delta primarily are determined by flows in the Sacramento River; however, operations of the south Delta pumps can alter the direction of flow in the central Delta from a westward direction to a southerly flow path toward the south Delta pumps.

Flow paths in the Delta are also affected by operation of the federal Delta Cross Channel (DCC) gates, which divert flows from the Sacramento River (upstream of Walnut Grove) to the lower Mokelumne River, and through the central and South Delta in Old and Middle rivers (OMR) to the channels near the south Delta pumps. Generally, opening the DCC gates can reduce salinity in some central and south Delta channels, particularly in the summer months, through the transport of relatively lower salinity Sacramento River water into the central Delta (California Department of Water Resources et al. 2013).

Salinity in Suisun Bay is primarily affected by Delta outflow to the bay and tidal inflows from San Francisco Bay. Salinity within Suisun Marsh is similarly affected by inflows from the Delta, Suisun Bay inflows, and the use of the SMSCG, which are located on Montezuma Slough near Collinsville. Gates are operated to restrict the inflow of high-salinity flood-tide water from Grizzly Bay into the marsh, but allow freshwater ebb-tide flow from the mouth of the Delta to pass through. Gate operations lower salinity in Suisun Marsh channels and result in a net movement of water from east to west. When Delta outflow is low to moderate and the gates are not operating, net movement of water is from west to east, resulting in higher-salinity water in Montezuma Slough.

The San Joaquin River, the second largest contributor to Delta freshwater inflows, enters the Delta from the south and flows toward the north and west. San Joaquin River channel flow volume and directions are affected by tides, local in-Delta water diversions, CVP operations, and SWP operations (California Department of Water Resources et al. 2013). Flow in the Delta channels can change direction because of tidal exchange, ebbing and flooding with the two tides per day. On average, tidal inflows to the Delta are approximately equal to tidal outflows. The tidal range can vary by about 30 percent between spring tide and neap tide conditions. Tidal flows at Martinez can be as high as 600,000 cfs. Because the Delta is tidally influenced, water surface elevations can vary on a daily basis from less than 1 foot in the east Delta to more than 5 feet in the west Delta (California Department of Water Resources 2013b).

In addition to tides, local in-Delta water diversions, CVP operations, and SWP operations influence Delta hydraulics, including periodic reverse flows (flows upstream towards the San Joaquin River) in Old and Middle rivers. The measurement of reverse flows in Old and Middle rivers is referred to as OMR. Reverse flows also occur in the False River in the west Delta and Turner Cut in the San Joaquin River. Reverse flows can cause more saline water to move farther inland (California Department of Water Resources et al. 2013).

To maintain water levels in several south Delta waterways, historically DWR has implemented the seasonal South Delta Temporary Barriers Project, which consists of three temporary rock agricultural barriers. Tidal flows in the south Delta have a major influence on Delta surface water circulation.

### SWP and CVP Delta Water Facilities

Water flows through the South Delta towards the approach channel for the CVP Jones Pumping Plant and the five radial gates that allow water to flow into the 31-taf CCF, which regulates water flows into the Banks Pumping Plant. The capacity of the Banks Pumping Plant is 10,300 cfs; however, the rate of diversion of water into the CCF is generally restricted to 6,680 cfs as a three-day average inflow to the CCF and 6,993 cfs as a one-day average inflow, in accordance with regulatory conditions of a USACE permit. The SWP is allowed to export an additional 500 cfs between July 1 and September 30 in some water years when SWP exports are reduced to protect listed fish species.

The CVP Jones Pumping Plant has a permitted diversion capacity of 4,600 cfs; however, the operating capacity is limited to 4,200 cfs in a lower portion of the downstream Delta-Mendota Canal.

Water conveyed from the SWP Banks Pumping Plant and CVP Jones Pumping Plant flows in aqueducts to deliver water to downstream users. A portion of the water from the pumping plants flows to the 2.027-million-acre-foot (maf) San Luis Reservoir, operated jointly by Reclamation and DWR (up to 1.062 maf of SWP water and up to 0.965 maf of CVP water). San Luis Reservoir storage generally increases in late fall through early spring when south-of-Delta demand is lower than in the summer. Water from the San Luis Reservoir is released into the California Aqueduct, which conveys water supplies southward to the Central Coast, Antelope Valley, and Southern California. The first segment of the California Aqueduct extends downstream from San Luis Reservoir to a location near Kettleman City. This upstream segment is called the San Luis Canal and is owned jointly by the SWP and CVP. The remaining portions of the California Aqueduct are owned by the SWP.

D-1641 authorized the joint use of the Jones and Banks pumping plants (referred to as the Joint Point of Diversion) with conditional limitations, staged implementation, and required response coordination plans related to maintaining south Delta water elevations for local riparian water users and south and central Delta water quality.

Simulated results from the Baseline Conditions CalSim 3 model and recent historical observed data of total Delta exports (sum of the Jones Pumping Plant and Banks Pumping Plant) are shown in Figures 3A-3 through 3A-5. Simulated results are based on the 100-year simulation period. Figure 3A-3 presents 100-year CalSim 3 model results in box-and-whisker format indicating the range of modeled exports for each month. Black lines of historical exports (WY 2008 to 2021) are overlaid atop the box-and-whisker plot. Baseline Conditions CalSim 3 model results of Delta exports during Dry water years are shown in Figure 3A-4 as black points and historical data of Dry water years in the 2008 to 2021 period as lines. Figure 3A-5 shows similar information for Critical water years. These figures illustrate that the 100-year hydrology and simulated operations in CalSim 3 generally encompass the recent historical exports. As noted earlier, CalSim 3 and other models used in this analysis cannot be compared to historical data.

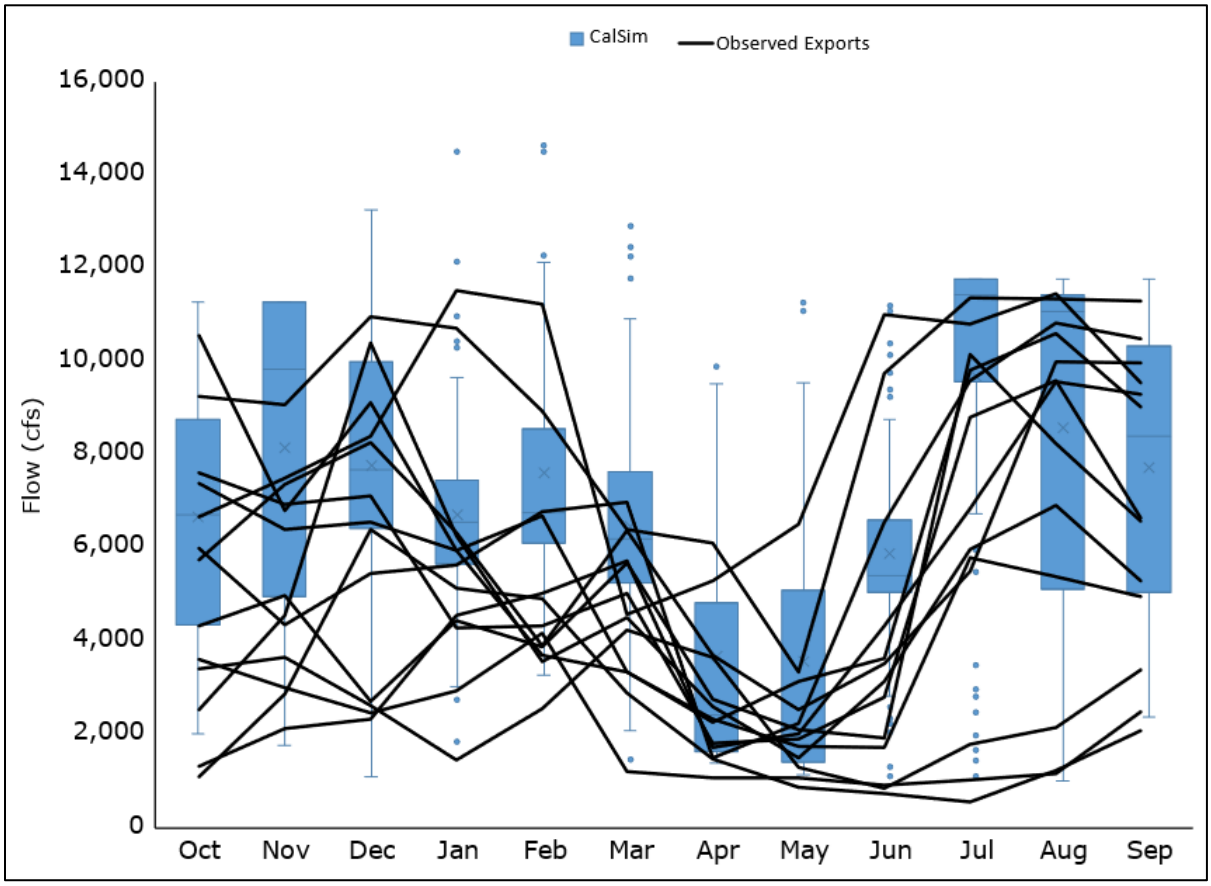



**Figure 3A-3. Total Delta Exports, Historical and Modeled Baseline Conditions**

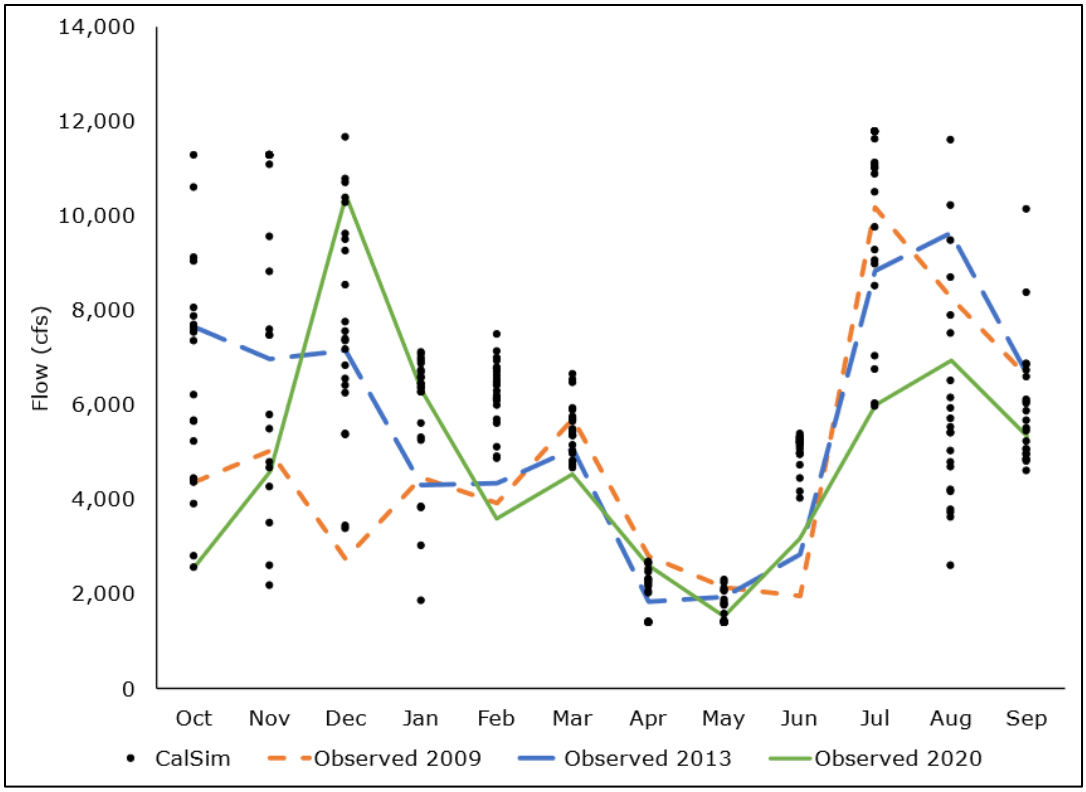



**Figure 3A-4. Total Delta Exports, Dry Year Historical and Modeled Baseline Conditions**

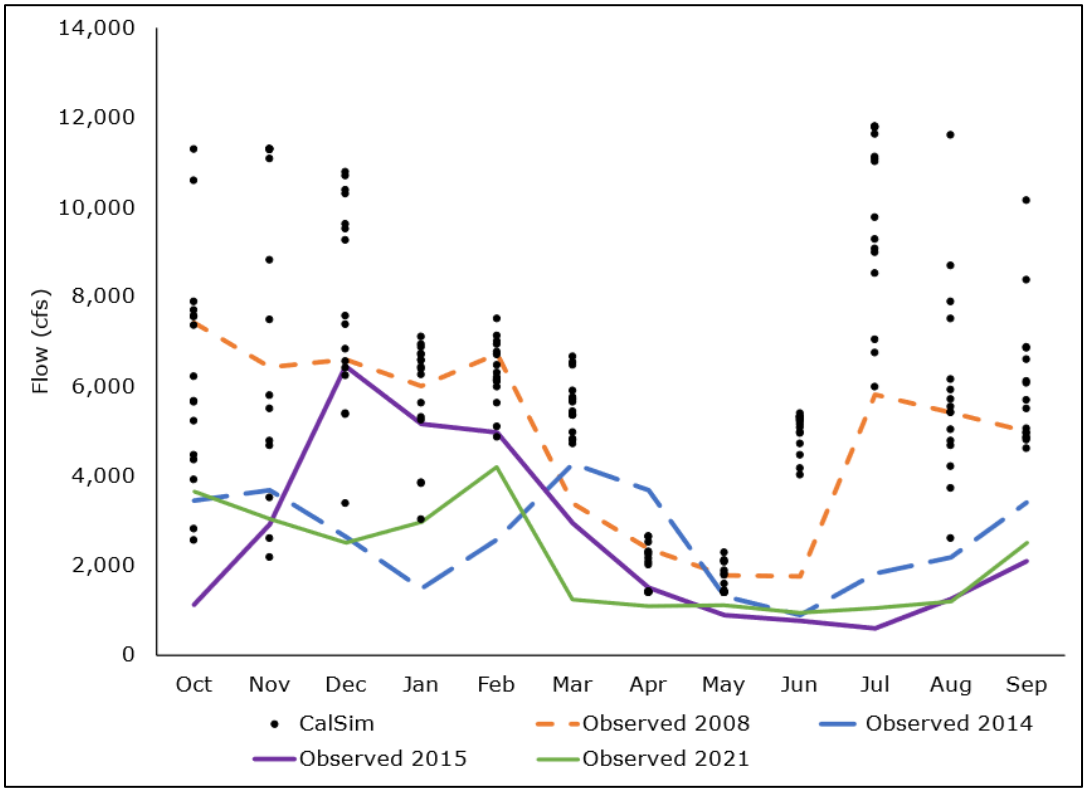



**Figure 3A-5. Total Delta Exports, Critical Year Historical and Modeled Baseline Conditions**

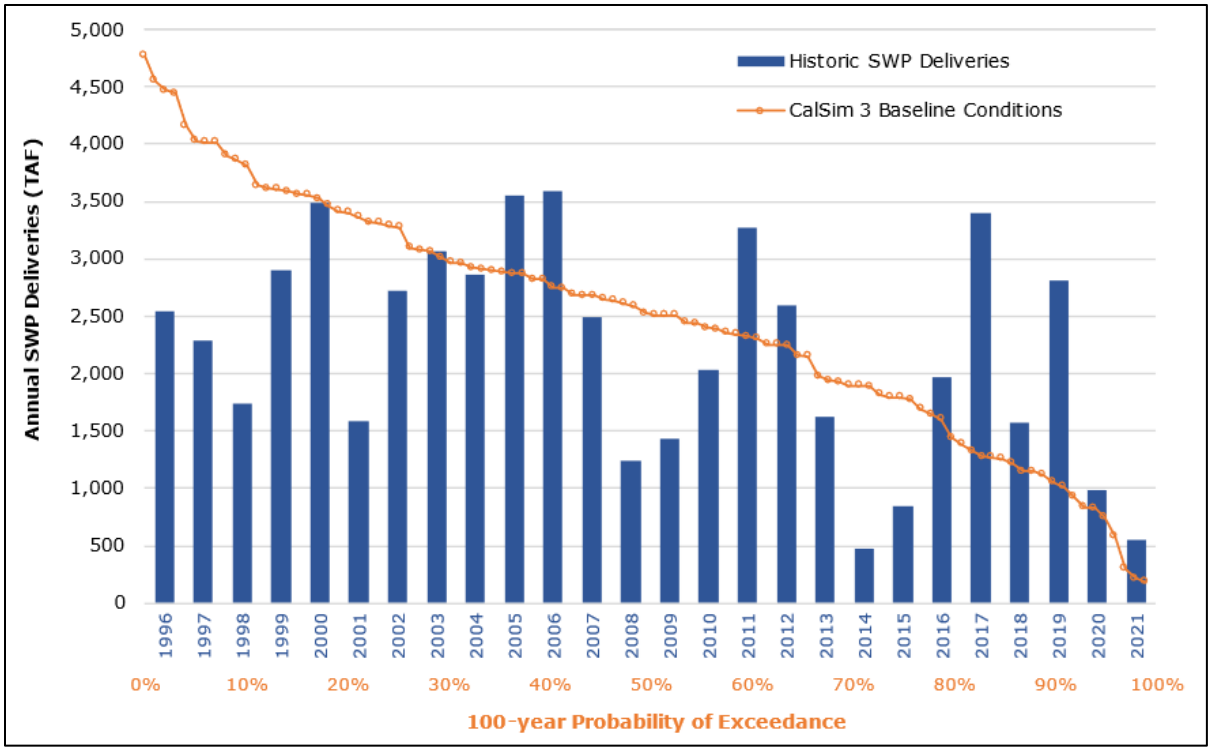
### Water Supplies Used by State Water Project Water Users

The SWP water supplies are the only water supplies available to some water users, including communities served by the Antelope Valley–East Kern Water Agency. Other SWP water users rely on other surface water supplies and groundwater. However, when the SWP water supplies are limited because of lack of precipitation, the other surface water supplies also are limited.

Several SWP water users also rely on other imported water supplies, including water from the Solano Project, which is used by the Solano County Water Agency; water from the Hetch Hetchy Water Project, which is used by the Alameda County Water District, Santa Clara Valley Water District, and Zone 7 Water Agency; and water from the Colorado River, which is used by portions of the service area of MWD, Desert Water Agency, and Coachella Valley Water District.

In response to recent reductions in SWP water supply reliability, water agencies have been making improvements to regional and local water supplies through enhanced water conservation efforts, wastewater effluent and stormwater recycling, construction of local surface water and groundwater storage facilities, and construction of desalination treatment plants for brackish water sources and ocean water sources. In addition, many agencies have constructed conveyance facilities to allow sharing of water supplies between communities, including the recent Bay Area Regional Water Supply Reliability Project, providing conveyance opportunities between several SWP water users in the Bay Area.

Figure 3A-6 shows the modeled Baseline Conditions and historical annual SWP deliveries. The probability of exceedance of the modeled annual SWP deliveries for the 100 years from the Baseline Conditions CalSim 3 simulation are plotted (orange line) along with the recent historical annual SWP deliveries (blue columns) in the figure. This figure shows that the CalSim 3 deliveries are representative of recent historic deliveries because modeled and observed deliveries are in the same range.




Note: Recent historical deliveries are shown as blue columns for 1996 to 2021 period. Modeled deliveries are plotted as a probability of exceedance curve (orange line) using the 100-year CalSim 3 results. Note that the historical deliveries for the years 1996–2008 are provided for reference; the Baseline Conditions CalSim 3 model is representative of the regulatory conditions in the years 2009 through 2021.

**Figure 3A-6. Annual Total SWP Deliveries, Historical and Modeled Baseline Conditions**

## Surface Water Quality

Primary factors affecting water quality in the Project area include patterns of land use, precipitation, SWP and CVP operations, and point and nonpoint sources of pollutants. The magnitude of the effect that each factor has on water quality in the Project area can differ for different constituents and conditions (e.g., hydrologic, climatic) during different times of a given year and across years.

Examples of point and nonpoint sources of pollutants to surface waters in the potential environmental impact area are described below.

- Drainage discharged from inactive and abandoned mines can contribute metals, such as mercury, cadmium, copper, and zinc.
- Stormwater runoff can contribute metals, sediment, pathogens, organic carbon, nutrients, pesticides, dissolved solids (i.e., salts), petroleum products, oil and grease, and other chemical residues.
- Discharges from wastewater treatment plants can contribute salts, metals, trace elements, nutrients, pathogens, organic carbon, and pesticides.
- Agricultural irrigation return flows and nonpoint discharges can contribute salts, organic carbon, methylmercury, nutrients, pesticides, pathogens, and sediment.
- Direct application of herbicides and insecticides for aquatic plant and mosquito control.

- Large dairies and feedlots can contribute nutrients, organic carbon, pesticides, sediment, and pathogens.
- Water-based recreational activities (e.g., boating) can contribute hydrocarbon compounds, nutrients, and pathogens.
- Atmospheric deposition can contribute metals, pesticides, and synthetic organic chemicals and may lower pH via precipitation.

Water quality in the Sacramento River from the confluence of the Feather River to the Delta (i.e., upstream of the Delta) is affected by the factors listed above, as well as watershed hydrology and water management activities, such as reservoir operations and diversions. River flow rates can affect the amount of water available for dilution and assimilation of contaminant inputs from point and nonpoint sources.

Delta water quality is also affected by the point and nonpoint source contributions listed above, tributary inflow rates from the Sacramento River, San Joaquin River, and eastside tributaries (i.e., the Cosumnes, Mokelumne, and Calaveras rivers), and the tides, which bring seawater from San Francisco Bay up through San Pablo Bay, Suisun Bay, and Suisun Marsh into the Delta. Each river system has its own water quality characteristics, with variable levels of constituents based on watershed characteristics and land use activities. These Delta inflows with different seasonal water quality characteristics mix in different proportions across the Delta, depending on the relative inflow rates (affected by hydrology, upstream diversions, and water management activities), in-Delta gate and barrier operations, CVP/SWP and other in-Delta diversions, and the tidal cycle. The extent of seawater intrusion into the Delta is affected by the tidal cycle and freshwater inflows and outflows that are a function of the combined river inflows into the Delta and in-Delta diversions, with the proportion of seawater being greatest in the western Delta.

The following sections describe the beneficial uses of the Sacramento River, Delta, and downstream waters, current water quality impairments, existing conditions for key constituents that could be affected by the Proposed Project.

### Beneficial Uses

Table 3A-29 lists the designated beneficial uses for waterbodies in the Project area. Beneficial uses of surface waters are designated by California's Regional Water Quality Control Boards (RWQCBs) for waters in their jurisdictions within their respective Water Quality Control Plans (WQCPs). In addition, the State Water Board has designated beneficial uses for the statutory Delta in its Bay-Delta WQCP. The Delta also falls within the jurisdictions of the Central Valley and San Francisco Bay RWQCBs, which have designated uses for the Delta within their respective WQCPs, the *Water Quality Control Plan (Basin Plan) for Sacramento River Basin and San Joaquin River Basin* and *San Francisco Bay Basin (Region 2) Water Quality Control Plan (Basin Plan)*.

**Table 3A-29. Designated Beneficial Uses for Waterbodies in the Potential Environmental Impact Area**

| Name | Sacramento River: Feather River to Delta | Yolo Bypass | Sacramento–San Joaquin Delta |
|---|---|---|---|
| Municipal and Domestic Supply (MUN) | E | | E |
| Agricultural Supply (AGR) | E | E | E |
| Industrial Process Supply (PRO) | | | E |

| Name | Sacramento River: Feather River to Delta | Yolo Bypass | Sacramento–San Joaquin Delta |
|---|---|---|---|
| Industrial Service Supply (IND) | E | | E |
| Hydropower Generation [c] (POW) | | | |
| Water Contact Recreation (REC-1) | E | E | E |
| Non-Contact Water Recreation (REC-2) | E | E | E |
| Warm Freshwater Habitat (WARM) | E | E | E |
| Cold Freshwater Habitat (COLD) | E | P | E |
| Migration of Aquatic Organisms (MIGR) | E [a, b] | E [a, b] | E [c] |
| Spawning, Reproduction, and/or Early Development (SPWN) | E [a, b] | E [a] | E [d] |
| Wildlife Habitat (WILD) | E | E | E |
| Navigation (NAV) | E | | E |
| Commercial and Sport Fishing (COMM) | | E | E |
| Groundwater Recharge (GWR) | | | E |
| Shellfish Harvesting (SHELL) | | | E |
| Estuarine Habitat (EST) | | | E |
| Rare, Threatened, or Endangered Species (RARE) | | | E |

Sources: Central Valley Regional Water Quality Control Board 2019a:2-1–2-14; San Francisco Bay Regional Water Quality Control Board 2019:Table 2-1; State Water Resources Control Board 2018:7–8.

E = existing beneficial use; P = potential beneficial use

[a] Striped bass, sturgeon, and shad.

[b] Salmon and steelhead.

[c] Uses of water that support habitats necessary for migration or other temporary activities by aquatic organisms, such as anadromous fish.

[d] Uses of water that support high-quality aquatic habitats suitable for reproduction and early development of fish.

### Water Quality Impairments

Section 303(d) of the Clean Water Act (CWA) requires states, territories, and authorized Tribes to develop a ranked list of water quality–limited (impaired) segments of rivers and other waterbodies under their jurisdiction. Listed waters are those that do not meet water quality standards even after point sources of pollution have installed the minimum required levels of pollution control technology. The law requires that total maximum daily loads (TMDLs) be developed to monitor and improve water quality. A TMDL is the sum of the individual waste load allocations from point sources, load allocations from nonpoint sources and background loading, plus an appropriate margin of safety. A TMDL defines the maximum amount of a pollutant that a waterbody can receive and still meet water quality standards. The CWA Section 303(d) list for California, compiled by the State Water Board, identifies Delta waterways, Suisun Marsh and Bay, and San Francisco Bay as impaired for a number of constituents, as shown in Table 3A-30 and Table 3A-31. The State Water Board's CWA Section 303(d) list also includes numerous other waterbodies or segments of waterbodies in the Delta and Sacramento River and San Joaquin River watersheds due to impairments associated with various constituents.

**Table 3A-30. Clean Water Act Section 303(d) Listed Pollutants and Sources for Sacramento River, Delta Region, and Suisun Marsh and Bay**

| | | Sacramento River | Delta Region | | | | | | | | | Suisun | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Pollutant** | **Listed Source** | **From Confluence of Feather River to Delta** | **Central** | **Eastern** | **Export Area** | **Northern** | **Northwestern** | **Southern** | **Stockton DWSC** | **Western** | **SF Bay Region [a]** | **Suisun Bay** | **Suisun Marsh** |
| Arsenic | Source unknown | | | | | | | | | X | | | |
| Chlordane | Source unknown | X | | | | X | | | | X | | X | |
| Chloride | Source unknown | | | | | | | | | | X | | X |
| Chlorpyrifos | Source unknown, agriculture, urban runoff/storm sewers | | X | X | | X | X | X | X | X | | | |
| DDE/DDT | Source unknown | X | X | X | X | X | X | X | X | X | X | X | |
| Diazinon | Source unknown, agriculture, urban runoff/storm sewers | | X | X | | X | X | X | X | X | | | |
| Dieldrin | Source unknown | X | | | | X | | | | X | X | X | |
| Dioxin | Source unknown | | | | | | | | X | | X | X | |
| Disulfoton | Source unknown | | | | | | | | | | | | |
| Electrical conductivity/ salinity | Source unknown | | | | X | | X | X | | X | | | X |
| Furan compounds | Source unknown | | | | | | | | X | | X | X | |
| Group A pesticides [b] | Source unknown | | X | X | X | X | X | X | X | X | | | |
| Organophosphorus Pesticides | Source unknown | | | | | | | | | | | | |
| Invasive species | Source unknown | | X | X | X | X | X | X | X | X | X | X | |
| Mercury | Resource extraction, industrial-domestic wastewater, atmospheric deposition, nonpoint source | X | X | X | X | X | X | X | X | X | X | X | X |
| Nutrients | Source unknown | | | | | | | | | | | | X |
| Organic enrichment/low dissolved oxygen | Municipal point sources, urban runoff/storm sewers, hydromodification, source unknown | X | | | | | | | X | | | | X |
| PAHs | Source unknown | | | | | | | | | X | | | |
| PCBs | Source unknown | X | | | | X | | | X | X | X | X | |
| Temperature | Source unknown | X | | | | | | | X | | | | |
| TDS | Source unknown | | | | | | | | | | | | X |
| Toxicity c | Source unknown | X | X | X | X | X | X | X | X | X | | | |
| Selenium | Source unknown | | | | | | | | | | X | X | |

Source: State Water Resources Control Board 2022.

DDE = dichlorodiphenyldichloroethylene; DDT = dichlorodiphenyltrichloroethane; EC = electrical conductivity; PAHs = polynuclear aromatic hydrocarbons; PCBs = polychlorinated biphenyls; TDS = total dissolved solids.

[a] Separate listing of impairments for the Delta region within the jurisdiction of the San Francisco Bay RWQCB.

[b] Group A pesticides include aldrin, dieldrin, chlordane, endrin, heptachlor, heptachlor epoxide, benzene hexachloride (including lindane), endosulfan, and toxaphene.

[c] Toxicity is known to occur, but the constituent(s) causing toxicity is unknown.

**Table 3A-31. Clean Water Act Section 303(d) Listed Pollutants and Sources for San Francisco Bay**

| Pollutant | Listed Source | Carquinez Strait | San Pablo Bay | Central | Lower | South |
|---|---|---|---|---|---|---|
| Chlordane | Source unknown | X | X | X | X | X |
| DDT | Source unknown | X | X | X | X | X |
| Dieldrin | Source unknown | X | X | X | X | X |
| Dioxin compounds | Source unknown | X | X | X | X | X |
| Furan compounds | Source unknown | X | X | X | X | X |
| Invasive species | Source unknown | X | X | X | X | X |
| Mercury | Resource extraction, industrial-domestic wastewater, atmospheric deposition, nonpoint source | X | X | X | X | X |
| PCBs | Source unknown | X | X | X | X | X |
| Selenium | Source unknown | X | X | X | | X |
| Trash | Source unknown | | | X | X | |

Source: State Water Resources Control Board 2022.

DDT = dichlorodiphenyltrichloroethane; PCBs = polychlorinated biphenyls.

### Existing Surface Water Quality

This section describes the existing surface water quality conditions for key constituents of concern as related to how the Proposed Project could affect water quality: salinity constituents (electrical conductivity [EC] and chloride), and cyanobacteria and cyanotoxins.

#### *Salinity (Electrical Conductivity and Chloride)*

Salinity is a measure of dissolved salts in water. Salinity can be characterized in a variety of ways, including total dissolved solids concentrations, chloride concentrations, and EC.

The beneficial uses most affected by salinity levels are municipal, agricultural, and industrial water supply. Additionally, changes in salinity, including tidally influenced interfaces between fresh water and saltwater in the Delta, directly affect aquatic organisms and indirectly affect aquatic and wildlife habitats (warm freshwater habitat, cold freshwater habitat, estuarine habitat). Related beneficial uses such as commercial and sport fishing and shellfish harvesting can also be affected by salinity levels.

Salinity can originate from natural sources such as seawater and rainfall-induced leaching of salts from soils. Anthropogenic sources of salinity include drainage from irrigated agricultural lands and managed wetlands, agricultural chemical soil additives, municipal and industrial wastewater discharges, and urban stormwater. Salinity in ditches, canals, and reservoirs increases through evaporative concentration, which occurs during the dry, warm months of the year.

Salinity in the Delta channels varies depending on several factors. The primary source of salinity in the Delta is seawater intrusion from the west, which occurs at greater magnitudes when freshwater Delta outflow to San Francisco Bay is low and/or when tidal flows are high. Hydrology and upstream water management operations influence Delta inflows, which in turn influence the balance with the highly saline seawater intrusion. Delta salinity conditions also are affected by inflow quality as well as in-Delta sources such as agricultural returns, natural leaching, and municipal and industrial discharges. Operation of various Delta gates and barriers and pumping rates of various diversions are other key factors influencing Delta salinity.

Salinity in Suisun Bay is primarily affected by Delta outflow to the bay and tidal inflows from San Francisco Bay. Salinity within Suisun Marsh is similarly affected by inflows from the Delta, Suisun Bay inflows, and the use of the SMSCG, which are located on Montezuma Slough near Collinsville. Gates are operated to restrict the inflow of high-salinity flood-tide water from Grizzly Bay into the marsh, but allow freshwater ebb-tide flow from the mouth of the Delta to pass through. Gate operations lower salinity in Suisun Marsh channels and result in a net movement of water from east to west. When Delta outflow is low to moderate and the gates are not operating, net movement of water is from west to east, resulting in higher-salinity water in Montezuma Slough.

Within San Francisco Bay, Delta waters flow in near the surface and gradually mix into the water column due to its lower density, compared to seawater (Cohen 2000:6). Delta inflows also create horizontal salinity gradients, with lower-salinity water near the Delta and higher-salinity water near the mouth of the bay (Cohen 2000:6).

The Bay-Delta WQCP includes numeric salinity-related objectives for the Delta and Suisun Marsh. It includes chloride objectives to protect municipal and industrial water supply beneficial uses, and EC objectives for multiple western, interior, and south Delta compliance locations to protect agricultural supply beneficial uses (State Water Resources Control Board 2018:11–13). The Bay-Delta WQCP also specifies salinity objectives for fish and wildlife protection: EC objectives for the Delta and Suisun Marsh, a narrative salinity objective for brackish tidal marshes of Suisun Bay, and the "X2" standard that regulates the location and number of days of allowable encroachment into the west Delta of salinity exceeding 2 parts per thousand (ppt) isohaline (2.64 milliSiemens per centimeter) (State Water Resources Control Board 2018:14–17).

#### *Cyanobacteria Harmful Algae Blooms*

Cyanobacteria (formerly called blue-green algae) are a phylum of bacteria that obtain their energy through photosynthesis. The term CHABs refers to cyanobacteria harmful algae blooms that have the potential to harm human health or aquatic biota.

CHABs in fresh and brackish water environments typically contain the genera *Microcystis, Dolichospermum*, and *Aphanizomenon*. To date, the most common and well-studied cyanobacteria in the Delta is *Microcystis*. There are five primary environmental factors that have been related to the emergence and subsequent growth of *Microcystis* in the water column of Delta waters, which are as follows.

- Water temperatures greater than 19 degrees Celsius (°C) (66.2 degrees Fahrenheit [°F])
- Low flows and channel velocities resulting in low turbulence
- Long hydraulic residence times
- Water column irradiance and clarity greater than 50 micromoles per square meter per second
- Sufficient nutrient availability of nitrogen and phosphorus

Furthermore, in waterbodies influenced by saltwater, salinity below 10 ppt is more likely to support *Microcystis* growth than salinity above 10 ppt.

In the Delta, CHABs are primarily comprised of the colonial form of *Microcystis aeruginosa*, but single cells are also present (Baxa et al. 2010:343). Other pelagic cyanobacteria including *Aphanizomenon* spp., *Dolichospermum* spp., *Planktothrix* spp., *Pseudanabaena* spp., and *Oscillatoria* spp. have also been detected in the Delta, although generally to a lesser extent than *M. aeruginosa* (Lehman et al. 2010:229; Spier et al. 2013:8; Mioni et al. 2012:20; Berg and Sutula 2015:35; Kurobe et al. 2018:7; Lehman et al. 2022:8). Since it was first observed in the Delta in 1999, annual *Microcystis* blooms have occurred at varying levels throughout the Delta, with blooms typically beginning in the central and southern Delta and spreading seaward into saline environments (Lehman et al. 2008:199; Lehman et al. 2013:146; Lehman et al. 2022:1; California Water Quality Monitoring Council 2021).

Production of cyanotoxins associated with CHABs is highly variable and not well understood. Nevertheless, *Microcystis* blooms often produce the liver toxin microcystin (Harke et al. 2016:4) and microcystin is the most frequently documented cyanotoxin in the Delta. In addition to producing cyanotoxins, CHABs can create surface scums that interfere with recreation and cause aesthetic problems, produce taste and odor compounds, and lower oxygen levels within the water column (Sutula and Senn 2017:41). Increased microcystin concentrations are generally associated with higher *Microcystis* abundances (Lehman et al. 2013:146).

During the 2014 drought, microcystin concentrations frequently exceeded the World Health Organization provisional drinking water guideline value of 1 microgram per liter (µg/L), the EPA 10-day Health Advisories drinking water guidelines of 0.3 µg/L for children under the age of six years old (Lehman et al. 2017:105), and the California Caution Action Trigger of 0.8 µg/L. Since 2014 microcystin concentrations have also exceeded EPA recreational guidelines of 8.0 µg/L and the California Danger Tier II trigger for recreational waters of 20 µg/L a number of times at different locations throughout the southern and central Delta including in Discovery Bay, at several locations along the San Joaquin River, and at locations along the Stockton waterfront (California Water Quality Monitoring Council 2021). The neurotoxins anatoxin-a and saxitoxin have also been documented in Delta waters, but concentrations have been low (i.e., below the California Warning Tier II trigger for recreational waters of 20 µg/L) (Central Valley Regional Water Quality Control Board 2019b:3; Lehman et al. 2021:1, 8).

*Microcystis* has been observed in Suisun Marsh, but bloom size has remained very small and does not occur annually (Sommer et al. 2020:18; Hammock et al. 2015:319). Visible CHABs do not occur regularly in the embayments of the San Francisco Bay or Suisun Bay, likely due to the intolerance of genera like *Microcystis* to elevated salinity. However, low levels of microcystins have been detected throughout the San Francisco and Suisun Bay (Peacock et al. 2018:138). The origin of these microcystins is unknown, but the toxin may have come from the Delta, urban run-off, point-source, or smaller freshwater inputs (Peacock et al. 2018:145).

### Applicable Laws, Regulations, and Programs

The following summarizes key federal and state laws, regulations, and plans directly related to regulating surface water quality in the potential environmental impact area.

#### Clean Water Act

The CWA (33 USC, Section 1251 et seq.) establishes the basic structure for regulating discharges of pollutants into the waters of the United States (including wetlands) and quality standards for surface waters, and gives the EPA the authority to implement control programs. The CWA authorizes the EPA to delegate many permitting, administrative, and enforcement aspects of the CWA to state governments, with the EPA retaining oversight responsibilities. The EPA has delegated various authorities for establishing water quality standards and regulating controllable factors affecting water quality to the State of California. California's State Water Board and nine RWQCBs implement the state's water quality management responsibilities.

#### Porter-Cologne Water Quality Control Act

The Porter-Cologne Water Quality Control Act is California's statutory authority for the protection of water quality. Under this act, California must adopt water quality policies, plans, and objectives that ensure beneficial uses of the state are reasonably protected. The Porter-Cologne Water Quality Control Act requires California's nine RWQCBs to adopt WQCPs and establish water quality objectives and authorizes the State Water Board and RWQCBs to issue and enforce permits containing requirements for the discharge of waste to surface waters and land. The Proposed Project is within the jurisdiction of the Central Valley RWQCB and San Francisco Bay RWQCB. The State Water Board and RWQCBs have the authority and responsibility to adopt plans and policies, regulate discharges to surface water and groundwater, regulate waste disposal sites, and require cleanup of discharges of hazardous materials and other pollutants.

#### Water Quality Control Plan for the San Francisco Bay/Sacramento–San Joaquin Delta Estuary

The Bay-Delta WQCP identifies beneficial uses of water in the Delta to be protected, water quality objectives for the reasonable protection of beneficial uses, and an implementation program to achieve the water quality objectives (State Water Resources Control Board 2018). Key elements of the Bay-Delta WQCP include salinity-related objectives. In D-1641, the State Water Board amended the water right license and permits for the SWP and CVP to meet certain objectives in the Bay-Delta WQCP. Specifically, D-1641 places responsibility on DWR and Reclamation for measures to ensure that specified water quality objectives are met.

## 3A.3.10.2 Discussion

Would the Project:

### a) Violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or groundwater quality?

The proposed long-term operation of the SWP would alter surface water flows in the Delta. Although these changes in surface water flows would remain within the range of historical conditions, the modified Delta surface flows would have the potential to alter Delta water quality for several constituents, including EC, chloride, and cyanobacteria. Changes in these constituents may exceed the applicable water quality limits established by various regulatory actions. Such exceedances may result in violating applicable water quality standards. An exceedance of applicable water quality standards would be a ***potentially significant impact***. Because the proposed long-term operation of the SWP may result in a potential significant impact on water quality, both surface water hydrology and water quality will be discussed further in the EIR.

**b) Substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the basin?**

The proposed long-term operation of the SWP would only modify surface water hydrology to a limited extent that would remain within the range of historical operations. This limited change to surface water hydrology would not result in decreasing groundwater supplies, interfere with groundwater recharge, or impede sustainable groundwater management in the Project area. ***No impact*** would occur.

**c) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner that would:**

**i) result in substantial on- or off-site erosion or siltation on- or off-site?**

The proposed long-term operation of the SWP would not include construction of new or modification of existing SWP facilities. Therefore, the Proposed Project would not alter existing drainage or river courses, nor create additional impervious surfaces that would induce or accelerate erosion or siltation.

The proposed long-term operation of the SWP would only modify surface water hydrology to a limited extent, and therefore the water hydrology would remain within the range of historical operations. Therefore, the Proposed Project would not create substantially different flow conditions that would induce or accelerate erosion or siltation. ***No impact*** would occur.

**ii) substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site;**

The proposed long-term operation of the SWP does not include construction of new or modification of existing SWP facilities. Therefore, the Proposed Project would not increase the rate or amount of surface runoff that subsequently would result in flooding.

The proposed long-term operation of the SWP would modify only surface water hydrology to a limited extent, and the hydrology would remain within the range of historical operations. This limited change to surface water hydrology would not result in flooding to areas in the SWP project area. ***No impact*** would occur.

**iii) create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff; or**

The proposed long-term operation of the SWP would not include construction of new or modification of existing SWP facilities, and therefore would not exceed the capacity of existing or planned stormwater systems or substantial sources of polluted runoff. ***No impact*** would occur.

**iv) impede or redirect flood flows?**

The proposed long-term operation of the SWP would not include construction of new or modification of existing SWP facilities and would only modify surface water hydrology to a limited extent that would remain within the range of historical operations. Therefore, the Proposed Project would not alter or impede the existing conveyance of flood flows. ***No impact*** would occur.

**d) In flood hazard, tsunami, or seiche zones, risk release of pollutants due to project inundation?**

The proposed long-term operation of the SWP would not include construction of new or modification of existing SWP facilities, and therefore would not result in increased flood hazard, tsunami risk, or risk of release of pollutants because of inundation. Surface water flow resulting from the Proposed Project would remain within the range of historical conditions and no change would occur. ***No impact*** would occur.

**e) Conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan?**

As previously discussed under item a, the proposed long-term operation of the SWP would alter surface water flows in the Delta. The modified Delta surface flows potentially could alter Delta water quality for several constituents, including EC and chloride. Changes in these constituents may exceed the applicable water quality limits established by various regulatory actions. Operation of the SWP would not result in conflict with an applicable WQCP. ***No impact*** would occur because of a conflict with an applicable WQCP.

The proposed long-term operation of the SWP would only modify surface water hydrology to a limited extent that would remain within the range of historical operations. This limited change to surface water hydrology would not result in decreasing groundwater supplies, interfere with groundwater recharge, or impede sustainable groundwater management in the Project area. Operation of the SWP would not result in a conflict with an applicable groundwater management plan. ***No impact*** would occur.

## 3A.3.11 Land Use and Planning

**Table 3A-32. Potential Impacts on Land Use and Planning**

| Environmental Issues | Environmental Impact Significance |
|---|---|
| **XI. LAND USE AND PLANNING.**<br>Would the Project: | - |
| a) Physically divide an established community? | No Impact |
| b) Cause a significant environmental impact due to a conflict with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect? | No Impact |

Note: "-" indicates blank cell

## 3A.3.11.1 Environmental Setting

### Existing Land Uses

A wide range of land uses occur in the Project area. These land uses include forestry, agriculture, water, urban (including industrial, commercial, and residential), rural residential, parks and recreation, and public open spaces. The following discussion briefly describes the land uses found in each region in the Project area.

#### Sacramento River Region

The Sacramento River Region includes Butte, Colusa, El Dorado, Glenn, Nevada, Placer, Plumas, Shasta, Sutter, Tehama, and Yuba counties. Only Butte and Yuba counties receive SWP water supplies. Although Sutter County is immediately adjacent to the Sacramento River within the Project area, it is not discussed further because it does not receive SWP water.

#### Delta

The Delta includes Alameda, Contra Costa, Sacramento, San Joaquin, and Solano counties. Alameda County, San Joaquin County, and Solano County are part of the Project area where SWP facilities are located and divert water from the Delta (Table 3A-33).

**Table 3A-33. Delta Region Land Use and Area of Potential Impact**

| County | Size (approx. square mile) | Major Communities | Predominant Land Use | Potential Areas of Effect from Long-Term Operation of the SWP |
|---|---|---|---|---|
| Alameda | 738 | Oakland, Fremont, Hayward, Berkeley, San Leandro, Livermore, Alameda, Pleasanton, Union City, and Castro Valley | Unincorporated area Agricultural and open space uses | SWP facilities (including the SWP South Bay Aqueduct) |
| San Joaquin | 1,426 | Stockton, Tracy, Manteca, Lodi, Lathrop, Ripon, and Garden Acres | Agriculture uses Incorporated cities | SWP facilities (including facilities associated with the Rock Slough Pumping Plant, the Jones Pumping Plant, the Clifton Court Forebay, and the Harvey O. Banks Pumping Plant), areas along the Delta channels that use the surface waters |
| Solano | 910 | Benicia, Dixon, Fairfield, Rio Vista, Suisun City, Vacaville, and Vallejo | Agriculture uses Incorporated cities | SWP facilities (North Bay Aqueduct intakes at Barker Slough), areas in the Yolo Bypass and along the Delta channels that use the surface waters |

Note:
SWP = State Water Project

## Applicable Plans

### Delta Stewardship Council Delta Plan

The Delta Reform Act of 2009 created the Delta Stewardship Council (DSC), with a primary responsibility to develop and implement a legally enforceable, long-term management plan for the Delta. The California Legislature required the Delta Plan to advance the co-equal goals of protecting and enhancing the Delta ecosystem and providing for a more reliable water supply for California, and to do so in a manner to protect and enhance the Delta as an evolving place (Delta Stewardship Council 2013).

The Delta Plan is a comprehensive, long-term management plan to achieve these goals for the Delta. The Delta Plan generally covers five topic areas and goals:

- Increased water supply reliability
- Restoration of the Delta ecosystem
- Improved water quality
- Reduced risk of flooding in the Delta
- Protection and enhancement of the Delta

The DSC does not propose to construct, own, or operate any facilities related to these five topic areas. Rather, the Delta Plan sets forth regulatory policies and recommendations that seek to influence the actions, activities, and projects of cities, counties, and other federal, state, regional, and local agencies toward meeting the goals in the five topic areas.

### Delta Protection Commission Land Use and Resource Management Plan

The Delta Protection Act of 1992 created the Delta Protection Commission (DPC), to guide conservation of the Delta while focusing on agriculture, recreation, and natural resources. The act also requires the DPC to develop and implement a Land Use and Resource Management Plan for the Primary Zone of the Delta (Delta Protection Commission 2010).

The Land Use and Resource Management Plan provides goals and policies for land use, agriculture, natural resources, recreation and accessibility, water, levees, and utilities and infrastructure. In addition, general plans and projects in the Delta counties must be consistent with the management plan and are subject to review by the DPC.

## 3A.3.11.2 Discussion

Would the Project:

**a) Physically divide an established community?**

The long-term operation of the SWP would not involve construction of new facilities or modification of existing facilities. The proposed long-term operation of the SWP would only modify surface water hydrology and exports to a limited extent that would remain within the range of historical operations. No changes to land use would occur. Therefore, the proposed long-term operation would not divide an established community. ***No impact*** would occur.

**b) Cause a significant environmental impact due to a conflict with any applicable land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect?**

The long-term operation of the SWP would not involve construction of new facilities or modification of existing facilities. The proposed long-term operation of the SWP would only modify surface water hydrology and exports to a limited extent that would remain within the range of historical operations. No changes to land use would occur. Thus, the long-term operation would not conflict with an applicable land use plan, policy, or regulation.

Because the Proposed Project would result in only a minor revision to SWP facility operations and would not be in conflict with flow objectives established by the State Water Board Bay-Delta WQCP, the Proposed Project would be consistent with the Delta Plan pursuant to 23 CCR Section 5005. ***No impact*** would occur.

# 3A.3.12 Mineral Resources

**Table 3A-34. Potential Impacts on Mineral Resources**

| Environmental Issues | Environmental Impact Significance |
|---|---|
| **XII. MINERAL RESOURCES.** Would the Project: | - |
| a) Result in the loss of availability of a known mineral resource that would be a value to the region and the residents of the state? | No Impact |
| b) Result in the loss of availability of a locally important mineral resource recovery site delineated on a local general plan, specific plan, or other land use plan? | No Impact |

Note: "-" indicates blank cell

## 3A.3.12.1 Environmental Setting

### Construction Aggregate

The loss of access to regionally important mineral deposits because of land uses that preclude mining is one of the problems that the California Surface Mining and Reclamation Act of 1975 (SMARA) was framed to address. SMARA mandates a two-phased mineral resource conservation process called classification-designation. Under SMARA, the State Mining and Geology Board (SMGB) may designate certain mineral deposits as being regionally significant to satisfy future needs. The SMGB decision to designate an area is based on a classification report prepared by CGS and on input from agencies and the public.

Mineral land classification studies have been prepared for most geographic regions. Mineral land classification studies identify known and potential deposits of Portland cement concrete-grade (construction) aggregate, precious metals, and other economically valuable minerals, such as kaolin clay. The primary focus of mineral land classification is on sand, gravel, and crushed rock, which are the most important mineral commodities classed as construction materials. These commodities, collectively referred to as aggregates, provide bulk and strength to Portland cement concrete, asphaltic concrete, and plaster or stucco. Aggregates also are used as road base, subbase, and fill. Aggregates normally provide from 80 to 100 percent of the material by volume in the above uses.

Table 3A-35 shows the mineral resource zone classification system established by CGS to indicate the location and significance of key extractive resources. Table 3A-36 shows an overview of mineral resources in the Project area, in the vicinity of SWP and CVP facilities or waterbodies.

**Table 3A-35. California Geological Survey Mineral Land Classification System**

| Classification | Description |
|---|---|
| MRZ-1 | Areas where adequate information indicates that no significant mineral deposits are present or where it is judged that little likelihood exists for their presence |
| MRZ-2 | Areas where adequate information indicates that significant mineral deposits are present or where it is judged that a high likelihood for their presence exists |
| MRZ-3 | Areas containing mineral deposits, the significance of which cannot be evaluated from existing data |
| MRZ-4 | Areas where available data are inadequate for placement in any other mineral resource zone |

Source: Dupras 1977

Note: MRZ = Mineral Resource Zone

**Table 3A-36. Mineral Resources in the Northern California Project Area**

| Classification | Description of Mineral Resources | MRZ Classification Description |
|---|---|---|
| **Region** | **-** | **-** |
| Sacramento River Valley | Classification extending along the Sacramento River from the I Street bridge to Collinsville for concrete-grade aggregate | MRZ-1 |
| Delta | Known aggregate deposits in Antioch, Pittsburg, Martinez, and Benicia | MRZ-2 |
| Suisan Marsh/ Suisan Bay | Classification for concrete-grade aggregate at Nelson Hill Quarry | MRZ-1, MRZ-2, MRZ-3 |

Source: The Diggings 2019; Dupras 1997, 1999; Foster 2001; Shumway 1997; Butte County 2012; Stinson et al. 1987a, 1987b; Jensen and Silva 1988; Rapp et al. 1977; Higgins 1997; Clinkenbeard 1999; Cole and Fuller 1988

Notes: "-" indicates blank cell

MRZ = Mineral Resource Zone

Aggregate mineral resources are found in various locations throughout the Sacramento River, Delta and Suisan Bay/Suisan Marsh Region SWP service areas (California Department of Conservation 2023). Rock formations that are most likely to yield economically valuable deposits of aggregate resources consist of sedimentary deposits with interbedded layers of gravel, cobble, sand, and conglomerate. In particular, the streambeds of major rivers and large streams historically have served as excellent sources of aggregate resources throughout the state.

## Oil and Gas

Oil and gas also represent an economically valuable form of naturally occurring deposits in Northern California. Natural gas well fields are concentrated primarily in the center of the Sacramento and San Joaquin valleys between Redding and Modesto, along the Sacramento River, and in the Delta (California Division of Oil, Gas, and Geothermal Resources 2019).

Most of the natural gas produced in California is found in the Sacramento and northern San Joaquin valleys. Today, most of California's natural gas needs are met by importing this commodity from other states (California Department of Conservation n.d.).

### 3A.3.12.2 Discussion

Would the Project:

**a) Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state?**

The proposed long-term operation of the SWP would not involve any new construction of water facilities, infrastructure, or land disturbance. Thus, no new sources of development could result in the loss of availability of economically valuable state-designated mineral resource deposits (i.e., areas designed as MRZ-2, MRZ-3 or MRZ-4). The proposed long-term operation of the SWP would not affect the ability to recover mineral resources in any of the areas designated as MRZ-2 that are adjacent to streams or rivers considered in this analysis because such mining activities would occur either on the land side of flood protection levees or behind raised berms, or at locations that are higher in elevation and set back from the stream. ***No impact*** would occur.

**b) Result in the loss of availability of a locally important mineral resource recovery site delineated on a local general plan, specific plan, or other land use plan?**

For the same reasons described in item a, the proposed long-term operation of the SWP would not result in the loss of availability of a locally important mineral resource recovery site delineated on a local general plan, specific plan, or other land use plan. ***No impact*** would occur.

## 3A.3.13 Noise

**Table 3A-37. Potential Impacts on Noise**

| Environmental Issues | Environmental Impact Significance |
|---|---|
| **XIII. NOISE.**<br>Would the project result in: | - |
| a) Generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies? | No Impact |
| b) Generation of excessive groundborne vibration or groundborne noise levels? | No Impact |
| c) For a project located within the vicinity of a private airstrip or an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels? | No Impact |

Note: "-" indicates blank cell

### 3A.3.13.1 Environmental Setting

The SWP includes numerous storage facilities, reservoirs, lakes, and pumping plants; four pumping-generating plants; five hydroelectric power plants; and approximately 700 miles of open canals and pipelines. Noise sources associated with operation of SWP facilities include pumping plants, lift stations, and other conveyance facilities.

## Sound, Noise, and Acoustics

Sound is the mechanical energy of a vibrating object transmitted by pressure waves through a liquid or gaseous medium (e.g., air). Noise is defined as sound that is unwanted (i.e., loud, unexpected, or annoying). Acoustics is the physics of sound.

The amplitude of pressure waves generated by a sound source determines the perceived loudness of that source. A logarithmic scale is used to describe sound pressure level in terms of decibels (dB). The threshold of human hearing (near-total silence) is approximately 0 dB. A doubling of sound energy corresponds to an increase of 3 dB. In other words, when two sources at a given location are each producing sound of the same loudness, the resulting sound level at a given distance from that location is approximately 3 dB higher than the sound level produced by only one of the sources. For example, if one automobile produces a sound pressure level of 70 dB when it passes an observer, two cars passing simultaneously do not produce 140 dB; rather, they combine to produce 73 dB.

The typical human ear is not equally sensitive to all frequencies of the audible sound spectrum. As a consequence, when assessing potential noise impacts, sound is measured using an electronic filter that de-emphasizes the frequencies below 1,000 hertz (Hz) and above 5,000 Hz in a manner corresponding to the human ears' decreased sensitivity to low and extremely high frequencies instead of the frequency mid-range. This method of frequency weighting is referred to as A-weighting and is expressed in units of A-weighted decibels (dBA). All noise levels reported in this section are in terms of A-weighting. A strong correlation exists between A-weighted sound levels and community response to noise. As discussed above, doubling sound energy results in a 3-dB increase in sound. In typical noisy environments, noise-level changes of 1 to 2 dB generally are not perceptible by the healthy human ear; however, people can begin to detect 3-dB increases in noise levels. An increase of 5 dB generally is perceived as distinctly noticeable, and a 10-dB increase generally is perceived as a doubling of loudness. The following are the sound level descriptors commonly used in environmental noise analysis:

- Equivalent sound level ($L_{eq}$): An average of the sound energy occurring over a specified time period. In effect, the $L_{eq}$ is the steady-state sound level containing the same acoustical energy as the time-varying sound that actually occurs during the same period. The one-hour, A-weighted equivalent sound level is the energy average of A-weighted sound levels occurring during a one-hour period.
- Maximum sound level ($L_{max}$): The highest instantaneous sound level measured during a specified period.
- $L_{dn}$ (day-night noise level): The 24-hour $L_{eq}$ with a 10-dB "penalty" applied during nighttime noise-sensitive hours, 10 p.m. through 7 a.m. The $L_{dn}$ attempts to account for the fact that noise during this specific period of time is a potential source of disturbance with respect to normal sleeping hours.
- $L_n$ (Statistical Descriptor): The noise level exceeded in percent of a specific period of time, generally accepted as an hourly statistic. An $L_{10}$ would be the noise level exceeded 10 percent of the measurement period.

Sound from a localized source (i.e., point source) propagates uniformly outward in a spherical pattern, and the sound level attenuates (decreases) at a rate of 6 dB for each doubling of distance from a point/stationary source. Roadways and highways and, to some extent, moving trains consist of several localized noise sources on a defined path; these are treated as "line" sources, which approximate the effect of several point sources. Sound levels attenuate at a rate of 3 dB for each doubling of distance from a line source. Therefore, noise from a line source attenuates less with distance than noise from a point source with increased distance.

### Existing Noise Environment

Background noise levels in the project area vary between rural and urban settings. Based on historical measured noise levels taken at representative rural and urban settings (U.S. Environmental Protection Agency 1971), existing one-hour $L_{eq}$ noise levels at the remote rural sites are assumed to be in the range of 35 to 50 dBA during the day and 30 to 40 dBA at night. Daytime noise levels at sites in small towns are assumed to be 50 to 55 dBA. Daytime noise levels at sites within 100 feet of high-volume freeways or highways are assumed to be 55 to 65 dBA (California Department of Transportation 2013). Sources of ambient noise in the Project area include traffic, agricultural equipment, boats, and aircraft. Some locations in the Project area are within airport land use planning or influence areas and may experience ambient noise from aircraft arrivals and departures. Rail transportation corridors in the Project area are a source of rail noise and vibration from freight and commuter trains. The influence of these sources of noise on ambient levels depends on the proximity of receivers to highways, rail corridors, airports, and developed areas.

Existing groundborne vibration levels generally are not discernible at locations beyond the road shoulders of highways or freeways. Proposed Project activities are not expected to result in perceptible levels of vibration in sensitive buildings.

### Noise-Sensitive Land Uses

Noise-sensitive land uses generally are defined as locations where people reside or where the presence of elevated noise emissions could significantly affect the use of the land. Noise-sensitive land use may be near access roads that are used for substantial haul truck traffic. Typical sensitive receptors include residences, schools, hospitals, and places of worship. Noise-sensitive receptors also can include parks, where quiet conditions are important for normal conversation between park users, and outdoor use areas at businesses, such as outdoor dining areas at restaurants.

## 3A.3.13.2 Discussion

Would the Project result in:

**a) Generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?**

Because the Proposed Project would not require any construction activities, introduce new land uses, or result in population increases in the Project area, no new sources of noise would be introduced as part of the proposed long-term operation of the SWP. Noise levels from existing SWP facilities would remain the same as with existing conditions. The proposed long-term operation of the SWP would not generate noise levels that would conflict with applicable general plan noise elements or noise ordinances for other counties or cities in the Project area. ***No impact*** would occur.

**b) Generation of excessive vibration or groundborne noise levels?**

Because the proposed long-term operation of the SWP would not result in new construction activities, changes to land uses, or increase the population in the area, the Project would not generate any excessive vibration or groundborne noise. Therefore, ***no impact*** would occur.

**c) For a project located within the vicinity of a private airstrip or an airport land use plan or, where such a plan has not been adopted, within 2 miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?**

The proposed long-term operation of the SWP would not introduce new land uses or increase the population in the area. Therefore, the Proposed Project would not expose people residing or working in the Project area to excessive noise associated with public or public use airports. ***No impact*** would occur.

# 3A.3.14 Population and Housing

**Table 3A-38. Potential Impacts on Population and Housing**

| Environmental Issues | Environmental Impact Significance |
|---|---|
| **XIV. POPULATION AND HOUSING.** Would the Project: | - |
| a) Induce substantial unplanned population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)? | No Impact |
| b) Displace substantial numbers of existing people or housing, necessitating the construction of replacement housing elsewhere? | No Impact |

Note: "-" indicates blank cell

## 3A.3.14.1 Environmental Setting

### Population

Numerous communities with populations ranging from thousands (e.g., Stockton and Tracy) to a few hundred (e.g., Locke) are located throughout the Project area. Most of the population resides in or near the peripheral urban areas. The following discussion briefly describes each Project area segment and presents population data for 2010 and 2022, and projected population data for each region.

#### Sacramento River Region

Sutter, Sacramento, and Yolo counties are evaluated within the Sacramento River Region because they border the Sacramento River downstream of the Feather River confluence (Table 3A-39). Sacramento County had the highest growth rate of the three counties and Sutter County experienced the lowest population growth over the last 12 years (2010 to 2022), with an average annual growth rate of 0.3 percent. The average population growth rate in these three counties over the last 12 years was approximately 0.7 percent. Population growth in all three counties is projected to continue through 2060.

**Table 3A-39. Population Characteristics in the Sacramento River Region**

| County | Population in 2010 | Population in 2022 | Annual Average Growth Rate (percent)[b] | Projected Population in 2060 |
|---|---|---|---|---|
| Sutter County | 94,742 | 98,503 | 0.3% | 103,147 |
| Sacramento County | 1,421,381 | 1,584,169 | 0.9% | 1,844,098 |
| Yolo County | 201,061 | 222,115 | 0.8% | 243,410 |
| **Sacramento River Region[a]** | **1,717,184** | **1,904,787** | **0.7%** | **2,190,655** |

Sources: USA Facts 2023; California Department of Finance 2023

Notes:

[a] Calculated sum of population for all Sacramento River Region counties.

[b] Calculated annual average from 2010 to 2022.

### Delta

The Delta Region includes in part or in whole the counties of Alameda, Contra Costa, Sacramento, San Joaquin, Solano, and Yolo (Table 3A-40). Among the counties evaluated in the Delta, Sacramento and San Joaquin counties had the highest population growth over the last 12 years (2010 to 2022), with an average annual growth rate of 0.9 and 1.2 percent, respectively. Alameda County had the lowest population growth, with an average annual growth rate of 0.6 percent. Between 2010 and 2022, the Delta had an average annual growth rate of 0.8 percent. Population growth in the Delta Region is projected to continue through 2060.

**Table 3A-40. Population Characteristics in the Delta Region**

| County | Population in 2010 | Population in 2022 | Annual Average Growth Rate (percent) [b] | Projected Population in 2060 |
|---|---|---|---|---|
| Alameda County | 1,512,997 | 1,628,997 | 0.6% | 1,977,629 |
| Contra Costa County | 1,052,516 | 1,156,966 | 0.8% | 1,444,900 |
| Sacramento County | 1,421,381 | 1,584,169 | 0.9% | 1,844,098 |
| San Joaquin County | 687,115 | 793,229 | 1.2% | 976,326 |
| Solano County | 413,963 | 448, 747 | 0.7% | 512,615 |
| Yolo County | 201,061 | 222,115 | 0.8% | 243,410 |
| **Delta Region [a]** | **5,289,033** | **5,385,476** | **0.8%** | **6,998,978** |

Sources: USA Facts 2023; California Department of Finance 2023

Notes:

[a] Calculated sum of population for all Delta Region counties.

[b] Calculated annual average from 2010 to 2022.

### Suisun Marsh and Suisun Bay Region

The Suisun Marsh and Suisun Bay Region is located in part within Solano and Contra Costa counties in the SWP service area (Table 3A-41). Contra Costa County has experienced the greatest population growth in this region over the past decades, with an average annual growth rate of 0.8 percent. Solano County had an average annual growth rate of 0.7 percent. Between 2010 and 2022, the Suisan Marsh and Suisan Bay Region had an average annual growth rate of 0.75 percent. All counties in the Suisan Marsh and Suisan Bay Region are projected to experience population growth through 2060.

**Table 3A-41. Population Characteristics in the Suisun Marsh and Suisun Bay Region**

| County | Population in 2010 | Population in 2022 | Annual Average Growth Rate (percent) [b] | Projected Population in 2060 |
|---|---|---|---|---|
| Solano County | 413,963 | 448, 747 | 0.7% | 512,615 |
| Contra Costa County | 1,052,516 | 1,156,966 | 0.8% | 1,444,900 |
| **Suisun Area Region [a]** | **1,466,479** | **1,605,713** | **0.75%** | **1,957,515** |

Sources: USA Facts 2023; California Department of Finance 2023

Notes:

[a] Calculated sum of population for all Suisan Marsh and Suisun Bay Region counties.

[b] Calculated annual average from 2010 to 2022.

## Housing

Housing density in the Project area varies greatly, corresponding to the variation in population density. The following subsections present housing unit numbers for 2010 and 2022, for each Project area segment.

### Sacramento River Region

Among the counties evaluated in the Sacramento River Region Project area, Yolo and Sacramento counties had the highest housing unit growth between 2010 and 2022, with an average growth of 9.18 percent and 7.20 percent, respectively. Between 2010 and 2022, the number of housing units in the Sacramento River Valley region grew by 7.33 percent (Table 3A-42).

**Table 3A-42. Housing Characteristics in the Sacramento River Region**

| County | Housing Units in 2010 | Housing Units in 2022 | Change from 2010 to 2022 (percent) |
|---|---|---|---|
| Sacramento County | 555,932 | 595,939 | 7.20% |
| Sutter County | 33,858 | 34,749 | 2.63% |
| Yolo County | 75,054 | 81,945 | 9.18% |
| **Sacramento River Region [a]** | **1,032,252** | **1,107,950** | **7.33%** |

Sources: California Department of Finance 2010, 2023

Notes:

[a] Calculated sum of housing units for all Sacramento River Region counties.

### Delta Region

Among the counties evaluated in the Delta Region, Yolo, San Joaquin, and Alameda counties had the highest housing unit growth between 2010 and 2022, with an average growth rate of 9.18 percent, 10.61 percent, and 8.70 percent, respectively. Between 2010 and 2022, the number of housing units in the Delta region grew by 8.05 percent (Table 3A-43).

**Table 3A-43. Housing Characteristics in the Delta Region**

| County | Housing Units in 2010 | Housing Units in 2022 | Change from 2010 to 2022 (percent) |
|---|---|---|---|
| Alameda County | 582,549 | 633,242 | 8.70% |
| Contra Costa County | 400,263 | 427,775 | 6.57% |
| Sacramento County | 555,932 | 595,939 | 7.20% |
| San Joaquin County | 233,755 | 258,566 | 10.61% |
| Solano County | 152,698 | 163,820 | 7.28% |
| Yolo County | 75,054 | 81,945 | 9.18% |
| **Delta Region [a]** | **2,000,251** | **2,161,287** | **8.05%** |

Sources: California Department of Finance 2010, 2023

Notes:

[a] Calculated sum of housing units for all Delta Region counties.

### Suisun Marsh and Suisun Bay Region

Among the counties evaluated in the Suisun Marsh and Suisun Bay Region, Contra Costa and Solano counties grew in the number of housing unit between 2010 and 2022, by 6.87 percent and 7.28 percent, respectively. Between 2010 and 2012, the number of housing units in the Suisun Marsh and Suisun Bay Region grew by 6.99 percent (Table 3A-44).

**Table 3A-44. Housing Characteristics in the Suisun Marsh and Suisun Bay Region**

| County | Housing Units in 2010 | Housing Units in 2022 | Change from 2010 to 2022 (percent) |
|---|---|---|---|
| Contra Costa County | 400,263 | 427,775 | 6.87% |
| Solano County | 152,698 | 163,820 | 7.28% |
| **Suisun Marsh and Suisun Bay Region [a]** | **552,961** | **591,595** | **6.99%** |

Sources: California Department of Finance 2010, 2023

Notes:

[a] Calculated sum of housing units for all Suisan Marsh and Suisan Bay Region counties.

## 3A.3.14.2 Discussion

Would the Project:

**a) Induce substantial unplanned population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)?**

The proposed long-term operation of the SWP would not result in substantial unplanned population growth in an area, either directly or indirectly because SWP deliveries would not exceed the contracted maximum water volume of the individual public water agencies. Therefore, ***no impact*** would occur.

**b) Displace substantial numbers of existing people or housing, necessitating the construction of replacement housing elsewhere?**

The proposed long-term operation of the SWP would not result in the displacement of substantial numbers of existing people or housing that would necessitate construction of replacement housing elsewhere because the Proposed Project would not include construction of any new facilities, expansion of the SWP service area, or increases in the contracted maximum amount of water delivered to individual public water agencies. Therefore, ***no impact*** would occur.

# 3A.3.15 Public Services

**Table 3A-45. Potential Impacts on Public Services**

| Environmental Issues | Environmental Impact Significance |
|---|---|
| **XV. PUBLIC SERVICES.** Would the project: | - |
| a) Result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times, or other performance objectives for any of the public services: | - |
| Fire Protection? | No Impact |
| Police Protection? | No Impact |
| Schools? | No Impact |
| Parks? | No Impact |
| Other Public Services? | No Impact |

Note: "-" indicates blank cell

## 3A.3.15.1 Environmental Setting

Law enforcement in the Project area is provided by city police departments in incorporated areas and by county sheriff departments in unincorporated areas. While the overarching responsibility of these agencies is to prevent and respond to criminal activity and apprehend suspects, they provide specialized services to communities, such as special weapons and tactical teams, canine units, marine patrols, and swift water rescues. The State of California provides assistance to the Project area through CDFW and CHP. CHP provides traffic regulation enforcement, emergency management, and assistance on California highways, interstate highways, and other major roadways.

Fire protection in the Project area is provided by a variety of public and private entities. Communities within the Project area are provided fire protection, rescue, and emergency services by a combination of fire protection entities, including cities, counties, fire protection districts, and volunteer fire departments, and they also receive supplemental services from the state.

Densely populated areas are served by municipal fire departments, and rural and unincorporated areas are served largely by fire protection districts and volunteer fire departments. Rural and unincorporated areas also receive supplemental services from the state. Mutual aid agreements exist between many of these departments to ensure that sufficient personnel and equipment are available to respond to emergencies no matter where the emergency occurs.

Portions of the Project area receive wildfire protection services from CAL FIRE (see Section 3A.3.20 for further discussion). This state agency provides emergency services (e.g., fire, medical, rescue, disaster relief services) throughout California (California Department of Forestry and Fire Protection 2023a).

In addition, numerous private and public schools, public parks, and libraries exist throughout the Project area, which are administered and managed by a variety of federal, state, and local entities.

### 3A.3.15.2 Discussion

Would the Project:

**a) Result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, or the need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, to maintain acceptable service ratios, response times, or other performance objectives for any of the public services:**

**Fire protection?**

The Proposed Project would not involve any new construction of water facilities, infrastructure, or result in land disturbance. Therefore, the proposed long-term operation of the SWP would not result in the need for new facilities or modification of existing facilities that would affect existing response times, service ratios, or other performance objectives of local fire protection services. ***No impact*** would occur.

**Police protection?**

The Proposed Project would not involve any new construction of water facilities, infrastructure, or result in land disturbance. Therefore, the proposed long-term operation of the SWP would not result in the need for new facilities or modification of existing facilities that would affect existing response times, service ratios, or other performance objectives of local police protection services. ***No impact*** would occur.

**Schools?**

The Proposed Project would not involve any new construction of water facilities, infrastructure, or result in land disturbance. Therefore, the proposed long-term operation of the SWP would not result in the need for new facilities or modification of existing facilities that would affect existing school services or result in increased demand or need for additional school services. ***No impact*** would occur.

**Parks?**

The Proposed Project would not involve any new construction of water facilities, infrastructure, or result in land disturbance and the proposed long-term operation of the SWP therefore would not result in the need for new facilities or modification of existing facilities that would affect existing parks. Furthermore, the proposed long-term SWP operation would not create additional demand for parks and recreation beyond existing levels. ***No impact*** would occur.

**Other public facilities?**

The proposed long-term operation of the SWP would not affect other public facilities, services, or demand levels. ***No impact*** would occur.

# 3A.3.16 Recreation

**Table 3A-46. Potential Impacts on Recreation**

| Environmental Issues | Environmental Impact Significance |
|---|---|
| **XVI. RECREATION.**<br>Would the project: | - |
| a) Would the project increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated? | No Impact |
| b) Does the project include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment? | No Impact |

Note: "-" indicates blank cell

## 3A.3.16.1 Environmental Setting

Recreational activities occur throughout the Project area, particularly in the reservoirs, waterways and existing local and regional recreational parks or reserves. Many of these activities are serviced and managed in partnership with the following agencies: DWR, Reclamation, CDFW, and the State Department of Parks and Recreation. Counties bordering the Project area that provide or overlap the Project area's recreational activities include Alameda, Contra Costa, Sacramento, San Joaquin, Solano, Sutter, and Yolo.

### Waterways

The Sacramento River between the confluence with the Feather River and the legal Delta encompasses 20.4 miles of main river channel that is used for recreational activities. This segment of the river is a single-thread, narrowly confined, leveed channel that has been almost completed hardened with large rock revetment. A narrow zone of riparian and upland vegetation is typically found on the river-side of the levees. Agriculture is the primary land use along the river until the cities of Sacramento and West Sacramento are reached, where the urban landscape prevails. This reach of the river includes marinas, boat launching ramps, water diversion facilities, irrigation and flood control return flow facilities, bridges, wing-dikes, sunken boats and other structures, and numerous instream structures of unknown current purpose. The river reach is used for various recreational activities including boating and other watersports, fishing, wildlife viewing, swimming, and picnicking.

### Reservoirs

#### Bethany Reservoir

The 608-acre Bethany Reservoir is jointly managed by three State of California agencies: DWR, CDFW, and the State Department of Parks and Recreation. It is located in the northernmost part of the San Joaquin Valley, Bethany Reservoir State Recreation Area offers water-oriented recreation, including fishing and windsurfing. It also features a bike trail (along the California Aqueduct Bikeway) and many windmills. This reservoir is the northern terminus of the California Aqueduct (California Department of Parks and Recreation 2023).

## Delta Recreational Opportunities

The Delta contains numerous parks; extensive public lands; and a complex of interconnected rivers, sloughs, and other waterways, which are affected by both freshwater inflows and tidal action, and which offer a variety of water-dependent and water-enhanced recreational opportunities. Privately owned commercial marinas and resorts allow access to the waterways and other recreational opportunities and services. Private lands also provide recreational opportunities, particularly hunting.

Boating is the most popular activity in the Delta, while popular land-based recreation activities include hunting, camping, picnicking, walking for pleasure, bicycling, and viewing and photographing wildlife.

Boating and related facilities are located throughout the Delta and include launch ramps, marinas, boat rental facilities, swimming areas, camping sites, dining and lodging facilities, and marine supply stores.

One of the larger bodies of water in the Delta is the CCF. Shoreline fishing is the only recreational activity that occurs in the CCF because public access is restricted. Two marinas are near the CCF. Rivers End Marina and Storage is at the north end of Lindeman Road. Lazy M Marina is just east of Byron Highway, approximately 0.75 mile west of the intake canal that leads to the Banks Pumping Plant.

### Suisun Marsh and Suisan Bay

Suisun Marsh and Suisan Bay provide water-related activities, including boating, kayaking, hiking, wildlife viewing, fishing, and hunting. Water-related recreation occurs in the two major channels (Montezuma and Suisun sloughs) and in several moderately sized channels (Cordelia, Denverton, Nurse, and Hill sloughs). Duck hunting generates the most frequent recreation-related visits to Suisun Marsh.

### Fishing in the Delta

The Delta supports regionally important recreational fisheries consisting of a variety of resident and migratory fish. Sport fish species known to occur in the Delta attract anglers to this location, and the species include White Sturgeon, White Catfish, Striped Bass, Largemouth Bass, and Chinook Salmon.

The majority of recreation-related fishing in the San Francisco Bay Estuary is sturgeon fishing, especially in San Pablo and Suisun bays. Because of their life history, geographic distribution, and large size, White Sturgeon have a lower vulnerability to entrainment into water diversions than many of the other fish inhabiting the Delta. Green Sturgeon fishing is not allowed at any time.

Striped Bass angling occurs throughout the year; however, fishing localities vary seasonally in accordance with the Striped Bass migratory pattern. In winter, Striped Bass are found from the San Francisco Bay throughout the Delta. By March, the bulk of the population is spread throughout the Delta and as far north as Colusa and Princeton on the Sacramento River. In summer and fall, Striped Bass fishing reaches its peak in the San Francisco Bay (California Department of Fish and Wildlife 2023b). Charter boat operators and private boaters fish for Striped Bass in the San Francisco, San Pablo, and Suisun bays; in the Delta; and in the upper Sacramento River. Shoreline fishing is popular along the Sacramento River from Courtland to Colusa in spring and along the San Joaquin River near Stockton in spring and fall. Striped Bass is limited to two fish per day per person, with a minimum size limit of 18 inches (California Department of Fish and Wildlife 2023c).

Black Bass angling is possible all year, but is limited to five fish per day per person, with a minimum size limit of 12 inches (California Department of Fish and Wildlife 2023d). In addition, the Delta is one of the most productive trophy bass fisheries in the nation, and numerous bass tournaments are held in the Delta throughout the year, including several corporate-sponsored tournaments.

### Salmon Fishing along the Northern California Coast

Chinook Salmon, Coho Salmon, and steelhead are the primary recreation-related fish species found along the Pacific Coast of Northern California. Pacific salmon fisheries are managed by the Pacific Fishery Management Council (PFMC) from 3 to 200 nautical miles offshore (Pacific Fishery Management Council 2023). Along the California coast, salmon fisheries are managed by CDFW from 0 to 3 nautical miles offshore, governed by regulations that generally are similar to those applied by the PFMC. The PFMC analyzes the status of the fisheries each year and defines the length of the fishing season and minimum fish sizes allowed to be caught for commercial, recreational, and Tribal salmon fishing activities. In general, recreation-related fishing for ocean salmon is open from May through October. The daily bag and possession limit is two salmon of any species, except Coho Salmon, with a minimum size limit of 20 inches (California Department of Fish and Wildlife 2023e).

## 3A.3.16.2 Discussion

Would the Project:

**a) Increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?**

The proposed long-term operation of the SWP would not affect existing recreational facilities or cause substantial physical deterioration of recreational facilities. The Proposed Project would not introduce new land uses or increase the population of the Project area and would not increase the use of existing regional parks or other recreational facilities.

The proposed long-term operation of the SWP would not result in a shift in use of the area's recreational facilities to other existing regional recreational facilities. The proposed long-term operation of the SWP would not include construction activities that could affect recreation experiences by impairing access, generating noise, or creating negative visual effects.

As discussed in Section 3A.3.10, the proposed long-term operation of the SWP would only modify surface water hydrology to a limited extent that would remain within the range of historical operations. These changes would not result in a notable difference in water surface elevation or flows in the Sacramento River downstream from the Feather River confluence. Hydrodynamic conditions in the Delta would not be altered by the proposed long-term operation of the SWP in a manner that would reduce existing recreational opportunities. Therefore, proposed long-term operation of the SWP would not affect water-based recreational opportunities, including fishing, swimming, and boating, from occurring in the lower Sacramento River or the Delta.

CDFW would continue to maintain regulations to promote sport fishing and would allow reasonable public angling opportunities. These regulations would remain in effect and would continue to provide protection of game fish.

The proposed long-term operation of the SWP would not substantially affect recreational opportunities. ***No impact*** would occur.

**b) Include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment?**

The proposed long-term operation of the SWP would not involve construction of new or expansion of existing recreational facilities. In addition, because the Proposed Project would not involve any new construction of water facilities or infrastructure, it would not increase the population of the Project area by introducing new housing or employment opportunities that would result in construction or expansion of recreational facilities. Therefore, ***no impact*** would occur.

# 3A.3.17 Transportation/Traffic

**Table 3A-47. Potential Impacts on Transportation**

| Environmental Issues | Environmental Impact Significance |
|---|---|
| **XVII. TRANSPORTATION.** Would the project: | - |
| a) Conflict with a program, plan, ordinance, or policy addressing the circulation system, including transit, roadway, bicycle and pedestrian facilities? | No Impact |
| b) Conflict or be inconsistent with CEQA Guidelines section 15064.3, subdivision (b)? | No Impact |
| c) Substantially increase hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)? | No Impact |
| d) Result in inadequate emergency access? | No Impact |

Note: "-" indicates blank cell

## 3A.3.17.1 Environmental Setting

This section describes the environmental and regulatory setting and analyzes the Proposed Project's effects on transportation and circulation.

The roadway system in the Project area contains numerous local streets as well as state and federal highways and freeways, all with varying capabilities and service levels. The U.S. Interstate Highway and U.S. Highway System are assigned at the national level. The evenly numbered highways run east to west, and the odd numbered highways run north to south. California has 21 interstate highways and seven U.S. highways. Several major highways either cross or are in close proximity to the Project area, including the following:

- **U.S. Highway (U.S.) 101:** U.S. 101 was established in 1926 and stretches 1,540 miles from Los Angeles north to Olympia, Washington. From Southern California to the Bay Area, it follows much of the route of El Camino Real, the "royal road" of California's Spanish and Mexican-era missions, while north of San Francisco it becomes the famed Redwood Highway (California Department of Transportation 2011).
- **Interstate (I-) 5:** I-5 travels north to south through the Central Valley, parallel to the Delta-Mendota Canal and the California Aqueduct. The entire length of I-5 within the state of California is 796.8 miles.
- **Interstate 80:** I-80 connects San Francisco through Sacramento over the Sierra Nevada. It was the first California freeway opened under the Federal Highway Act (California Department of Transportation 2011).

The California State Route System is managed by Caltrans and designated by the California State Legislature. State Route (SR) 70, SR 99, SR 138, SR 152, and SR 299 are the major highways that either cross or are close to the Project area, and are described as follows:

- **SR 70:** SR 70 begins north of Sacramento and runs north through Sutter, Yuba, Butte, Plumas and Lassen counties. SR 70 has a portion that is a State Scenic Highway, where it turns northeast from Sacramento into the mountains, eventually running east out of California.
- **SR 99:** SR 99 is a north-south state highway stretching almost the entire length of the Central Valley for 425 miles.
- **SR 138:** SR 138 is an east-west state highway that follows the northern foothills of the San Gabriel Mountains. It was constructed in 1934 and is approximately 105 miles long.
- **SR 152:** SR 152 is an east-west state highway and is approximately 104 miles long. It begins west of Highway 1 in Watsonville and ends at SR 99 in the Central Valley.
- **SR 299:** SR 299 is an east-west route in northern California that is approximately 306 miles long. A part of SR 299 is known as the Trinity Scenic Byway.

The roadway systems in the project vicinity are regulated by federal and state agencies, as follows:

- The Federal Highway Administration (FHWA) coordinates the highway transportation program in cooperation with states and other partners to enhance the country's safety, economic vitality, quality of life, and environment. FHWA has programs that provide federal financial assistance to states for construction and improvement of the National Highway System, including urban and rural roads and bridges. This program provides funds for general improvements and development of safe highways and roads (Federal Highway Administration 2018).
- Caltrans is responsible for operating and maintaining the state highway system. In the vicinity of the Project, several of the major highways and freeways, exit and entrance ramps, and intersections fall under the jurisdiction of Caltrans (California Department of Transportation 2018).
- The California Transportation Commission (CTC) is responsible for programming and allocating funds for construction of highway, passenger rail, and transit improvements throughout California. The CTC also advises and assists the Secretary of the California State Transportation Agency and Legislature in formulating and evaluating state policies and plans for California's transportation programs. Furthermore, the CTC is an active participant in the initiation and development of state and federal legislation that seeks to secure financial stability for the state's transportation needs (California Transportation Commission 2019).

Numerous regional agencies work with local jurisdictions to address regional transportation issues, including the Council of Governments, Association of Governments, and regional transportation commissions and authorities. These regional agencies often are responsible for developing policies, planning, and securing funding for transportation and transit facilities.

Generally, state agencies that are involved with the location or construction of facilities for the production, generation, storage, treatment, or transmission of water are not subject to local regulations. Inconsistency with local transportation regulations is not considered to be a significant effect on the environment. The Project area covers multiple counties with multiple cities throughout California. All of these counties and cities have general plans that contain transportation and circulation elements, including policies to facilitate their respective congestion management plans as well as local and regional transportation planning.

## 3A.3.17.2 Discussion

Would the Project:

**a) Conflict with a program, plan, ordinance, or policy addressing the circulation system, including transit, roadway, bicycle and pedestrian facilities?**

The proposed long-term operation of the SWP would not involve construction of new or modification of existing SWP facilities that would require construction employees or result in the need for additional operations and maintenance employees. Therefore, the Project would not conflict with any program, plan, ordinance, or policy addressing the circulation system, including transit, roadway, bicycle, and pedestrian facilities. ***No impact*** would occur.

**b) Would the project conflict or be inconsistent with CEQA Guidelines section 15064.3, subdivision (b)?**

The proposed long-term operation of the SWP would not involve construction of new or modification of existing SWP facilities that would conflict or be inconsistent with Section 15064.3(b) of the State CEQA Guidelines. This new CEQA guideline codifies a switch from level of service to vehicles miles traveled as the metric for transportation impact analysis. Since the Proposed Project would not involve any new construction of water facilities or infrastructure, vehicle miles traveled would not be affected, and ***no impact*** would occur.

**c) Substantially increase hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?**

The proposed long-term operation of the SWP would not involve construction of new or modification of existing SWP facilities. Therefore, the Proposed Project would not include any change to roadway design in the area or introduce incompatible uses. ***No impact*** would occur.

**d) Result in inadequate emergency access?**

The proposed long-term operation of the SWP would not require any construction activities or changes in land uses that would affect emergency response access or response time. Therefore, ***no impact*** would occur.

# 3A.3.18 Tribal Cultural Resources

**Table 3A-48. Potential Impacts on Tribal Cultural Resources**

| Environmental Issues | Environmental Impact Significance |
|---|---|
| **XVIII. TRIBAL CULTURAL RESOURCES.** Would the project cause a substantial adverse change in the significance of a tribal cultural resource, defined in Public Resources Code section 21074 as either a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American tribe, and that is: | - |
| a) Listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources as defined in Public Resources Code section 5020.1(k), or | Potentially Significant Impact |
| b) A resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of Public Resources Code Section 5024.1. In applying the criteria set forth in subdivision (c) of Public Resources Code Section 5024.1, the lead agency shall consider the significance of the resource to a California Native American tribe. | Potentially Significant Impact |

Note: "-" indicates blank cell

## 3A.3.18.1 Environmental Setting

CEQA requires the lead agency to begin consultation with any California Native American Tribe that is traditionally and culturally affiliated with the geographic area of the proposed project if (1) the California Native American Tribe requested to the lead agency, in writing, to be informed by the lead agency through formal notification of proposed projects in the geographic area that is traditionally and culturally affiliated with the tribe and (2) the California Native American Tribe responds, in writing, within 30 days of receipt of the formal notification and requests the consultation (PRC, Section 21080.3.1(d)).

Additionally, the California Natural Resources Agency (CNRA) Final Tribal Consultation Policy, adopted November 12, 2012, was developed in response to Governor Edmund G. Brown Jr.'s EO B-10-11 (September 19, 2011), which states, "[t]he purpose of this policy is to ensure effective government-to-government consultation between the Natural Resources Agency, its Departments…and Indian Tribes…to provide meaningful input into the development of regulations, rules, policies, programs, projects, plans, property decisions, and activities that may affect tribal communities."

DWR adopted its Tribal Engagement Policy, effective March 8, 2016, to strengthen DWR's commitment to improving communication, collaboration, and consultation with California Native American Tribes. This policy is consistent with EO B-10-11, the CNRA's Tribal Consultation Policy, and CEQA, and includes principles that facilitate early and meaningful tribal engagement with California Native American Tribes.

## Native American Consultation

DWR sent letters by certified mail, return receipt, on June 2, 2023, to 32 California Native American Tribes that had requested formal notification of proposed projects from DWR under CEQA:

- Amah Mutsun Tribal Band
- Amah Mutsun Tribal Band of Mission San Juan Bautista
- Buena Vista Rancheria of Me-Wuk Indians
- Cachil Dehe Band of Wintun Indians of the Colusa Indian Community
- Calaveras Band of Mi-Wuk Indians
- California Valley Miwok Tribe (Sheep Ranch Rancheria of Me-Wuk)
- Chicken Ranch Rancheria of Me-Wuk Indians
- Colfax-Todds Valley Consolidated Tribe
- Cortina Rancheria – Kletsel Dehe Band of Wintun Indians
- Costanoan Runsen Carmel Tribe
- Estom Yumeka Maidu Tribe of the Enterprise Rancheria
- Guidiville Indian Rancheria
- Indian Canyon Mutsun Band of Costanoan
- Ione Band of Miwok Indians
- Mechoopda Indian Tribe of Chico Rancheria
- Mooretown Rancheria
- Muwekma Ohlone Indian Tribe of the SF Bay Area
- Nashville Enterprise Miwok-Maidu-Nishinam Tribe
- Nevada City Rancheria Nisenan Tribe,
- North Valley Yokuts Tribe
- Pakan'yani Maidu of Strawberry Valley Rancheria
- Shingle Springs Band of Miwok Indians
- Southern Sierra Miwuk Nation
- The Confederated Villages of Lisjan
- The Ohlone Indian Tribe
- Tsi Akim Maidu
- Tule River Indian Tribe
- Tuolumne Band of Me-Wuk Indians
- United Auburn Indian Community of the Auburn Rancheria
- Wilton Rancheria
- Winnemem Wintu Tribe
- Yocha Dehe Wintun Nation

Return receipts evidencing delivery of the letters were received from all but three Tribes. Those three Tribes (Indian Canyon Mutsun Band of Costanoan, Pakan'yani Maidu of Strawberry Valley Rancheria, and Tsi Akim Maidu) were contacted by email on July 5, 2023. Five Tribes (Mooretown Rancheria, The Confederated Villages of Lisjan, United Auburn Indian Community of the Auburn Rancheria, Wilton Rancheria, and Yocha Dehe Wintun Nation) responded to DWR's letter with a letter or email and requested consultation on the Project.

### 3A.3.18.2 Discussion

Would the Project cause a substantial adverse change in the significance of a Tribal cultural resource, defined in PRC Section 21074 as either a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American Tribe, and that is:

**a) Listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources as defined in Public Resources Code section 5020.1(k), or**

**b) A resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of Public Resources Code Section 5024.1. In applying the criteria set forth in subdivision (c) of Public Resources Code Section 5024.1, the lead agency shall consider the significance of the resource to a California Native American tribe.**

DWR is conducting ongoing consultation with the five Tribes who requested to consult with DWR in accordance with PRC, Section 21080.3.1. Letters acknowledging requests for consultation were sent on September 29, 2023, to Mooretown Rancheria, The Confederated Villages of Lisjan, United Auburn Indian Community of the Auburn Rancheria, Wilton Rancheria, and Yocha Dehe Wintun Nation. DWR consulted in person with Wilton Rancheria on October 18, 2023 and again on November 17, 2023. DWR consulted in person on November 13, 2023 and on April 3, 2024 with the Yocha Dehe Wintun Nation and with The Confederated Villages of Lisjan on January 17, 2024 and April 24, 2024. DWR is continuing consultation with all five Tribes, based on each Tribe's interest and availability, during development of the Draft EIR and will continue to do so through finalization of the EIR.

Consultation with these Tribes is ongoing. Based on the ongoing consultation and the Delta being identified as a Tribal Cultural Landscape by DWR for the Delta Conveyance Project, impacts on Tribal cultural resources are considered ***potentially significant*** and are evaluated in detail in the EIR.

# 3A.3.19 Utilities and Service Systems

**Table 3A-49. Potential Impacts on Utilities and Service Systems**

| Environmental Issues | Environmental Impact Significance |
|---|---|
| **XIX. UTILITIES AND SERVICE SYSTEMS.** Would the project: | - |
| a) Require or result in the relocation or construction of new or expanded water, wastewater treatment or storm water drainage, electric power, natural gas, or telecommunications facilities, the construction or relocation of which could cause significant environmental effects? | No Impact |
| b) Have sufficient water supplies available to serve the project and reasonably foreseeable future development during normal, dry, and multiple dry years? | No Impact |
| c) Result in a determination by the wastewater treatment provider that serves or may serve the project that it has adequate capacity to serve the project's projected demand, in addition to the provider's existing commitments? | No Impact |
| d) Generate solid waste in excess of state or local standards, or in excess of the capacity of local infrastructure, or otherwise impair the attainment of solid waste reduction goals? | No Impact |
| e) Comply with federal, State, and local management and reduction statutes and regulations related to solid waste? | No Impact |

Note: "-" indicates blank cell

## 3A.3.19.1 Environmental Setting

### Water Supply

Water service providers in the Project area include cities and counties, special districts, and private utilities. These water service providers range in size from those with a few service connections to others with thousands of connections. These providers obtain their water from surface water and groundwater, or a combination of these sources. The amount of water available to these providers is defined by water rights, water contract agreements, groundwater pumping limitations, and the infrastructure required to treat, pump, and deliver water.

### Wastewater Collection, Conveyance, and Treatment

Wastewater generated in the Project area is handled by sanitary sewer systems, treatment plants, and individual septic systems. Municipal and industrial wastewater typically is transported to a treatment facility and treated, and then the treated effluent is discharged into a receiving waterbody (i.e., rivers, streams, creeks, and sloughs). In some rural areas where sewer service is unavailable, residents and businesses use on-site septic systems. Treatment plants for individual non-industrial developments also exist in some areas to treat local wastewater from residential developments, mobile home parks, apartment complexes, and resorts. Methods of disposal include evaporation and percolation ponds or application to irrigated agricultural lands. Recycled effluent also is used for industrial purposes or agricultural irrigation during the summer months. In some cases,

municipalities may provide wastewater collection infrastructure and services that discharge to regional facilities owned and operated by another municipality.

### Solid Waste

Municipal governments in the Project area collect solid waste or contract with private franchisers for collection and transport to transfer stations and landfills. Cities and counties are responsible for maintaining their own solid waste facilities, including transfer stations, disposal sites, and resource recovery facilities. They may own and/or operate them, contract with each other, or contract with a private company to provide or operate facilities. A solid waste facility, site, or operation may include one or more waste handling activities (units). Cities and counties must routinely inspect active and closed solid waste facilities to ensure compliance with applicable state minimum standards and permit conditions. The California Department of Resources Recycling and Recovery (CalRecycle) administers and provides oversight for all state-managed, non-hazardous waste handling and recycling programs. CalRecycle regulates and inspects California's active and closed solid waste landfills, as well as materials recovery facilities, solid waste transfer stations, and compost facilities.

### Electrical, Natural Gas, and Communications

Power transmission facilities were developed in response to population growth in communities surrounding the Project area. Electricity is generated through a combination of energy sources, including natural gas–fired plants, hydroelectric facilities, renewable resources (i.e., biomass, solar, wind, and geothermal), and coal.

Electrical service providers in the Project area consist of investor-owned providers, publicly owned providers, joint utility agencies, rural cooperatives, and self-generators. In addition, the Western Area Power Agency markets and transmits wholesale electricity throughout the Project area from multi-use water projects and hydroelectric power plants operated by Reclamation and USACE (see Section 3A.3.6, "Energy," for further discussion of hydroelectric facilities).

Natural gas service providers in the Project area consist of investor-owned providers, publicly owned providers, and private producers. Natural gas pipelines distribute natural gas to communities throughout the Project area.

Communication infrastructure in the region includes underground cable and fiber optic lines, and communication and transmission towers.

## 3A.3.19.2 Discussion

Would the Project:

**a) Require or result in the relocation or construction of new or expanded water, wastewater treatment or storm water drainage, electric power, natural gas, or telecommunications facilities, the construction or relocation of which could cause significant environmental effects?**

The proposed long-term operation of the SWP would not involve construction of any new water facilities or infrastructure, and SWP water deliveries would not exceed contracted amounts. The Proposed Project would not involve housing development or other activities that would create a need for new or expanded water, wastewater treatment, or stormwater drainage, electric power, natural gas, or telecommunications facilities. ***No impact*** would occur.

**b) Have sufficient water supplies available to serve the project and reasonably foreseeable future development during normal, dry and multiple dry years?**

The proposed long-term operation of the SWP would not involve housing development or other activities that would result in water use, and SWP water deliveries would not exceed contracted amounts. No changes in land use (i.e., conversion from agricultural land to non-agricultural land) are anticipated because of the Proposed Project. The continued operation and maintenance of SWP facilities would not increase demand for water supplies. ***No impact*** would occur.

**c) Result in a determination by the wastewater treatment provider that serves or may serve the project that it has adequate capacity to serve the project's projected demand, in addition to the provider's existing commitments?**

The proposed long-term operation of the SWP would not involve housing development or other activities that would generate wastewater. Therefore, the Proposed Project would not use any provider's existing wastewater capacity or require construction of new wastewater plants or sewer lines to serve the Proposed Project. ***No impact*** would occur.

**d) Generate solid waste in excess of State or local standards, or in excess of the capacity of local infrastructure, or otherwise impair the attainment of solid waste reduction goals?**

The proposed long-term operation of the SWP would not involve any activities that would generate solid waste. Therefore, the Proposed Project would not generate solid waste in excess of state or local standards or use any existing landfill capacity. ***No impact*** would occur.

**e) Comply with federal, State, and local management and reduction statutes and regulations related to solid waste?**

The proposed long-term operation of the SWP would not generate any solid waste. ***No impact*** would occur.

## 3A.3.20 Wildfire

**Table 3A-50. Potential Impacts on Wildfire**

| Environmental Issues | Environmental Impact Significance |
|---|---|
| **XX. WILDFIRE.**<br>Would the project: | - |
| a) Substantially impair an adopted emergency response plan or emergency evacuation plan? | No Impact |
| b) Due to slope, prevailing winds, and other factors, exacerbate wildfire risks, and thereby expose project occupants to pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire? | No Impact |
| c) Require the installation or maintenance of associated infrastructure (such as roads, fuel breaks, emergency water sources, power lines or other utilities) that may exacerbate fire risk or that may result in temporary or ongoing impacts to the environment? | No Impact |
| d) Expose people or structures to significant risks, including downslope or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes? | No Impact |

Note: "-" indicates blank cell

## 3A.3.20.1 Environmental Setting

### Wildfire Classifications

Fires are classified by where they burn in the fuel strata: surface fires, understory fires, and crown fires (California Department of Forestry and Fire Protection 2023b). Surface fires are the most common. Depending on the fuels, weather, and topography, these fires can be low to high intensity. Understory fires have flame lengths of up to 10 feet. They consume surface fuels, small trees, brush, and the lower branches of overstory trees. Crown fires reach into the crowns of trees with flame lengths that are more than 10 feet.

### Fire Season

Fire season is the period when fires are expected to occur, based on knowledge of long-term climate patterns. The typical fire season in California is from May to November, and the most intense fires occur in late September and October. The fire season has been expanding and is now about 70 days longer than 40 years ago (California Department of Forestry and Fire Protection 2023b).

### Wildfire Behavior

Wildland fire behavior is based on three primary factors: topography, weather, and fuels. This section briefly describes how each of these factors influences wildfire behavior.

#### Topography

Topographic features such as slope and aspect influence a fire's intensity, direction, and rate of spread. Fires burning in flat or gently sloping areas tend to burn more slowly and spread in wider ellipses than fires on steep slopes. Streams, rivers, and canyons can channel local diurnal and general winds, which can accelerate the fire's speed and affect its direction, especially during foehn (a warm, dry, and usually strong wind) events (California Department of Forestry and Fire Protection 2023b).

#### Weather

Weather conditions influence the potential for fire ignition, rates of spread, intensity, and the direction(s) in which a fire burns. Temperature, relative humidity, and wind are the variables used to predict fire behavior. Coastal areas generally have a cool, stable temperature regime, and this marine influence can reduce fire hazards. With increasing distance from the ocean, the marine influence is less pronounced, and inland areas experience wider variations of temperature and lower humidity.

Wind plays a role in the flammability of fuels by removing moisture through evaporation, preheating fuels in a fire's path, and increasing spotting distances (the distance at which a flying ember might ignite a spot fire). Winds blowing more than 20 feet above the ground can carry embers downwind, causing spot fires. Fires during foehn events can result in extreme fire behavior because they are particularly strong and dry, thus reducing fuel moistures. This leads to easier ignitions and increased fire intensity and rate of spread (California Department of Forestry and Fire Protection 2023b).

### Fuels

Vegetation usually provides most of the fuel that feeds wildfire. The volume, character, distribution, and arrangement of vegetation all greatly influence fire behavior. Moisture content is critical to how easily a fire burns. Larger fuels take longer to absorb or lose moisture, while drier fuel fires generally spread faster, are more intense, and are consumed faster (California Department of Forestry and Fire Protection 2023b).

## Fire Hazard Severity Zones

Fire prevention areas considered to be under state jurisdiction are referred to as SRAs, and CAL FIRE is responsible for vegetation fires within SRA lands.[2] In general, SRA lands contain trees producing or capable of producing forest products (timber, brush, undergrowth, and grass), whether of commercial value or not, that provide watershed protection for irrigation or for domestic or industrial use or lands in areas that are principally used or that are useful for range or forage purposes. In 2018, CAL FIRE managed 31 million acres of SRA land (California Department of Forestry and Fire Protection 2019).

Fire hazard severity zones are measured qualitatively based on vegetation, topography, weather, crown fire potential (a fire's tendency to burn upward into trees and tall brush), and ember production and movement within the area in question. CAL FIRE uses these factors to define three fire hazard levels for SRAs: moderate, high, and very high.

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CAL FIRE's jurisdiction extends throughout the state. Its emergency response and resource protection capability consist of approximately 6,100 full-time fire professionals, foresters, and administrative employees; 2,600 seasonal firefighters; 105 California Conservation Corps firefighters; 600 Volunteers In Prevention; and 3,500 inmates and wards (California Department of Forestry and Fire Protection 2019).

CAL FIRE responds to approximately 6,000 wildland fires that burn on average over 260,000 acres each year (California Department of Forestry and Fire Protection 2019). Firefighting actions frequently involve helicopter transport of water from reservoirs close to wildfires.

Individual CAL FIRE strategic fire plans document and assess the fire conditions within each of CAL FIRE's 21 units and six contract counties.[3] Strategic fire plans include stakeholder contributions and priorities; identify strategic areas for pre-fire planning and fuel treatment; coordinate CAL FIRE's pre-fire activities with adjacent CAL FIRE units, National Forests, and local collaborators; and provide the foundation for planning, prioritizing, and funding unit projects. The Project area does not fall within any of CAL FIRE's units or contract counties.

[2] PRC Sections 4125–4127 define an SRA as land in which the financial responsibility for preventing and suppressing wildland fire resides with the State of California.

[3] Kern, Los Angeles, Marin, Orange, Santa Barbara, and Ventura counties contract with CAL FIRE to provide initial response to fires on SRA lands. CAL FIRE provides funding for fire protection services in these six counties, including the wages of suppression crews and funding for maintenance of firefighting facilities, infrastructure improvements, and equipment.

## 3A.3.20.2 Discussion

Would the Project:

**a) Substantially impair an adopted emergency response plan or emergency evacuation plan?**

The proposed long-term operation of the SWP would not involve any new construction of water facilities, infrastructure, or land disturbance that would place new buildings or result in roadway closures that could impede emergency response or evacuation plans. Continued operation of the SWP would modify surface water hydrology to a limited extent. Surface water flows would remain within the range of historical operations. Therefore, the Proposed Project would not involve any activities that would impede emergency response or evacuation plans. ***No impact*** would occur.

**b) Due to slope, prevailing winds, and other factors, exacerbate wildfire risks and thereby expose project occupants to pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire?**

In general, the use of construction equipment and diesel fuel can pose a wildfire risk because vehicle mufflers, combustion engines, gasoline-powered tools, and other equipment can produce a spark, fire, or flame. The proposed long-term operation of the SWP would not involve any new construction of water facilities, infrastructure, or land disturbance that could pose a wildfire risk and therefore, no new maintenance activities would occur that could exacerbate wildfire risk.

Some SWP facilities are located in rural areas where a high fire hazard risk exists because of the surrounding terrain and amount of vegetation. As previously stated, CAL FIRE manages SRAs, and the U.S. Forest Service provides wildfire protection, both independently and cooperatively with CAL FIRE. In addition, the U.S. Forest Service and BLM provide resource management and fire protection on portions of federal lands. Continued operation of the SWP would modify surface water hydrology to a limited extent and flows would remain within the range of historical operations. Because no new construction activities would occur and SWP operations would only modify surface water hydrology within the range of historical conditions, the proposed long-term operation of the SWP would not include any actions that would increase the probability of a wildland fire. Therefore, the Proposed Project would not exacerbate wildfire risks or cause the uncontrolled spread of wildfire. ***No impact*** would occur.

**c) Require the installation or maintenance of associated infrastructure (such as roads, fuel breaks, emergency water sources, power lines, or other utilities) that may exacerbate fire risk or that may result in temporary or ongoing impacts to the environment?**

The proposed long-term operation of the SWP would not involve any new construction of water facilities, infrastructure, or land disturbance. The proposed long-term operation of the SWP would not require installation or maintenance of infrastructure that may exacerbate fire risk or possibly result in temporary or ongoing impacts on the environment. ***No impact*** would occur.

**d) Expose people or structures to significant risks, including downslope or downstream flooding or landslides, therefore of runoff, post-fire slope instability, or drainage changes?**

The proposed long-term operation of the SWP would not involve housing development or other buildings; therefore, the Proposed Project would not expose people or structures to significant risks because of runoff, post-fire slope instability, or drainage changes. ***No impact*** would occur.

# 3A.3.21 Mandatory Findings of Significance

**Table A-51. Mandatory Findings of Significance**

| Environmental Issues | Environmental Impact Significance |
|---|---|
| **XXI. MANDATORY FINDINGS OF SIGNIFICANCE.** | - |
| a) Does the project have the potential to substantially degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, reduce the number or restrict the range of a rare or endangered plant or animal or eliminate important examples of the major periods of California history or prehistory? | Potentially Significant Impact |
| b) Does the project have impacts that are individually limited, but cumulatively considerable? ("Cumulatively considerable" means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects.) | Potentially Significant Impact |
| c) Does the project have environmental effects that will cause substantial adverse effects on human beings, either directly or indirectly? | No Impact |

Note: "-" indicates blank cell

## 3A.3.21.1 Discussion

**a) Does the project have the potential to substantially degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, reduce the number or restrict the range of an endangered, rare, or threatened species, or eliminate important examples of the major periods of California history or prehistory?**

As discussed in Section 3A.3.4, "Biological Resources," and Section 3A.3.10, the proposed long-term operation of the SWP has the potential to adversely affect fish habitat, cause a fish population to drop below self-sustaining levels, and substantially reduce the number or restrict the range of an endangered, rare, or threatened species by altering Delta hydrology and water quality. Therefore, proposed long-term operation of the SWP may have a ***potentially significant*** effect and this topic will be addressed in further detail in the EIR.

**b) Does the project have impacts that are individually limited, but cumulatively considerable? ("Cumulatively considerable" means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects.)**

As discussed in the relevant sections above, the Proposed Project would have ***no impacts*** on aesthetics, agricultural resources, air quality, cultural resources, energy, geology, GHG emissions, hazards and hazardous materials, land use, mineral resources, noise, population and housing, public services, recreation, transportation, utilities and service systems, terrestrial biological resources, or wildfire. Because the proposed long-term operation of the SWP would not have an impact on these resource topics, the Proposed Project could not contribute to a potential cumulative impact on these resources. Cumulative impacts relating to these topics will therefore not be addressed in the EIR.

The potential for cumulative impacts from the proposed long-term operation of the SWP in relation to the topics addressed in the EIR will also be addressed in the cumulative impacts section of the EIR.

**c) Does the project have environmental effects that will cause substantial adverse effects on human beings, either directly or indirectly?**

As discussed in Section 3A.3.4, Section 3A.3.10, and Section 3A.3.18, "Tribal Cultural Resources," the Proposed Project has the potential to adversely affect aquatic biological resources, Delta water quality, and Tribal cultural resources. These effects would not cause substantial adverse effects on human beings. Therefore, proposed long-term operation of the SWP will have ***no impact*** on human beings.

# 3A.4 References

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No references.

## 3A.4.2 Chapter 2, Project Description

No references.

## 3A.4.3 Chapter 3, Initial Study Checklist

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