

CALIFORNIA WATERFIX

CEQA Findings of Fact and Statement of Overriding Considerations

INTRODUCTION

Under the California Environmental Quality Act (CEQA), a state or local public agency decisionmaker, before approving a project for which an environmental impact report (EIR) was prepared, must make certain findings with respect to each significant impact identified in the EIR. (See California Public Resources Code, § 21081, subd. (a); see also Cal. Code Regs., tit. 14, div. 6, ch. 3 (“CEQA Guidelines”), § 15091, subd. (a).) Such findings are one of the primary means by which California public agencies satisfy what the California Supreme Court has called the “substantive mandate” of CEQA, by which such agencies must substantially lessen or avoid the occurrence of significant environmental impacts to the extent feasible. (See *Mountain Lion Foundation v. Fish & Game Com.* (1997) 16 Cal.4th 105, 134; California Public Resources Code, § 21002.)

In adopting such required findings, the agency decisionmaker must reach, with regard to each significant impact, one of three conclusions, or a combination of them. These potential conclusions are that:

- (1) Changes or alterations have been required in, or incorporated into, the project which avoid or substantially lessen the significant environmental effect as identified in the final EIR;
- (2) Such changes or alterations are within the responsibility and jurisdiction of another public agency and not the agency making the finding. Such changes have been adopted by such other agency or can and should be adopted by such other agency; and/or
- (3) Specific economic, legal, social, technological, or other considerations, including provision of employment opportunities for highly trained workers, make infeasible the mitigation measures or project alternatives identified in the final EIR.

(See CEQA Guidelines, § 15091, subd. (a).)

Additionally, the findings required under CEQA must be supported by substantial evidence. (See CEQA Guidelines, § 15091, subd. (b).)

A typical set of CEQA findings identifies all adopted or rejected mitigation measures for the various significant environmental impacts of a proposed project. The findings then go on to explain why various project alternatives identified in EIRs are either infeasible or unnecessary to meet the substantive mandate of CEQA.

A related CEQA requirement is the need for the agency decisionmaker to adopt a “statement of overriding considerations” before approving any project with environmental effects that cannot be mitigated to a less than significant level. (See California Public Resources Code, § 21081, subd. (b); see also CEQA Guidelines, § 15093.) This separate requirement is not a substitute for the adoption of CEQA findings, but is an additional procedural step required as part of the project approval process. A statement of overriding considerations must identify “the specific economic, legal, social, technological, or other benefits, including region-wide or statewide environmental benefits, of [the] proposed project [that] outweigh the [project’s] unavoidable adverse environmental effects,” thereby rendering them “acceptable” to the decisionmaker. (CEQA Guidelines, § 15093, subd. (a).)

The document at hand is intended to satisfy both of the above-described CEQA requirements with respect to the project commonly known as the California WaterFix (the Project). Acting as the CEQA lead agency, the California Department of Water Resources (DWR) has completed the Final Environmental Impact Report (Final EIR) portion of the Final Environmental Impact Report/Environmental Impact Statement (Final EIR/EIS) for the Project. The California WaterFix is described in that document as Alternative 4A. As the final decisionmaker for Department of Water Resources, the Acting Director of DWR (Acting Director) has certified the EIR portion of that joint environmental document¹ pursuant to CEQA Guidelines section 15090, and is now in a position to approve that portion of the California WaterFix within DWR’s control. (Actions by other responsible agencies, such as the California Department of Fish and Wildlife (CDFW), will also be required.)

Through this document, including its attachments, the Acting Director hereby issues both the CEQA Findings of Fact (Findings) and the Statement of Overriding Considerations necessary for the Project. The Acting Director does so after having received, reviewed, and considered not only the Final EIR/EIS, but also the previously-issued Draft Environmental Impact Report/Environmental Impact Statement (DEIR/EIS) and the Partially Recirculated Draft EIR/Supplement to Draft EIS (RDEIR/SDEIS), as well as public and agency comments on those documents and all other information in DWR’s record of proceedings.

Through Exhibit A (CEQA Findings of Fact for Significant and Unavoidable Impacts and Impacts that are Less Than Significant After Mitigation), these findings explain that all of

¹ For the purposes of CEQA compliance, the document published in December 2016 was a *proposed* Final EIR/EIS. Following the publication of this document, DWR prepared an additional document entitled, “Developments after Publication of the Final EIR/EIS.” That document, which is part of the ultimate version of the Final EIR certified by the Acting Director of DWR, includes minor corrections and additional clarification regarding the information in the proposed Final EIR/EIS, responds to comments received during the voluntary public comment period that DWR provided for the Final EIR/EIS, and also considers information that came to light after publication of the proposed Final EIR/EIS. The additional information included in the Developments after Publication of the Final EIR/EIS document does not constitute significant new information requiring recirculation under CEQA Guidelines section 15088.5. Rather, all information included in the Developments after Publication of the Final EIR/EIS document merely clarifies or amplifies or makes insignificant modifications to the proposed Final EIR/EIS.

the mitigation measures proposed in the Final EIR/EIS have been adopted and incorporated into the enforceable Mitigation Monitoring and Reporting Program (MMRP) for the Project. (See California Public Resources Code, § 21081.6, subds. (a)(1) and (b).) Likewise, the Environmental Commitments (ECs) and Avoidance and Minimization Measures (AMMs) set forth in Appendix 3B to the Final EIR/EIS have been incorporated into the MMRP.

As part of the narrative portion of these findings, the Acting Director explains why the other project alternatives analyzed in the Final EIR/EIS are being rejected. Each specific finding is supported by substantial evidence.

The Statement of Overriding Considerations, found near the end of this document, then identifies the specific economic, legal, social, technological, and other benefits of the Project that, in the Acting Director's view, outweigh the Project's significant and unavoidable environmental impacts. To the extent that these Findings do not set forth in detail all of the evidence in support of the conclusions reached, readers seeking additional information are directed to the Final EIR/EIS, which is hereby incorporated by reference.

ORGANIZATION

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RECORD OF PROCEEDINGS

For purposes of CEQA and these Findings, the Record of Proceedings for the Project consists of the following documents, at a minimum:

- The Notices of Preparation and all other public notices issued by DWR in conjunction with the Project.
- The Final EIR/EIS for the California WaterFix, any documents cited therein, and Developments after Publication of the Proposed Final Environmental Impact Report.
- All comments submitted by agencies or members of the public during public comment periods on the Draft EIR/EIS and the RDEIR/SDEIS.
- All comments and correspondence submitted to DWR with respect to the Project, in addition to timely comments on the Draft EIR/EIS, the RDEIR/SDEIS, and Final EIR/EIS.
- The Mitigation Monitoring and Reporting Plan for the Project.
- All reports, studies, memoranda, maps, staff reports, or other planning documents relating to the Project prepared by DWR staff, consultants to DWR, and responsible or trustee agencies with respect to DWR's compliance with the requirements of CEQA and with respect to DWR's actions on the Project.
- All documents submitted to DWR by other public agencies or members of the public in connection with the Project.
- Any minutes and/or verbatim transcripts of all public meetings and public hearings held by the lead agencies in connection with the Project.

- Any documentary or other evidence timely submitted to DWR at such public meetings and public hearings regarding the Project.
- CALFED Bay-Delta Program. 2006. *10-Year Action Plan*. April.
- CALFED Bay-Delta Program. 2000. *Final Programmatic Environmental Impact Statement/ Environmental Impact Report*. July. Prepared for the U.S. Bureau of Reclamation, U.S. Fish and Wildlife Service, National Marine Fisheries Service, U.S. Environmental Protection Agency, Natural Resources Conservation Service, U.S. Army Corps of Engineers, and California Resources Agency. Sacramento, CA. State Clearinghouse #96032083.
- CALFED Bay-Delta Program. 1997. *Information on Stressors Affecting Priority Species and Habitats*. Attachment E (excerpt from RFP).
- CALFED Bay-Delta Program. 2000. *Final Programmatic Environmental Impact Statement/Environmental Impact Report*. Technical Appendix. July. Prepared for the U.S. Bureau of Reclamation, U.S. Fish and Wildlife Service, National Marine Fisheries Service, U. S. Environmental Protection Agency, Natural Resources Conservation Service, U.S. Army Corps of Engineers, and California Resources Agency. Sacramento, CA. State Clearinghouse No. 96032083.
- Delta Vision Blue Ribbon Task Force. 2007. *Delta Vision: Our Vision for the California Delta*. November 30.
- Matters of common knowledge to DWR, including, but not limited to federal, State, and local laws and regulations;
- Any documents expressly cited in the Final EIR/EIS and these findings, in addition to those cited above; and
- Any other materials required to be in the record of proceedings by Public Resources Code section 21167.6, subdivision (e).

The custodian of the documents comprising the record of proceedings: Marcus Yee, Program Manager III for the California WaterFix Program, 901 P Street, Sacramento, CA 92814.

The Acting Director of DWR has relied on all of the documents listed above in reaching a decision on the Project, even if not every document was formally presented as part of the DWR filed generated in connection with the project. Without exception, any documents set forth above not found in the Project files fall into one of two categories. Many of them

reflect prior planning or legislative decisions with which the Acting Director was aware in approving the Project. (See *City of Santa Cruz v. Local Agency Formation Commission* (1978) 76 Cal.App.3d 381, 391-392; *Dominey v. Department of Personnel Administration* (1988) 205 Cal.App.3d 729, 738, fn. 6.) Other documents influenced the expert advice provided to DWR Staff or consultants, who then provided advice to the Acting Director. For that reason, such documents form part of the underlying factual basis for the Acting Director's decisions relating to approval of the Project. (See Pub. Resources Code, § 21167.6, subd. (e)(10); *Browning-Ferris Industries v. City Council of City of San Jose* (1986) 181 Cal.App.3d 852, 866; *Stanislaus Audubon Society, Inc. v. County of Stanislaus* (1995) 33 Cal.App.4th 144, 153, 155.)

PART I: Historical Background

A. Project Need/Historical Background 2

The process by which the Bay Delta Conservation Plan (BDCP) and later the California WaterFix were developed has been an interactive and iterative process between DWR, the U.S. Bureau of Reclamation (Reclamation), CDFW, the United States Fish and Wildlife Service (USFWS), the National Marine Fisheries Service (NMFS), state and federal water contractors, non-governmental organizations, agricultural and fishing interests, and the general public. The fundamental purpose of the California WaterFix is to make physical and operational improvements to the State Water Project system in the Delta necessary to restore and protect ecosystem health, water supplies of the State Water Project and Central Valley Project south of the Delta, and water quality within a stable regulatory framework, consistent with statutory and contractual obligations. (Final EIR/EIS, Chapter 2, p. 2-2.) A long history precedes and informs the current moment in time.

1. The Central Valley Project and State Water Project

Based on policy decisions made by Congress and the California Legislature many decades ago, the federal Central Valley Project (CVP) and the State Water Project (SWP) form the core of California's existing water system. These two infrastructure projects convey water from the Sacramento and San Joaquin River watersheds to millions of Californians throughout the San Francisco Bay Area (Bay Area), the Central Valley, and southern California. Water conveyed through the Delta supports farms and ranches from the north Delta to the Mexican border, provides a source of financial stability for the State, and helps to produce a substantial percentage of the nation's domestically grown fresh produce.

² The information in this section (1.A) is derived from Appendices 1A and 3A from the Final EIR/EIS, Master Response 36 from the Final EIR/EIS, and the Executive Summary and Introduction to the RDEIR/SDEIS.

Between them, these two watersheds capture runoff from approximately 40 percent of the land in California.

a. *Early History*

Demands on California water resources changed substantially during the first 100 years following the granting of statehood in 1850. The demand for irrigated crops increased in the late 1860s and 1870s following completion of the transcontinental railroad, which enabled fruits and vegetables from California to be delivered to markets throughout the United States. In 1873, following a severe drought in the 1870s, Congress authorized the Alexander Commission to develop solutions for water supplies of the Sacramento and San Joaquin Valleys. The report outlined a system of large-scale irrigation-water supply facilities and suggested that federal assistance would be required to accomplish these recommendations.

In 1919, the U.S. Geological Survey completed the Marshall Plan, which recommended the transfer of water from northern California to meet urban and agricultural needs of central and southern California. The Marshall Plan recommended the following physical improvements: a series of storage reservoirs on the Sacramento River near the confluence with the McCloud and Pit Rivers, with large canals along the west and east sides of the Sacramento and San Joaquin Valleys; a storage reservoir on the San Joaquin River near Friant, with canals along the east side of the San Joaquin Valley to deliver water to areas north and south of the San Joaquin River; and diversion of the Kern River to Los Angeles. A portion of the water from the Sacramento River would be conveyed through the Delta to lower San Joaquin River water rights holders in exchange for water diverted at Friant Dam to the eastern San Joaquin Valley, including the Kern River area.

During the 1920s, the state continued investigation of the Marshall Plan and other alternatives to reduce salinity intrusion in the Delta and provide water to the San Joaquin Valley. Most of the alternatives included construction of reservoirs in northern California and conveyance through the Delta to San Francisco Bay area and San Joaquin Valley water users. Delta conveyance alternatives included isolated canals or use of Delta channels with a Cross Delta Channel that would convey water from the Sacramento River near Walnut Grove to the San Joaquin River. In 1930, the Division of Water Resources Bulletin No. 25 outlined a statewide water plan, which was approved by the Legislature in 1941 as the State Water Plan. Many of the facilities were completed as part of the CVP in the 1940s and 1950s to serve water users in the Sacramento Valley, San Francisco Bay area, and San Joaquin Valley.

b. *The Central Valley Project*

The basic concept and facilities of the CVP were included in the first California State Water Plan formulated in the 1930s. In the Depression era, however, the State was unable to sell

the necessary bonds to finance the project. Most of the water development envisioned by the State was eventually accomplished by the federal CVP, beginning with its initial authorization in 1935. Construction on the CVP began in 1937 with the Contra Costa Canal, which began delivering water in 1940. The next facility built was Shasta Dam, the keystone of the CVP. Work on the dam began in 1938, and water storage started even before its completion in 1945. Congress subsequently passed 13 separate measures to authorize the construction of other major water management and storage facilities over the next three decades, including Friant Dam, which was completed in 1942. The final dam, New Melones on the Stanislaus River, was completed in 1979.

The CVP remains one of Reclamation's most ambitious projects, and has been developed over more than 80 years to become one of the largest water storage and transport systems in the world. In years of normal precipitation, the CVP stores and distributes about 20 percent of the State's developed water—about 7 million acre-feet (af)—through its massive system of reservoirs and canals. Water is transported 450 miles from Lake Shasta in northern California to Bakersfield in the southern San Joaquin Valley.

Within the Delta, the Delta Cross Channel can be operated to intercept CVP water flowing in the Sacramento River water as it travels westward toward Suisun Bay, and divert it south through a series of man-made channels, the Mokelumne River, and other natural sloughs, marshes and distributaries. From there, the water travels southward to the Jones Pumping Plant, which raises water into the Delta-Mendota Canal, which in turn travels 117 miles southward to Mendota Pool on the San Joaquin River, supplying water along the way to other CVP reservoirs. The Tracy Fish Collection Facility, which sits at the entrance of the Jones pumping plant, catches fish that would otherwise end up in the Delta-Mendota Canal. A second canal, the Contra Costa Canal, captures fresh water near the central part of the Delta, takes it 48 miles southward (distributing water to the Clayton and Ygnacio Canals in the process), supplies water to Contra Loma Dam, and eventually terminates at Martinez Reservoir.

c. *The State Water Project*

i. *General Attributes*

Even before the construction of major features of the CVP had been completed, interest was expressed in California building its own water project, one that would deliver water to southern California and to San Joaquin Valley farms that were ineligible for CVP water.

In 1951, A. D. Edmonston, the State Engineer, unveiled a blueprint for what became the Feather River Project (today, the SWP). The Legislature approved the project, but provided no funding to build it. Despite this lack of funding, interest in the project continued to build, gaining critical momentum in 1955 when a Christmas Eve flood of the rain-swollen Feather River claimed 64 lives north of Sacramento and caused \$200 million in property damage.

As these facilities were completed, it became apparent that California's rapid urban, agricultural, and industrial growth would quickly increase demands for water and power. In 1957, DWR Bulletin No. 3 defined the need for new SWP facilities for flood control in northern California and to store and convey water from the Sacramento Valley to the San Francisco Bay area, San Joaquin Valley, central coast, and southern California.

In 1959, through the Burns-Porter Act, the Legislature authorized funding for the SWP; and in 1960, the voters authorized the sale of bonds. The Burns-Porter Act expressly authorized the State of California to enter into contracts for the sale, delivery, or use of water made available by the State Water Resources Development System. The Burns-Porter Act provides that those who benefit from the SWP repay the principle and interest cost of the bonds as well as other construction and operation costs. (DWR Bulletin No. 200, California State Water Project, Vol. I, History, Planning and Early Progress (Nov. 1974) at p. 25.) Today, 29 public water agencies have long-term contracts for SWP supplies, and repay the principle and interest, operations, maintenance, power, and replacement costs associated with SWP water supplies. (DWR, Bulletin No. 132-15, Management of the California State Water Project (July 2016) at pp. 10, 155-156; App. B, Table 2, p. B-14.)

The initial water resource facilities constructed under the Act included the Oroville Dam and Reservoir, Harvey O. Banks Pumping Plant (Banks Pumping Plant), California Aqueduct, San Luis Dam and Reservoir, and additional downstream conveyances, pumping facilities, and storage reservoirs. The facilities authorized under the Act also included "master levees, control structures, channel improvements and appurtenant facilities . . . for . . . transfer of water across the Delta"; however, a Delta water transfer facility was not constructed with the initial facilities. Water was first delivered in 1962 through a portion of the South Bay Aqueduct to Alameda and Santa Clara counties. Large-scale water deliveries began in the late 1960s. By 1972, SWP water reached southern California.

The SWP was planned, designed, constructed and is now operated and maintained by DWR. Today, the SWP is the world's largest publicly built and operated water and power development and conveyance system, consisting of 34 storage facilities, reservoirs and lakes; 20 pumping plants; four pumping-generating plants; five hydroelectric power plants; and about 701 miles of open canals and pipelines. Water from rainfall and snowmelt runoff is stored in SWP facilities and delivered via SWP transportation facilities to water agencies and districts in the Southern California, Central Coast, San Joaquin Valley, South Bay, North Bay, and Upper Feather River areas. The SWP provides water for 25 million of California's estimated 37 million residents, and irrigates about 750,000 acres of farmland. The SWP, however, is also operated to improve water quality in the Delta, to control Feather River flood water, to generate power, to provide recreation, and to enhance fish and wildlife.

Oroville Dam is the centerpiece of the SWP and its largest water storage facility. It also provides significant flood control and recreational public benefits. The Oroville Dam is located about 70 miles north of Sacramento at the confluence of the three forks of the Feather River. Lake Oroville releases SWP water into the Feather River, which travels

downstream to the confluence with the Sacramento River, the State's largest waterway. Water flows down the Sacramento River into the Delta. Some of the SWP's water supply is diverted into the North Bay Aqueduct via Barker Slough Pumping Plant and is used in Napa and Solano counties.

Near Byron, the SWP diverts its water into Clifton Court Forebay for delivery south of the Delta. Banks Pumping Plant lifts water from Clifton Court Forebay into the 444-mile-long California Aqueduct. Water then enters Bethany Reservoir, where the South Bay Aqueduct begins. The South Bay Aqueduct serves Alameda and Santa Clara counties. Most of the water delivered to Bethany Reservoir from Banks Pumping Plant, however, flows into the California Aqueduct. This main artery of the SWP conveys water to the agricultural lands of the San Joaquin Valley and to the urban regions of southern California. A Coastal Branch of the California Aqueduct was completed in 1997 to serve the Central Coast region.

ii. *Consideration of a "Peripheral Canal"*

Even while the SWP was being planned and constructed, some people were concerned that sole reliance on south Delta pumps as the mechanism for sending water south from the Delta could ultimately prove to be problematic.

Even before construction of the SWP and CVP pumping plants in the south Delta, the Delta was characterized by high salinity, especially in late summer and fall months or during drought periods. While the use of the Delta Cross Channel improved water quality in the central and South Delta during some periods, there were many studies undertaken to evaluate a wide range of alternatives to improve the quality of the water conveyed from northern California to other areas of California through the Delta.

Studies in 1930 and 1957, and subsequent studies in the late 1950s and early 1960s, considered a combination of existing river channels and isolated conveyance facilities to move water from the reservoirs in the Sacramento River and Trinity River watersheds to the pumping facilities in the southern Delta. These conveyance facilities included siphons under the San Joaquin River to reduce the potential for high salinity in the water conveyed to the areas located south of the Delta. Several of the studies also considered the addition of salinity and flow barriers in the Delta. The studies indicated that water quality of the SWP and CVP water pumped from the south Delta would have low salinity. There were concerns, however, about potential impacts on fisheries and recreation resources if numerous Delta barriers were installed, and potential impacts on salinity for water used in the Delta if all of the SWP and CVP water supplies were conveyed in an isolated facility from the north Delta to the south Delta. These studies did not include detailed evaluations of dual conveyance, which would continue to move water across the Delta in combination with an isolated facility.

In the early 1960s, an Interagency Delta Committee was convened to coordinate water resources planning for the SWP, CVP, and local agencies. In a 1963 report, this Interagency

Delta Committee evaluated alternatives to protect Delta water quality and water supplies, maintain flood protection, control drainage and seepage in the Delta, maintain Delta navigation, maintain Delta recreation, protect fish and wildlife, and maintain vehicular transportation. The study considered hydraulic and physical barriers, Delta waterway control, and a peripheral canal. The peripheral canal would have been constructed along the eastern edge of the Delta from Walnut Grove on the Sacramento River to Stockton and continue to Italian Slough near the Clifton Court Tract.

This 1963 report acknowledged what it called “the San Joaquin flow reversal problem” and acknowledged that “[t]he influence of the export pumps presents a serious problem to young fish, eggs, and fry.” The report suggested that the construction of “overland canals,” combined with other structures, could help to address this problem. The report further concluded that a peripheral canal would allow for balanced growth of Delta-oriented activities and recommended that further study be completed.

A 1965 DWR study defined the peripheral canal alignment along the eastern edge of the Delta starting at Hood on the Sacramento River with siphons beneath the Mokelumne, San Joaquin, and Old Rivers and connecting canals to the SWP and CVP pumping plants. The numerous subsequent studies and proposed plans ultimately resulted in DWR issuing Project Order No. 12 in 1966 adopting the Peripheral Canal as the SWP Delta facilities. (See DWR Bulletin 76, July 1978, p. 118 and Appendix C-5.) In the 1970s, construction of Interstate 5 involved some initial excavation of borrow pits along the potential Peripheral Canal alignment.

The 1974 Draft EIR for the proposed Peripheral Canal Project described an isolated facility to convey freshwater from the Sacramento River to the SWP and CVP pumping plants with up to 12 release facilities to distribute water from the canal into Delta channels. The canal was planned to initially operate by gravity with the addition of a pumping plant within 10 years following construction. Other purposes of the project were to convey flood flows from Morrison Creek in Sacramento County and Middle River in San Joaquin County into the Peripheral Canal and to incorporate recreational facilities into the project. The recommended alignment would have diverted water from the Sacramento River near Hood for conveyance to Clifton Court.

The Peripheral Canal proposal included a fully isolated facility removed from Delta channels. It would have included 43 miles of above-ground, open earth channel, with an average water surface width of about 500 feet and an average center depth of 30 feet deep with levees on both sides. The canal would have required an approximately 1,000-foot right-of-way. The proposed canal would have had a total carrying capacity of 23,300 cubic feet per second (cfs), and would have included 12 facilities along the canal to provide water releases to meet water quality objectives. The proposed Peripheral Canal also would have included four large siphons (18-25 feet in diameter) to move water under the Mokelumne River and San Joaquin River at Stockton Deep Water Channel, Disappointment Slough, and Old River. Water conveyance would have relied entirely on pumps. The Peripheral Canal

proposal included 1,500 cfs reserved for the proposed future federal Hood-Clay Connection to the Folsom South Canal. The capacity would have decreased in three steps to 18,300 cfs at the outlet of the canal at Clifton Court Forebay. The proposed Peripheral Canal also would have included one fish screen to keep salmon and striped bass out of the canal. The Peripheral Canal would have permanently impacted approximately 5,800 acres of agricultural land in the eastern Delta, not including land that would have been impacted due to disposal of dirt and material during construction. The Peripheral Canal would have been operated to transport up to 9 million acre feet of water per year at full development.

In 1982, in a statewide referendum election, the voters of California rejected the act that would have implemented the Peripheral Canal facilities. Since that time, a Delta transfer facility has continued to be studied and proposed as part of the SWP, as described subsequently in this Part.

2. The Ecological and Recreational Importance of the Delta

In addition to being a water hub for the transport and export of CVP and SWP water, the Delta is also a vitally important ecosystem that is home to hundreds of aquatic and terrestrial species, many of which are endemic to the area and a number of which are designated as threatened or endangered under the California Endangered Species Act (CESA) or the federal Endangered Species Act (ESA).

The Delta region is also a key recreational destination. Its waterways and managed wetlands support many activities, including fishing, boating, and hunting. It sustains distinctive geographical and cultural characteristics and supports extensive infrastructure of statewide importance, such as aqueducts, natural gas pipelines, and electricity transmission lines; railroads, commercial navigation (ports and shipping channels), and recreational navigation (marinas, docks, launch ramps); agricultural production and distribution; wildlife refuges; public and private levee systems; and highways.

The Delta is a center of controversy due to long-standing conflicts over how best to use and conserve its water and biological resources. Fish species, including delta smelt (*Hypomesus transpacificus*) and winter-run Chinook salmon (*Oncorhynchus tshawytscha*), are listed under ESA and CESA and have recently experienced the lowest population numbers in their recorded history. Furthermore, Delta levees and the lives, land, and infrastructure they protect are at risk from earthquake damage, continuing land subsidence, and rising sea level.

3. Multiple Environmental Challenges Facing the Delta

The extensive development of the SWP and CVP infrastructure in California has occurred along with other changes that have altered both the temporal and spatial distribution of Delta water including installations of water diversions, canals and levees, pumps, flow-

altering barriers, and municipal and agricultural discharges and drainage. Control of river flow and stage through the operation of SWP and CVP dams and water transfer facilities reduces the winter and spring floods into the Delta (though precipitation remains the dominant determinant of such floods), while maintaining elevated freshwater flows in the summer and late fall periods. At certain times of the year, these seasonal flows influence the transport of eggs and young organisms through the Delta and into San Francisco Bay, playing an important role in the reproductive success and survival of estuarine and migratory species including salmon, striped bass, American shad, delta smelt, longfin smelt, splittail, sturgeon and others. Temporal variations in freshwater flow are hypothesized to be among the most important natural factors influencing the Delta ecosystem.

a. Salinity

Delta salinity has been a major concern since the City of Antioch's 1920 lawsuit against irrigators in the Sacramento Valley, whose upstream water withdrawals reduced freshwater flows into the Delta and increased the salinity at water intakes in the western Delta. High salinity levels can affect the use and taste of urban water supplies, the productivity of farmland, and the viability of different organisms within aquatic ecosystems. For many decades, this issue was discussed in terms of where the salinity gradient—that is, the transition from seawater to freshwater (referred to as “X2” by scientists)—should be located in the estuary. Since the 1920s, to meet water supply needs, it has been regarded as desirable to maintain the Delta, as much as possible, as a freshwater system, Suisun Bay and Marsh as brackish water systems, and San Francisco Bay as a marine (saltwater) system. SWP and CVP reservoirs are operated in part to alleviate the problem of seasonal salt water intrusion into the Delta by making releases of fresh water year-round. However, salinity intrusion from the ocean or accumulation of minerals from farming discharges into Delta rivers remains a concern. Increasingly, it has been recognized that salinity and other, broader, water quality concerns in the Delta are compounded by the quality of upstream and in-Delta drainage, with consequences for both urban and agricultural users, as well as for fish and wildlife.

Agricultural drainage (or in-Delta drainage) also contributes to the Delta's salinity problems. Because most Delta islands are below sea level, water from surrounding channels seeps through the levees onto the land. Farmers must pump this water from their lands while adding controlled amounts of fresh water needed for productive agriculture. In the south Delta, where farmers rely primarily on the waters of the San Joaquin River for their irrigation supply, the process of irrigation concentrates salts in the drainage water, which is then pumped and discharged into nearby Delta channels. When the current is not sufficient to “flush” these salts through the Delta, there can be localized salinity problems.

The salt content of drainage water flowing down the San Joaquin River, primarily from the west side of the valley, is high, and sources of dilution water are limited. Most of the valley averages less than 10 inches of rain per year, and fresh water from Sierra tributaries is

either exported or diverted for consumptive uses. Flows in some stretches of the San Joaquin River during the summer irrigation season consist almost entirely of these irrigation return flows. In turn, salty return flows increase the salt content of water used downstream by Delta farmers and the amount of salty water flowing into the estuary. Over the last decade, steps have been taken to reduce the volume of agricultural drainage flow into the San Joaquin River.

Salinity is a critical component of the Delta, having broad impacts on the quality of water in the Delta available for drinking, agriculture, and biological resources use. Salinity concentrations are not uniformly distributed throughout the Delta because of the complex interactions between tidal and freshwater inputs that are subject to spatial and temporal variability.

b. Other Water Quality Issues

Because the Delta is a source of drinking water for more than 20 million Californians, the quality of Delta water is very important. Cycling of nutrients, carbon, and other organic and inorganic materials are some of the major chemical processes driving the ecological conditions of the Delta. Water quality impacts on Delta ecosystems date back to the Gold Rush era when hydraulic mining and gold processing with liquid mercury washed large amounts of highly contaminated sediment from surrounding landforms into the Delta's major tributaries. In addition, hundreds of organic and inorganic toxins are present in the Delta system and may cause adverse physiological responses in humans, plants, fish, or wildlife. These contaminants—organic, inorganic, and biological pathogens—are found in many forms and have the ability to affect the ecosystem in many ways and at different life stages of individual species.

More specifically, the contaminants present in the Delta include: metals, such as mercury (and methylmercury) and selenium; pesticides; inorganic nutrients (e.g., forms of nitrogen, ammonia, and phosphorus); organic matter; and pharmaceuticals. These contaminants may cause acute toxicity, such as mortality, or chronic toxicity, such as reduced growth, reproductive impairment, or other subtle effects. Contaminants can also affect the sustainability of healthy aquatic food webs and interdependent fish and wildlife populations. Some contaminants are naturally occurring at low levels, but with human disturbance, contaminants can be present in amounts or concentrations high enough to pose life-threatening effects.

The following are the principal sources of additional contaminants that affect water quality in the Delta:

- Historical drainage and sediment discharged from upstream mining operations in the late 1800s and early 1900s contributed metals such as cadmium, copper, and mercury.

- Stormwater runoff can contribute metals, sediment, pathogens, organic carbon, nutrients, pesticides, dissolved solids (salts), petroleum products, and other chemical residues.
- Industrial and municipal wastewater treatment plant discharges can contribute salts, metals, trace organics, nutrients, pathogens, pesticides, organic carbon, and oil and grease.
- Agricultural irrigation return flows and nonpoint discharges can contribute salts (including bromide), selenium, organic carbon, nutrients, pesticides, pathogens, and sediment.
- Water-based recreational activities (such as boating) can contribute hydrocarbon compounds, nutrients, and pathogens.
- Atmospheric deposition can contribute metals, nutrients, pesticides, and other synthetic organic chemicals, and may lower pH.
- Seawater intrusion can contribute salts, including bromide, which affect total dissolved solids concentrations and can contribute to the formation of unwanted chemical byproducts in treated drinking water.

The length of time during which nutrients and contaminants are present is another important aspect of water quality contamination because of the potential for resident organisms' increased exposure and subsequent chronic effects. Delta sloughs are particularly susceptible because they experience longer water residence time.

c. Suspended Sediments

Suspended sediments are a natural component of the Delta and are not inherently toxic, but have direct as well as indirect impacts on the Delta ecology. The Delta was created as a result of sediment deposition from the Sacramento and San Joaquin Rivers entering the ocean. Many of the species in the Delta have adapted to these highly turbid conditions that occur at certain times. Over the last three decades, water in the Delta has become less turbid due to a variety of physical and biological changes.

For instance, construction of upstream dams has reduced the inflow of sediments to the downstream Delta. Levees and other flood management activities have also reduced the amount of sediments transported in the rivers because these facilities are designed to reduce erosion; therefore, turbidity in the river is reduced. The increase of invasive, aquatic weeds also results in areas of reduced mobilization of sediments. These reductions of intertidal mud and sand has reduced the availability of habitat for a variety of organisms such as mudworms and waterfowl, as well as increased the potential to uncover and mobilize previously buried contaminants such as mercury and selenium. The resulting decreased turbidity alters the natural system in the Delta by increasing light penetration, altering primary production, and affecting predator-prey interactions through increased water transparency and susceptibility to predation pressure.

d. Land Subsidence in the Delta

A large portion of the Delta lands now lie 25 feet or more below sea level and below the level of the water in the surrounding channels. In many cases, the reclamation of the islands initiated the subsidence process, because much of the material used to elevate the levees was taken from the interior of reclaimed islands, thereby lowering the island while elevating its protective barrier. Another cause of the subsidence is the soil itself. The peat soils are rich in nutrients, but oxidize as they decompose, releasing carbon dioxide and causing the exposed land to subside as much as three inches per year.

Soil burning, mostly associated with the potato farming that developed by 1900, also accounted for much of the early subsidence. Despite the benefits of burning—weed control, fertilization, and the facilitation of the seedbed—it accelerated subsidence and allowed for salt accumulation and increased wind erosion.

Land subsidence is a critical problem because the process puts additional stress on levees and renders the system of Delta levees unstable, creating a greater likelihood of levee failure and subsequent flooding. In the event of a levee failure, land subsidence would result in greater saltwater intrusion into the Delta.

Additionally, subsidence adds to farming costs because it requires additional levee rebuilding, drainage excavation, and pumping both for regular operations and recovery after floods. However, in general, Delta farmers have continued to farm subsided lands. Even though some of the more destructive farming practices have ceased, slowing down the rate of subsidence, Delta islands continue naturally to subside due to the exposed peat soils.

e. Delta Levees/Seismic Issues

Today, over 1,100 miles of levees protect the 18,738,000 acres of Delta islands, tracts, and population centers from flooding, and some key levees also protect a large portion of the State's water supply. The levee systems have allowed farmers to drain and reclaim a large portion of the Delta from its original state as a tidal marsh. These levees were built to prevent flooding and allow cultivation of the rich soil, while some of them now protect towns and cities as well as public infrastructure such as highways, railroads, and pipelines.

A sound, well-maintained, levee system is vital to protect the farms, towns, and transportation corridors on Delta islands and a portion of the levee system is also key to protecting the supply of fresh water moving through Delta waterways. When levees fail, water rushes into the lower-than-sea-level islands, pulling salt water from the San Francisco Bay into the Delta. If numerous levees were to fail simultaneously in the Delta, there is a significant risk that large amounts of salt water could flow into the Delta and raise salinity levels in the eastern and southern Delta. The resulting high salinity levels

could require the shutdown of the export pumps in the south Delta that supply water to millions of people.

A majority of the levees protecting the Delta (approximately 65 percent) are not within the federal/state Sacramento Flood Control Project system and are constructed and maintained by island landowners or local reclamation districts. These levees are generally built to an agricultural standard and may be less stable than those constructed and maintained to protect urban areas. Improvement and maintenance of these “non-project” levees can be very challenging. The natural peat deposits that made the Delta such a fertile farming location make poor building materials for levees and/or their foundations. Oxidization of these peat soils has led to island and levee subsidence, which has increased the burden on the levee system. Another way that the Delta levees are distinguished from levees along rivers such as the Sacramento is that they are constantly exposed to water pressure, making them more comparable to dams. Unlike dams, however, they are not constructed or regulated to the same high engineering standards. Delta levees need to withstand the daily cycle of tides, wind, and boat wakes. Levees in the west Delta receive the strongest impact from tidal influences; soils there are the least stable and most susceptible to liquefaction. Burrowing animals further threaten levees, because they burrow into and weaken levees before they are detected.

Additionally, land subsidence, sea level rise, and changes in climate make Delta levees increasingly vulnerable to failure from earthquakes, floods, and other causes. Our understanding of the Delta’s vulnerability to natural disaster has been highlighted by recent scientific analysis, which calculated the probability of levee failure due to flooding or earthquake, and by real-world events such as Hurricane Katrina and the 2011 earthquake and tsunami in Japan. These events demonstrated the level of destruction that can result from breached levees. Although levee vulnerability in the Delta is not easy to quantify, it is estimated that levee breaches are very likely in the event of an earthquake.

The probabilities of moderate to large earthquake events, and related damage to or failure of Delta area levees, are generally high and increasing over time. Many of the related Delta islands are currently below sea level due to factors including subsidence of underlying organic soils, with this subsidence expected to continue at a generalized rate of approximately 0.9 inch per year until the organic content is largely depleted (with subsidence in Suisan Marsh substantially lower due to management practices). Based on the noted conditions, seismically induced levee breaches would result in the influx of seawater into the associated islands, with a number of resultant issues including water quality and related water supply concerns.

A major earthquake event could result in breaching/failure of existing levees within the Delta area, with a substantial number of these structures exhibiting moderate to high failure probabilities. The most immediate and significant effect to water quality under such a scenario would be the influx of large volumes of seawater and/or brackish water into the Delta, which would alter the “normal” balance of freshwater/seawater flows and result in

flooding of the associated islands. The corresponding shift in Delta water quality conditions would be characterized by an increase in salinity levels, including specific associated constituents such as bromide (which affects total dissolved solids concentrations and can contribute to the formation of undesirable chemical byproducts in treated drinking water). Additional water quality concerns in a large-scale levee failure/scenario would include soil- and agricultural-related pollutants such as organic material, and hydrocarbons associated with local oil and gas exploration/production activities. The described water quality concerns, particularly the influx of seawater/brackish water and associated salinity increase, would continue for an extended period of time. In general, the process following levee breaches would be to (1) repair the levees, (2) dewater the flooded islands using pumps, and then (3) flush brackish water from the Delta. For a seismic event in which 20 islands are breached, associated repairs would require 25 months on average, with a range of 20 to 30 months from the date of the earthquake. Dewatering of all the associated islands would be completed approximately 29 months after the earthquake on average, with a range of 25 to 34 months. Repair times for a scenario in which 30 islands are flooded would likely double these estimated repair times.

The time required to repair levees and dewater affected islands would probably not be the same as the duration of time that SWP/CVP water exports from the Delta are curtailed. The DWR Delta Flood Emergency Preparedness, Response and Recovery plan studies suggest that several years would be required, at about a five percent exceedance probability, to restore salinity concentrations necessary for municipal water quality needs at the export pumps from a catastrophic failure of twenty or more islands.

In some instances, restoration of the export of Delta water supplies after a major seismic (or flood) event could be longer than one year. Because of the potential extent of levee slumping and liquefaction, the possible competition for repair materials and labor, the time required to pump saline water from all (or most) flooded islands, and the time needed to flush saline water from the south and central Delta, restoration of water exports from Jones and Banks Pumping Plants could require up to three years.

The above-described seismic levee failure scenario and resultant water quality issues could generate both direct and indirect effects to water supply sources and facilities associated with the SWP and CVP. Direct impacts to SWP and CVP operations would result from the potential increase of salinity (or other adverse water quality conditions) at the associated Banks and Jones Pumping Plants' intakes near the southwestern edge of the Delta. If salinity (and/or other pollutant) levels exceed related thresholds at these intakes, pumping would be appropriately curtailed or terminated, with corresponding effects to the viability of the Delta to convey water for the SWP and CVP over a substantial time period. While it is difficult to project the level of direct effects to SWP/CVP water supplies due to the complex nature of the described earthquake/levee failure scenario, it is conceivable that the Banks and Jones Pumping Plants' intakes would be largely or completely out of service for a period of months to years, as described above. Under such conditions, the availability of

water for agricultural and domestic consumption in much of central and southern California would be severely curtailed, with associated potential catastrophic economic losses and lifestyle changes (such as water shortages and rationing) affecting millions of people. Even in a scenario in which water supplies to the SWP and CVP are maintained at reduced levels, the effects would likely be pronounced.

f. Pelagic Organism Decline

The four primary pelagic (open water) fish of the upper Delta (delta smelt, longfin smelt, striped bass and threadfin shad) have shown substantial variability in their populations, with evidence of long-term declines for these species. By 2004, these declines became widely recognized and discussed as a serious management issue, and collectively became known as Pelagic Organism Decline (POD). Concerns surrounding POD focus on the fish species that rely on the pelagic zone for spawning, early life history, and perennial habitat. The apparent simultaneous declines of these four fish species occurred despite differences in their life histories and in how each species utilizes Delta habitats. These differences suggested one or more Delta-wide factors to be important in their declines.

A multi-agency work team was created in 2005 to evaluate the potential causes of POD, which likely include a combination of factors: stock-recruitment effects, a decline in habitat quality, increased mortality rates, and reduced food availability from invasive species competition. The team organized an interdisciplinary effort that included scientists from DWR, CDFW, Central Valley Regional Water Quality Control Board (RWQCB), Reclamation, U.S. Environmental Protection Agency (USEPA), U.S. Geological Survey (USGS), California Bay-Delta Authority, San Francisco State University, and University of California at Davis. A conceptual model, including a suite of 47 studies, was developed to aid in the evaluation of POD, and to describe possible mechanisms by which a combination of long-term and recent changes in the ecosystem could produce the observed pelagic fish declines. The conceptual model is intended to assess how different stressors may be linked to the POD, and is based on classical food web and fisheries ecology. It contains four major components: (1) prior fish abundance; (2) habitat; (3) top-down effects; and (4) bottom-up effects. A substantial synthesis effort is also included in the model to produce, among other outputs, life cycle models for each of the primary species.

g. Fish Entrainment

Freshwater diversions in the Delta range from small pumps and siphons that serve individual farms to the state and federal facilities in the north and south Delta that are used to export water. These facilities directly affect Delta fish species through entrainment and impingement and related mortality. Export pumping and the associated alterations to the movement of water through the Delta may be responsible, in part, for declines of species such as striped bass, Chinook salmon, and delta smelt. Entrainment occurs at Delta export

facilities, agricultural diversions, and power plants, where fish species are trapped by the facility during operations and subsequently exposed to high levels of predation and direct mortality from impingement.

The effects of diversions on individual species vary depending on the facility type, and while efforts are made to salvage entrained fish and transport them to another location in the Delta, losses of fish due to predation remain high despite these efforts. These non-natural increases in mortality possibly inhibit the abundance, distribution, diversity, and growth of special-status species populations such as Chinook salmon, steelhead, delta smelt, longfin smelt, and splittail.

Both the SWP and the CVP operate fish salvage facilities to reduce the impacts associated with fish entrainment. The SWP operates the John E. Skinner Fish Protective Facility and the CVP operates the Tracy Fish Collection Facility. Both salvage facilities have similar salvage processes where the fish are intercepted by louvers, collected, held in tanks, and trucked to various locations throughout the Delta. DWR and the Reclamation measure the efficiency of their salvage facilities by evaluating multiple factors including louver efficiency, prescreen predation, and transport efficiency. Both facilities currently operate at less than 100 percent salvage efficiency.

Fish that enter Clifton Court Forebay, such as delta smelt, are affected by predation and operations of the fish facilities. Over 60 studies have been completed by DWR in the past 20 years to evaluate the feasibility of providing fish screens along the intakes to Clifton Court Forebay. These studies have indicated that it is difficult to find a location at the Clifton Court Forebay site for a single location that would provide appropriate sweeping velocities to reduce the entrainment of fish in accordance with USFWS and NMFS fish screen operations criteria or guidance. The screen would have to be more than a mile in length, which could expose fish to excessive times in front of the screen. Because the screens are located in short sloughs with limited cross-waterways, the fish could accumulate in front of the screens and be subject to predation, poor habitat quality, or increased potential of entrainment at the Clifton Court Forebay screens and other intakes in the adjacent portions of the south Delta. (See Final EIR/EIS, Appendix 3A, pp. 3A-51 – 3A-54.)

h. Nonnative Species

The Delta is one of the most invaded ecosystems in the world, the result of accidental and purposeful introductions of nonnative species that have been occurring over many decades. Over the past several decades, the accidental introduction of many marine and estuarine organisms from the ballast water of ships has greatly changed the planktonic and benthic (bottom and shore dwelling) invertebrates of the Delta and directly affected the food web. Additionally, water management structures and activities have contributed to a reduction in the Delta's naturally diverse and variable ecosystem, resulting in more

favorable conditions for successful colonization by invasive animal and plant species. Invasive aquatic and terrestrial species from around the world dominate the Delta today, particularly in fresh and low salinity habitats.

Nonnative species are known to have harmful effects on the Delta ecosystem and may directly and indirectly threaten native species by altering ecosystem functions and the food web and competing with or directly preying upon native species. Recent conservation interest has focused on the introduction of invasive clams and invasive aquatic plant species that may have a large impact on the ecology of the Delta. Nonnative invertebrate species currently found in the Delta, such as the Asian (Corbula) and overbite clams (Corbicula), as well as recent California invaders (not yet found in the Delta) such as quagga and zebra mussels, have high colonization and filtration rates that limit phytoplankton and zooplankton abundance. Nonnative aquatic weeds also pose serious problems in the Delta because of their ability to displace native plant species, harbor nonnative predatory species, reduce food web productivity, reduce turbidity, and interfere with water conveyance and flood management systems. For example, Brazilian waterweed is often referred to as an “ecosystem engineer” because it has affected the natural environment within the Delta by reducing suitable habitat for native species, reducing turbidity, and improving habitat conditions for invasive species.

4. The CALFED Process to Develop a Bay-Delta Plan

In 1995, state and federal agencies, including DWR, Reclamation, USFWS, and NMFS, signed a Framework Agreement to establish a joint state/federal CALFED Bay-Delta Program (CALFED) to prepare a comprehensive plan to address resource problems of the Delta. Through a six-step process, the CALFED agencies completed a Phase I report to define problems in the Delta, identify actions to address the problems, evaluate a comprehensive set of alternatives, and develop a plan. In the fall of 1995, CALFED identified four main problem areas in the Bay-Delta (ecosystem quality, water quality, water supply, and system vulnerability), developed objectives for addressing those problems, and agreed upon solution principles to provide policy guidance on developing alternatives.

Based on these objectives, CALFED agencies publicly conducted a lengthy, multi-phased evaluation of potential alternatives in a far-reaching effort to develop possible alternatives to achieve their mission. CALFED’s scoping process resulted in the identification of nearly 50 categories of potential actions and 100 preliminary solution alternatives. In early 1996, CALFED identified “action categories” for alternatives and potential “core actions” to be included in any alternative, based upon a consensus among stakeholders, as actions critical to a Bay-Delta solution. In order to ensure maximum sensitivity to the policies and positions of the CALFED agencies and stakeholder groups, the Program involved technical experts, Program staff teams, and the public to refine the initial set of potential alternatives to 31, and then down to 20. Further consolidation and refinement led to 10 alternatives, with their various components characterized at modest, moderate, and extensive levels of

implementation. The 10 alternatives included Dual Delta Conveyance (with north Delta and south Delta intakes) and Through Delta Conveyance.

After additional technical analysis and the evaluation of comments received from the public and various agencies, the CALFED collaboration narrowed and reclassified the 10 potential alternatives into three generalized approaches, or alternatives, for conveying water across the Delta. The three alternatives shared a set of common programs to address ecosystem quality, water quality, water use efficiency, and levee system integrity. The three alternatives represented different methods to address water storage and conveyance through or around the Delta.

In March 1998, the CALFED lead agencies released a Draft Program EIS/EIR and a Draft Phase II Report that presented results of an evaluation of 12 conveyance alternatives based upon three broad options (existing system conveyance, modified Through Delta Conveyance, and Dual Delta Conveyance with an isolated facility and north Delta intakes). These documents did not identify a preferred alternative or proposed action. The initial technical analyses indicated that a Dual Delta Conveyance would provide the most water quality improvements (primarily related to salinity in the south Delta); however, comments from the public on the draft documents raised many concerns about the location, construction methods, and operations of the Dual Delta Conveyance facilities.

With respect to reducing Delta exports, CALFED carefully considered and rejected an alternative that would have done so as unreasonable. In responding to comments concerning a potential reduced Delta exports alternative, the Program EIR/EIS stated the following:

Among these [potential alternatives developed but rejected] were alternatives that emphasized water use efficiency and de-emphasized or eliminated actions to improve export water supplies and improve the adequacy of Bay-Delta water to meet Delta outflow needs. Based on input from public workshops, scoping meetings, the [Bay Delta Advisory Council], and the CALFED agencies, CALFED concluded that these actions would not achieve the primary objective for water supply reliability . . . [A]n alternative that would achieve water quality objectives by reducing or capping exports would prevent the CALFED Program from achieving its objectives regarding water supply reliability.

In August 2000, a broad array of state and federal agencies, including DWR, adopted the CALFED EIS/EIR Programmatic Record of Decision (ROD) as a 30-year planning roadmap for restoring the Delta's ecology and improving water management. The CALFED ROD states that "Alternative 3 – Dual Conveyance Alternative" would provide the greatest technical performance; however, it would present "the most serious challenges in terms of cost, scientific uncertainty, assurances and implementation." The CALFED ROD offered the

potential for a Dual Conveyance plan in the future following completion of future studies and environmental review.

As reflected in the CALFED ROD, the CALFED Preferred Program for water deliveries from the Delta continued use of the existing Through Delta Conveyance with the following improvements:

- New screened intakes at Clifton Court and Tracy (south Delta intakes for SWP and CVP pumping plants).
- Joint point of diversion and construction of an intertie to allow for joint use of both pumping plants by SWP and CVP. Increase pumping criteria to fully use the capacity of the SWP pumping plant.
- New permanent operable barrier at the head of Old River on the San Joaquin River.
- New operable barriers and floodway improvements in the south Delta to improve quantities and quality of water available for south Delta agricultural diverters.
- Evaluation of a new screened diversion facility on the Sacramento River near Hood or Georgiana Slough and a channel to convey water between the Sacramento and Mokelumne rivers.
- New setback levees and dredged or improved channels and levees along the lower Mokelumne River between Interstate 5 and San Joaquin River.

The CALFED ROD also recommended continued evaluation of a screened diversion facility on the Sacramento River in coordination with modifications of Delta Cross Channel operations and a channel between the Sacramento and Mokelumne rivers to improve drinking water quality if the CALFED ROD recommendations for water quality programs did not improve drinking water quality.

In April 2006, the CALFED Program issued a 10-year Action Plan to refocus the program based on new scientific and policy information. The scientific information indicated that the current physical configuration of the Delta did not lead to a sustainable condition due to increasing risk of seismic events and sea level rise; and that population levels for Delta pelagic organisms were at record low levels and were appearing to continue to decline. The policy information was informed by independent reviews by the Little Hoover Commission, the California Department of Finance, and CALFED consultants, and the information indicated that there were concerns regarding long-term financing of programs and governance. The 10-year Action Plan also indicated that several water users were considering the development of habitat conservation plans. This effort was the initiation of BDCP. The 10-year Action Plan also described the need for a “100-Year Delta Vision” process to become the strategic plan for CALFED. This recommendation led to the State initiating the Delta Vision process.

5. Delta Vision as a Strategic Plan for the Delta

In September 2006, Governor Schwarzenegger signed Executive Order S-17-06, which launched the Delta Vision process by establishing a Blue Ribbon Task Force, a cabinet-level Delta Vision Committee, Delta Science Advisors, and a Stakeholder Coordination Group. The executive order charged the Blue Ribbon Task Force with developing both a long-term vision for a sustainable Delta and a plan to implement that vision. The task force completed its vision for the Delta in January of 2008, and its strategic plan in October of 2008. The executive order charged the cabinet-level Delta Vision Committee with reviewing the completed work of the task force and making its own implementation recommendations to both the Governor and Legislature by December 31, 2008. A key component of Delta Vision was the Governor's appointment of an independent Blue Ribbon Task Force that would be responsible for recommending future actions to achieve a sustainable Delta. Many of the recommendations made by the Blue Ribbon Task Force in the Delta Strategic Plan were later incorporated into the 2009 Comprehensive Water Package.

The Delta Vision Committee Implementation Report concluded that “[t]he priorities that form the foundation for a sustainable Delta include the following ‘fundamental actions’:

- A new system of dual water conveyance through and around the Delta to protect municipal, agricultural, environmental, and the other beneficial uses of water;
- An investment commitment and strategy to restore and sustain a vibrant and diverse Delta ecosystem including the protection and enhancement of agricultural lands that are compatible with [the Delta Vision Blue Ribbon Task Force's Strategic] Plan goals;
- Additional storage to allow greater system operational flexibility that will benefit water supplies for both humans and the environment and adapt to a changing climate;
- An investment plan to protect and enhance unique and important characteristics of the Delta region;
- A comprehensive Delta emergency preparedness strategy and a fully integrated Delta emergency response plan;
- A plan to significantly improve and provide incentives for water conservation – through both wise use and reuse – in both urban and agricultural sectors throughout the state;
- Strong incentives for local and regional efforts to make better use of new sources of water such as brackish water cleanup and seawater desalination; and
- An improved governance system that has reliable funding, clear authority to determine priorities and strong performance measures to ensure accountability to the new governing doctrine of the Delta: operation for the coequal goals.

Completion of this fundamental action is absolutely essential to the sustained operation and maintenance of all of these recommendations.”³

On February 28, 2008, Governor Schwarzenegger, in a letter to state Senators Perata, Machado, and Steinberg, stated his intention to direct DWR to proceed with preparation of environmental review and permitting activities for a proposed Habitat Conservation Plan/Natural Community Conservation Plan (HCP/NCCP) to be called the Bay Delta Conservation Plan (BDCP). The Governor later directed DWR to evaluate at least four alternative Delta conveyance strategies developed in coordination with the BDCP efforts to better protect at-risk fish species. The four conveyance strategies were (1) continued use of existing Delta conveyance without improvements, (2) Dual Conveyance (including an Isolated Conveyance facility to convey water from the Sacramento River to the south Delta in conjunction with continued use of existing Delta conveyance, as suggested by the Delta Vision process), (3) Isolated Conveyance (to convey water from the Sacramento River to the south Delta without continued use of the existing Delta conveyance), and (4) Through Delta Conveyance with substantial improvements and protections of the existing facilities (“armoring the Delta” or “Through Delta” plan).

In 2009, in response to this directive, the Dual Conveyance, Isolated Conveyance, and Through Delta Conveyance alternatives were evaluated further through the preparation of Conceptual Engineering Reports (CERs). The Dual Conveyance and Isolated Conveyance alternatives were evaluated in separate CERs for alignments located along the eastern and western borders of the Delta and through the center of the Delta.

6. The 2008 and 2009 USFWS and NMFS Biological Opinions and the California Department of Fish and Wildlife (CDFW) Incidental Take Permit for Longfin Smelt

On December 15, 2008, USFWS issued the current Biological Opinion (BiOp) on the Coordinated Long Term Operation of the CVP and SWP. On June 4, 2009, NMFS issued its own BiOp on Long-Term Operation of the CVP and SWP. These BiOps⁴ significantly changed the manner in which the CVP and SWP operate, influencing the amounts of water conveyed through the south Delta. The USFWS BiOps called for changes in water pumping operations to avoid jeopardizing the continued existence of delta smelt, while the NMFS BiOp addressed system changes needed to avoid jeopardy to winter and spring-run Chinook salmon, Central Valley steelhead (*Oncorhynchus mykiss*), the southern population of North American green sturgeon (*Acipenser medirostris*), and southern resident killer whales (*Orcinus orca*). Both BiOps also laid out strategies to avoid adverse modification or

³ This section is taken from http://deltavision.ca.gov/DV_Committee/Jan2009/08-1231_Delta_Vision_Committee_Implementation_Report.pdf.

⁴ The U.S. Bureau of Reclamation, in conjunction with DWR, reinitiated consultation with USFWS and NMFS on the Long Term Operations of the CVP and SWP on August 2, 2016 to review and possibly replace the 2008/2009 BiOps. This reinitiation of consultation is expected to conclude in 3 – 5 years.

destruction of the designated critical habitat for these species. Operational changes are tied to water year type, and exceptions are provided for drought and health and safety issues.

In concurrence with the issuance of the 2008 and 2009 Biological Opinions, CDFW issued DWR a consistency determination under the provisions of Section 2080.1 of CESA for those species listed under both ESA and CESA. In addition, CDFW issued an incidental take permit (ITP) under Section 2081(b) of CESA for the on-going and long-term operation of the SWP. This ITP is for the protection of state-listed only species under the California Endangered Species Act (CESA), longfin smelt (*Spirinchus thaleichthys*). Incidental take of longfin smelt may occur as a result of mortality due to water operations including entrainment/salvage.⁵

Despite the issuance of these BiOps and ITP, the Delta remains in a state of crisis. Several threatened and endangered fish species, including delta smelt and winter-run Chinook salmon, have recently experienced the lowest population numbers in their recorded history, exacerbated by the recent multi-year drought. Meanwhile, Delta levees and the infrastructure they protect are at risk from earthquake damage, continuing land subsidence, and rising sea level. A major seismic event causing levee failure could cause an interruption of water exports for as long as several months or even years. And the amounts of water available for human use south of the Delta have already decreased significantly in recent years, independent of the recent multi-year drought, due to regulatory actions by USFWS, NMFS, and CDFW intended to protect ESA- and CESA-listed fish species.

7. The Proposed Bay Delta Conservation Plan and the California WaterFix

As the participants in the Delta Vision process concluded, there is an urgent need, for both environmental and economic reasons, to improve and modernize the existing SWP/CVP conveyance system, which was designed and built long before the “environmental era.” Many of the current systemic problems stem from the fact that both the SWP and the CVP export water from intake facilities, including pumps, that are located at the far southern edge of the Delta, near the City of Tracy. Because of their far southerly location and their elevation above sea level, in certain conditions these pumps create “reverse flows” that pull river water southward (upstream, in effect) towards the intakes, rather than allowing it to flow downstream towards San Pablo Bay, San Francisco Bay, and, ultimately, the Pacific Ocean. Concerns have been raised that these reverse flows can contribute to direct and indirect impacts on fish species such as delta smelt, which are pulled toward the pumps, where adverse conditions, including the presence of predator species, await them. Concerns have also been raised that the reverse flows can also adversely affect salmon migration patterns. (See Final EIR/EIS, Master Response 3, Project Objectives and Purpose and Need.) To try to reduce these potential adverse effects on fisheries, regulators have

⁵ This section is taken from: <https://www.wildlife.ca.gov/Conservation/Delta/Longfin-smelt-incidental-take>
California WaterFix CEQA Findings of Fact and
Statement of Overriding Considerations

substantially reduced water exports to SWP and CVP service areas, to the economic detriment of those areas.

The ecological problems with the current system could be greatly reduced by the construction and use of new north Delta intake structures with state-of-the-art fish screens with the conveyance of water, isolated from the Delta, to the SWP and CVP pumping plants. With this future vision in mind, DWR and several state and federal water contractors, in coordination with Reclamation, proposed a strategy for restoring ecological functions in the Delta while improving water supply reliability in California. These agencies' initial approach, going back as far as 2006, focused on the development of an extensive conservation plan known as the BDCP, which would add new intakes in the north Delta while at the same time pursuing a very large-scale long-term habitat restoration program within the greater Delta. Under this potential approach, DWR would achieve compliance with ESA through a habitat conservation plan (HCP) submitted for approval by both USFWS and NMFS under Section 10 of the ESA, and would achieve compliance with state endangered species laws through a natural community conservation plan (NCCP) submitted for approval by CDFW under the California Natural Community Conservation Plan Act (NCCPA). Both the HCP and NCCP was developed to provide incidental take authorization for a long list of covered species, including those listed under the ESA and CESA, for a period of 50 years. Reclamation, as a federal agency, would not be considered an applicant under Section 10 of the ESA and for its role in implementing elements of the BDCP would achieve compliance with ESA through Section 7 of that Act.

After publishing the Draft EIR/EIS based on this approach in December 2013, and after reviewing critical public and agency comments on that document, the lead agencies decided to consider additional alternatives. They substantially modified three alternatives, including the proposed BDCP (Alternative 4 in the Draft EIR/EIS), to address environmental concerns. With the issuance of the Partially Recirculated Draft EIR/Supplemental Draft EIS (RDEIR/SDEIS) in July 2015, the lead agencies announced a new preferred alternative called the California WaterFix (Alternative 4A), and introduced two additional sub-alternatives (Alternatives 2D and 5A). Like the two other new sub-alternatives addressed in the RDEIR/SDEIS, Alternative 4A seeks compliance with endangered species laws under different statutory authorizations and for a period less than 50 years, and includes only limited amounts of habitat restoration to reduce and mitigate for significant environmental impacts in compliance with CEQA and other regulatory requirements. Otherwise, Alternative 4A is very similar to Alternative 4, and the conveyance facilities are identical.

Notably, Alternative 4A (like all of the other alternatives) differs markedly from the Peripheral Canal proposed in the late 1970s and early 1980s, as described earlier. The environmental requirements of the present day – especially the complex ESA rules governing the operations of the CVP and SWP, as dictated by USFWS and NMFS – would make a proposal such as the Peripheral Canal nearly impossible to get approved and permitted. The California WaterFix is more modest in scope than the Peripheral Canal, and

it pursues goals different than those DWR and other proponents had in mind nearly 40 years ago. The California WaterFix has been designed to address threats to the Delta that were previously unknown or not well understood, and the Project accounts for changed circumstances, new scientific information, and a much more sophisticated and stringent environmental regulatory framework intended to better protect the environment. In contrast, water managers in decades past had limited information about the effects of climate change (e.g., snowpack reduction and sea level rise), subsidence, and seismic risks on water supply reliability.

The California WaterFix conveyance facilities will also create a much smaller permanent surface footprint than the Peripheral Canal would have done. The Peripheral Canal would have permanently impacted approximately 5,800 acres of agricultural land in the eastern Delta, not including land that would have been impacted due to disposal of dirt and material during construction. In contrast, the California WaterFix will permanently impact approximately 3,900 acres of agricultural land, including the conveyance facility footprint and areas that would be used (temporarily, in all likelihood) for storage of Reusable Tunnel Material.⁶ This dramatically reduced footprint reflects the fact that the California WaterFix will convey water underground through two, 35-mile long tunnels to a modified Clifton Court Forebay and pump station at that location. The refinements to the alignment also reduced the amount of private land that would be used temporarily or permanently for the facility from approximately 5,965 acres to approximately 4,288 acres.

While the Peripheral Canal could have diverted as much as 23,300 cfs from the Sacramento River, totaling as much as 9 million acre feet of water per year at full development, the California WaterFix will be able to divert no more than 9,000 cfs, with a yearly total of between 4.7 and 5.6 million acre feet per year, depending on hydrology and other factors. The Project will also include state-of-the-art fish screens on the new north Delta intakes that meet CDFW, NMFS, and USFWS standards. Under certain conditions, water will be conveyed through the tunnels entirely by gravity, instead of by pumps, which reduces air emissions and other impacts associated with greater reliance on pumps. The Project will also maintain existing capability for through-Delta operations, allowing for greater operational flexibility. The Peripheral Canal, in contrast, would have been a totally isolated facility.

While the Peripheral Canal would have been operated to meet water quality criteria, it did not include operational provisions explicitly intended to reduce effects on fish species. In stark contrast, the California WaterFix includes specific operational objectives related to Old River and Middle River flows, Head of Old River gate operations, Delta outflow, and North Delta bypass flows to meet both water quality and fisheries needs. As noted earlier, current ESA standards governing the CVP and SWP are very stringent, and are likely to get

⁶ For additional information on the benefits of reusing tunnel material, see Final EIR/EIS, Vol. II, Master Response 12, Reusable Tunnel Material (RTM).

only more stringent. Such standards were essentially unknown in the late 1970s and early 1980s.

Because scientific uncertainty is inherent in a project of this scope and detail, DWR, Reclamation, CDFW, USFWS, NMFS, and directly affected public water agencies will establish a collaborative science, monitoring, and adaptive management program. This program will support the Project by helping to address scientific uncertainty and, if necessary, by allowing operators to improve (i) the design of fish facilities, including the intake fish screens, (ii) operation of water conveyance facilities, and (iii) habitat restoration and other mitigation measures required under CEQA, NEPA, and the incidental take authorizations obtained under federal and state law. Adaptive management was wholly absent from the Peripheral Canal proposal.

8. The Sacramento-San Joaquin Delta Reform Act

The above-described actions occurred against a regulatory backdrop that changed significantly in November 2009, with the California Legislature's adoption of the Sacramento-San Joaquin Delta Reform Act of 2009 (SBX7) and related legislation. Through these bills, the Legislature passed a wide-ranging water package aimed primarily at addressing the State's aging water infrastructure, future water supply issues throughout California regions, and the environmental plight of the Sacramento-San Joaquin Bay-Delta. The package included an \$11.14 billion bond proposal to fund drought relief, water supply reliability, Delta sustainability, statewide water system operational improvements, conservation and watershed protection, groundwater protection, and water recycling and water conservation programs. Initially, the bond was scheduled to go before voters in November of 2010, but the Legislature voted to postpone the vote. The bill package was intended to improve planning in the Bay-Delta area and to set up mechanisms by which future decisions about water supply and allocation can be balanced with ecological concerns. In addition, the legislation includes measures that aim to improve groundwater monitoring and record keeping on water diversion activities, promote water conservation, and require more efficient use of water by the urban and agricultural sectors.

Importantly, the Sacramento-San Joaquin Delta Reform Act expressly calls for new Delta conveyance as part of a larger policy strategy of restoring both Delta ecosystem health and the reliability of water supplies exported from the Delta.

In adopting the Delta Reform Act, the Legislature stated generally that:

[I]t is the intent of the Legislature to provide for the sustainable management of the Sacramento-San Joaquin Delta ecosystem, to provide for a more reliable water supply for the state, to protect and enhance the quality of water supply from the Delta, and to establish a governance structure that will direct efforts across state agencies to develop a legally enforceable Delta Plan.

(California Water Code, § 85001, subd. (c).) This general policy statement sets forth the “coequal goals” of “providing a more reliable water supply for California and protecting, restoring, and enhancing the Delta ecosystem.” (California Public Resources Code, § 29702, subd. (a) [establishing the coequal goals as state policy for the Delta]; see also California Water Code, § 85054 [defining the coequal goals].) The same legislation also declares that “[p]roviding a more reliable water supply for the state involves ... new and improved infrastructure, including water storage and *Delta conveyance facilities*.” (California Water Code, Section 85004, subd. (b), italics added). Indeed, inherent in the coequal goals is a recognition of the need to “[i]mprove the water conveyance system[.]” (California Water Code, § 85020, subd. (f).) And pursuant to Water Code section 85320, the Delta Stewardship Council would be required to incorporate the BDCP into the Delta Plan if it met certain criteria; and, as explained above, the BDCP includes new conveyance infrastructure resulting in a dual conveyance system as Conservation Measure 1.

Simply put, the Delta ecosystem and water conveyance system, as currently designed and operated, are not sustainable from an environmental perspective; therefore a fundamental, systemic change to the current system is necessary, as the Legislature has explicitly recognized. Part of the solution is adding new conveyance in the north Delta to create a dual conveyance system.

B. Project Objectives

As set forth in Chapter 2 of the Final EIR/EIS, DWR’s fundamental purpose in proposing the Project is to make physical and operational improvements to the SWP system in the Delta necessary to restore and protect ecosystem health, water supplies of the SWP and CVP south of the Delta, and water quality within a stable regulatory framework, consistent with statutory and contractual obligations.

This fundamental purpose is informed by past efforts taken within the Delta and the watersheds of the Sacramento and San Joaquin Rivers, including those undertaken through the CALFED Bay-Delta Program and Delta Risk Management Strategy. The fundamental purpose, in turn, gives rise to the following project objectives.

- Address adverse effects to state and federally listed species related to:
 - The operation of existing SWP Delta facilities and construction and operation of facilities for the movement of water entering the Delta from the Sacramento Valley watershed to the existing SWP and CVP pumping plants located in the southern Delta.
 - The implementation of actions to improve SWP and/or CVP conveyance that have the potential to result in take of species that are listed under ESA and CESA.

- Improve the ecosystem of the Delta by reducing the adverse effects to certain listed species of diverting water by siting additional intakes of the SWP and coordinated operations with the CVP.
- Restore and protect the ability of the SWP and CVP to deliver up to full contract amounts, when hydrologic conditions result in the availability of sufficient water, consistent with the requirements of state and federal law and the terms and conditions of water delivery contracts and other existing applicable agreements.

In addition to the project objectives enumerated above, the project objectives listed below guided the development of the proposed project and alternatives.

- To meet the standards identified in the ESA and the California Fish & Game Code, including CESA or NCCPA, by, among other things, minimizing and fully mitigating the impacts of incidental take, and, if possible, protecting, restoring, and enhancing aquatic and terrestrial natural communities and ecosystems that support listed and sensitive species within the geographic scope of the proposed project.
- To make physical improvements to the conveyance system in anticipation of rising sea levels and other reasonably foreseeable consequences of climate change.
- To make physical improvements to the conveyance system that will minimize the potential for public health and safety impacts resulting from a major earthquake that causes breaching of Delta levees and the inundation of brackish water into the areas in which the SWP and CVP pumping plants operate in the southern Delta.
- To develop projects that restore and protect water supply and ecosystem health and reduce other stressors on the ecological functions of the Delta in a manner that creates a stable regulatory framework under the ESA and either CESA or NCCPA.
- To identify new operations and a new configuration for conveyance of water entering the Delta from the Sacramento River watershed to the existing SWP and CVP pumping plants in the southern Delta by considering conveyance options in the north Delta that can reliably deliver water at costs that are not so high as to preclude, and in amounts that are sufficient to support, the financing of the investments necessary to fund construction and operation of facilities and/or improvements.

C. Project Description⁷

Alternative 4A, known as The California WaterFix, became DWR's CEQA preferred alternative and Reclamation's preferred alternative under the National Environmental

⁷ This information is derived from Chapter 3 of the Final EIR/EIS.

Policy Act (NEPA) with the publication of the RDEIR/SDEIS. It is now the “Project” being approved by DWR. The Project involves the construction of new north Delta intake structures with state-of-the-art fish screens that, when coupled with dual conveyance, will increase water supply reliability and align water operations to better reflect natural seasonal flow patterns. These intakes will reduce the SWP’s and CVP’s ongoing reliance on existing diversion facilities located at the far southern part of the Delta, allow for greater operational flexibility to protect fish, and capture water during high flow events when pumping in the south Delta would otherwise be restricted. Alternative 4A also includes habitat restoration commensurate with CEQA’s mitigation requirements and the June 2017 USFWS and NMFS Biological Opinions.

California WaterFix is one element of Governor Brown’s California Water Action Plan, which seeks to bolster regional self-sufficiency in water supplies; reduce reliance on the Delta; recover native fish populations; and, overall, bring reliability, restoration, and resilience to California’s water supply systems. The California Water Action Plan includes long-term habitat restoration efforts specific to species recovery programs that will be pursued separate from the Project. Under a program called EcoRestore, for example, the state will separately pursue restoration of more than 30,000 acres of fish and wildlife habitat by 2020.

The California WaterFix contemplates the SWP and CVP operating in dual conveyance between the existing south Delta pumping facilities and the new diversion facilities in the North Delta, with a preference on North Delta diversions depending on water quality and fish habitat conditions. Under Alternative 4A, water would primarily be conveyed from the north Delta to the south Delta through pipelines/tunnels. Water would be diverted from the Sacramento River through three fish-screened intakes on the east bank of the Sacramento River between Clarksburg and Courtland. Water would travel from the fish-screened intakes through gravity collector box conduits extending through the levee to a sedimentation system, consisting of sedimentation basins to capture sand-sized sediment and drying lagoons for sediment drying and consolidation, a sedimentation afterbay providing the transition from the sedimentation basins to a shaft that will discharge into an initial single-bore tunnel, which would lead to an intermediate forebay on Glannvale Tract. From the southern end of this forebay, water would pass through an outlet structure into a dual-bore tunnel where it would flow by gravity to the south Delta. Water would then reach pumping plants northeast of the Clifton Court Forebay, where it would be pumped into the north cell of the expanded Clifton Court Forebay from the tunnels. The forebay would be dredged and redesigned to provide an area that would isolate “fish free” water flowing from the new north Delta facilities from water diverted from south Delta channels.

A map and a schematic diagram depicting the conveyance facilities associated with Alternative 4A are provided in Mapbook Figure M3-4 and Figure 3-10. A new pumping facility would be constructed northeast of the north cell of the expanded Clifton Court Forebay, along with control structures to regulate the relative quantities of water flowing

from the north Delta and the south Delta to the Banks and Jones Pumping Plants. Alternative 4A would entail the continued use of the SWP/CVP south Delta export facilities. (Final EIR/EIS, Chapter 3, p. 3-111 - 3-112.)

1. *Intake Perimeter Berm*

The intakes will be sited along the existing Sacramento River levee system, requiring levee modifications to facilitate intake construction and to provide continued flood management. At each intake pumping plant site, a new perimeter berm will be constructed on the landside (see Final EIR/EIS, Figure 3-20). The space enclosed by the perimeter berm will be filled up to the elevation of the top of the perimeter berm, creating a building pad for the adjacent pumping plant. The new perimeter berms will be designed to provide the same level of flood protection as the existing levee. Transition levees will be constructed to connect the existing levees to the new perimeter berms.

Each new perimeter berm will have a broad-based, generally asymmetrical triangular cross section. The berm height, as measured from the adjacent ground surface on the landside vertically up to the elevation of the berm crest, will range from approximately 20 to 45 feet to provide adequate freeboard above anticipated water surface elevations. The width of the perimeter berm (toe of berm to toe of berm) will range from approximately 180 to 360 feet. The minimum crest width of the berm will be 20 feet; however, in some places it will be larger in order to accommodate roadways and other features. Cut-off walls will be constructed to avoid seepage, and the minimum slope of levee walls will be three units horizontal to one unit vertical. All levee reconstruction will comply with applicable state and federal flood management engineering and permitting requirements.

The levee sections adjacent to intakes will be widened, and box conduits will be installed through the levee section to provide transition for flows between the intake structure and the sedimentation basins. The perimeter berm at these sites will surround the sedimentation basins, outlet shaft, and storage buildings, and will be designed to provide the same level of flood protection as the levee at each intake site. A slurry cutoff wall will also be constructed around the perimeter of the intake facility. This perimeter cutoff wall will tie into short sections of diaphragm wall within the widened levee crest and will maintain public flood protection during construction. It is anticipated that earthwork at each intake site will require approximately 1.4 million cubic yards of borrow material. The slurry wall materials will consist of a combination of sand, cement, native soil, and bentonite. This combination of materials will be used to avoid changing groundwater and surface water quality in the vicinity of the slurry walls. (Final EIR/EIS, Chapter 3, p. 3-121.)

2. *Intake Structure and Fish Screens*

Each intake structure will consist of a reinforced concrete structure subdivided into individual bays that can be isolated and individually managed. Water will be diverted from

the Sacramento River by gravity into the screened bays and routed from each bay through multiple parallel conveyance conduits to a receiving partitioned or channelized sedimentation basin. Each bay will be fitted at opposing faces with screen panels, flow control baffles, and provisions for bulkhead isolation. The bank of vertical stainless steel screen panels with stainless steel wire fabric will prevent impingement and entrainment of fry-sized salmonids and juvenile smelt. The series of self-contained flow control baffle assemblies will be located behind the screens, and will uniformly distribute approach velocities at the screen face. Log booms and/or deflector equipment will protect the intakes from debris and other floating objects.

From the river bottom to the top of the structure, the intake structures will be approximately 55 feet tall, with the top deck elevation aligning with the top of the adjacent levee to maintain flood protection and provide access. Depending on the height of the river at the intake location, the intake will rise above the typical river's surface by 20 to 30 feet.

The intakes will be sized to provide screen area, in accordance with federal and state standards, sufficient to prevent entrainment and impingement of salmonids and delta smelt. The intake sizes (length along the river at the face of the intake) will vary from approximately 700 to 2,500 feet. Each intake will have a maximum conveyance capacity of 3,000 cfs.

The intake facilities will use on-river vertical flat plate screens, which represent the best available technology for reducing entrainment and impingement risk to fish species. Each screened intake will consist of a reinforced concrete structure subdivided into six individual bays that can be isolated and managed separately. Water will be diverted from the Sacramento River by gravity into the screened intake bays and routed from each bay through multiple parallel conveyance box conduits to the sedimentation basins. Flow meters and flow control sluice gates will be located on each box conduit to assure limitations on approach velocities and that flow balancing between the three intake facilities is achieved. Although the diversions will be located outside of the main range for delta and longfin smelt, the fish screens will be designed to meet delta smelt criteria, which require 5 square feet/cfs and result in approach velocity less than or equal to 0.2 feet/s at an intake flow rate of 3,000 cfs. When coupled with equal or less sweeping velocities, delta smelt impingement and screen contact will be minimized. The delta smelt screening criteria are also protective of salmonids, for which the standards for Chinook salmon fry are 0.33 feet/s approach velocity.

Each of the intake facilities will vary slightly in terms of bathymetric conditions and design river levels. The fish screen sizes, like the individual intake sizes, will vary depending on intake location and will range from 10 to 22 feet in height and from 915 to 1,935 feet in length. Each screen would be as large as the largest fish screens in the Central Valley, such as those at facilities operated by the Glenn-Colusa Irrigation District (GCID), Tehama-Colusa Canal Authority (TCCA) and Freeport Regional Water Authority (FRWA).

Differences between the GCID and TCCA screens and those to be used for the intake locations include slower ambient flow conditions and weaker swimming fish species like delta smelt. The FRWA diversion uses flat plate screens with approach velocities suitable for delta smelt and has similar flow conditions. Because of changes in river flow and tidal influence (i.e. tidally-influenced flows), approach velocities will be maintained by a system of vertically and horizontally adjustable flow control baffles placed behind the screens.

Fish will be prevented from being drawn into the intakes by a fish screen system of screen panels at the lowest portion of the intake structure face, with solid panels stacked above the screens in guides that extend above the deck of the intake structure. The screen panels will be arranged in groups that provide enough area for the maximum possible diversion when added in multiples of six screen groups, with each of the groups being hydraulically independent. Fish screen design has not yet been finalized, and final design is subject to review and approval by the fish and wildlife agencies (i.e., USFWS, NMFS, and CDFW). As currently designed, the fish screens are a vertical flat plate profile bar type made of stainless steel, with an opening of 0.069 inches and porosity of 43 percent. Each individual screen bay group will have a dedicated screen cleaning system using large brushes supported by a monorail and driven by an electric motor and cable system that would clean the screens at a minimum of every five minutes. A log boom system will protect the screens and cleaning system from large river debris.

Due to the length of the screens and extended fish exposure to their influence (screens and cleaners), fish refugia areas will be incorporated into the screen design of the intakes. These areas will consist of small areas created within the columns between the fish screens that will provide small fish resting areas and protected cover from predators. Design concepts for fish refugia are still in their infancy and are usually site-specific, with designs recommended by the fish agencies. Two recent examples of the refugia design and installation process include the Red Bluff fish screen and Reclamation District 2035, on the Sacramento River just north of Sacramento. The Red Bluff fish screen design used a physical model study to assess hydraulic parameters such as velocity and turbulence in relation to behavior of juvenile Chinook salmon, white sturgeon, and rainbow trout. Bar spacing at the entrance to the refuge was selected based on fish size (to allow species for protection in, while excluding predators) and a final configuration was chosen to reduce velocity in the refuge while minimizing turbulence; a total of four fish refugia were constructed along 1,100 feet of screen. At the Reclamation District 2035 fish screen, an initial design included a single refuge pocket midway along the intake, which was subsequently modified to include two-foot-long refugia between each screen panel along the intake. This fish screen also included juvenile fish habitat elements into the upstream and downstream sheet pile training walls and the sloped soil areas above the training walls, with grating materials attached to the sheet pile walls to prevent predatory fish from holding in the corrugated areas by the walls and to another form of refuge for small fish.

These two examples serve to illustrate the site-specific design considerations that are necessary for construction of large intakes.

All fish screen bay groups will be separated by piers with appropriate guides to allow for easy installation and removal of screen and solid panels as well as the flow control baffle system and bulkheads; these features will be removable by gantry crane. Piers will support the operating deck set with a freeboard of 18 inches above the 200-year flood level with sea level rise. The levee in the immediate area will be raised to provide a freeboard of three feet above the 200-year flood level with sea level rise. Sheet pile training walls will have a radius of 200 feet and will be located upstream and downstream of the intake structures, providing improved river hydraulics and vehicular access to the operating deck as well as transitioning the intake structure to the levee. (Final EIR/EIS, Chapter 3, p. 3-122 – 3-124.)

3. *Sedimentation Basins and Solids Handling Facilities*

Although the intake fish screens will remove debris and sediment from the intake inflow, a sedimentation basin will be constructed between the intake structure and the pumping plant to remove the suspended solids that pass through the screen. Settled sediment in the sedimentation basin will be collected by solids collection equipment in the sedimentation basin and conveyed by positive displacement/progressive cavity pumps to up to three solids lagoons for further settling and disposal. Water will be conveyed from the solids lagoons by gravity to the inlet structure of the sedimentation basin.

The sedimentation basin will be approximately 120 feet long by 40 feet wide by 55 feet deep, and will have interior concrete walls to create separate sedimentation channels. The channels will divide the flow, and each channel will be capable of being independently isolated for maintenance. The structural system for the basins will consist of reinforced concrete walls and mat slab foundation supported on piles. The walls will be designed to retain external soil loads and contain internal hydrostatic and dynamic loads. The bottom of the basin will be at an elevation between -28.0 and -20.9 feet, and the top of the walls will be at the flood protection elevation.

The solids lagoons will be concrete lined to prevent seepage to the groundwater or adjacent riverbed, and will be approximately 10 feet deep with sloped sides with a top width of 86 feet and a top length of 165 feet. The solids lagoons will be approximately 15 feet deep and will have a bottom width of 200 feet and a bottom length of 400 feet. Up to three solids lagoons will be used in a rotating cycle with one basin filling, one settling, and the third being emptied of settled and dewatered solids. The volume of solids generated on a daily basis will depend on the volume of water pumped through the intakes, as well as on the sediment load within the river. It is anticipated that during most periods when five intakes are operating at about 3,000 cfs each, approximately 137,000 dry pounds of solids per day will be pumped to the solids lagoons. During periods of high sediment load in the Sacramento River, the daily mass of solids will be expected to increase up to 253,000 dry

pounds per day. The annual volume of solids is anticipated to be 486,000 cubic feet (dry solids basis).

Reinforced concrete collector box conduits will be constructed across the back wall of the fish screens at each intake and will funnel flow from the intake structure into the sedimentation basins. The sedimentation system at each intake will consist of a jetting system in the intake structure that will re-suspend accumulated sediments for transport to the intake collector box conduits; twin unlined, earthen sedimentation basins; and solids lagoons for drying and consolidating prior to disposal. The basins will be triangular in shape and will be approximately 250 to 677 feet wide (with the maximum width facing the intake channels), 660 feet long, and 25 feet deep (for normal settling depth and sediment storage depth). The bottom of the basin will be at an elevation between -28 and -23 feet and the deck surrounding basin will be three feet above the water surface elevation corresponding to a 200-year flood (inclusive of projected sea level rise). The basins will be divided by an earthen berm running the full length of the basin, with three fish screen bays connected by the box conduits serving each half of the overall sedimentation basin.

Four sediment drying lagoons will be constructed at each intake site. Each lagoon will be approximately 160 feet wide (at the bottom), 350 feet long, and 15 feet deep with sloped sides. The top of each lagoon will be level with the site and will be protected from the design (200-year) flood condition. Two drying lagoons will be available for each sedimentation basin allowing for a yearly rotation cycle with one drying lagoon filling and one settling and being dewatered through underdrains and a decant system.(Final EIR/EIS, Chapter 3, p. 3-124 – 3-125.)

4. Intakes, Pumping Plants, and Appurtenant Facilities

For Alternative 4A, the pumping facilities will not be constructed adjacent to the intake facilities; instead, they will be located at the northeastern corner of Clifton Court Forebay on a small DWR-owned island south of Kings Island. Here, the two main tunnels will terminate at the base of two pump plant shafts. These shafts will (1) provide for gravity flow when system hydraulics allow (via a separate spillway into Clifton Court Forebay), (2) provide for surge protection via the spillway, and (3) house the pumps and their controls. The two pumping plants will receive flow from the pump shafts and lift the water into Clifton Court Forebay, discharging water through pipes into a spillway basin within the northern section of forebay. Each pumping plant will have a design pumping capacity of 4,500 cfs and will include 4 large pumps (1,125 cfs capacity) and 2 smaller pumps (563 cfs capacity). The pumps will be vertical column discharge pumps, and one large pump at each plant will be a spare. Each pumping plant will be housed within a building and will have an associated electrical building. The pumping plant buildings will be circular structures with a diameter of 182 feet and each will be equipped with a bridge crane that will rotate around the building and allow for access to the main floor for pump removal and installation. The total site for the pumping plants, electrical buildings, substation, spillway,

access roads, water treatment plant, and construction staging areas is approximately 95 acres. The main floor of the pumping plants and appurtenant permanent facilities will be constructed at a minimum elevation of 25 feet to provide flood protection. The bottom of the pump shafts will be at an elevation of approximately -163 feet, though a concrete base slab, shaft lining, and diaphragm wall will be constructed to deeper levels (to an elevation of -275 feet). A control room within an electrical building at the pumping facility site will be responsible for controlling and monitoring the communication between the intake structures, pumping plants, and the Delta Field Division Operations and Maintenance Center, DWR Headquarters, and the Joint Operations Center. (Final EIR/EIS, Chapter 3, p. 3-126 – 3-127.)

5. *Water Conveyance Operational Components*

The water conveyance operational components of the Project were developed with the goals of improving aquatic habitat conditions and continuing SWP and CVP Delta exports in accordance with the concepts described below:

- Provisions to limit diversions at north Delta intakes to periods when Sacramento River flows will provide fish screen sweeping velocities⁸ that comply with NMFS and USFWS protective criteria for salmonids and delta smelt;
- Operational objectives for SWP and CVP south Delta export facilities, including seasonal export limits to minimize Old and Middle River (OMR) reverse flows that appear to be related to fish salvage rates at SWP and CVP south Delta export facilities, while reducing hydraulic residence times through the Delta and improving south Delta water quality in summer months;
- Provisions to protect downstream habitat with bypass flow requirements that reflect historical hydrologic conditions;
- Seasonally adjusted Delta inflow and outflow to improve estuarine habitat;
- Operational criteria for Delta Cross Channel gates to improve fish migration, hydraulic residence time, and food and organic material transport through the Delta while maintaining adequate water quality of SWP and CVP exports;
- Provisions for fish movement in the Sacramento River using bypass flow rules prior to diversion;
- Operational criteria to maintain sufficient Sacramento River flows at Rio Vista to minimize impacts on aquatic habitat conditions; and

⁸ Sweeping velocity is the flow velocity component parallel to the fish screen face.

- Maintenance of water quality for in-Delta agricultural, municipal, and industrial water quality requirements.

6. Operational Scenario H

Operational components of the water conveyance facilities under Alternative 4A will be similar, but not identical, to those described under Scenario H, as applied to Alternative 4 in Chapter 3, Section 3.6.4.2 of the Final EIR/EIS. Prior to operation of Alternative 4A, specific initial operating criteria will be determined through the continued adaptive management process as outlined in the ESA Section 7 consultation process and CESA 2081(b) permit prior to the start of construction. Appendix 5E, *Supplemental Modeling Requested by the State Water Resources Control Board Related to Increased Delta Outflows*, and Appendix 5F, *Comparison of FEIRS Alternative 2D, 4A, and 5A Modeling Results to RDEIR/SDEIS Modeling Results*, present a range of operational scenarios to depict potential operations that are expected to be approved during subsequent environmental permitting. An adaptive management program, which includes a monitoring and reporting program, as described below, will be implemented to develop additional science during the course of project construction and operation to inform and improve conveyance facility operations. Operating criteria applicable to the California WaterFix that are in addition to the criteria that govern CVP and SWP operations without the California WaterFix will only take effect once the North Delta Diversion facilities become operational. In addition, re-initiation of consultation on initial operations may occur prior to completion of construction which may include changes to the initial operating criteria in light of the best available science and adaptive management program.

Implementation of the Project will include dual conveyance operations, utilizing both new and existing water conveyance facilities once the new North Delta Diversion facilities are completed and become operational. Operations for south Delta export facilities as described in the Final EIR/EIS and supplemented by the revisions in the Biological Assessment, will supplement the south Delta operational limits currently implemented with the 2008 USFWS and 2009 NMFS BiOps. The SWP/CVP will continue to operate pursuant to the 2008 USFWS and 2009 NMFS BiOps, unless they are replaced, until the new facilities are constructed. In a separate process, Reclamation in coordination with DWR has reinitiated consultation for the Long Term Operations of the CVP and SWP. This process is expected to consider the provisions in the 2017 California WaterFix BiOps and may result in new BiOps that incorporate the 2017 California WaterFix BiOps and replace the 2008/2009 BiOps. Once the California WaterFix facilities are operational, the 2017 biological opinions for the Project (separate or in conjunction with the BiOps produced by reinitiation of consultation for the Long Term Operations for the CVP and SWP) will replace and supersede the 2008 USFWS and 2009 NMFS BiOps for in-Delta operations of the CVP and SWP. The 2017 California WaterFix BiOps include both new operational provisions and operational provisions that will remain in effect unmodified. As such, once the new facilities in the North Delta are operational, CVP and SWP operations that are not

described will continue to operate pursuant to the 2008 USFWS and 2009 NMFS BiOps (or to the BiOps produced by reinitiation of consultation for the Long Term Operations for the CVP and SWP).

The operational range presented for the Project also incorporates existing criteria from the 2008 USFWS and 2009 NMFS BiOps (including Fall X2), and adds additional criteria for spring outflow. The north Delta diversions and the head of Old River barrier will be new facilities for the CVP and SWP and will be operated consistent with the operating criteria for these facilities. All other criteria included in the 2008 USFWS and 2009 NMFS BiOps and SWRCB Decision 1641 (D-1641) will continue to apply, subject to adjustments made pursuant to ongoing adaptive management or to other ongoing processes. The following facilities will involve possible modified or new operational criteria:

- North Delta intakes;
- South Delta export facilities (including export rates and OMR flows);
- Head of Old River barrier;
- Delta Cross Channel gate;
- Suisun Marsh facilities; and
- North Bay Aqueduct intake.

New criteria, not associated with any facility, include spring outflow criteria. The purpose of the spring outflow criteria is to maintain spring outflows consistent with the current 2008 USFWS and 2009 NMFS BiOps.

Unlike Alternative 4, the California WaterFix (Alternative 4A) does not include operational elements associated with Fremont Weir modifications, because the Project does not include the Yolo Bypass improvements contemplated in Conservation Measure 2 from the proposed BDCP. These improvements will occur independently of the Project.

The Project operations include a preference for south Delta pumping in July through September to provide limited flushing for improving general water quality conditions and reduced aquatic species residence times. (Final EIR/EIS, Chapter 3, p. 3-261 – 3-263.)

7. *Adaptive Management and Monitoring*

Considerable scientific uncertainty exists regarding the Delta ecosystem, including the effects of CVP and SWP operations and the related operational criteria. To address this uncertainty, DWR, Reclamation, CDFW, USFWS, and NMFS are committing to adaptively managing the ongoing operation of the CVP and SWP and future implementation and operation of the California WaterFix in conjunction with those ongoing operations. Specifically, collaborative science and adaptive management will, as appropriate, develop and use new information and insight gained during the course of Project construction and operation to fulfill five primary objectives:

1. Inform and improve on:
 - the design of fish facilities including the intake fish screens;
 - the operation of the water conveyance facilities under the Section 7 biological opinion and 2081(b) permit; and
 - habitat restoration and other mitigation measures conducted under the June 2017 biological opinions and 2081(b) permit.
2. Ensure the ongoing SWP/CVP operations and the construction and operation of the California WaterFix are implemented in a way that reflects the current state of scientific understanding and meets the requirements of ESA Section 7 and CESA.
3. Maintain and improve water supply reliability, to the extent possible.
4. Communicate (provide transparency) to the broader community of state, federal and local agencies, the public, universities, scientific investigators, public water agencies and nongovernment stakeholders how existing operations will be assessed, how new scientific investigations will be prioritized, and carried out, and how the results of those investigations will be integrated into adaptive management decisions.
5. Build on and support existing efforts of the Interagency Ecological Program, Collaborative Science and Adaptive Management Program, Delta Stewardship Council/Delta Science Program, and other relevant individual agency science initiatives.

In summary, the broad purposes of the program will be to: (1) undertake collaborative science, (2) guide the development and implementation of scientific investigations and monitoring for both permit compliance and adaptive management, and (3) apply new information and insights to management decisions and actions. (Final EIR/EIS, Chapter 3, p. 3-281 – 3-282).

D. Environmental Review Process: Getting to Alternative 4A

A Delta transfer facility, in one form or another, has been proposed, studied, and debated for decades. The current inter-agency, public process that led to the formulation of the California WaterFix began in 2006. During the time period since then, the BDCP and later the California WaterFix have been developed based on sound science, data gathered from various agencies and experts, input from agencies, stakeholders, and independent scientists, and more than 600 public meetings, working group meetings, and stakeholder briefings. All of the documents, studies, administrative drafts, and meeting materials– more than 3,000 documents – have been posted online since 2010 in an unprecedented commitment to public access and government transparency.

The BDCP planning process was guided by a Steering Committee consisting of representatives from eight state and federal agencies (Reclamation, CDFW, DWR, California Natural Resources Agency (CNRA), NMFS [ex officio], State Water Board [ex officio], the United States Army Corps of Engineers (USACE) [ex officio], and USFWS [ex officio]), as well as six public water agencies, six environmental non-governmental organizations, and five other regional member agencies.

Between April 2008 and March 2009, the lead agencies conducted a total of 22 scoping meetings throughout California. During the 2008 scoping process, 123 letters, emails, and comment cards were submitted. Transcripts from the 2008 scoping process included comments from 94 commenters. During the 2009 scoping process, 182 letters, emails, and comment cards were submitted. During five of the meetings, 84 comments were recorded. Based on all of this input, there were a total of 2,950 separate comments identified.

As a result of the suggestions offered during this scoping process, as well as input on conveyance alignment alternatives identified in the Steering Committee process, 15 water conveyance alternatives were developed. In November 2010, a working draft of the BDCP was released to the public. It reflected public scoping input insofar as it proposed underground tunnels instead of surface canals, as had previously been contemplated. In February 2012, the second administrative draft BDCP and the first administrative draft of the EIR/EIS were released to the public. In May 2013, the “Consultant Administrative Draft EIR/EIS,” which reflected public input on the first administrative draft EIR/EIS, was circulated for additional public input. Prior to the December 2013 release of the public review Draft BDCP and Draft EIR/EIS, the proposed project was significantly revised in response to stakeholder involvement and engineering optimization efforts.

Although the BDCP process began before the enactment of the Delta Reform Act of 2009, the passage of that landmark legislation had breathed additional intensity into the effort to move forward with the proposed BDCP. That landmark legislation, mentioned earlier, (i) recognized the importance of the Delta as “the hub of the California water system,” (ii) proclaimed the Legislature’s intention “to provide for a more reliable water supply for the state,” and (iii) expressly anticipated “new and improved infrastructure relating to the water conveyance in the Delta[.]” (California Water Code, §§ 85002, 85304.) As of 2009, the Legislature was aware of the then-proposed BDCP, and created a specific chapter within the Act to deal with it. (See Chapter 2 [Bay Delta Conservation Plan] within Part 4 [Comprehensive Delta Planning] of the Act [Division 35 of the Water Code], Water Code, §§ 85320-85322.)

In fashioning the range of alternatives to be included for full analysis in the Draft EIR/EIS, DWR and Reclamation⁹ were very conscious of the requirements of a key provision within

⁹ For the Draft EIR/EIS, USFWS and NMFS were also lead agencies for NEPA compliance purposes because of their permitting role under Section 10 of the ESA. These lead agencies were active participants in all aspects of the development of the Draft EIR/EIS including the development of the appropriate alternatives for inclusion in the Draft EIR/EIS.

the Act, Water Code section 85320, subdivision (b)(2). That statute sets forth a roadmap by which the BDCP, as eventually approved after thorough environmental review, might ultimately be incorporated by operation of law into the then-anticipated “Delta Plan.” That new regulatory document – the Delta Plan – was to be prepared and enforced by a newly authorized entity called the Delta Stewardship Council (DSC). To obtain such automatic incorporation into the future Delta Plan, the BDCP would have to be subject to an EIR meeting certain very detailed requirements, and would have to meet both the state statutory requirements for a “natural community conservation plan” (NCCP) and the federal statutory requirements for a “habitat conservation plan” (HCP). Whether the requirements for NCCPs and HCPs had been met would be determined by the Department of Fish and Game (now the Department of Fish and Wildlife), subject to the possibility of an administrative appeal to the DSC. (California Water Code, § 85320, subsds. (b), (e).)

Subdivision (b)(2) of section 85320 envisioned an alternatives-focused EIR addressing a wide range of potential approaches to all of the following: new conveyance options, rates of diversion, flow criteria, and other operational criteria. Conveyance options were to include “through-Delta, dual conveyance, and isolated conveyance alternatives and including further capacity and design options of a lined canal, an unlined canal, and pipelines.” (*Id.*, subd. (b)(2)(A), (b)(2)(B).) Implicit in the sheer breadth of this continuum of possible choices was the notion that the consideration of so many different options would foster informed public debate and commentary and, ultimately, a more environmentally sensitive and informed decision on the substance of the final BDCP. The required range of alternatives seems intended to allow the public and agency decisionmakers to examine the inevitable environmental and other tradeoffs associated with differing approaches to trying to strike the best balance in furthering the State’s coequal goals of “providing a more reliable water supply for California and protecting, restoring, and enhancing the Delta ecosystem.” (California Public Resources Code, § 29702, subd. (a); California Water Code, § 85054.)

Such tradeoffs are inescapable with respect to the joint operation of the CVP and SWP, which were constructed during past eras in which environmental considerations were given less weight than they receive today. At the helms of systems built decades ago, operators today face challenges such as (i) maintaining a large pool of cold water in Shasta Reservoir to facilitate the spawning below Shasta Dam of salmonids that evolved in cold-water tributaries; (ii) releasing water from reservoir storage in order to maintain minimum instream flows for aquatic species; (iii) releasing water from storage to increase Delta outflow for the benefit of delta smelt; (iv) releasing water from storage in order to maintain, or contribute to the maintenance of, water quality standards in various waterways and the Delta; (v) providing guaranteed minimum flows for various other environmental purposes, including providing export water to wildlife refuges south of the Delta; (v) releasing stored water to make room for spring runoff inflows for flood protection; and (vi) providing reliable water supplies to state and federal water contractors

in, among other places, the Bay Area, the San Joaquin Valley, and Southern California, for the maintenance of economic activities and the health and safety needs of the water customers in those areas. A single state water contractor -- the Metropolitan Water District -- provides water from its Colorado River Aqueduct and the State Water Project on a wholesale basis to areas supporting a majority of the State's population and key job centers. Another state and federal contractor -- the Santa Clara Valley Water District -- serves important geographic areas within the South Bay region commonly known as Silicon Valley. Various state and federal contractors make enormous contributions to the State's world-class agricultural economy. Perhaps more than anyone else in California, SWP/CVP operators face tremendous challenges meeting competing environmental, flood control, water supply, and water quality, and health and human safety requirements. Looming over the whole system is the need to always stay in compliance with the federal and state endangered species acts and applicable water quality requirements.

The range of alternatives set forth in section 85320 seems intended to allow decisionmakers to assess the tradeoffs associated with higher or lower exports and higher or lower instream flows and Delta outflows. Management actions serving one environmental purpose (e.g., providing substantial minimum instream flows and Delta outflows) might be in tension with other system obligations (e.g., cold water pool maintenance or meeting contractual obligations to state and federal water contractors). The required approach under section 85320 far exceeded what is normally required in an EIR under CEQA, namely, a clearly defined "proposed project" and a few alternatives considered at a considerably diminished level of detail.

Section 85320 also directed that the EIR for the proposed BDCP vigorously confront some of the most difficult environmental challenges facing the Delta:

- The potential effects of climate change, possible sea level rise up to 55 inches, and possible changes in total precipitation and runoff patterns on the conveyance alternatives and habitat restoration activities considered in the environmental impact report.
- The potential effects on migratory fish and aquatic resources.
- The potential effects on Sacramento River and San Joaquin River flood management.
- The resilience and recovery of Delta conveyance alternatives in the event of catastrophic loss caused by earthquake or flood or other natural disaster.
- The potential effects of each Delta conveyance alternative on Delta water quality.

The Draft EIR/EIS was developed with the intention of fully satisfying the content requirements set forth in section 85320. (See Final EIR/EIS, Appendix 3A, *Identification of Water Conveyance Alternatives Conservation Measure 1*, pp. 3A-20 – 3A-25.) The Draft

EIR/EIS includes 15 action alternatives and a lengthy appendix describing the long history behind the proposed project and the various other potential alternatives that were carefully considered but ultimately not put forward for detailed analysis. (See Final EIR/EIS, Appendix 3A.) The proposed BDCP itself, as well as other alternatives, would have been an HCP/NCCP with a 50-year permit term. It assumed vast amounts of habitat restorations occurring over several decades. Language from that appendix described in general CEQA and NEPA terms a recognized approach to formulating and analyzing project alternatives. It happens to also well describe the approach embodied in section 85320:

When there are a very large number of potential alternatives, a reasonable number of alternatives covering the full spectrum of reasonable alternatives can be identified for detailed analyses in the NEPA document. *** [S]uch an approach creates what in common practice are known as analytical “bookends,” referring to a range of decision-making options (alternatives) consisting of a continuum of choices. In general, alternatives with comparatively low levels of environmental impact occupy one end of the continuum or range, while alternatives with comparatively higher levels of impact occupy the other end, though in practice even alternatives with minimal impacts in one environmental category might have relatively severe impacts in other categories, while the alternatives ostensibly on the high impact end of the continuum might be comparatively benign with respect to certain environmental categories. Where specific policy options within the continuum consist of reasonable mid-points between the low bookend and the high bookend, agency decision makers retain discretion to ultimately choose to approve an alternative anywhere within the continuum, provided that the information developed for the various bookends and the mid-points suffices to address the actual projected impacts of the precise option chosen. As with CEQA, the creation of “hybrid” options similar, if not identical, to fully developed alternatives is also permissible.

(Draft EIR/EIS, App. 3A, pp. 3A-14 – 3A-15; Final EIR/EIS, App. 3A, p. 3A-15.)

Starting on December 13, 2013, the formal Draft EIR/EIS was circulated for public review for a 228-day comment period that closed on July 29, 2014. At the time, the CEQA preferred alternative was Alternative 4 (the proposed BDCP), which proposed three new fish-screened intake structures on the east bank of the Sacramento River between Clarksburg and Courtland, as well as two underground tunnels sending diverted water to an expanded Clifton Court Forebay near the existing south Delta pumps. This proposal, as well as most of the alternatives described in the Draft EIR/EIS, was an HCP/NCCP. It included “conservation measures” (CMs) contemplating 65,000 acres of restored tidal perennial aquatic, tidal mudflat, tidal freshwater emergent wetland, and tidal brackish emergent

wetland natural communities, as well as large amounts of additional lands devoted to other habitat types.

In January and February 2014, the lead agencies conducted 12 public meetings throughout California to take comments on the Draft EIR/EIS. During the 228-day public review period on the Draft EIR/EIS, 2,018 non-form comment letters were received. Of those letters, 51 were received from elected officials, 85 were received from governments or public agencies, 455 were received from non-governmental organizations, and 1,522 were received from the general public (because some letters were signed by more than one entity, these numbers total more than 2,018). Transcripts from the 2014 public meetings included oral comments from 104 commenters. Based on all of this input, there were a total of 18,532 separate comments identified.

In July 2015, DWR and Reclamation, as state and federal lead agencies under CEQA and NEPA, respectively, released their Partially Recirculated Draft EIR/Supplemental Draft EIS (RDEIR/SDEIS). A new alternative, Alternative 4A, also referred to as California WaterFix, was introduced in that document, replacing Alternative 4 as the CEQA proposed project. Alternative 4A also became the NEPA Preferred Alternative, a designation that had not been attached to any of the alternatives presented in the Draft EIR/EIS.

This shift to a new recommended approach was made in response to public and agency input on the Draft EIR/EIS and the proposed BDCP. Many comments on those two documents included concrete suggestions regarding how, from the commenters' perspectives, the proposed project (i.e., Alternative 4, the BDCP) could be improved. For example, commenters suggested that DWR should pursue a permit term shorter than 50 years due to the levels of uncertainty regarding both the future effects of climate change and the long-term effectiveness of habitat restoration in recovering fish populations. Other comments suggested that the proposed conveyance facilities should be separated from the very ambitious habitat restoration components of the BDCP, with the latter to be pursued separately. Still other comments urged the lead agencies to reduce the level and scope of the construction activities, as well as the sheer size of the proposed facilities, as means of reducing air quality and noise impacts. Other commenters noted that Alternative 4 as then envisioned included substantial amounts of construction activity within Staten Island, which is prime habitat for the greater sandhill crane. Many commenters argued that, because the proposed project would lead to significant, unavoidable water quality effects, DWR could not obtain various approvals needed for the project to succeed (e.g., approval by the State Water Resources Control Board of new points of diversion for north Delta intakes).

Consistent with this public input, the lead agencies fashioned Alternative 4A, as well as two other new sub-alternatives (2D and 5A), to seek incidental take authorization for a period of less than 50 years, and to include only limited amounts of habitat restoration to satisfy CEQA mitigation requirements. Among the key changes to Alternative 4, also reflected in Alternative 4A, were (1) the elimination of three pumping plants associated with new intake facilities; (2) associated reductions in construction-related air pollutant emissions at

intake sites; (3) substantial reductions in the amount of construction occurring on Staten Island; (4) reductions in water quality effects; and (5) the relocation of key project features from private property to public property already owned by DWR.

The three new sub-alternatives (4A, 2D, and 5A) embodied a different implementation strategy that would not involve a 50-year HCP/NCCP approved under ESA Section 10 and the NCCPA, but rather would achieve incidental take authorization under ESA Section 7 and CESA Section 2081(b), assuming a much shorter project implementation period. These new sub-alternatives address the reverse flow problem by focusing on the construction and operation of new north Delta intakes and on habitat restoration commensurate with the footprint of these new facilities. Additionally, these three sub-alternatives were developed to meet the original purpose and objectives as first envisioned by the BDCP and other action alternatives. This alternative implementation strategy would allow for other state and federal programs to address more extensive long-term habitat restoration efforts for species recovery in programs separate from the proposed project. Such separate programs include the State's California EcoRestore program, which includes some actions required by the 2008 and 2009 USFWS and NMFS BiOps for the joint operation of the CVP and SWP, such as Yolo Bypass improvements and habitat enhancements and 8,000 acres of tidal habitat restoration. Other related actions are also identified in the Brown Administration's 2014 California Water Action Plan.

The new preferred alternative (4A) and the two other new sub-alternatives (2D and 5A) were added to the analytical framework built with section 85320. The three new options facing DWR and other agencies represented new attempts to feasibly achieve the goals and objectives, and to strike the right balance in furthering the coequal goals within a rigorous framework of state and federal environmental laws such as the Endangered Species Act, the Clean Water Act, the California Endangered Species Act, the Porter-Cologne Water Quality Control Act, and decades of water rights decisions and water quality control planning obligations.

Public meetings on the RDEIR/SDEIS were conducted during 2015 in Sacramento and Walnut Grove. Interested parties were encouraged to attend the public meetings to provide comments on the document. During the 112-day public review period on the RDEIR/SDEIS, 6,349 non-form comment letters were received. Of those letters, 36 were received from elected officials, 117 were received from governments or public agencies, 464 were received from non-governmental organizations, and 5,920 were received from the general public. (Because some letters were signed by more than one entity, these numbers total more than 6,349.) Transcripts from the 2015 public meetings included comments from 81 commenters. Based on all of this input, there were a total of 12,492 separate comments identified.

Ongoing agency consultation and coordination activities continued during preparation of the final environmental documents for the BDCP/California WaterFix. The lead agencies continued to proactively engage interested agencies throughout the NEPA, CEQA, and

project permitting processes, including access to informative websites and social media updates.

In order to achieve compliance with all applicable federal and state laws, the lead agencies have engaged in consultation or coordination with respect to these and other laws: Clean Water Act, Federal Endangered Species Act, Fish and Wildlife Coordination Act, Magnuson-Stevens Fishery Conservation and Management Act, Rivers and Harbors Act, National Historic Preservation Act, Native American Consultation, Executive Order on Environmental Justice (EO 12898), Natural Community Conservation Planning Act, California Endangered Species Act, and Porter-Cologne Water Quality Control Act.

Following completion of the RDEIR/SDEIS public review period, DWR and Reclamation prepared a proposed Final EIR/EIS, which was made available in December 2016. The timing associated with preparation and publication of the Final EIR/EIS was dependent on the volume and nature of the comments received on the Draft EIR/EIS and RDEIR/SDEIS, responses to which are included in Volume II of the Final EIR/EIS.

In publishing the proposed Final EIR/EIS, DWR and Reclamation allowed interested agencies, organizations, and members of the public a period of 30 days in which to submit additional comments. Although this 30-day “cooling off” period is required by NEPA, no such requirement exists in CEQA. From DWR’s standpoint, then, this was what the California Supreme Court has called an “optional” comment period provided pursuant to CEQA Guidelines section 15089, subdivision (b). (See *Center for Biological Diversity v. California Department of Fish & Wildlife* (2015) 62 Cal.4th 204, 239.)

Because DWR and Reclamation received substantial numbers of comments on the proposed Final EIR/EIS, DWR chose to take the time necessary to carefully consider the new input and to prepare additional material for the ultimate, complete Final EIR to be certified by DWR. Such an approach finds clear legal authority in CEQA case law. (See *Beverly Hills Unified School District v. Los Angeles County Metropolitan Transportation Authority* (2015) 241 Cal.App.4th 627, 664-666 [describes process whereby a lead agency prepared an addendum to a final EIR after publicly releasing a proposed final EIR].) During the time period in which DWR was preparing such additional material, DWR continued to receive unsolicited input from interested parties, despite the absence of any legally-mandated or optional public comment periods during this time frame. While such work was underway, DWR also received Biological Opinions from both USFWS and NMFS, which were issued in final form on June 23, 2017, and June 16, 2017, respectively. DWR has carefully considered whether any of the new requirements from these BiOps would trigger recirculation under CEQA, and answered that question in the negative. As certified, then, the July 2017 Final EIR fully reflects the requirements imposed on DWR by both USFWS and NMFS. Although, as of the date of certification, DWR had not yet received final incidental take authorization from CDFW pursuant to CESA, DWR has received draft portions of the 2081(b) ITP from CDFW and therefore had a very good sense of what sorts

of limitations CDFW was likely to impose. As a responsible agency, CDFW could not take formal action until DWR, as lead agency, certified the Final EIR for CDFW's use.

As the preceding historical discussion demonstrates, the California WaterFix project, as it stands, is a product of over a decade of expert design and analysis, and based on these analyses, represents the best available plan for a sustainable Delta. It also reflects compliance with the stringent requirements of the Endangered Species Act, as well as CEQA and other state and federal environmental laws. DWR also believes that the proposed conveyance facilities and habitat restoration support the goals of the 2009 Delta Reform Act, including the coequal goals of ecosystem restoration and water supply reliability.

PART II: Project Specific Findings on the California WaterFix Environmental Impacts

Within each of the resource area chapters, the Final EIR/EIS lays out the significant environmental impacts of the Project. Each such environmental impact has its ultimate CEQA determination, that is, whether it would be significant and unavoidable or could be mitigated to a less than significant level through the implementation of proposed mitigation. Attached to this document as Exhibit A are two Findings Tables. Table 1 identifies significant and unavoidable impacts. Table 2 identifies significant impacts that can be rendered less than significant with mitigation. Within the tables, the verb "substantially lessen" is understood to mean "mitigate, but *not* to a less than significant level, while the verb "avoid" is understood to mean "mitigated to a less than significant level." These tables do not attempt to describe the full analysis of each environmental impact contained in the Final EIS/EIR. Rather, such full analysis can be found within the Final EIR/EIS, which, as noted earlier, is incorporated by reference herein. In making these findings, the Acting Director of DWR ratifies, adopts, and incorporates into these findings the analysis and explanation in the Final EIR/EIS, and ratifies, adopts, and incorporates in these findings the determinations and conclusions of those documents relating to environmental impacts and mitigation measures, except to the extent any such determinations and conclusions are specifically and expressly modified by Exhibit A to these Findings.

As noted above, all of the mitigation measures proposed in the Final EIR/EIS have been adopted and incorporated into the enforceable Mitigation Monitoring and Reporting Program (MMRP) for the Project. (See Public Resources Code, § 21081.6, subds. (a)(1) and (b).) So too have the both the generic and project-specific Environmental Commitments (ECs), and Avoidance and Minimization Measures (AMMs) set forth in Appendix 3B to the Final EIR/EIS. No mitigation measures identified in the Final EIR/EIS have been rejected as infeasible as is permitted under CEQA Guidelines section 15091, subdivision (c)(3).

A. Potentially Significant and Unavoidable Impacts

Mitigation measures are identified for most of the significant unavoidable impacts, but the measures are not sufficient to reduce the impacts to less than significant levels. For other significant unavoidable impacts, there is no feasible mitigation available at all. Certain other impacts are considered to be significant and unavoidable even though full implementation of recommended mitigation measures by other agencies or in cooperation with the lead agencies would reduce the impacts to less than significant levels. This conservative characterization reflects the fact that several of these mitigation measures cannot be implemented by DWR by itself, but will be dependent on the reasonable cooperation of other agencies. As explained in the Final EIR/EIS, if such cooperation is forthcoming and DWR can work successfully with the other agencies in question (e.g., by reaching written agreements where necessary), the impacts will ultimately be less than significant under CEQA. Alternatively, where the Project's impacts will have an incremental contribution to larger significant cumulative impacts, the mitigation will constitute the Project's "fair share" contribution to mitigation schemes addressing these larger cumulative impacts.

Within Exhibit A to this document, Table 1 includes (1) all potentially significant and unavoidable impacts associated with Alternative 4A (the California WaterFix), (2) adopted feasible mitigation measures, if available, intended to reduce the severity of such impacts, (3) characterization of significance of the impact after the adoption of appropriate mitigation measures, if any, and (4) explanations of the nature of the impacts and the effectiveness of mitigation measures.

Even though the impacts in Table 1 will remain significant and unavoidable, DWR has determined to approve the Project. CEQA provides that, where a proposed project would cause significant environmental impacts that cannot be avoided or substantially lessened, a public agency's decisionmaker, after adopting proper findings, may nevertheless approve the project if the decisionmaker first adopts a statement of overriding considerations. This latter document must set forth the specific reasons why the agency decisionmaker finds the project's benefits to outweigh its significant unavoidable environmental impacts. The statement of overriding considerations for the Project is included in these Findings under Part IV, below.

B. Potentially Significant Impacts Reduced to Less than Significant

As noted above, Table 2 within Exhibit A identifies significant impacts that can be reduced to less than significant levels through the adoption and implementation of feasible mitigation measures. Table 2 includes: (1) all potentially significant impacts associated with Alternative 4A (the California WaterFix), (2) adopted mitigation measures intended to reduce the severity of such impacts, (3) characterization of less than significance of the

impact after the adoption of mitigation measures, and (4) explanations of the nature of the impacts and the effectiveness of mitigation measures.

PART III: Findings Regarding Alternatives to the Proposed Project

A. Basis for Alternatives-Feasibility Analysis

California Public Resources Code section 21002 provides that “public agencies should not approve projects as proposed if there are feasible alternatives or feasible mitigation measures available which would substantially lessen the significant environmental effects of such projects[.]” Where a lead agency has determined that, even after the adoption of all feasible mitigation measures, a project as proposed will still cause one or more significant environmental effects that cannot be substantially lessened or avoided, the agency, prior to approving the project as mitigated, must first determine whether, with respect to such impacts, there remain any project alternatives that are both (1) environmentally superior with respect to such significant, unavoidable effects and (2) feasible within the meaning of CEQA.

Under CEQA Guidelines section 15126.6, the alternatives to be discussed in detail in an EIR should be able to “feasibly attain most of the basic objectives of the project[.]” For this reason, the project objectives described earlier in these Findings provided part of the policy framework by which DWR and its sister federal lead agencies developed the alternatives analyzed in the EIR/EIS. In analyzing such alternatives in detail in both the Draft EIR/EIS and later the RDEIR/SDEIS, the lead agencies took these objectives into account, while at the same time focusing on means of substantially lessening or avoiding significant environmental effects as required under CEQA. Based on this approach, the lead agencies developed, and addressed in detail, 18 action alternatives and a No Project Alternative.

Although an EIR must evaluate a reasonable range of *potentially* feasible alternatives¹⁰, the lead agency decisionmaker ultimately determines whether such alternatives are *actually* feasible. (See *California Native Plant Society v. City of Santa Cruz* (2009) 177 Cal.App.4th 957, 981, 999 (CNPS).) “Feasible” is defined in CEQA as “capable of being accomplished in a successful manner within a reasonable period of time, taking into account economic, environmental, social, and technological factors.” (Pub. Resources Code, § 21061.1; CEQA Guidelines, § 15364.) As courts have noted, “the feasibility of alternatives must be evaluated within the context of the proposed project.” (See *SPRAWLDEF v. San Francisco Bay Conservation and Development Commission* (2014) 226 Cal.App.4th 905, 918.)

¹⁰ An EIR need not study in detail an alternative that is infeasible or that the lead agency has reasonably determined cannot achieve the project's underlying fundamental purpose. (*In re Bay-Delta etc.* (2008) 43 Cal.4th 1143, 1165.)

The determination of whether an alternative is actually feasible may be based on several grounds. One ground by which decisionmakers may reject an alternative as infeasible is that the alternative is inconsistent with project objectives, or does not fully meet such objectives. (See *id.* at p. 1001 [“an alternative ‘may be found infeasible on the ground it is inconsistent with the project objectives as long as the finding is supported by substantial evidence in the record’”]; see also *Save Panoche Valley v. San Benito County* (2013) 217 Cal.App.4th 503, 521-523; and *Citizens for Open Government v. City of Lodi* (2012) 205 Cal.App.4th 296, 314-315.) Similarly, a decisionmaker may reject an alternative as infeasible if the decisionmaker concludes, after a “reasonable balancing of the relevant economic, environmental, social, legal, and technological factors,” that the alternative is undesirable from a policy standpoint. (*City of Del Mar v. City of San Diego* (1982) 133 Cal.App.3d 410, 417 (*City of Del Mar*); *CNPS, supra*, 177 Cal.App.4th at p. 1001; *San Diego Citizenry Group v. County of San Diego* (2013) 219 Cal.App.4th 1, 17-18.) Thus, under these principles, even if a project alternative would avoid or substantially lessen any or all of the unavoidable significant environmental effects of a proposed project as mitigated, the decisionmakers may nevertheless reject the alternative for such reasons.

B. Alternatives Addressed in EIR

The 18 action alternatives analyzed in the EIR/EIS differ in the location, design, and operation of conveyance facilities and improvements. With the exception of the CEQA No Project Alternative, which also functions as the NEPA No Action Alternative, each of the alternatives selected for detailed evaluation in the EIR/EIS involves some level of construction of conveyance facilities/improvements to the system for diverting water to the existing SWP and CVP south Delta export facilities. The 50-year HCP/NCCP Alternatives also include habitat restoration components (referred to in the EIR/EIS as Conservation Measures (CM) 2-22) with the extent of habitat restoration varying between the alternatives. CM 2-22 are not included in the ESA Section 7/ CESA Section 2081 (non-HCP) Alternatives, and habitat restoration is included in those alternatives only to the extent necessary to mitigate the environmental impacts of the alternative. The following alternatives, as described in detail in Final EIR/EIS Chapter 3 (*Description of Alternatives*), were carried forward for detailed analysis in the Draft EIR/EIS, RDEIR/SDEIS, and Final EIR/EIS:

50-year HCP/NCCP Alternatives (introduced in the Draft EIR/EIS):

- No Action Alternative/No Project Alternative
- Alternative 1A – Dual Conveyance with Pipeline/Tunnel Intakes 1-5 (15,000 cfs; Operational Scenario A)
- Alternative 1B – Dual Conveyance with East Alignment and Intakes 1-5 (15,000 cfs; Operational Scenario A)

- Alternative 1C – Dual Conveyance with West Alignment and Intakes 1-5 (15,000 cfs; Operational Scenario A)
- Alternative 2A – Dual Conveyance with Pipeline/Tunnel and Five Intakes (15,000 cfs; Operational Scenario B)
- Alternative 2B – Dual Conveyance with East Alignment and Five Intakes (15,000 cfs; Operational Scenario B)
- Alternative 2C – Dual Conveyance with West Alignment and Intakes W1-W5 (15,000 cfs; Operational Scenario B)
- Alternative 3 – Dual Conveyance with Pipeline/Tunnel and Intakes 1 and 2 (6,000 cfs; Operational Scenario A)
- Alternative 4 – Dual Conveyance with Modified Pipeline/Tunnel and Intakes 2, 3, and 5 (9,000 cfs; Operational Scenario H) (the proposed BDCP, also described as the Original Proposed Project and the CEQA Preferred Alternative)
- Alternative 5 – Dual Conveyance with Pipeline/Tunnel and Intakes 1 (3,000 cfs; Operational Scenario C)
- Alternative 6A – Isolated Conveyance with Pipeline/Tunnel and Intakes 1-5 (15,000 cfs; Operational Scenario D)
- Alternative 6B - Isolated Conveyance with East Alignment and Intakes 1-5 (15,000 cfs; Operational Scenario D)
- Alternative 6C - Isolated Conveyance with West Alignment and Intakes 1-5 (15,000 cfs; Operational Scenario D)
- Alternative 7 – Dual Conveyance with Pipeline/Tunnel, Intakes 2, 3, and 5, and Enhanced Aquatic Conservation (9,000 cfs; Operational Scenario E)
- Alternative 8 - Dual Conveyance with Pipeline/Tunnel, Intakes 2, 3, and 5, and Increased Delta Outflow (9,000 cfs; Operational Scenario F)
- Alternative 9 – Through Delta/Separate Corridors (15,000 cfs; Operational Scenario G)

ESA Section 7/ CESA Section 2081 (non-HCP) Alternatives (introduced in the RDEIR/SDEIS):

- No Action Alternative Early Long Term (ELT)
- Alternative 4A – Operational Scenario H (the California WaterFix)
- Alternative 2D - Operational Scenario B
- Alternative 5A - Operational Scenario C

Although, after considering comments received on the Draft EIR/EIS, in publishing the RDEIS/SDEIS, DWR developed a new proposed project under CEQA (or preferred alternative), which Reclamation also embraced as the preferred alternative, the lead agencies did not abandon their continuing consideration of the original 50-year HCP/NCCP alternatives analyzed in the Draft EIR/EIS. Indeed, although DWR no longer identified Alternative 4 – the BDCP (an HCP/NCCP) – as its proposed project for CEQA purposes, the lead agencies did not reject further consideration of the HCP/NCCP alternatives from the Draft EIR/EIS. Rather, the alternative implementation strategy, as set forth in the RDEIR/SDEIS, was intended to provide additional options, increasing the number of alternatives and sub-alternatives under consideration. Thus, the RDEIS/SDEIS was clear that, at the time of its release, the alternatives from the Draft EIR/EIS were still under active consideration. The new approach was merely a logical outgrowth of the extensive analysis and consideration of comments received through the public review process on the Draft EIR/EIS.

C. Pros and Cons of the Alternatives

As explained earlier, the EIR/EIS was prepared with the intention of including all of the alternatives contemplated by California Water Code section 85320. This “bookend” approach is also authorized by both NEPA and CEQA, and provides a sound approach for examining various potential strategies for achieving the fundamental goals and objectives of the Project and striking the right balance in furthering the State’s coequal goals of “providing a more reliable water supply for California and protecting, restoring, and enhancing the Delta ecosystem.” (California Public Resources Code, § 29702, subd. (a); California Water Code, § 85054.)

Although DWR no longer intends to use the “roadmap” set forth in that statute for the incorporation of the BDCP into the Delta Plan by operation of law, it bears mention in this context that the alternatives and sub-alternatives embody the kinds of environmental and other trade-offs described earlier in these findings. At this juncture, a general discussion of some of these tradeoffs (pros and cons) is appropriate.

The majority of the action alternatives (1A, 1B, 1C, 2A, 2B, 2C, 3, 4, 5, 6A, 6B, 6C, 7, 8, 9) include HCP/NCCP components with substantial amounts of environmental restoration and protection designed to satisfy the requirements of ESA Section 10 and the NCCPA, while Alternatives 4A (California WaterFix), 2D, and 5A include smaller amounts restoration to provide adequate mitigation to meet the requirements of CEQA, NEPA, ESA Section 7 and CESA Section 2081(b), but not to meet the broader conservation goals required by an HCP or NCCP. All of the action alternatives, however, include a managed approach for restoring Delta habitat and implementing numerous stressor reduction measures that likely would not occur under No Project conditions.

Under all of the action alternatives, coordinated SWP/CVP operations are intended to reduce the severity of long-standing adverse environmental consequences associated with the sole

reliance on diversions from the south Delta, such as reverse flows in Old and Middle River and fish losses from entrainment. Under the action alternatives with addition of new points of diversion in the north Delta, overall fish loss from the joint operation of the SWP and CVP would be minimized through reduced reliance on the south Delta pumps. These alternatives would reduce reliance on diversion from the south Delta by allowing water diversions from the Sacramento River through the use of state-of-the-art fish screens at new intake facilities in the north Delta. Alternatives with dual conveyance (using both south and north Delta facilities) would provide operational flexibility that would minimize adverse impacts on covered aquatic species by, among other things, allowing operators to divert water at times and places—in either the north or the south—that protect those species at sensitive life stages. Alternatives with isolated conveyance would dispense altogether with diversions from the south Delta.

The No Project Alternative would leave the SWP/CVP system subject to potentially catastrophic consequences in the event of a major earthquake leading to levee breaks, inundation of Delta islands, and prolonged disruptions of exports that could require environmentally damaging emergency measures south of the Delta to provide water. Even in the absence of an event that catastrophically alters the hydrology of the Delta, climate change and anticipated sea level rise will gradually limit the operation of the SWP/CVP water pumps in the south Delta by increasing salinity in the south Delta. Consequently, additional releases from upstream reservoirs would be necessary in order to provide the fresh water needed to meet current salinity standards. In addition to the continuing decline of the ecology of the Delta that would likely occur under a No Project scenario, another possible adverse result could be additional groundwater overdraft in export areas, particularly in the San Joaquin Valley, in response to decreasing exports, which could result in challenges regarding compliance with the Sustainable Groundwater Management Act (SGMA), in addition to deleterious effects on groundwater supplies and groundwater-dependent resources. In addition, as described in Final EIR/EIS Appendix 5B, *Responses to Reduced South of Delta Water Supplies*, water managers in urban export areas could respond to diminished deliveries by taking other actions, such as the construction of desalination plants, that would create their own adverse environmental effects, including consumption of large amounts of greenhouse gas-generating fossil fuels, brine discharge, and potential entrainment of marine species.

Among the action alternatives, each one involves a different set of environmental benefits and impacts. For example, the number of north Delta intakes associated with particular alternatives typically reflects a balance between localized construction-related, visual, and footprint-related impacts in the Delta against the system-wide environmental benefits associated with reducing reliance on the south Delta pumps. For example, Alternatives 4 and 4A, with three intakes, would involve fewer such localized in-Delta impacts than alternatives with five intakes (Alternatives 1A, 1B, 1C, 2A, 2B, 2C, 2D, 6A, 6B, and 6C). Other alternatives with three intakes (Alternatives 7 and 8) would similarly reduce localized, in-

Delta impacts compared with alternatives with five intakes. For further details associated with particular intake locations, see Final EIR /EIS Appendix 3F, *Intake Location Analysis*.

Alternative 3 would have two north Delta intakes, and Alternatives 5 and 5A would have one. Therefore, some of the environmental impacts related to temporary and permanent habitat or agricultural land conversion would be less for these alternatives than for Alternatives 4, 4A, 7, and 8, which would include three new north Delta intakes, and for Alternatives 1A, 1B, 1C, 2A, 2B, 2C, 2D, 6A, 6B, and 6C, which would include five north Delta intakes. Although the BDCP conservation strategy, with its large amounts of habitat restoration and preservation, as well as the Environmental Commitments under the non-HCP alternatives, would offset many of the environmental impacts associated with constructing north Delta facilities, this strategy would not mitigate to less-than-significant levels all of the impacts associated with in-Delta facility construction. As discussed earlier, alternatives with fewer intakes provide less flexibility in operations and may result in continued dependence on south Delta pumps and/or reduced water supplies that conflict with basic project goals and objectives as well as the coequal goals of Delta ecosystem restoration and water supply reliability.

Despite their reduced footprints, Alternatives 3, 5, and 5A, compared with Alternatives 1A, 1B, 1C, 2A, 2B, 2C, 2D, 4, 4A, 6A, 6B, 6C, 7, and 8, would have different adverse environmental impacts due to their greater dependence on south Delta exports. As with the No Project scenario, reverse flows and fish losses in the south Delta would continue under Alternatives 3, 5, and 5A, though to a lesser degree than at present. Such continuing losses would not improve the likelihood of delta smelt recovery as much as the three-intake alternatives (e.g., Alternatives 4, 4A, 7, and 8).

Despite the past and ongoing environmental issues associated with south Delta exports, there are several advantages that would occur under alternatives with dual conveyance (1A, 1B, 1C, 2A, 2B, 2C, 2D, 3, 4, 4A, 5, 5A, 7, and 8), which would continue to use south Delta pumps under limited circumstances, as explained above. The availability of intakes in the north in addition to existing diversion facilities in the south would provide system operators the flexibility to divert from the north or south depending on which is better for sensitive aquatic species at different times of year and different hydrological conditions. Dual conveyance also allows flexibility in water diversions when regulatory restrictions limit the ability to pull water from either the north or south, thus furthering the goal of increasing water supply reliability. In contrast, alternatives with isolated conveyance (6A, 6B, and 6C) could cause greater water quality impacts because of reduced freshwater flows from the Sacramento River into the central and south Delta. Isolated conveyance would also fail to provide the same degree of operational flexibility to respond to changing conditions in the Delta as would exist for the dual conveyance options.

In general, alternatives that include pipelines/tunnels to convey water under the Delta (1A, 2A, 2D, 3, 4, 4A, 5, 5A, 6A, 7, and 8) would be environmentally superior to all alternatives that would use lined or unlined surface canals (Alternatives 1B, 1C, 2B, 2C, 6B, and 6C). The construction of large canals would lead to losses of habitat, agricultural resources, cultural

resources, recreational opportunities, and other environmental resources far more extensive than would occur with facilities built underground. The canal alignment alternatives would also bisect existing floodplains, agricultural drainage systems, surface irrigation systems, and underground utilities. Although the construction of north Delta intakes, an intermediate forebay, and tunnel facilities would certainly cause some of these kinds of impacts, the extent of the disturbed acreage would be only a fraction of what would occur with the construction of surface canals. Among the alternatives with surface canals, the alternatives with a west-side canal alignment (1C, 2C, and 6C) would be more susceptible to earthquake damage and would be more difficult to construct compared to the east side canals (1B, 2B, and 6B) due to geologic conditions, such as earthquakes and expansion. The western alignment would be built on soils that are more subject to expansion, and would involve construction of a tunnel through soils with greater expected earthquake ground motions than those found in the eastern alignment.

Alternatives with tunnels would also be less susceptible than canal alternatives to liquefaction, seepage, settlement, and other damage due to seismic events, wave run-up, or erosion during a flood event. Alternatives involving an unlined canal as their primary conveyance mechanism (1B, 1C, 2B, 2C, 6B, and 6C) would have the potential for greater groundwater and water quality impacts than alternatives with either lined canals or tunnels. For instance, in some areas where groundwater is *higher* than the water elevations in a canal would be, groundwater could seep into the canal, possibly causing reductions in groundwater levels that could result in inoperable wells in the immediate area. Further, in some areas where groundwater is *lower* than the water elevations in a canal would be, water from the canal could seep into the surrounding groundwater, thereby causing groundwater levels to rise in the root zone for crops in surrounding agricultural lands. Alternatives with unlined canals could also adversely affect export water quality during conveyance because impaired groundwater at elevations above the canal bottom could seep into the canals from adjacent land uses, including agricultural operations, causing water quality problems due to dissolved constituents from fertilizer and pesticide applications. Alternatives involving lined canals or tunnels would limit or avoid these adverse water quality and groundwater level effects.

Alternative 9, a “through-Delta” proposal that would provide an isolated corridor for fish passage through the San Joaquin River system in lieu of new north Delta intakes, presents a unique set of environmental issues. Alternative 9 combines various in-Delta improvements as compared to the No Project Alternative. It is well accepted that the current conveyance through the Delta via south Delta pumping plants alone will not improve either ecological conditions in the Delta or water supply reliability in the long-term, as supported by the extensive analysis in the EIR/EIS. While Alternative 9 would reduce the existing effects of reverse flows toward the existing south Delta intakes during outgoing or ebb tides, the alternative would continue to use the channels as the exclusive means to transport water. In doing so, Alternative 9 would require increased construction in riparian areas along the banks of the Mokelumne and San Joaquin Rivers compared with the other action

alternatives that would require construction primarily along the Sacramento River, which is already heavily riprapped. Dredging within the waterways during initial construction under Alternative 9 could also result in additional water quality degradation. Further, Alternative 9 would result in increased visual and recreation impacts in certain areas compared to other alternatives due to the construction of 14 operable barriers necessary for fish and water quality protection purposes, which would substantially change the visual character of the Mokelumne and San Joaquin Rivers, and would adversely affect recreational boating opportunities. Alternative 9 could also increase adverse water quality impacts on drinking water users in the western Delta, compared with alternatives with north Delta intakes.

Four alternatives (4, 4A, 7, and 8) would include dual tunnels and three intakes. Among these alternatives, Alternatives 7 and 8 would require greater outflows at certain times that could benefit delta smelt and longfin smelt, but would create other environmental problems. Among these alternatives, DWR has chosen to approve Alternative 4A in part because its operations are intended to optimize spring and fall Delta flow conditions for delta smelt and longfin smelt without creating adverse environmental impacts further upstream (i.e., in upstream reservoirs and the rivers that flow out of them) and in export areas. These problems could include the following: reduced Shasta Reservoir cold water pool necessary to maintain downstream cold water temperatures for winter run salmon; adverse temperature effects on salmon and steelhead in the Lower American River; impacts on reservoir-related recreation; reduced clean hydropower generation, including at peak demand periods when fossil fuel consumption is typically at its maximum; greater risk of impacts associated with drought conditions because under those alternatives carryover storage is reduced in order to maximize outflows; increased reliance on groundwater by Sacramento Valley agricultural interests, as well as associated land subsidence that might result; and reduced availability for exports to south-of-Delta wildlife refuges and for human and other beneficial uses.

Notably, operations under Alternative 4A would be subject to a requirement intended to ensure adequate Delta outflows through additional criteria for spring outflow. Alternative 4A starting operations will be determined through the continued coordination and adaptive management as outlined in the ESA Section 7 consultation process and 2081(b) permit prior to the start of construction. An adaptive management and monitoring program will be implemented in order to develop additional science during the course of project construction and operation to inform and improve conveyance facility operational limits and criteria.

Alternatives 7 and 8 would include greater levels of guaranteed spring and fall Delta outflows, which are intended to provide benefits to delta and longfin smelt. However, meeting these increased outflows could require releases from upstream reservoirs and rivers, making these alternatives less likely to avoid both the upstream environmental problems described above (e.g., reduction in cold water for listed salmon) and the potential for reduced water availability for uses south of the Delta. Thus, although Alternatives 7 and

8 could be more beneficial than Alternatives 4 and 4A to delta smelt and longfin smelt, Alternatives 4 and 4A could be more beneficial for coldwater-dependent salmonids. Alternatives 4 and 4A are also likely to have fewer impacts than Alternatives 7 and 8 with respect to other categories of environmental impacts. For example, Alternatives 7 and 8 would be more likely to result in reduced water supplies and, as noted earlier, reduced water supplies would result in other adverse environmental impacts south of the Delta (see Final EIR/EIS Appendix 5B, *Responses to Reduced South of Delta Water Supplies*). Overall, Alternative 4A would provide the best balance of operational flexibility for improving conditions for listed species and the Delta ecosystem.

D. Infeasibility of Alternatives Other than 4A

CEQA vests the final decisionmaking authority over a project with the designated lead agency decisionmaking body or official, who must act consistently with his or her agency's statutory function and powers. As the California Supreme Court stated in acknowledging the limits of its own review function, "[t]he wisdom of approving ... any ... project" is "a delicate task which requires a balancing of interests," and "is necessarily left to the sound discretion of the [public] officials and their constituents who are responsible for such decisions." (*Citizens of Goleta Valley v. Board of Supervisors* (1990) 52 Cal.3d 553, 576.)

As explained earlier, a decisionmaker's assessment of the "actual feasibility" of EIR alternatives can involve the "reasonable balancing of the relevant economic, environmental, social, legal, and technological factors" associated with a proposed project. Based on such a balancing process, a decisionmaker may conclude that an alternative, being "undesirable" from a policy standpoint, is infeasible within the meaning of CEQA. (*California Native Plant Society v. City of Santa Cruz* (2009) 177 Cal.App.4th 957, 981, 999, 1001 (*CNPS*); *City of Del Mar v. City of San Diego* (1982) 133 Cal.App.3d 410, 417; *San Diego Citizenry Group v. County of San Diego* (2013) 219 Cal.App.4th 1, 17-18.) In making such determinations, the decisionmaker may also consider the extent to which an alternative meets project objectives. (*CNPS, supra*, 177 Cal.App.4th at p. 1001 ["an alternative 'may be found infeasible on the ground it is inconsistent with the project objectives as long as the finding is supported by substantial evidence in the record'"]; see also *Save Panoche Valley v. San Benito County* (2013) 217 Cal.App.4th 503, 521-523; and *Citizens for Open Government v. City of Lodi* (2012) 205 Cal.App.4th 296, 314-315.) Under these principles, a decisionmaker may reject an alternative as infeasible even if the alternative would avoid or substantially lessen one or more of the unavoidable significant environmental effects of a proposed project as mitigated.

"CEQA requires the decision-making agency to balance, as applicable, the economic, legal, social, technological, or other benefits, *including region-wide or statewide environmental benefits*, of a proposed project against its unavoidable environmental risks when determining whether to approve the project." (CEQA Guidelines, § 15093, subd. (a), italics)

added.) Thus, decisionmakers often find themselves balancing competing environmental considerations as well as competing economic and social considerations.

The Project and its alternatives indeed present all of these categories of competing considerations. DWR, through its Acting Director, has therefore undertaken a deliberative process by which he balanced such competing considerations against each other in light of project objectives and state and federal law, including the 2009 Delta Reform Act and the federal and state endangered species acts. Set forth below are the Acting Director's conclusions with respect to each of the Alternatives considered in the Final EIR/EIS.

1. The No Project Alternative

Through its Acting Director, DWR finds the No Project Alternative to be *infeasible* based on all of the reasons discussed below.

The No Project Alternative fails to meet DWR's fundamental purpose of "mak[ing] physical and operational improvements to the SWP system in the Delta necessary to restore and protect ecosystem health, water supplies of the SWP and CVP south of the Delta, and water quality within a stable regulatory framework, consistent with statutory and contractual obligations." This alternative also fails to meet the three specific project objectives of "mak[ing] physical improvements to the conveyance system in anticipation of rising sea levels and other reasonably foreseeable consequences of climate change"; "mak[ing] physical improvements to the conveyance system that will minimize the potential for public health and safety impacts resulting from a major earthquake that causes breaching of Delta levees and the inundation of brackish water into the areas in which the SWP and CVP pumping plants operate in the southern Delta"; and "identify[ing] new operations and a new configuration for conveyance of water entering the Delta from the Sacramento River watershed to the existing SWP and CVP pumping plants in the southern Delta by ... conveyance ... in the north Delta that can reliably deliver water at costs that are not so high as to preclude, and in amounts that are sufficient to support, the financing of the investments necessary to fund construction and operation of facilities and/or improvements."

In the absence of new north Delta diversion facilities, the ecology of the Delta would likely continue to worsen due to climate change, sea level rise, invasive species and other stressors, and water exports would continue to be reduced, as has occurred in recent years through export restrictions intended to reduce harm to listed fish species.

As noted above, the No Project Alternative would also leave the SWP/CVP system subject to potentially catastrophic consequences in the event of a major earthquake. Moreover, even in the absence of such a major seismic event, climate change and anticipated sea level rise likely would gradually limit the operation of the SWP/CVP water pumps in the south Delta.

Consequently, additional releases from upstream reservoirs would likely be necessary in order to provide the fresh water needed to meet current salinity standards, reducing water supplies and increasing temperatures upstream to the detriment of salmon. Although groundwater extraction would be limited to some extent by the Sustainable Groundwater Management Act, agricultural areas would still likely rely more heavily on groundwater, or may fallow more land, causing associated adverse environmental impacts. Water managers in urban export areas would likely respond to diminished deliveries by taking other actions in addition to those they are already taking to stretch or augment local supplies, such as the construction of desalination plants. These actions would create their own negative environmental effects, including consumption of large amounts of greenhouse gas-generating fossil fuels, the creation of brine discharge, and potential entrainment of marine species.

2. Alternatives with Lined or Unlined Surface Canals (Alternatives 1B, 1C, 2B, 2C, 6B, and 6C)

Through its Acting Director, DWR finds alternatives 1B, 1C, 2B, 2C, 6B, and 6C, all of which would involve lined or unlined surface canals, to be *infeasible* based on all of the reasons discussed below.

Alternatives 1B, 1C, 2B, 2C, 6B, and 6C entail environmental consequences that can be avoided or minimized through the use of underground tunnels. Under the surface canal alternatives, water conveyance is carried out by lined or unlined canal ways, either by a western or eastern alignment through the Delta, until it connects to the current water project facilities in the south Delta. As discussed above, and as set forth in detail in the Final EIR/EIS, these alternatives would create more environmental impacts by utilizing canal ways, while the Project will avoid some of these impacts by using underground tunnels.

The surface canal alternatives (Alternatives 1B, 1C, 2B, 2C, 6B, and 6C) would have greater impacts to agriculture, which is an important industry to the Delta community. All of the alternatives would result in some impacts to agricultural land and economy, but the severity of the impact differs between them. Compared with Alternative 4A, the surface canal alternatives would cause a substantially greater effect on the regional agricultural economy. Notably, temporary and permanent impacts from the construction of the water conveyance facilities under the surface canal alternatives would result in a higher conversion of Important Farmland and land subject to Williamson Act contracts or in Farmland Security Zones to other uses, compared to the Project (Alternative 4A) (Final EIR/EIS, Chapter 14, Figure 14-0 [Comparison of Impacts on Agricultural Resources]; see also pp. 14-36, 39). In addition to the physical impacts to agricultural land, displacing this much agricultural land would also have substantial impacts on the agricultural economy. The displacement of agricultural land under east alignment alternatives 1B and 6B, for example, would reduce direct agricultural employment by an estimated 90 full-time

equivalent (FTE) jobs, while total employment (direct, indirect, and induced) associated with agricultural employment would fall by 340 FTE jobs (Final EIR/EIS, Chapter 16, p. 16-81 [Table 16-26]). Direct agricultural job losses could be even higher than the 90 FTE jobs shown in Table 16-26 because many agricultural jobs are seasonal rather than year-round, FTE jobs, suggesting that more than one seasonal job could be lost per every FTE job lost as a result of construction of conveyance facilities construction (Final EIR/EIS, Chapter 16, p. 16-81). This would translate to a decline of total value of irrigated crop production on average by \$32.8 million per year during the construction period, with total irrigated crop acreage declining by about 19,460 acres. These estimates are not dependent on water year type (Final EIR/EIS, Chapter 16 p. 16-86). Surface canal alternatives under the west alignment would have similar adverse effects on the agricultural industry (Final EIR/EIS, Chapter 14, p. 14-72; Chapter 16, p. 16-98,104). Constructing the canal ways under these alternatives would therefore have a greater impact in Delta communities that rely on agriculture as their main staple, compared to the Project. The alignments themselves would cross more agricultural parcels than the Project will, therefore having more of an impact. By connecting the new north Delta intakes to the existing water project by way of underground tunnels, the Project will have a substantially lower impact to the agricultural land and economy it supports (Final EIR/EIS, Chapter 14, pp. 14-36, 39, 200, Chapter 16, pp. 16-277, 282).

In addition to having greater agricultural effects, the construction of canal ways under these alternatives would affect more cultural resources than the Project (Final EIR/EIS, Chapter 18, Figure 18-0 [Comparison of Impacts on Cultural Resources]). Construction of conveyance facilities along the east alignment under Alternative 1B, for example, would affect 17 identified archaeological resources that occur in the footprint of this alternative (Final EIR/EIS, Chapter 18, p. 18-1). DWR identified these resources and finds that they are likely to qualify as historical resources under CEQA (see the individual site descriptions in Appendix 18B, Section 18B.1.1, *Archaeological Site Descriptions*). Therefore, these sites are considered historical resources for the purposes of CEQA. This impact would be significant because construction could materially alter or destroy the potential of these resources to yield information useful in archaeological research (the basis for the significance of these resources) through excavation and disruption of the spatial associations that contain meaningful information (Final EIR/EIS, Chapter 18, p. 18-80). The west alignment under Alternative 1C, for example, would affect 12 identified archaeological resources (Final EIR/EIS, Chapter 18, p. 18-90). In contrast, the Project will affect fewer archaeological resources compared to the surface canal alternatives (Final EIR/EIS, Chapter 18, p. 18-213). The surface canal alternatives would also affect a greater number of historic structures, while the Project would result in the fewest effects on historic structures out of all of the alternatives (Final EIR/EIS, Chapter 18, p. 18-1). The severity of these impacts will be less under the Project because underground tunnels will be built in lieu of a canal way system.

The surface canal alternatives would also have greater air quality impacts compared to the Project. The alternative alignments run through four distinct air quality management districts (i.e., Sacramento, Yolo-Solano, San Joaquin, and Bay Area). Although air quality impacts under each alternative vary within each district, the surface canal alternatives have greater air quality impacts generally (Final EIR/EIS, Chapter 22, Figure 22-0a [Comparison of Impacts on Air Quality]). For example, the highest maximum daily NO_x emissions within the Yolo-Solano Air Quality Management District (YSAQMD) would occur under Alternatives 1C, 2C, and 6C (west alignment alternatives), which would result in maximum daily emissions of 3,620 pounds per day. The lowest maximum daily NO_x emissions within the YSAQMD would occur under Alternative 4A (the Project), and would range from 124 to 174 pounds per day. The west alignment alternatives would also emit the highest NO_x within the Bay Area Air Quality Management District (BAAQMD). Within the San Joaquin Air Pollution Control District (SJVAPCD), Alternatives 1B and 6B would result in the greatest daily NO_x emissions per day (Final EIR/EIS, Chapter 22, p. 22-1). The Project is advantageous compared to the canal alternatives because using underground tunnels will require less on-the-ground equipment and therefore have fewer impacts.

Because they involve the construction of surface canals, Alternatives 1B, 1C, 2B, 2C, 6B, and 6C would also create transportation issues in various communities within the Delta that will not occur under the Project. Notably, the surface canal alternatives would cause greater impacts from increased construction vehicle trips resulting in unacceptable Level of Service (LOS) conditions for roadway segments (Final EIR/EIS, Chapter 19, Figure 19-0 [Comparison of Impacts on Transportation]). For example, Alternative 1B, with an east alignment, would exceed LOS thresholds for at least 1 hour during the 6:00 AM to 7:00 PM analysis period on a total of 48 roadway segments under baseline plus background growth (BPBGPP) conditions and would temporarily exacerbate an already unacceptable LOS under BPBG conditions on 28 roadway segments (Final EIR/EIS, Chapter 19, p. 19-89). Alternative 1C, with a west alignment, would exceed acceptable LOS levels at even more roadway segments (Final EIR/EIS, Chapter 19, p. 19-119). As explained in the Final EIR/EIS, these impacts are considered significant and unavoidable. Because the Project uses underground tunnels, fewer roadway segments will be adversely affected (Final EIR/EIS, Chapter 19, p. 19-357). In sum, construction-related traffic volume on these roadways will not be as great under the Project compared to the surface canal alternatives. Therefore, the surface canal alternatives under both the east and west alignments would cause greater impacts to transportation in various parts of the Delta.

The surface canal alternatives would also result in a greater long-term reduction of recreational opportunities and experiences in the Delta, compared to the Project. The Delta remains a place where people congregate to take part in its recreational opportunities, whether it is wakeboarding, fishing, bird watching, or other activities. Adverse effects on recreation may include restricted access to a recreation facility or use of an area; degraded recreation opportunities and experiences as a result of construction noise or changes to the visual setting; or other conflicts with construction that could adversely affect visitors'

ability to participate in recreational activities at the site or area. If these effects were to occur, visitors may choose to visit different recreation areas or marinas during the construction period. The surface canal alternatives would reduce recreational opportunities and experiences at between 11 and 18 sites in the Delta, which is considered a significant and unavoidable impact in the EIR/EIS. Although the Project would also result in significant and unavoidable recreation impacts, the construction of the water conveyance facilities under the Project will result in impacts at fewer recreational sites. (Final EIR/EIS, Chapter 15, Figure 15-0 [Comparison of Impacts on Recreation]). Recreation is a vital aspect to the Delta's character and affecting more recreational opportunities would likely take away visitors to the area and their potential economic input to local businesses.

3. Alternatives with Isolated Conveyance (Alternatives 6A, 6B, and 6C)

Through its Acting Director, DWR finds Alternatives 6A, 6B, and 6C, all of which would involve isolated rather than dual conveyance, to be *infeasible* based on all of the reasons discussed below.

First, isolated conveyance would cause greater water quality impacts than the Project because of reduced freshwater flows from the Sacramento River into the central and south Delta under these alternatives. They would result in water quality impairments in the central and south Delta due to the fact that there will be less influence from the Sacramento River and more from the San Joaquin River. These water quality impacts, discussed below, would likely cause additional effects to aquatic species through contaminant bioaccumulation. Second, isolated conveyance would cause decreases in surface water deliveries to export water users, which would lead to either increased groundwater pumping or reduced agricultural production and other negative economic impacts. And third, isolated conveyance, compared to the dual conveyance provided under the Project, would also fail to provide the operational flexibility needed to respond to changing conditions in the Delta. At times when flows are critical to ESA-listed aquatic species, such as winter-run Chinook salmon, the operational criteria for Alternatives 6A, 6B, and 6C, including those for reservoir operations, would reduce instream flows and create sub-optimal conditions for migration. The operational criteria would not allow for flexibility that can be achieved under the Project, which will be beneficial to covered species.

Alternatives 6A, 6B, and 6C would have greater water quality impacts compared to the Project, and would result in numerous significant and unavoidable impacts that will not occur under the Project (See Final EIR/EIS, Chapter 8, Figures 8-0a and 8-0b [Comparison of Impacts on Water Quality]).¹¹ Under the alternatives that include an isolated conveyance (Alternatives 6A through 6C), all of the exported water would be from the new north Delta

¹¹ As summarized in Exhibit A, with mitigation, the only potentially significant and unavoidable impact of the Project on water quality is WQ-14: Effects on mercury concentrations resulting from implementation of Environmental Commitments 3, 4, 6-12, 15, and 16.

intakes, and none of the diversions would be from the existing south Delta intakes (see Final EIR/EIS, Chapter 5, Water Supply, for more information). Such a scenario would result in a greatly increased San Joaquin River water influence throughout the south, west, and interior Delta, and a corresponding decrease in Sacramento River water influence. (See Final EIR/EIS, Appendix 8D.) Actions under Alternative 6A through 6C would have impacts on water quality where the fraction of source water containing higher contaminant concentrations would increase. Under these alternatives, significant and unavoidable impacts would occur on concentrations of mercury in fish tissue, bromide, chloride, electrical conductivity, dissolved organic carbon, pesticides, and selenium, as well as Microcystis bloom formation, all of which would increase at least in part due to the alternatives' influence on source water fractions and mixing within the Delta (Final EIR/EIS, Chapter 8, Water Quality).

Alternatives 6A, 6B, and 6C would also have greater impacts on water supply compared to the Project, which would diminish the ability to meet the project objective of providing a more reliable water supply, which is also one of the co-equal goals under the 2009 Delta Reform Act. The Final EIR/EIS provides a summary comparison of important water supply impacts in Chapter 5, Water Supply, Figure 5-0. As depicted in Figure 5-0, Alternatives 6A through 6C would result in a 5 percent decrease in the average annual total SWP delivery and a 13 percent decrease in the average annual total CVP delivery. The Project, in contrast, would result in no change to annual SWP deliveries and a 5 percent increase in annual CVP deliveries. Thus, compared to Alternatives 6A through 6C, the Project will be more effective at improving water supply reliability and will be more capable of meeting the state's water needs. As such, the Project will meet the goals and objectives set forth in the Final EIR/EIS, and provide what DWR regards as the optimal balance in furthering the coequal goals set forth in the Delta Reform Act, while Alternatives 6A, 6B, and 6C would not.

Moreover, decreases in surface water deliveries could result in either a corresponding increase in groundwater use in the Export Service Areas (to the extent allowed under adopted plans), or reduced agricultural production and other negative economic impacts. It is also forecasted that Alternatives 6A through 6C would decrease the surface water supplies from the Delta to Export Service Areas outside of the Central Valley. If less surface water became available for municipal, industrial, and agricultural users, utilization of groundwater resources could be increased (see Final EIR/EIS, Chapter 5, Water Supply). Many groundwater basins in the San Francisco Bay Area, Central Coast, and Southern California rely on SWP/CVP surface water to recharge groundwater basins (as described in Final EIR/EIS, Chapter 7, subsection 7.1.1.4, Groundwater Setting in the Export Service Areas outside the Delta Watershed). Therefore, adverse effects on groundwater supplies, groundwater recharge, and local groundwater table levels would be expected to result from the implementation of Alternatives 6A through 6C in these Export Service Areas, although compliance with the Sustainable Groundwater Management Act could limit these impacts to some degree.

Alternatives 6A, 6B, and 6C would also have greater impacts on fish and aquatic species compared to the Project. Under Alternatives 6A, 6B, and 6C, migration corridors for aquatic species would be substantially altered due to changing operations of an isolated conveyance and specific reservoir operations. Flows in the Feather River during a large portion of both juvenile emigration and adult immigration period of winter-run Chinook, for example, would be frequently reduced by up to 53 percent compared to Existing Conditions (Final EIR/EIS, Chapter 11, pp. 11-2116, 2300, 2334). Flows in the Feather, American, Stanislaus, San Joaquin, and Mokelumne Rivers would also generally be lower than those under Existing Conditions during substantial portions of the fall-run Chinook salmon adult migration period, reducing olfactory cues for fall adult migrants, potentially delaying or preventing them from reaching these spawning grounds. In addition, flows under Alternative 6A in the American River during two of the four months of the juvenile fall-run Chinook salmon migration period each year would be lower than Existing Conditions. Flows in the Stanislaus River throughout the fall-run juvenile Chinook salmon rearing period would be predominantly lower under Alternative 6A, 6B, and 6C relative to Existing Conditions. These flow reductions would reduce the downstream migratory ability of fall-run juveniles, which could delay smoltification and reduce survival. Temperatures would increase in the American, and Stanislaus Rivers, increasing stress and mortality of migrants (Final EIR/EIS, Chapter 11, pp. 11-2148, 2303, 2337-2338). Although upstream flows Alternatives 6A, 6B, and 6C would be similar to those under Existing Conditions, water temperatures would be elevated, which could contribute to increased stress or mortality to migrating individuals. In contrast, modeling supports the conclusion that upstream migratory conditions would generally not change under Alternative 4A (Final EIR/EIS, Chapter 11, p. 11-3239). Notably, Alternatives 6A, 6B, and 6C would result in several significant and unavoidable impacts to fish and aquatic species that will not occur under the Project. Specifically, Alternative 6A, 6B, and 6C would result in significant and unavoidable impacts on migration conditions for winter-, spring-, fall-, and late fall-run Chinook salmon and steelhead, which will not occur under the Project (Final EIR/EIS, Chapter 11, p. 11-65 [Table 11-7-SUM1. Results of Entrainment and Flow-Related Effects on Fish]), whereas the Project will not result in any significant and unavoidable impacts to fish species (Final EIR/EIS, Chapter 11, p. 11-83; p. 11-82 [Table 11-8-SUM1. Results of Entrainment and Flow-Related Effects on Fish]).

Further, concentrations of mercury in fish tissue would increase under Alternatives 6A through 6C. These alternatives could result in increased levels of mercury by frequency, magnitude, and geographic extent such that there could be measurably higher body burdens of mercury in aquatic organisms, thereby substantially increasing the health risks to wildlife (including fish) (Final EIR/EIS, Chapter 11, pp. 11-2288, 2324, 2357-2358). Mercury is not the only constituent that the aquatic system would be affected by changes in operations under Alternatives 6A through 6C. The primary mechanism for these changes would be the increased proportion of San Joaquin River water entering the Delta, which has elevated loads of selenium and other contaminants. Across all water years, selenium concentrations in sturgeon tissue would be slightly-to-moderately increased to above the

toxicity value for these alternatives at the San Joaquin River at Antioch (Final EIR/EIS, Chapter 11, pp. 11-2288, 2324, 2357-2358). Notably, for green sturgeon, which is assumed to be the species most sensitive to selenium, Alternatives 6A through 6C would have the potential to exceed applicable thresholds reported in Presser and Luoma (2010), as seen in Table 11-1A-122 and 11-1A-123 (Final EIR/EIS, Chapter 11, p. 11-777 and p. 11-779), in the western Delta and Suisun Marsh; therefore, these alternatives would cause significant effects on green and white sturgeon, as well as splittail. (Final EIR/EIS, Chapter 11 p. 11-2289). In contrast, the model results support the determination that changes in potential exposure and bioaccumulation of mercury and selenium under Alternative 4A (the Project) will not substantially affect the levels of these contaminants in Delta fishes or the frequency of exceedance of applicable thresholds relative to Existing Conditions (Final EIR/EIS, Chapter 11, p. 11-3608).

4. Alternatives with Five North Delta Intakes (1A, 1B, 1C, 2A, 2B, 2C, 2D, 6A, 6B, and 6C)

Through its Acting Director, DWR finds alternatives 1A, 1B, 1C, 2A, 2B, 2C, 2D, 6A, 6B, and 6C, all of which would involve the construction of five north Delta intakes, to be *infeasible* based on all of the reasons discussed below.

Alternatives 1A, 1B, 1C, 2A, 2B, 2C, 2D, 6A, 6B, and 6C would not achieve the fundamental project purpose and objectives as well as the Project (Alternative 4A), would create problems for fish passing by all five intakes, would have greater water quality impacts than the Project, and would entail more severe localized impacts in the north Delta.

The five-intake alternatives would have greater impacts to fish and aquatic species compared to the Project. As explained in the Final EIR/EIS, the potential for construction and maintenance activities to affect covered fish species would typically be proportional to the number of north Delta intakes constructed, and the total area of habitat affected (Final EIR/EIS, Chapter 11, p. 11-12.) Thus, under the five-intake alternatives, the construction of an additional two intakes, in addition to the three that are included in the Project, would cause a greater decrease in available habitat, lead to greater impingement, and cause behavioral changes in aquatic species that use this stretch of the Sacramento River as a migration corridor to complete their life cycles.

The five-intake alternatives would have greater impacts to aquatic habitat compared to the Project. Table 11-1A-SUM1 in the Final EIR/EIS shows the number and location of intakes under each alternative and the associated temporary and permanent impacts of construction activities on aquatic habitat. (Final EIR/EIS, Chapter 11, p. 11-12.) As shown in Table 11-1A-SUM1, the Project would have lesser permanent impacts to tidal perennial habitat and channel margin habitat compared to the five-intake alternatives. (Final EIR/EIS, Chapter 11, p. 11-12). For example, under Alternative 1A, approximately 64.6 acres of tidal perennial habitat along 2.73 miles of river shoreline would be subject to

temporary dredging and water quality effects (increased turbidity) during in-water work, and approximately 16.7 acres of tidal perennial habitat and 3.09 miles of channel margin habitat would be permanently modified and/or inaccessible to fish (Final EIR/EIS, Chapter 11, pp. 11-12, 11-385). Under Alternative 4A, in contrast, the three intake structures and associated permanent bank-line modifications will result in a permanent loss of up to only 6.6 acres of aquatic habitat and permanent modification of 1.02 linear miles of shoreline habitat (Final EIR/EIS, Chapter 11, pp. 11-12, 11-3235). Therefore, because it has fewer intakes than the five-intake alternatives, the Project will have lesser impacts to aquatic habitat, including important migration habitat for protected fish species (e.g., all listed runs of Chinook salmon).

In addition to greater physical impacts to aquatic habitat, the risk of entrainment and impingement of fish species at the north Delta intakes under the five-intake alternatives would also be greater than under the Project because there would be two additional intakes. The construction of two more intakes could also cause an increase in the amount of predation associated with this river reach compared to the Project. (Final EIR/EIS, Chapter 11, p. 11-91.) Although the new intakes will be fitted with state-of-the-art fish screens that will reduce their effects, the fish agencies recognize that all life stages of all species of concern may not be fully protected from the effects of water diversions even if all fish screen design criteria are met. For example, as explained in the Final EIR/EIS, near-field effects of Alternative 4A on winter-run Chinook salmon related to impingement and predation associated with three new intake structures will result in negative effects on juvenile migrating winter-run Chinook salmon, although there is high uncertainty regarding the overall effects. As explained in the Final EIR/EIS, however, the level of near-field impacts under all of the alternatives is directly correlated to the number of new intake structures in the river; thus, the level of impacts associated with three new intakes will be considerably lower than those expected from having five new intakes in the river (Final EIR/EIS, Chapter 11, p. 11-3239). Moreover, because they would have greater impacts to fish species and aquatic habitat, the five-intake alternatives would be less likely to meet the project objective of restoring ecosystem health and reducing stressors on the ecological functions of the Delta.

Constriction-related impacts would also be greater under the five-intake alternatives compared to the Project. The construction process for intake facilities will span over a number of years, and will have impacts to the aquatic and human environment. Under the five-intake alternatives, the magnitude of such impacts would be greater than under the Project because there would be more construction activity. For example, impacts associated with pile driving, including impacts to aquatic species from underwater noise and the exposure of residential structures to ground-borne vibration, would be greater for alternatives with five intakes because there would be more pile driving activity (See Final EIR/EIS, Chapter 11, p. 11-293 -297; Final EIR/EIS, Chapter 23, Figure 23-0 [Comparison of Noise Impacts]). Although mitigation measures will reduce pile driving impacts, the Project

will have a smaller footprint of noise impacts overall compared to alternatives with five intakes.

Air quality impacts would also be greater under the five-intake alternatives compared to the Project. The volume of emissions from construction and energy use associated with the construction and operation of the north Delta facilities varies accordingly to the number of intakes that are built. The project spans across four air quality management districts. Although air quality impacts within each district vary depending on the location of the facilities, the alternatives with five intakes have greater air quality impacts generally. (Final EIR/EIS, Chapter 22, Figure 22-0a [Comparison of Impacts on Air Quality].) The highest maximum daily NO_x emissions within the Sacramento Metropolitan Air Quality Management District (SMAQMD), for example, would result from implementation of Alternatives 1A, 2A, and 6A, at 4,992 pounds per day, while the Project's maximum emissions will be significantly lower, at just 1,273 pounds per day (Final EIR/EIS, Chapter 22, p. 22-1).

Aesthetic impacts would also be greater under the five-intake alternatives compared to the Project. The preservation of the Delta's aesthetic environment is important to the local community. Scattered rural residences are located along County Highway (CH) E9 and State Route (SR) 160 along both banks of the river, throughout the corridor between where Intakes 1 through 5 would be built; some of these would be near or directly adjacent to construction activities (key observation points [KOPs] 1, 3, 4, 18, 30, 41, and 49; see Final EIR/EIS, Chapter 17, Aesthetics and Visual Resources). The towns of Clarksburg, Hood, and Courtland have a higher concentration of residential viewers and are also near the intakes (KOPs 12, 38, 72, 73, and 74). Recreationists on local roadways and waterways, roadway users on local roadways, and nearby businesses would have direct views of intake construction (Final EIR/EIS, Chapter 17, p. 17-49). Construction activities under the five-intake alternatives would substantially alter the existing visual quality and character present in the study area. All of the following contribute to these impacts: the long-term nature of construction of the intakes, pipeline/tunnel, work areas, spoil/borrow and Reusable Tunnel Material (RTM) areas, shaft sites, barge unloading facilities; the presence and visibility of heavy construction equipment; proximity to sensitive receptors; relocation of residences and agricultural buildings; removal of riparian vegetation and other mature vegetation or landscape plantings; earthmoving and grading that result in changes to topography in areas that are predominantly flat; addition of large-scale industrial structures (intakes and related facilities); remaining presence of large-scale borrow/spoil and RTM area landscape effects; and the introduction of tall steel transmission lines. Overall, construction would last up to nine to 14 years, and would change the existing visual character in the vicinity of project elements from those of agricultural, rural residential, or riparian and riverine settings to areas involving heavy construction equipment, temporary construction structures, work crews, other support vehicles and other activities that would modify and disrupt short- and long-range views. These activities would be disruptive to viewers. Once construction is complete, these alternatives would

result in the placement of large, multi-story industrial concrete and steel structures, pumping plants, fencing, and other similar anthropogenic features where none presently exist (See Final EIR/EIS, Chapter 17, p. 17-62 [discussion for Alternative 1A]). Because the Project includes only three intakes, as opposed to five, the visual and aesthetic impacts would be less under the Project compared to the five-intake alternatives because its physical presence in the Delta community would be smaller.

Agricultural impacts would also be greater under the five-intake alternatives compared to the Project. The Delta heavily relies on agriculture as one of its main industries to provide income and jobs for the community. All of the project alternatives would have some effect on agriculture within the alignments of physical facilities, but, as demonstrated above, alternatives with five intakes would have a greater level of impact compared to the Project. Specifically, conversion of Important Farmland and land subject to Williamson Act contracts or in Farmland Security Zones to other uses would generally be greater under the five-intake alternatives. (Final EIR/EIS, Chapter 14, Figure 14-0 [Comparison of Impacts on Agricultural Resources]; Chapter 16, Socioeconomics, p. 16-1]). Lost agricultural land translates into a loss in jobs in that industry, and therefore, the five-intake alternatives would generally result in greater impacts to the agricultural economy compared to the Project. (Final EIR/EIS, Chapter 16, p. 16-1.)

The five-intake alternatives would also have greater water quality impacts compared to the Project. During construction, the intensity of construction activity along with the fate and transport characteristics of the chemicals used, would largely determine the magnitude, duration, and frequency of construction-related discharges and resulting concentrations and degradation associated with the specific constituents of concern. (Final EIR/EIS, Chapter 8, p. 8-343.) As described in Final EIR/EIS, Chapter 8, Water Quality, the potential water quality concerns associated with the major categories of contaminants that might be discharged as a result of construction activity include suspended sediment, organic matter, nutrients, petroleum hydrocarbons, trace constituents (metals, pesticides, synthetic organic compounds), pathogens, and other inorganic compounds. (Final EIR/EIS, Chapter 8, pp. 8-343-344.) Because the Project includes only three intakes, the water quality impacts associated with the construction of the intake facilities would generally be lower under the Project compared to the five-intake alternatives.

Finally, on balance, DWR finds that the Project will better achieve the State's coequal goals of providing a more reliable water supply for California and protecting, restoring, and enhancing the Delta ecosystem, compared to the five-intake alternatives. (California Public Resources Code, § 29702, subd. (a); California Water Code, § 85054.)

5. Alternatives with Fewer than Three Intakes (Alternatives 3, 5, and 5A)

Through its Acting Director, DWR finds Alternative 3, with only two north Delta intakes, and Alternatives 5 and 5A, with one north Delta intake, to be *infeasible* based on all of the reasons discussed below.

Compared to the Project, Alternatives 3, 5, and 5A would provide fewer benefits for fish species in the Delta and would not be capable of meeting key project goals and objectives.

Because of their reduced north Delta diversion capacity compared with the Project (Alternative 4A), which has three north Delta intakes, reverse flows in the south Delta would persist under Alternatives 3, 5, and 5A, and fish losses in the south Delta would continue, though to a lesser degree than at present. Among other problems, the greater reverse flows and continuing fish losses would not improve conditions for delta smelt as much as the Project, which could lead to additional restrictions on exports, which is inconsistent with the project goals and objectives. Additionally, the operational scenario under Alternative 3 (Operational Scenario A) does not include Fall X2 objectives or the San Joaquin River inflow/export ratio (Final EIR/EIS Chapter 3, p. 3-41). By maintaining X2's position within Suisun Bay and the western Delta, the Project may create better conditions for the delta smelt life cycle. Because Alternative 3 does not include Fall X2 objectives in the operational criteria, it would diminish the ability to implement actions to reduce the potential to result in take of species that are listed under ESA and CESA, which is one of the main objectives of the project (as discussed above in Part 1B). More specifically, because they include fewer intakes, Alternatives 3, 5, and 5A would not meet the project objective of "develop[ing] projects that restore and protect water supply and ecosystem health and reduce other stressors on the ecological functions of the Delta in a manner that creates a stable regulatory framework under the ESA and either the CESA or NCCPA."

Existing problems for fish species, including reverse flows in the south Delta, would persist to a greater extent under Alternatives 3, 5, and 5A, compared to the Project. Alternatives 3, 5, and 5A, with their reduced diversion capacity in the north Delta, would result in more negative reverse flows in Old and Middle Rivers, compared to the Project, during critical periods where species such as salmonids and delta smelt are present in the south Delta (for more information see Final EIR/EIS, Chapter 11). Alternative 3 and 5, for example, would result in an increase in reverse flows in April-May, and Alternative 3 would also increase reverse flows in October compared to Existing Conditions (Final EIR/EIS Chapter 6, p. 6-99 and p. 6-117). Alternative 4A, on the other hand, would provide positive changes related to reducing reverse flows in Old and Middle Rivers in all months except April, compared to Existing Conditions. The reverse flow conditions in April are expected to remain similar, as the increase (more negative) in reverse flow conditions in April is less than 1 percent as compared to Existing Conditions (Final EIR/EIS, Chapter 6, p. 6-176).

Because reverse flow conditions would be lower under the Project, compared to Alternatives 3, 5, and 5A, the Project is expected to result in improved conditions for delta smelt, which also lowers the risk of more stringent regulations reducing water supplies in the long run. Although delta smelt are generally not present in the south Delta where the state and federal pumping facilities are located (Final EIR/EIS, Appendix 11A, p. 11A-1), several of the life stages of that species are affected by negative reverse flows, resulting in entrainment at the State Water Project pumps in the south Delta. As discussed above, due to their limited diversion capacities in the northern facilities, and therefore their heavier

reliance on current water facilities in the south Delta, Alternatives 3, 5, and 5A, while improving on existing conditions, would entail a greater degree of entrainment of larval/juvenile delta smelt compared to the Project (Final EIR/EIS, Chapter 11, p. 11-1198, 11-1859, 11-3877). Operational criteria also play a role in determining the timing and severity of negative reverse flows. Differing from Alternatives 5 and 5A, Alternative 3 would not include inflow/export ratio criteria for the San Joaquin River in April and May; as such, reverse flows would be less positive at those times. As noted above, because its operational criteria do not include Fall X2, Alternative 3 would create conditions where reverse flows would be less positive in October. Although Alternatives 3, 5, and 5A would result in a reduction of overall entrainment of juvenile winter-run Chinook salmon relative to the Existing Conditions baseline (Final EIR/EIS, Chapter 11, p. 11-1213, p. 11-1873, and p. 11-3888), the Project (Alternative 4A) shows a greater reduction across all water years (Final EIR/EIS, Chapter 11, p. 11-3218). Although some entrainment would occur under the Project, the Project's ability to draw water from three intakes rather than the one or two intakes under Alternatives 3, 5, and 5A, combined with its operational criteria, will better meet the project objective of restoring ecosystem health and reducing stressors on the ecological functions of the Delta.

Alternatives 3, 5, and 5A would also provide less operational flexibility compared to the Project. For instance, because the Project includes three intakes, it will still be able to function even if one or two of the intakes is unable to operate. On the other hand, because they have fewer intakes, Alternatives 3, 5, and 5A would have lower capacity than three-intake dual-conveyance alternatives like the Project, and would be more susceptible to system failure, which would translate into greater reliance on the existing south Delta facilities than the Project would afford, which would in turn result in a greater persistence in the ecological problems current experienced with the current system.

Finally, on balance, DWR finds that the Project will better achieve the State's coequal goals of providing a more reliable water supply for California and protecting, restoring, and enhancing the Delta ecosystem, compared to Alternatives 3, 5, and 5A. (California Public Resources Code, § 29702, subd. (a); California Water Code, § 85054.)

6. Alternatives 7 and 8

Through its Acting Director, DWR finds Alternatives 7 and 8 to be *infeasible* based on all of the reasons discussed below.

Like the Project (Alternative 4A), Alternatives 7 and 8 include dual tunnels and three intakes, and therefore, impacts related to the construction of the water conveyance facilities would generally be similar to those of the Project under each of these alternatives, despite the differences in the location of the intakes. The main difference between the Project and the conveyance component of Alternatives 7 and 8 is the operational criteria for the water conveyance facilities. Specifically, compared to the Project, the operational

critical under Alternatives 7 and 8 would require greater outflows at certain times. Alternative 7 would include criteria for enhanced aquatic conservation under Operational Scenario E (Final EIR/EIS, Chapter 3, p. 3-101); and Alternative 8 would include increased Delta outflow under Operational Scenario F (Final EIR/EIS, Chapter 3, p. 3-104). Although the greater outflows under Alternatives 7 and 8 may benefit delta smelt and longfin smelt in certain respects, these operational scenarios would create other environmental problems in upstream reservoirs, the river reaches below them, and in the CVP/SWP export areas. These problems include the following: reduced Shasta Reservoir cold water pool necessary to maintain downstream cold water temperatures for winter-run salmon; adverse temperature effects on salmon and steelhead in the Lower American River; adverse impacts on reservoir-related recreation; and reduced availability for exports to south-of-Delta areas, which could cause increased pressure on groundwater basins in Sacramento Valley agricultural areas.

Notably, Alternatives 7 and 8 would result in several significant and unavoidable impacts to fish and aquatic species that will not occur under the Project. For example, Alternative 7 would result in significant and unavoidable impacts on rearing conditions for fall-, and late fall-run Chinook salmon, which would not occur under the Project (Final EIR/EIS, Chapter 11, p. 11-78; p. 11-75 [Table 11-7-SUM1. Results of Entrainment and Flow-Related Effects on Fish]). And Alternative 8 would result in significant and unavoidable impacts on several species for spawning (winter-run Chinook salmon and the lamprey species), rearing (winter-run and spring-run salmon, steelhead, and the lamprey species), and migration (all the covered fish species except delta smelt, Sacramento splittail and Pacific lamprey), whereas the Project will not result in any significant and unavoidable impacts to fish species (Final EIR/EIS, Chapter 11, p. 11-83; p. 11-82 [Table 11-8-SUM1. Results of Entrainment and Flow-Related Effects on Fish]). Thus, the Project will avoid several significant and unavoidable flow-related impacts to fish species that would occur under Alternatives 7 and 8.

Alternatives 7 and 8 would also be less effective, compared to the Project, at meeting the project objective of improving water supply reliability, which is also one of the State's coequal goals for the Delta under the 2009 Delta Reform Act, because they would result in greater reductions in annual deliveries from both the SWP and CVP compared to the Project. The Final EIR/EIS provides a summary comparison of important water supply impacts in Chapter 5, Water Supply, Figure 5-0. As depicted in Figure 5-0, the greatest negative change in total annual SWP and CVP water deliveries out of all of the alternatives would occur under Alternative 8, with a 9 percent decrease in the long-term average annual total SWP delivery and a 30 percent decrease in the average annual total CVP delivery. Alternative 7 would result in a 5 percent decrease in long-term average annual SWP deliveries and a 13 percent decrease in annual CVP deliveries. The Project, in contrast, would result in no change to long-term average annual SWP deliveries and a 5 percent increase in annual CVP deliveries. Thus, compared to Alternatives 7 and 8, the Project will be more effective at improving water supply reliability and will be more capable of meeting

the state's water needs. As such, the Project will achieve the fundamental goals and objectives while avoiding or mitigating the most potentially significant adverse environmental impacts, and provide what DWR regards as the optimal balance in furthering the coequal goals set forth in the Delta Reform Act, while Alternatives 7 and 8 would not.

Moreover, because Alternatives 7 and 8 would decrease water deliveries to the hydrologic regions south of the Delta, they could cause adverse impacts to agriculture and the agricultural economy that would not occur under the Project. The average annual decrease in CVP and SWP deliveries would be 1,256 TAF under Alternative 7 and 1,879 TAF under Alternative 8 relative to Existing Conditions (Final EIR/EIS, Chapter 16, Socioeconomics, Impact Econ-19). The reduced or less reliable water deliveries under Alternatives 7 and 8 could result in decreased agricultural production in certain areas. Impacts on agricultural production would also cause a reduction in both direct and indirect agricultural employment (Final EIR/EIS, Chapter 16, Socioeconomics, Impact Econ-19). Economic and social patterns tied to predominant agricultural industrial activities and land uses could erode, changing the character of agricultural communities in hydrologic regions (Final EIR/EIS, Chapter 16, Socioeconomics, Impact Econ-19).

In areas where groundwater is available (and not adjudicated), reductions in south of Delta surface water supplies may increase reliance on groundwater resources in the SWP and CVP service areas located south of the Delta. Although compliance with future groundwater management plans prepared pursuant to the Sustainable Groundwater Management Act could limit adverse groundwater impacts, increases in groundwater pumping in these areas would cause groundwater levels to decline below current levels. Direct effects caused by declines in groundwater levels include increases in pumping costs, reductions in well production rates, and a reduction in groundwater supply and water supply reliability (Final EIR/EIS, Appendix 5B, *Responses to Reduced South of Delta Water Supplies*, p. 5B-34 – 5B-35). Indirect cumulative effects that can be caused by groundwater declines relate to subsidence, reduced groundwater quality, reduced spring and stream flows, and reduced drainage (Final EIR/EIS, Appendix 5B, *Responses to Reduced South of Delta Water Supplies*, p. 5B-34 – 5B-35).

Reduced water exports under Alternatives 7 and 8 also have the potential to impact CVP and SWP hydropower generation. The generation of electrical energy at the CVP and SWP generating plants is dependent on water runoff conditions. The CVP and SWP facilities have been designed to utilize the majority of the flows available at each generating plant (Final EIR/EIS, Chapter 21, Energy), and reductions in water supply can adversely affect hydropower reserves (Final EIR/EIS, Chapter 29, Climate Change, p. 29-8). DWR aims to schedule its consumption of electricity (primarily the operation of the pumps) during off-peak demand periods to the maximum extent possible. The coordinated operation of SWP facilities plays an important role in modulating daytime and nighttime demand for electricity throughout California (Final EIR/EIS, Appendix 5B, *Responses to Reduced South of Delta Water Supplies*, p. 5B-39). In dry years, less water is released from dams and less

energy is generated. Consequently, reduced exports south of the Delta would reduce hydroelectric electricity supplies and the electricity demand-modulating benefits of the SWP (Final EIR/EIS, Appendix 5B, *Responses to Reduced South of Delta Water Supplies*, p. 5B-39).

At the end of each water year, a certain amount of water remains stored in reservoirs to ensure availability for the following year. End of September storage would be reduced in all SWP and CVP reservoirs under Alternatives 7 and 8 (Final EIR/EIS, Chapter 5, Water Supply, pp. 5-132 – 5-134 and pp. 5-141 – 5-143). Such reductions may increase the risk of impacts associated with drought conditions, particularly extended droughts over several years. These include the above mentioned impacts on cold water reservoirs for salmon and other fish populations, as well as water supply reliability for agricultural and municipal users.

7. Alternative 9

Alternative 9, known as the “Through Delta/Separate Corridors Alternative,” would create a system of gates and operable barriers, and would not include any new intakes in the north Delta, instead continuing to rely exclusively on the existing diversion facilities in the south Delta. Through its Acting Director, DWR finds Alternative 9 to be *infeasible* based on all of the reasons discussed below

Alternative 9 would not achieve most of the project goals and objectives, and would entail more severe environmental consequences compared to the Project.

Over the long term, average annual Delta exports under Alternative 9 are anticipated to decrease by 767 TAF relative to Existing Conditions, and by 63 TAF relative to the NAA. Thus, it would fail to achieve the fundamental project objective and Delta Reform Act coequal goal of restoring and protecting reliable Delta water supplies. (Final EIR/EIS, Chapter 5, Figure 5-0, Table 5-6.)

Implementing a dual conveyance system under Alternative 4A, in which water can be diverted from either the north or the south or both, depending on the needs of aquatic organisms and water quality conditions, will align water operations to better reflect natural seasonal flow patterns by creating new water diversions equipped with state-of-the-art fish screens in the north Delta. The new system will reduce the ongoing physical impacts associated with sole reliance on the southern diversion facilities and allow for greater operational flexibility to better protect fish, as well as to capture water during high flow events when pumping in the south Delta will otherwise be restricted. Minimizing south Delta pumping will provide more natural east–west flow patterns. The new diversions will also help protect critical water supplies against the threats of sea level rise and earthquakes. Alternative 9, in contrast, would not include any new intakes in the north Delta. Instead, it would rely on other infrastructure improvements in the Delta to move water to the existing pumps in the south Delta. As a result, the benefits of having new water diversions equipped with state-of-the-art fish screens in the north Delta, discussed

above, would not be realized under Alternative 9. It would also provide less resilience in the face of sea level rise or seismically induced levee failures that could require export operations to cease for an extended period of time to repair levees and flush salt water from the south Delta.

With respect to environmental impacts, Alternative 9 would require increased construction, with heavy rip-rapping, in riparian areas along the banks of the Mokelumne and San Joaquin Rivers and would result in increased visual and recreation impacts in certain areas compared to other alternatives due to the construction of 14 operable barriers necessary for fish and water quality protection purposes, which would substantially change the visual character of the Mokelumne and San Joaquin Rivers, and would adversely affect recreational boating opportunities and its associated economics. Alternative 9 would also have significant and unavoidable water quality impacts that will not occur under the Project.

Unlike the Project, Alternative 9 has the potential to affect migration conditions for delta smelt and other covered fish species. Alternative 9 includes 16 physical barriers that would limit movement of delta smelt in the interior Delta. (Final EIR/EIS, Chapter 11, p. 11-86.)

Alternative 9 would result in greater visual and aesthetic impacts compared to the Project. Alternative 9 would create a system of gates and operable barriers that would have a greater aesthetic impact throughout its proposed alignment than the Project will have. For example, construction of the fish screens under Alternative 9 would displace the Boathouse Marina at Locke and several other smaller boat docks and landings, resulting in the relocation of businesses and structures and the razing of buildings on these properties during construction. Alternative 9 also includes 14 operable barriers and other above-ground facilities that will alter the visual character of the Delta community. The Project would avoid these aesthetic impacts on local communities and other areas along its alignment by creating and transporting water through two underground tunnels connecting the north Delta intakes to the current SWP facilities in the south Delta. Overall, Alternative 9 would have 13 permanent impacts on visual and aesthetic resources, while the Project will only have 10 such effects. (Final EIR/EIS, Chapter 17, Figure 17-0 [Comparison of Aesthetic and Visual Impacts]). Although these impacts are considered significant and unavoidable under both alternatives, the impacts would be less under the Project because fewer resources would be affected.

Alternative 9 would also have greater impacts on recreational resources compared to the Project. Recreation in waterways is a vital aspect to the character of the community that resides in and around the Delta. Boating and other recreational activities are important sources of enjoyment and contribute to economic stability for residents. Construction of the fish screens and intakes under Alternative 9 would result in the direct permanent loss of well-established recreation facilities, including Boathouse Marina, Walnut Grove public guest dock, and Boon Doox guest dock. (Final EIR/EIS, Chapter 15, p. 429-430). In fact, Alternative 9 would result in the greatest number of recreation sites (six) displaced by the water conveyance facilities out of all of the alternatives. In contrast, although the Project

will affect several Delta marinas, these facilities will not be displaced due to physical structures of the kind contemplated under Alternative 9 (Final EIR/EIS, Chapter 15, p. 257). Instead, the Project will result in the permanent displacement of only two existing well-established recreation facilities available for public access. And while this impact is considered significant and unavoidable under Alternative 9, it is less than significant under the Project.

On the waterways where an operable gate would be built, boat passage and navigation would be adversely affected by restriction in the width of the channels open to boat passage and in-channel obstructions during construction. Construction activities would typically include the installation of cofferdams in the waterways and the use of barges, barge-mounted cranes, or other large waterborne equipment that would obstruct portions of the channel. Boaters may be able to use alternative routes to reach their desired destinations and to avoid traffic delays while passing through the construction zones. However, most detours would require traveling a considerably greater distance and may not be practical or desirable for many boaters. Because gates could be constructed in multiple locations simultaneously, alternative routes without construction activity may not be available between some destinations (e.g., between the Sacramento and Mokelumne rivers near Walnut Grove or between Old and Middle Rivers in the south Delta) (Final EIR/EIS, Chapter 15, p. 15-439).

Impacts from the operation of operable gates would result in a substantial change and reduction of use of established recreational areas and activities. At the 10 waterway locations where an operable gate with a boat passage facility would be built, boaters would no longer have unimpeded passage through the waterway. At locations where an operable barrier is proposed without boat passage, boaters would lose access to waterways typically traveled (Final EIR/EIS, Chapter 15, p. 15-462).

The Project, in contrast, does not include any of these additional operable barriers, other than the one to be constructed at the head of Old River, and therefore does not have as great of an impact to recreation as Alternative 9 does. Operation and maintenance activities associated with the water conveyance facilities proposed under Alternative 9 would be anticipated to result in substantial localized effects on recreational resources and therefore, would be expected to reduce related economic activity such as lodging, food, fuel, and accessories in these areas. Alternative 9 would reduce the quality of the boating experience, along with other water-based recreation (Final EIR/EIS, Chapter 16, p. 16-269). Closure of the marinas and docks mentioned above would permanently eliminate recreational opportunities from the affected area and would also result in related economic impacts. Because the Project will have fewer effects on recreational resources, it is not expected to substantially reduce economic activity related to recreational activities (Final EIR/EIS, Chapter 16, p. 16-286).

Alternative 9 would also have greater water quality impacts compared to the Project. Notably, Alternative 9 would have numerous significant and unavoidable impacts related to

water quality, including impacts related to the following constituents of concern: bromide, chloride, electrical conductivity (EC), organic carbon, and selenium, while all of the impacts related to these constituents will be less than significant under the Project (Final EIR/EIS, Chapter 8, Figures 8-0a and 8-0b [Comparison of Impacts on Water Quality]). For example, in contrast to the Project, which is not expected to adversely affect municipal beneficial uses from increases in bromide or chloride concentrations in the Delta (Final EIR/EIS, Chapter 8, Water Quality, Impacts p. 8-924 – 8-926 and p. 8-931 – 8-932), Alternative 9 would result in modeled increases in long-term average bromide and chloride concentrations at several locations (Final EIR/EIS, Chapter 8, Water Quality, Impacts p. 8-838 – 8-839 and p. 8-843 – 8-845). Impacts from these constituents could lead to adverse changes in the formation of disinfection byproducts at drinking water treatment plants such that considerable water treatment plant upgrades would be necessary in order to achieve equivalent levels of drinking water health protection (Final EIR/EIS, Chapter 8, Water Quality, p. 8-839 and 8-841 – 8-842).

Similarly, while the Project is not expected to have any significant impacts in Suisun Marsh and only minimal impacts on EC in the Delta that, with mitigation, are expected to be reduced to a less-than-significant level (Final EIR/EIS, Chapter 8, Water Quality, p. 8-924 – 8-926 and p. 8-931 – 8-932), Alternative 9 would result in increases in EC in multiple locations, causing significant and unavoidable impacts on water quality (Final EIR/EIS, Chapter 8, Water Quality, p. 8-838 – 8-839 and p. 8-843 – 8-845). Under Alternative 9, increases in long-term and drought period average EC levels would occur in the San Joaquin River at San Andreas Landing (interior Delta); and there would also be an increased frequency of exceedance of EC objectives in the Sacramento River at Emmaton, as well as substantial increases in long-term average EC during the months of October through May in Suisun Marsh. These impacts would contribute to adverse effects on agricultural and fish and wildlife beneficial uses (Final EIR/EIS, Chapter 8, Water Quality, p. 8-850 – 8-852). Given that the western Delta and Suisun Marsh are listed as impaired under section 303(d) of the Clean Water Act due to elevated EC, the increased frequency of exceedance of the Bay-Delta WQCP objectives and long-term average EC levels under Alternative 9 would contribute to additional impairment and potentially result in significant effects on beneficial uses for these waterways (Final EIR/EIS, Chapter 8, Water Quality, p. 8-851), that will not occur under the Project.

8. 50-year HCP/NCCP Alternatives (Alternatives 1A, 1B, 1C, 2A, 2B, 2C, 3, 4, 5, 6A, 6B, 6C, 7, 8, and 9)

Finally, in addition to the reasons set forth above, the Acting Director of DWR hereby finds all of the 50-year HCP/NCCP Alternatives (Alternatives 1A, 1B, 1C, 2A, 2B, 2C, 3, 4, 5, 6A, 6B, 6C, 7, 8, and 9) to be *infeasible* for all of the additional reasons discussed below.

As discussed above, DWR received numerous comments from the public and other agencies that were critical of the of the 50-year HCP/NCCP Alternatives because they involve 50-year terms that many commenters found to be unacceptable for various reasons. In

particular, as commenters noted, the long-term character of these alternatives involves unacceptable levels of uncertainty regarding both the future effects of climate change and the long-term effectiveness of habitat restoration in recovering fish populations. Thus, while Alternative 4 (BDCP) promised to provide 50 years of no-surprises assurances under the ESA and NCCPA, it is infeasible because the fish agencies indicated they would not approve the HCP/NCCP in light of the uncertainties. The Project (Alternative 4A), in contrast, has a shorter time-frame, which will allow USFWS, NMFS, and CDFW, at some point in the foreseeable future, to consider modifying its operations through subsequent consultations. In comparison to the Project, the 50-year HCP/NCCP Alternatives also have greater environmental impacts in certain resource categories due to the much greater extent of habitat restoration.

Under the Project, the water conveyance facilities that will be constructed and maintained will be identical to those proposed and analyzed under Alternative 4 (Final EIR/EIS, Table ES-4, p. ES-30). The Project, however, achieves compliance with the Endangered Species Act (ESA) through Section 7 of that Act rather than through Section 10, and it obtains incidental take coverage under the California Endangered Species Act (CESA) rather than through the NCCP Act, which were the anticipated vehicles for federal and state incidental take coverage for BDCP Alternative 4 (Final EIR/EIS, Table ES-5). In addition, the extensive habitat restoration that was proposed under the 50-year HCP/NCCP Alternatives is not included under the Project; instead, the Project includes a smaller amount of habitat restoration, supplied to address mitigation for some of the Project's significant impacts. As explained previously, the State will pursue more extensive restoration projects separate from the Project through other programs including the state's EcoRestore program. For example, the Yolo Bypass improvements previously contemplated in the BDCP (under CM2) will not be implemented as part of Alternative 4A; instead, the EIR/EIS assumes Yolo Bypass improvements will be implemented separately, and are therefore included in the No Action Alternative, as they are required by the existing BiOps (Final EIR/EIS, Executive Summary, p. ES-31).

Separating the habitat restoration components of the BDCP and pursuing permit terms shorter than 50 years is consistent with the suggestions obtained during the Draft EIR/EIS comment period (Final EIR/EIS, Chapter 3). Problems with original 50-year term for the proposed BDCP and the other 50-year HCP/NCCP Alternatives include the inherent difficulties in trying to predict the future status of the target aquatic species and other future environmental conditions over a 50-year period in light of climate change and other variables. The second challenge related to the difficulties, over such a long period, is trying to accurately predict the benefits of long-term conservation in contributing to the recovery of such species. Other comments questioned DWR's and Reclamation's ability to implement such large-scale habitat restoration (Final EIR/EIS, Chapter 3, p. 3-26; see also Master Response 5). These challenges are particularly acute here, compared to other HCP/NCCPs, due to the inherent challenges and uncertainties in planning a water system in the Delta, as

discussed throughout the EIR/EIS. In light of these challenges, DWR finds the 50-year HCP/NCCP Alternatives to be infeasible.

Furthermore, compared to the 50-year HCP/NCCP Alternatives, the Project would more realistically achieve consistency with the policies in the Delta Stewardship Council's (DSC) Delta Plan. The Delta Plan generally covers five topic areas and goals: increased water supply reliability, restoration of the Delta ecosystem, improved water quality, reduced risks of flooding in the Delta, and protection and enhancement of the Delta. The Delta Stewardship Council (DSC) does not propose constructing, owning, or operating any facilities related to these five topic areas. Rather, the Delta Plan sets forth regulatory policies and recommendations that seek to guide the actions, activities, and projects of cities and counties and state, federal, regional, and local agencies toward meeting the goals in the five topic areas (Final EIR/EIS, Chapter 13, p. 13-12). Because the Project is shorter-term than the 50-year HCP/NCCP Alternatives, and avoids much of the uncertainty with the long term habitat conservation components included under those alternatives, consistency with the Delta Plan will more easily be achieved under the Project. As explained previously, large scale habitat restoration in the Delta will still occur under programs separate from the Project, including California EcoRestore.

By reducing the amount of habitat restoration compared to the 50-year HCP/NCCP Alternatives, the Project will have substantially reduced environmental impacts. For example, relative to Existing Conditions, major land and in-water disturbances and related site development activities would be more widespread among the 50-year HCP/NCCP Alternatives compared to the Project, and therefore would increase the potential to cause direct discharges and stormwater runoff of contaminants to adjacent water bodies, particularly during the rainy season (generally October to April in California) (Final EIR/EIS, Chapter 8, Water Quality, p. 8-342). In general, land surface grading and excavation activities, or exposure of disturbed sites immediately following construction and prior to stabilization, could result in rainfall- and stormwater-related soil erosion, runoff, and offsite sedimentation in surface water bodies. The initial runoff following construction, or return of seasonal rains to previously disturbed sites, can result in runoff with peak pollutant levels and is referred to as "first flush" storm events. Soil erosion and runoff can also result in increased concentrations and loading of organic matter, nutrients (nitrogen and phosphorus), and other contaminants contained in the soil such as trace metals, pesticides, or animal-related pathogens. Graded and exposed soils also can be compacted by heavy machinery, resulting in reduced infiltration of rainfall and runoff, thus increasing the rate of runoff (and hence contaminants) to downstream water bodies.

Construction activities necessary to develop the new habitat restoration areas for Conservation Measure (CM) 2 and CM4–CM10, under the 50-year HCP/NCCP Alternatives would likely have involved the following: a variety of extensive conventional clearing and grading activities on relatively dry sites that are currently separated from the Delta channels by levees; construction of extensive new setback levees; excavation and soil placement for new wetland and other habitat feature development; and a variety of

potential in-water construction activities such as excavation, sediment dredging, levee breaching, and hauling and placement or disposal of excavated sediment or dredge material. Construction activities for the proposed restoration sites, due to the direct connectivity with Delta channels, would have had the potential to result in direct discharge of eroded soil and construction-related contaminants, or indirectly through erosion and site inundation during the weeks or months following construction prior to stabilization of newly contoured and restored landforms and colonization by vegetation (Final EIR/EIS, Chapter 8, Water Quality, p. 8-342-8-343). Because the Project includes less habitat restoration, these impacts will be greatly reduced or avoided entirely.

Similarly, impacts to mineral resources under the Project will be much less than under 50-year HCP/NCCP Alternatives because restoration actions under the Project will be greatly reduced (Final EIR/EIS, Chapter 26, Mineral Resources, p. 26-151). The same is true for impacts to paleontological resources (Final EIR/EIS, Chapter 27, p. 27-106).

The construction and operation of new conveyance facilities under the Project will help resolve many of the concerns with the current south Delta conveyance system while otherwise helping to reduce threats to endangered and threatened species in the Delta through limited but substantial amounts of habitat restoration, as necessary to mitigate significant environmental effects and satisfy applicable ESA and CESA standards. Implementing a dual conveyance system, in which water can be diverted from either the north or the south or both, depending on the needs of aquatic organisms and water quality conditions, will align water operations to better reflect natural seasonal flow patterns by creating new water diversions equipped with state-of-the-art fish screens in the north Delta. The new system will reduce the ongoing physical impacts associated with sole reliance on the southern diversion facilities and allow for greater operational flexibility to better protect fish, as well as to capture water during high flow events when pumping in the south Delta will otherwise be restricted. Minimizing south Delta pumping will provide more natural east-west flow patterns. The new diversions will also help protect critical water supplies against the threats of sea level rise and earthquakes.

Although the Project includes only those habitat restoration measures needed to provide mitigation for specific regulatory compliance purposes, broader habitat restoration is still recognized as a critical component of the state's long-term plans for the Delta. Such larger endeavors, however, will likely be implemented over time under actions separate and apart from these alternatives. The primary parallel habitat restoration program is called California EcoRestore, which is overseen by the California Resources Agency and implemented under the California Water Action Plan. Under EcoRestore, the state will pursue restoration of more than 30,000 acres of fish and wildlife habitat by 2020. (Final EIR/EIS, pp. ES-3-ES-4.)

9. Conclusion

For the foregoing reasons, DWR rejects the following alternatives as infeasible: Alternatives 1A, 1B, 1C, 2A, 2B, 2C, 2D, 3, 4, 5, 5A, 6A, 6B, 6C, 7, 8, and 9. As explained above, these alternatives would have greater environmental impacts compared to Alternative 4A and/or would not meet the project goals and objectives, or would not achieve them to the same degree as the Project, and/or are found to be infeasible on the basis of additional grounds discussed above. DWR further finds that, out of all the alternatives considered, Alternative 4A strikes the optimal balance between attainment of project goals and objectives, competing environmental and economic impacts and benefits, and best achieves the coequal goals set forth in the Delta Protection Act and Delta Reform Act of providing a more reliable water supply for California and protecting, restoring, and enhancing the Delta ecosystem.

It is important to understand that despite DWR's best efforts to strike the best possible balance in furthering the coequal goals of the Delta Reform Act, the Project, by itself, need not satisfy by itself each and every policy objective within the Act. DWR does not govern land use within the Delta, but rather is charged with managing the SWP. The California WaterFix will further the coequal goals in the Delta, but it is only part of a much more comprehensive effort to implement the Delta Plan. The DSC is the regulatory body responsible for preparing and enforcing a Delta Plan with contents sufficient to achieve the Act's multiple statutory mandates affecting Delta land use and resource management. The Project must be consistent with the applicable policies in the Delta Plan or the coequal goals themselves. Covered actions are projects, as that term is defined in CEQA, that occur in whole or in part in the Delta that "have a significant impact on achievement of one or both of the coequal goals or the implementation of government-sponsored flood control programs to reduce risks to people, property, and state interests in the Delta." (California Water Code, § 85057.5, subd. (a)(4); see also *id.*, §85225 et seq.) The Project will have a significant beneficial impact on the achievement of the coequal goals of water supply reliability and ecosystem restoration. The Project will modify the existing SWP conveyance system, with its sole reliance on south Delta pumps, to render the system more flexible and reducing reverse flows, and it will provide resilience in response to other environmental challenges such as sea level rise and warming water temperatures. This same system flexibility, along with careful operations informed by strict environmental criteria, will also have a significant beneficial impact on the statutory goal of protecting, restoring, and enhancing the Delta ecosystem.

Not every covered action must meet statutory objectives under the Act independent of the coequal goals. Thus, the Project, by itself, may not sufficiently protect and enhance the unique cultural, recreational, and agricultural values of the Delta as an evolving place (although as the Final EIR/EIS and record of outreach and engagement with Delta stakeholders demonstrates, DWR has done its best to mitigate adverse effects on cultural, recreational, and agricultural values). (See California Water Code, § 85020, subd. (b).) Rather, other projects, landowners, citizens, and public agencies within the Delta and subject to the Delta Plan must contribute to the achievement of these particular statutory

goals. Nor can DWR ensure that local governments and water agencies throughout the State will undertake water use efficiency, water recycling, advanced water technologies, and local and regional water supply projects which the Legislature declared to be inherent in the coequal goals, and which improve reduced reliance/regional self-reliance. (See California Water Code, §§ 85020, subd. (b), 85021.) DWR recognizes and encourages all such projects (see, e.g., Final EIR/EIS, Appendix 1C, Demand Management Measures), but they are independent of the Project at hand, which at bottom is a modernizing upgrade to existing SWP infrastructure and operations.

E. Recirculation after the RDEIR/SDEIS

Many comments on the RDEIR/SDEIS and proposed Final EIR/EIS urged the lead agencies to recirculate some or all of the EIR/EIS for a second time. Many commenters argued that additional alternatives should have been considered.

CEQA requires a lead agency to recirculate an EIR only when significant new information is added to the EIR after public notice is given of the availability of the draft EIR for public review but before certification. (CEQA Guidelines, § 15088.5, subd. (a).)

As described within the Introduction of the RDEIR/SDEIS, the lead agencies recirculated a substantial portion of the DEIR/SEIS for public and agency review and comment after adding new information that the lead agencies determined to be significant new information requiring recirculation. The lead agencies have also included new information within the Final EIR/EIS, but the new information is not significant new information requiring recirculation.

For instance, no new information was included that would result in: (1) A new significant environmental impact resulting from the project or from a new mitigation measure proposed to be implemented; (2) A substantial increase in the severity of an environmental impact unless mitigation measures are adopted that reduce the impact to a level of insignificance; and/or (3) A feasible project alternative or mitigation measure considerably different from others previously analyzed were added that would clearly lessen the environmental impacts of the project. (CEQA Guidelines, § 15088.5, subd. (a).)

All information included in the Final EIR/EIS, including the Developments after Publication of the Proposed Final Environmental Impact Report, merely clarifies or amplifies or makes insignificant modifications to the EIR/EIS. (See *Laurel Heights Improvement Association v. Regents of University of California (Laurel Heights II)* (1993) 6 Cal.4th 1112, 1129-1130.)

Although modeling results were updated, the new modeling merely confirmed previous conclusions, and thus did not trigger any obligation to recirculate. (See *San Francisco Baykeeper v. California State Lands Commission* (2015) 242 Cal.App.4th 202, 224-225 [new modeling confirming earlier conclusion about effects of mining on Bay environment did not trigger recirculation]; *Beverly Hills Unified School Dist. v. Los Angeles County Metropolitan Transportation Commission* (2015) 241 Cal.App.4th 627, 660-666 [Final EIR containing

substantial amounts of new information, including numerous new seismic studies did not trigger recirculation].)

As provided in the Supplemental Modeling Appendix (Final EIR/EIS Appendix 11G) and as further explained in the Final EIR/EIS, the range of operational criteria and scenarios are within the scope of the modeling available through the RDEIR/SDEIS. A wide range of modeled scenarios provide the information to determine possible environmental impacts of all action alternatives considered.

Contrary to the contention in some comments on the RDEIR/SDEIS, sub-alternatives Alternatives 4A, 2D and 5A are different than the alternatives introduced in the Draft EIR/EIS in certain respects, but did not require an entirely new EIR/EIS. Rather, the RDEIR/SDEIS adequately addressed the environmental impacts of those sub-alternatives. Alternative 4A will entail the construction and operation of north Delta intakes and associated tunnel conveyance facilities, and the operation of the SWP as a dual conveyance facility, consistent with the physical features and operations of the updated version of Alternative 4, as described in RDEIR/RDEIS Appendix A. Alternatives 2D and 5A entail similar conveyance facilities similar to those proposed in the DEIR/EIS under Alternatives 2 and 5. When reviewed together with the Draft EIR/EIS, the RDEIR/SDEIS sufficiently describes and discloses the effects of implementing Alternatives 4A, 2D, and 5A for purposes of CEQA and NEPA. Where appropriate, the RDEIR/DEIS also references the Draft BDCP EIR/EIS.

Finally, the June 2017 Biological Opinions from USFWS and NMFS did not contain any terms or requirements triggering recirculation, for reasons discussed in the portion of the certified Final EIR entitled, Developments after Publication of the Proposed Final Environmental Impact Report. Most of these terms and requirements were environmentally beneficial or benign, in that they were intend to reduce or avoid adverse effects on federally-listed species. To the extent that increased amounts of delta smelt habitat involved environmental tradeoffs, no such tradeoffs resulted in new significant effects or substantial increases in the severity of previously-identified effects.

PART IV: Findings Regarding the Public Trust Doctrine

A. Introduction

Actions by state agencies involving the planning and allocation of water resources implicate the common law “public trust doctrine.”¹² The doctrine “is an affirmation of the duty of the state to protect the people’s common heritage of streams, lakes, marshlands and

¹² *National Audubon Society v. Superior Court* (1973) 33 Cal.3d 419, 446 (*National Audubon*).

tidelands, surrendering that right of protection only in rare cases when the abandonment of that right is consistent with the purposes of the trust.”¹³ The “traditional triad” of public trust uses includes navigation, commerce, and fishing on navigable waters.¹⁴ The doctrine now also extends to actions on non-navigable tributaries of navigable waters that adversely affect those navigable waters.¹⁵ The protection of recreational and ecological values “is among the purposes of the public trust.”¹⁶

“[T]raceable to Roman law,” the doctrine “rests on several related concepts. First, that the public rights of commerce, navigation, fishery, and recreation are so intrinsically important and vital to free citizens that their unfettered availability to all is essential in a democratic society. ‘An allied principle holds that certain interests are so particularly the gifts of nature’s bounty that they ought to be reserved for the whole of the populace.... Finally, there is often a recognition ... that certain uses have a peculiarly public nature that makes their adaptation to private use inappropriate. The best known example is found in the rule of water law that one does not own a property right in water in the same way he owns his watch or his shoes, but that he owns only an usufruct—an interest that incorporates the needs of others. It is thus thought to be incumbent upon the government to regulate water uses for the general benefit of the community and to take account thereby of the public nature and the interdependency which the physical quality of the resource implies.’”¹⁷

Importantly, the public doctrine does not operate as an absolute protection of the resources that come under its ambit. Under the doctrine, the state has an “affirmative duty” to project public trust uses whenever *feasible*.¹⁸ “[B]oth the public trust doctrine and the water rights system embody important precepts which make the law more responsive to the diverse needs and interests involved in the planning and allocation of water resources. To embrace one system of thought and reject the other would lead to an unbalanced structure, one which would either decry as a breach of trust appropriations essential to the economic development of this state, or deny any duty to protect or even consider the values promoted by the public trust.”¹⁹ Thus, “[a]s a matter of practical necessity, the state may have to approve appropriations despite foreseeable harm to public trust uses. In so doing, however, the state must bear in mind its duty as trustee to consider the effect of the taking on the public trust,” and “to preserve, so far as consistent with the *public interest*, the uses protected by the trust.”²⁰

¹³ *Id.* at p. 441.

¹⁴ *Id.* at p. 434.

¹⁵ *Id.* at p. 437.

¹⁶ *Id.* at p. 435.

¹⁷ *Zack's Inc. v. City of Sausalito* (2008) 165 Cal.App.4th 1163, 1175–1176 (*Zack's*), quoting Sax, *The Public Trust Doctrine in Natural Resource Law: Effective Judicial Intervention*, 68 Mich. L.Rev. 471, 484–485, citations, paragraph breaks, and footnotes omitted.

¹⁸ *National Audubon, supra*, 33 Cal.3d at p. 446, italics added.

¹⁹ *Id.* at p. 445.

²⁰ *Ibid.*, italics added.

Similar principles apply to agency actions affecting fish and wildlife in California. Indeed, the California Supreme Court has recognized “two distinct public trust doctrines”—“the common law doctrine, which involves the government’s ‘affirmative duty to take the public trust into account in the planning and allocation of water resources’” and “a public trust duty derived from statute, specifically California Fish and Game Code section 711.7, pertaining to fish and wildlife.”²¹ The court observed that “[t]here is doubtless an overlap between the two public trust doctrines—the protection of water resources is intertwined with the protection of wildlife,” though “the duty of government agencies to protect wildlife is primarily statutory.”²² “[W]hatever its historical derivation, it is clear that the public trust doctrine encompasses the protection of undomesticated birds and wildlife. They are natural resources of inestimable value to the community as a whole.”²³

In this second context, the California Supreme Court mentioned two particular provisions of the California Fish and Game Code: sections 711.7 and 1801. Subdivision (a) of the former statute provides that “fish and wildlife resources are held in trust for the people of the state by and through the [D]epartment [of Fish and Wildlife].” The latter provision declares that it is “the policy of the state to encourage the preservation, conservation, and maintenance of wildlife resources under the jurisdiction and influence of the state,” and sets forth several objectives consistent with that policy. Among them are “[t]o provide for economic contributions to the citizens of the state, through the recognition that wildlife is a renewable resource of the land by which economic return can accrue to the citizens of the state, individually and collectively, through regulated management.”²⁴ Notably, though, the general policy set forth in section 1801 “is not intended [to] ... provide any power to regulate natural resources or commercial or other activities connected therewith, except as specifically provided by the Legislature.”²⁵ To find such authority, courts “will look to the statutes protecting wildlife to determine if DF[W] or another government agency has breached its duties in this regard.”²⁶ One such statute is Fish and Game Code section 2081, which authorizes the issuance of incidental take permits for endangered and threatened species.²⁷ By analogy, another such statute is Fish and Game Code section 2820, which authorizes DFW to approve natural community conservation plans.²⁸

²¹ *Environmental Protection and Information Center v. California Dept. of Forestry & Fire Protection* (2008) 44 Cal.4th 459, 515 (*EPIC*).

²² *Ibid.*

²³ *Center for Biological Diversity, Inc. v. FPL Group, Inc.* (2008) 166 Cal.App.4th 1349, 1363.

²⁴ Cal. Fish & G. Code, § 1801[f].

²⁵ *Id.*, § 1801[h].

²⁶ *EPIC*, *supra*, 44 Cal.4th at p. 515.

²⁷ *Ibid.*

²⁸ See also *CBD*, *supra*, 166 Cal.App.4th at pp. 1359-1364; Cal. Fish & G. Code, §§ 1802, 2000, 2052, 3503.5, 3511, 3513, 3800, 12000.

Although the legal principles set forth above are well established, “[t]here is no set ‘procedural matrix’ for determining state compliance with the public trust doctrine.”²⁹ In general, however, “evaluating project impacts within a regulatory scheme like CEQA is sufficient ‘consideration’ for public trust purposes.”³⁰ Notably, CEQA requires the imposition of all *feasible* means of reducing the severity of significant environmental effects, including those on water-related resources, including fish, and on wildlife species and their habitats.³¹ Where governmental action authorizes the *private* use of public trust resources, however, CEQA compliance without more may not be enough; specific findings separately addressing public trust considerations may be necessary.³²

Here, the California WaterFix, as well as all of the alternatives and sub-alternatives set forth in the Final EIR/EIS, all involve proposals by which the Department of Water Resources (DWR) and the Bureau of Reclamation (Reclamation) – both *public* agencies – would add new points and diversion and alter the system operations by which they provide water to other *public* agency customers. The Final EIR/EIS, then, sets forth sufficient analyses for allowing DWR, as lead agency, to satisfy its duties under the two public trust doctrines. These documents should also be very helpful in assisting both the State Water Resources Control Board (State Board) and the Department of Fish and Wildlife (DFW), as CEQA responsible agencies, to satisfy their own obligations under both the common law public trust doctrine and the statutory public trust doctrine aimed at protecting wildlife and fish species.

Notably, the Delta Reform Act, with which the California WaterFix or one of the Final EIR/EIS alternatives must be generally consistent, requires the various state agencies with jurisdiction over activities occurring within the Delta to engage in a balancing of environmental and economic considerations that is totally consistent with the public trust doctrine. In particular, such balancing is required to “[a]chieve the two coequal goals of providing a more reliable water supply for California and protecting, restoring, and enhancing the Delta ecosystem.”³³ As the Legislature explicitly recognized, “the Sacramento-San Joaquin Delta ... is a critically important natural resource for California and the nation. It serves Californians concurrently as both the hub of the California water system and the most valuable estuary and wetland ecosystem on the west coast of North and South America.”³⁴ Thus, “[t]he economies of major regions of the state depend on the ability to use water within the Delta watershed or to import water from the Delta

²⁹ *San Francisco Baykeeper, Inc. v. State Lands Commission* (2015) 242 Cal.App.4th 202, 234 (*SF Baykeeper*), quoting *Citizens for East Shore Parks v. California State Lands Commission* (2013) 202 Cal.App.4th 549, 576 (*Citizens for East Shore Parks*).

³⁰ *Citizens for East Shore Parks*, *supra*, 202 Cal.App.4th at pp. 576-577, citing *National Audubon*, *supra*, 33 Cal.3d at p. 446, fn. 27, and *Carstens v. Coastal Commission* (1986) 182 Cal.App.3d 277, 289-291.

³¹ CEQA Guidelines, §§ 15002[a][3], 15021[a][2].

³² *SF Baykeeper*, *supra*, 242 Cal.App.4th at pp. 241-242 [leases authorizing a private lessee to mine sand from the San Francisco Bay].

³³ Cal. Pub. Resources Code, § 29702.

³⁴ Cal. Water Code, § 85002.

watershed. More than two-thirds of the residents of the state and more than two million acres of highly productive farmland receive water exported from the Delta watershed.”³⁵ Even so, one of the environmental objectives inherent in the above-described co-equal goals is to “[r]estore the Delta ecosystem, including its fisheries and wildlife, as the heart of a healthy estuary and wetland ecosystem.”³⁶ Although neither the California WaterFix nor any Final EIR/EIS alternative must, by itself, wholly achieve this particular environmental objective, DWR, the State Water Resources Control Board, and the Department of Fish and Wildlife all must be cognizant of this objective in taking their various actions relating to the California WaterFix or any such alternative.

B. Compliance with Public Trust Doctrines

As explained above, compliance with CEQA, with its mandate to mitigate significant environmental effects to the extent feasible,³⁷ tends to ensure compliance with the public trust doctrine, at least with respect to public projects involving public use of public trust resources.³⁸ This is because, as also explained above, the public trust doctrine gives the state an “affirmative duty” to project public trust uses whenever *feasible*.³⁹

Throughout the CEQA/NEPA process, DWR as CEQA lead agency has gone to considerable lengths to develop environmental commitments, conservation measures, avoidance and minimization measures, and mitigation measures intended to reduce otherwise “significant environmental effects” to less-than-significant levels whenever feasible. These effects include effects on the following public trust resources: surface water; water quality; fish and aquatic resources; terrestrial biological resources; in-water recreational resources; and in-river transportation. In the Final EIR/EIS, these topics are addressed in Chapters 6, 8, 11, 12, 15, and 19. In Volume I of the Final EIR/EIS, changes were made to all of these Final EIR/EIS chapters.

Most of the impacts at issue can be mitigated to less-than-significant levels, thereby resulting in protection of the public trust resources at issue. Some impacts to public trust resources, however, will remain significant and unavoidable. The existence of such impacts is also consistent with the public trust doctrine in that there are no *feasible* means by which such impacts can be mitigated to less-than-significant levels. As discussed within Section

³⁵ *Id.*, § 85004[a].

³⁶ *Id.*, § 85020[c].

³⁷ Cal. Pub. Resources Code, § 21002; CEQA Guidelines, §§ 15002[a][3], 15021[a][2].

³⁸ *Citizens for East Shore Parks*, *supra*, 202 Cal.App.4th at pp. 576-577, citing *National Audubon*, *supra*, 33 Cal.3d at p. 446, fn. 27; *Carstens v. Coastal Commission* (1986) 182 Cal.App.3d 277, 289-291; *SF Baykeeper*, *supra*, 242 Cal.App.4th at pp. 241-242 [leases authorizing a private lessee to mine sand from the San Francisco Bay].

³⁹ *National Audubon*, *supra*, 33 Cal.3d at p. 446, italics added.

31.6.2 of the Final EIR/EIS, with respect to Alternative 4A, only the following four significant, unavoidable impacts to public trust resources would occur:

- WQ-14: Effects on mercury concentrations resulting from implementation of Environmental Commitments 3, 4, 6-12, 15, and 16 (See Final EIR/EIS, p. 31-104);
- AQUA-201: Effects of water operations on entrainment of non-covered aquatic species of primary management concern (striped bass and American shad) (See Final EIR/EIS, p. 31-104.);
- REC-2: Result in long-term reduction of recreation opportunities and experiences as a result of constructing the proposed water conveyance facilities;⁴⁰ (See Final EIR/EIS, pp. 31-104 and 31-105) and
- REC-3: Result in long-term reduction of recreational navigation opportunities as a result of constructing the proposed water conveyance facilities. (See Final EIR/EIS, pp. 31-105.)

For the following reasons, none of these significant effects can be feasibly mitigated to less-than-significant levels.⁴¹

1. Significant, unavoidable effects on public trust resources
a. Mercury Concentrations resulting from implementation of Environmental Commitments

Water quality impacts on Delta ecosystems date back to the late 19th Century, when hydraulic mining washed large amounts of sediment from surrounding landforms into the Delta's major tributaries.⁴² Such sediment included mercury, cadmium, and copper.⁴³

Mercury and its more biologically available methylated form remain an element of statewide concern. Mercury present in the Delta, its tributaries, Suisun Marsh, and San Francisco Bay today is derived both from current processes and as a result of historical

⁴⁰ Impacts and effects on recreation from constructing the intakes would be LTS and NA, respectively, following mitigation.

⁴¹ The discussion of impacts and mitigation measures that follows does not attempt to describe in full the analyses found in the DEIR/EIS or the RDEIR/SDEIS for the relevant impacts and measures. Rather, readers are directed to those particular environmental documents for more detailed analyses. This following discussion, however, should be understood to incorporate by reference the detailed determinations and conclusions found in those documents.

⁴² Final EIR/EIS, Appendix 1A, *Primer on the Delta and California Water Delivery Systems*, p. 1A-6.

⁴³ *Id.*, p. 1A-7.

deposition. The majority of the mercury present is the result of historical mining of mercury ore in the Coast Ranges (via Putah and Cache Creeks to the Yolo Bypass) and the extensive use of elemental mercury to aid gold extraction processes in the Sierra Nevada (via Sacramento, San Joaquin, Cosumnes, and Mokelumne Rivers). Residual mercury in soils affected by historical mining continues to contribute to mercury concentrations in water and sediments of the Delta and its tributaries. The mercury supplied from historical gold mining processes appears to be the most bioavailable of the two primary sources because that mercury was purified prior to use rather than left as more refractory ore and tailings.⁴⁴

The bioavailability and toxicity of elemental mercury (from whatever primary source) are greatly enhanced through the natural, bacterial conversion of mercury to methylmercury in marshlands or wetlands. These environments tend to be more stagnant, with reduced oxygen concentrations, and promote chemical reduction processes that make methylation possible.⁴⁵

Areas of enhanced bioavailability and toxicity of mercury (created through the mercury methylation process) exist in the Delta, and elevated methylmercury concentrations in fish tissue produce subsequent exposure and risk to humans and wildlife. Consequently, the beneficial uses most directly affected by mercury are shellfish harvesting and commercial and sport fishing activities that pose a human health concern, and wildlife habitat and rare, threatened, and endangered species resources that can be exposed to bioaccumulation of mercury. Because of these concerns, mercury was the first Total Maximum Daily Load (TMDL) approved under Section 303(d) of the Clean Water Act for San Francisco Bay in 2007. The Delta methylmercury TMDL was approved by the Central Valley Water Board in 2010 and was approved as final on October 20, 2011. The Delta, several direct tributaries to the Delta (i.e., Sacramento River, San Joaquin River, Mokelumne River, Putah Creek, and Calaveras River), and areas downstream (i.e., Suisun Bay and Suisun Marsh) also are listed as impaired water bodies on the Section 303(d) lists for mercury in fish tissue.

Compared with the original “proposed project” in the Draft EIR/EIS (Alternative 4), the proposed project in the Final EIR/EIS (Alternative 4A) contains substantially less tidal restoration acreage. Thus, the magnitude of effects on mercury and methylmercury at locations in the Delta related to habitat restoration would therefore be considerably lower.

Notably, Environmental Commitment 12 will require the preparation of project-specific *Mercury Management Plans* that take into account site-specific factors, so that methylation potential can be more accurately assessed, efforts can be coordinated with ongoing research and TMDL compliance efforts, and the best approaches to restoration design and

⁴⁴ Final EIR/EIS, p. 8-66.

⁴⁵ *Ibid.*

adaptive management can be implemented.⁴⁶ Such plans will include the following components:

- A brief review of available information on levels of mercury expected in site sediments/soils based on proximity to sources and existing analytical data.
- A determination if sampling for characterization of mercury concentrations and/or post-restoration monitoring is warranted.
- A plan for conducting the sampling, if characterization sampling is recommended.
- A determination of the potential for the BDCP restoration action to result in increased mercury methylation.

If a potential for increased mercury methylation under the restoration action is identified, the following will also be included:

- Identification of any restoration design elements, mitigation measures, adaptive management measures that could be used to mitigate mercury methylation, and the probability of success of those measures, including uncertainties.
- Conclusion on the resultant risk of increased mercury methylation, and if appropriate, consideration of alternative restoration areas.

Because methylmercury is an area of active research in the Delta, each new project-specific methylmercury management plan will be updated based on the latest information about the role of mercury in Delta ecosystems or methods for its characterization or management. Results from monitoring of methylmercury in previous restoration projects will also be incorporated into subsequent project-specific methylmercury management plans.

In each of the project-specific methylmercury management plans developed under Environmental Commitment 12, relevant findings and mercury control measures identified as part of TMDL Phase I control studies will be considered and integrated into restoration design and management plans. DWR, in conjunction with the Methylmercury TMDL program, will provide for a programmatic quality assurance/quality control (QA/QC) program that will specify sampling procedures, analytical methods, data review requirements, a QA/QC manager, and data management and reporting procedures. Each project-specific plan will be required to comply with these procedures to ensure consistency and a high level of data quality.

With such project-specific methylmercury management plans in place, it is not expected that the level of tidal restoration proposed under Alternative 4A would cause fish tissue concentrations to increase, at a measurable level, outside of the immediate localized area of the tidal restoration sites. Habitat restoration has the potential, however, to increase water residence times and increase accumulation of organic sediments that are known to

⁴⁶ See Final EIR/EIS, p. 11F.3-56 – 11f.3-57

enhance methylmercury bioaccumulation in biota in the vicinity of the restored habitat areas. Fish tissue concentrations in the Delta already frequently exceed the Water Quality Control Plan (Basin Plan) for the Sacramento River and San Joaquin River Basins objective of 0.24 mg/kg for trophic level 4 fish in the Delta. The proposed tidal restoration may cause or contribute to increased fish tissue concentrations at a local level, though the magnitude of the increase is not quantifiable.⁴⁷

The Basin Plan includes methylmercury allocations for wetlands for various areas of the Delta. Because the proposed tidal restoration acreage is very small, it is possible that, relative to the allocations, the increased loading would be very small. It is still unknown, however, how and if the allocations can be attained. The Basin Plan also requires that for many areas of the Delta (i.e., those needing reductions in methylmercury), proponents of wetland restoration projects shall (a) participate in Control Studies, or implement site-specific study plans, that evaluate practices to minimize methylmercury discharges, and (b) implement methylmercury controls as feasible. As noted earlier, design of restoration sites would be guided by Environmental Commitment 12, which requires development of site-specific mercury management plans as restoration actions are implemented to minimize methylmercury production. The effectiveness of minimization and mitigation actions implemented according to the mercury management plans is not known at this time, although the potential to reduce methylmercury concentrations exists based on current research.⁴⁸

Importantly, these increases would not be expected to cause injury to downstream water rights holders or other downstream water users, because effects would be localized to the restoration sites. Nor would such localized impacts adversely affect any other downstream beneficial users.

Other Environmental Commitments—3, 4, 6–11, 15, and 16—would also help to ensure that there will be no substantial, long-term increase in mercury or methylmercury concentrations or loads in the rivers and reservoirs upstream of the Delta or the waters exported to the SWP/CVP Export Service Areas due to relative to Existing Conditions. Even with the relatively small amount of tidal restoration areas proposed in the Delta, however, uptake of mercury from water and/or methylation of inorganic mercury may increase in localized areas relative to Existing Conditions as part of the creation of new, marshy, shallow, or organic-rich restoration areas. Although not quantifiable on a local level, increases in methylmercury concentrations may be measurable. Methylmercury is CWA Section 303(d)-listed within the affected environment, and therefore any potential measurable increase in methylmercury concentrations would make existing mercury-related impairment measurably worse.⁴⁹

⁴⁷ Final EIR/EIS, p. 8-949.

⁴⁸ *Ibid.*

⁴⁹ *Ibid.*

Because mercury is bioaccumulative, increases in water-borne mercury or methylmercury that could occur in some areas could bioaccumulate to somewhat greater levels in aquatic organisms and would, in turn, pose health risks to fish, wildlife, or humans. Although Environmental Commitment 12 would be implemented with the goal of reducing the severity of this potential effect, the uncertainties related to site specific restoration conditions and the potential for increases in methylmercury concentrations in the Delta result in this potential impact being considered significant because, as described above, any potential measurable increase in methylmercury concentrations would make existing mercury-related impairment measurably worse. No mitigation measures would be available until specific restoration actions are proposed. Therefore, this impact is considered significant and unavoidable.⁵⁰

b. Effects of water operations on entrainment of non-covered aquatic species of primary management concern (striped bass and American shad)

Striped bass and American shad are non-native fish species popular with anglers in Northern California. The species were introduced into the Sacramento-San Joaquin River Basin in the late 1880s.⁵¹ Both species migrate from the Pacific Ocean via the Delta into the San Joaquin River to spawn in the spring.⁵²

Like the Delta smelt, the striped bass and American shad are pelagic species that are susceptible to entrainment at the south Delta facilities in proportion to broadscale hydrodynamic factors such as Old and Middle River (OMR) flows (shown for striped bass by Grimaldo et al. 2009). Operation of new north Delta intakes would be expected to reduce overall entrainment of screenable life stages (i.e., early juveniles and older, around 20 mm long) because of the reduction in use of the south Delta facilities, which do not have the state of the art fish screens proposed for the north Delta intakes.⁵³

Earlier life stages (eggs and larvae) of striped bass and American shad, however, would be susceptible to entrainment at the proposed north Delta intakes. For striped bass and American shad in particular, much of the overall Central Valley populations may be spawned upstream of the proposed north Delta intakes and therefore could be susceptible. In the Sacramento River, striped bass spawning usually takes place between Colusa (river km 195) and the mouth of the Feather River (river km 125), and to a much lesser extent within the Delta (Moyle 2002). Eggs and larvae would be vulnerable as they are passively transported downstream from spawning areas within the Sacramento River. Data from the

⁵⁰ *Id.*, p. 8-950.

⁵¹ Final EIR/EIS, p. 11-118.

⁵² *Id.*, p. 11-120.

⁵³ FEIR/FEIS, p. 11-677 – 11-678.

striped bass egg and larval survey (several years during 1977-1994) showed that early life history stages of striped bass (eggs and larvae <15mm) occur in the north Delta intakes area from April until June with the primary occurrence in May, with occasional occurrence as early as March and as late as July.⁵⁴

American shad are known to rear upstream of the north Delta intakes area, although the lower Sacramento River (Isleton) and the backwater sloughs of the Mokelumne River have also been identified as primary rearing areas. One study postulated that shad larvae were advected from the Sacramento River through the Delta Cross-Channel into the Mokelumne River and then into the San Joaquin River. This suggests two contrasting rearing scenarios that are probably dependent on flow and water temperature. Early life history stages of American shad (eggs and larvae) could occur in the north Delta intakes area from April until June, with the primary occurrence in May-June, and occasional occurrence as early as February and as late as July based on the historic striped bass egg and larval survey data. American shad larvae that rear successfully upstream of the proposed north Delta intake would be large enough to avoid entrainment, but if river conditions (high flow, low temperatures) moved the larvae through the area of the water intake structures as small larvae, there would be the potential to be entrained at similar rates to striped bass larvae, which are mostly moving into the Plan Area as opposed to remaining upstream.⁵⁵

For Alternative 4A, as with other alternatives proposing water conveyance with north Delta intakes, there is the potential for an appreciable increase in magnitude of entrainment of early life stages. It is important to consider the context within which the entrainment is occurring. For striped bass entrainment at the south Delta intakes, it has been noted:

Population-level consequences [of entrainment] have been best studied for striped bass. Striped bass larval production was historically explained by river flows and southern Delta exports (Stevens et al. 1985). However, Kimmerer et al. (2001) found that export effects were small and sporadic, primarily occurring during the first several months of life. Moreover, striped bass population dynamics is best explained by density dependence between age-1 and age-2 year classes, a bottleneck that dampens variation from effects early in life (Kimmerer et al. 2000). However, our analyses indicate that if there are years when density dependence is relaxed, then age-0 striped bass losses could be reduced by managing export flows during periods when these fish are abundant in the Delta.⁵⁶

The reasons for the continued decline of the age-0 striped bass abundance index to record lows during the Pelagic Organism Decline (POD) years, despite an increase in the adult

⁵⁴ *Ibid.*

⁵⁵ FINAL EIR/EIS, p. 11-680.

⁵⁶ *Id.*, p. 11-678.

abundance index and by extension, egg supply, are unknown. Recent statistical evaluations found water clarity, fall outflow (as indexed by X2), and food to be important in explaining trends in abundance, whereas entrainment was not found to be an important predictor. Given the potential for appreciably greater entrainment of the earliest life stages, however, it is concluded with some uncertainty that the effects of entrainment on striped bass from Alternative 4A would be significant and unavoidable. Although American shad early life stages may rear to sufficiently large size above the Delta, they could also be entrained in appreciably greater magnitude than currently occurs and therefore it is also concluded that the effects of entrainment on American shad from Alternative 4A would also be significant and unavoidable. Note that entrainment of the early life stages of striped bass and American shad at the north Delta intakes may be moderated by real-time operational adjustments during the spring to benefit covered fishes such as spring-run Chinook salmon. Note also that, although the north Delta intake screens are estimated to exclude larvae or juvenile fish of around 20-22 mm and larger, they may also exclude smaller fish to some extent, based on observations from other fish screens in the Delta.⁵⁷

c. Result in long-term reduction of recreation opportunities and experiences as a result of constructing the proposed water conveyance facilities

Two recreation sites, Clifton Court Forebay and Cosumnes River Preserve, are within the construction footprint and six recreation sites or areas (Stone Lakes National Wildlife Refuge [NWR], Clarksburg Boat Launch, Wimpy's Marina, Delta Meadows, Bullfrog Landing Marina, and Lazy M Marina) are within the 1,200- to 1,400-foot indirect impact area. Potential indirect effects on recreation include loss of access, construction noise, and changes in the visual character of the area surrounding the recreation sites.⁵⁸

Impacts on recreation occurring within the Stone Lakes NWR would be attributable to noise and changes in visual character as a result of temporary work areas, reusable tunnel material (RTM) storage, geotechnical exploration, construction of Intakes 2 and 3, and construction of the temporary transmission lines. Recreation activities that could be adversely affected include wildlife and environmental education.⁵⁹

The Clarksburg Boat Launch is on the west bank of the Sacramento River across the river from the site of Intake 3. Although access to the boat launch would be maintained during the construction period, noise generated during construction and geotechnical testing

⁵⁷ FINAL EIR/EIS, p. 11-678.

⁵⁸ Final EIR/EIS, p. 15-71 – 15-80.

⁵⁹ *Id.*, pp. 15-72.

could adversely affect use of the public access areas near the boat launch for fishing or other activities.⁶⁰

Impacts on recreation opportunities occurring within the Cosumnes River Preserve would include disruption of wildlife viewing and docent-guided tours. Although no recreation opportunities would be permanently displaced, recreation opportunities occurring within portions of the preserve could be adversely affected during construction as result of the introduction of noise, light, and temporary facilities such as access roads, safe haven work sites, and tunnel shaft with temporary work areas.⁶¹

Wimpy's Marina is a private boating facility located on the south fork of the Mokelumne River southeast of Walnut Grove. Geotechnical exploration would occur along the tunnel corridor for approximately 2.5 years and would introduce noise that would adversely affect recreation occurring at the marina.⁶²

Recreation occurring at Delta Meadows could be affected by geotechnical testing and construction and operation of the intermediate forebay and spillway. These features would generate noise and introduce visual disturbances to the recreation site.⁶³

Recreation occurring at the Bullfrog Landing Marina on Middle River could be affected by noise and visual disturbance as a result of constructing the water conveyance across Bacon Island. This would include impacts from constructing a temporary access road on the island as well as a temporary safe haven work area. Anglers on the river between the marina and the construction area would also experience noise and visual disturbances during construction.⁶⁴

On-water recreation opportunities not associated with formal recreation sites could be affected by the introduction of noise and light during the construction period. The quality of recreation opportunities in the vicinity of construction sites may be adversely affected by noise and changes in visual character.⁶⁵

Recreation opportunities, including fishing and hunting, could be adversely affected by expanding Clifton Court Forebay. Recreation would be adversely affected because access to the forebay would not be allowed during construction.⁶⁶

⁶⁰ *Id.*, p. 15-71.

⁶¹ *Id.*, p. 15-72 – 15-73.

⁶² *Id.*, p. 15-468.

⁶³ *Ibid.*

⁶⁴ *Ibid.*

⁶⁵ *FINAL EIR/EIS*, p. 15-469.

⁶⁶ *Id.*, at p. 15-484.

In sum, construction of Alternative 4A intakes and water conveyance facilities would result in permanent and long-term impacts on well-established recreational opportunities and experiences in the study area because of access, noise, and visual setting disruptions that could result in loss of public use. Overall, construction and geotechnical exploration may occur year-round and last from 2.5 to 13.5 years at individual construction sites near recreation sites or areas and in-river construction would be primarily limited to June 1 through October 31 each year, which would result in a long-term reduction of recreational opportunities or experiences. The following mitigation measures, in combination with environmental commitments, would reduce some construction-related impacts by compensating for effects on wildlife habitat and species; minimizing the extent of changes to the visual setting, including nighttime light sources; manage construction-related traffic; and implementing noise reduction and complaint tracking measures: REC-2, BIO-75, AES-1a, AES-1b, AES-1c, AES-1d, AES-1e, AES-1f, AES-1g, AES-4a, AES-4b, AES-4c, TRANS-1a, TRANS-1b, TRANS-1c, NOI-1a, and NOI-1b.

Notably, Mitigation Measure REC-2 (Provide Alternative Bank Fishing Access Sites) provides as follows:

Construction-related impacts on informal fishing access sites near the proposed water conveyance facilities, such as along the east bank of the Sacramento River, in the vicinity of the proposed intakes, and in the vicinity of the expanded Clifton Court Forebay, would be considered significant because construction would alter the river bank and/or restrict access, making these sites unusable. To compensate for the loss of these informal sites during construction, DWR will enhance nearby formal fishing access sites, including partnering with Yolo County to enhance the Clarksburg Fishing Access site on the west bank of the Sacramento River, and with the Sacramento County Department of Regional Parks to enhance the Cliffhouse Fishing Access site on the east bank of the Sacramento River and the Georgiana Slough Fishing Access site east of the Sacramento River, and with Contra Costa County to enhance fishing sites near Clifton Court Forebay, as well as other nearby sites. Prior to construction of the proposed intakes, DWR will ensure adequate signage will be placed at the informal sites that would be directly affected by construction of the intakes, directing anglers to the formal sites. Upgrading the existing fishing access sites will be completed prior to beginning construction of the intakes.

Where intake locations would remove existing public access to the Sacramento River for recreational purposes, as part of design of the intakes, DWR will ensure that public access to the Sacramento River, including fishing access, will be incorporated into the design of the intakes. The access sites will be placed a reasonable distance from the intake to ensure the safety of

recreationists and to compensate for the loss that would occur as a result of constructing the intakes.⁶⁷

Notwithstanding this mitigation and the others listed above, the level of this impact would not be reduced to a less-than-significant level, because it is not certain the mitigation would reduce the level of these impacts to less than significant in all the instances occurring within the entire study area. These impacts are therefore considered significant and unavoidable.

d. Result in long-term reduction of recreational navigation opportunities as a result of constructing the proposed water conveyance facilities

Construction activities associated with constructing the three intakes on the Sacramento River, siphons near Clifton Court Forebay, Head of Old River barrier and operating barges and constructing temporary barge unloading facilities at Snodgrass Slough, Potato Slough, San Joaquin River, Middle River, Connection Slough, Old River, and the West Canal would disrupt boat passage and navigation at and near these sites. Although implementing Mitigation Measure TRANS-1a and helping to fund measures to reduce aquatic weeds would reduce impacts on recreational navigation, these effects would remain significant because of the long duration of construction, which would continually reduce recreation opportunities and distract from experiences occurring near construction activity.⁶⁸

Mitigation Measure TRANS-1a (Implement Site-Specific Construction Traffic Management Plan) provides as follows:

Prior to construction, DWR will be responsible for project management and shall contract with one or more construction management firms to assist in ensuring that construction contractors' crews and schedules are coordinated and that the plans and specifications are being followed. DWR will also ensure development of site-specific construction traffic management plans (TMPs) that address the specific steps to be taken before, during, and after construction to minimize traffic impacts, including the mitigation measures and environmental commitments identified in this EIR/EIS. This will include potential expansion of the study area identified in this EIR/EIS to capture all potentially significantly affected roadway segments.

DWR will be responsible for developing the TMPs in coordination with the applicable jurisdictions, including the following.

⁶⁷ Mitigation Monitoring and Reporting Program for the California WaterFix, p. 2-50 – 2-51

⁶⁸ RDEIR, p. 4.3.11-5; see also RDEIR/SDEIS, Appendix A, pp. 51-22 – 15-28.

- Caltrans for state and federal facilities;
- local agencies for local roads, including emergency responders;
- transit providers;
- rail operators;
- the U.S. Coast Guard;
- city and county parks departments; and
- the California Department of Parks and Recreation (DPR)

DWR will also ensure that the TMPs are implemented prior to beginning construction at a site, including in-water construction sites. If necessary to minimize unexpected operational impacts or delays experienced during real-time construction, DWR will also be responsible for modifying the traffic management plan to reduce these effects. With the goal of minimizing construction traffic related effects on wildlife and in light of local community traffic interests, DWR will facilitate discussions in the development of the TMP to address methods for minimizing truck traffic impacts in ways that do not create local traffic hazards. Each TMP will address the following, as needed and appropriate after coordination with the entities listed above. Implementation of this measure will ensure operational traffic impacts and delays experienced during construction will be minimized to the greatest extent feasible.

- Signage warning of roadway surface conditions such as loose gravel, steel plates or similar conditions that could be hazardous to road cycling activity on roadways open to bicycle traffic.
- Signage and barricades to be used around the work sites.
- In-water work areas will be indicated by buoys, signage, or other effective means to warn boaters of their presence and restrict access. Warning devices and signage (e.g., “boats keep out” or “no wake zone” labeled buoys) will be in compliance with the U.S. Coast Guard Private Aid to Navigation requirements (U.S. Coast Guard 2012) and effective during non-daylight hours and periods of dense fog.
- Use of flag people or temporary traffic signals/signage as necessary to slow or detour traffic.
- Notifications for the public, emergency providers, cycling organizations, bike shops, and schools, the U.S. Coast Guard, boating organizations, marinas, city and

county parks departments, and DPR, where applicable, describing construction activities that could affect transportation and water navigation.

- Outreach (via public meetings and/or flyers and other advertisements)
- Procedures for construction area evacuation in the case of an emergency declared by county or other local authorities.
- Alternate access routes via detours and bridges to maintain continual circulation for local travelers in and around construction zones, including bicycle riders, pedestrians, and boaters, where applicable.
- Description of construction staging areas, material delivery routes, and specification of construction vehicle travel hour limits.
- Notifications to commercial and leisure boating community of proposed barge operations in the waterways, including posting notices at Delta marinas and public launch ramps. This information will provide details regarding construction site location(s), construction schedules, and identification of no-wake zone, speed restricted zones, and/or detours, where applicable.
- No-wake zone and speed-restrictions will be established as part of development of the site-specific plans and will be determined to protect the safety of construction workers and recreationists.
- Designation of areas where nighttime construction will occur.
- To the extent feasible, position construction lighting to reduce glare to nighttime drivers.
- Plans to relocate school bus drop-off and pick-up locations if they will be affected during construction.
- Scheduling for oversized material deliveries to the work site and haul routes.
- Provisions that direct haulers are to pull over in the event of an emergency. If an emergency vehicle is approaching on a narrow two-way roadway, specify measures to ensure that appropriate maneuvers will be conducted by the construction vehicles to allow continual access for the emergency vehicles at the time of an emergency.
- Control for any temporary road closure, detour, or other disruption to traffic circulation, including any temporary partial water channel closures.
- Designated offsite vehicle staging and parking areas.
- Posted information for contact in case of emergency or complaint.

- Daily construction time windows during which construction is restricted or rail operations would need to be suspended for any activity within railroad rights of way.
- Coordination with rail providers (BNSF Railway, Amtrak, and UPRR) to develop alternative interim transportation modes (e.g., trucks or buses) that could be used to provide freight and/or passenger service during any longer term railroad closures.
- Coordination with transit providers (SCT, Tri-Delta, Rio Vista, and Greyhound Bus Lines) to develop daily construction time windows during which transit operations would not be either detoured or significantly slowed.
- Routinely post information to the 511.org website regarding construction delays and detours.
- Other actions to be identified and developed as may be needed by the construction manager/ resident engineer to ensure that temporary impacts on transportation facilities are minimized.
- For construction-related traffic implement maximum 45 mph speed limit on Hood Franklin Road west of Interstate 5. Include signage: "Caution: entering sensitive wildlife area."
- Further reduce speed limit in both directions to 35 mph for construction-related vehicles from ½ mile west of Interstate 5 to 1 mile west of Interstate 5. Add sign at Visitor Center entrance stating that facilities are for SLNWR visitors only.
- Add a right hand turn lane on Hood Franklin Road at the entrance of the Stone Lakes Visitor Center.
- For construction-related traffic, reduce speed limit to 35 mph on Lambert Road from 1 ½ miles west of Interstate 5 to 2 ¼ miles west of Interstate 5. Include signage: "Caution: entering sensitive wildlife area."
- In consultation with Caltrans and local transportation agencies, schedule construction traffic to minimize impacts to local community events (e.g., Pear Fair, holidays).
- Schedule construction traffic to minimize impacts to agricultural transportation operations between agricultural areas and processing or marketing facilities during harvest season.

As additional mitigation to minimize delays to transit vehicles due to projected traffic congestion and to encourage use of alternative modes of travel, including transit, DWR is required to develop a Transportation Demand Management (TDM) program for construction contractor's crews to reduce the number of

project trips. The program shall include and implement any combination of measures that would reduce the project's trips and associated parking demand. The measures include:

- Promote ride sharing programs by methods that may include designating a certain percentage of parking spaces for ride sharing vehicles, designating adequate passenger loading and unloading and waiting areas for ride sharing vehicles.
- Provide public transit incentives such as fully-subsidized or low-cost monthly transit passes.
- Provide shuttle service and/or funding for a shuttle for residents that are outside of walking distance from a transit line.
- Offering a parking cash out program.
- The plan also includes more passive measures to further reduce trips:
- Addition of pedestrian and bicycle facilities;
- Provision of carpool/vanpool/ride-matching services;
- Provision of transportation information for contractors;
- Provision of a transportation information center.⁶⁹

2. Why the California WaterFix is in the public interest despite the occurrence of the above-described significant unavoidable effects on public trust resources

California's Water Master has opined that inefficient use of water is an unreasonable use of water.⁷⁰ In addition to retrofitting, modernizing and adding greater flexibility to the state's water system, the California WaterFix would align water operations to better reflect natural seasonal flow patterns by creating new water diversions in the north Delta equipped with state-of-the-art fish screens, thus reducing reliance on south Delta exports. Through many of its Environmental Commitments, moreover, the California WaterFix will also reverse the trend of habitat loss, habitat degradation, and declining populations of native species, and improve natural flow patterns through the Delta. A hallmark of the public trust doctrine is that projects must have a connection to water-related activities that provide benefits to the public statewide, and not sacrifice public benefit for private or

⁶⁹ Mitigation Monitoring and Reporting Program for the California WaterFix, p. 2-87 – 2-90

⁷⁰ *The Reasonable Use Doctrine & Agricultural Water Use Efficiency*, by Craig M. Wilson, Delta Watermaster, pg. 3.

purely local advantage.⁷¹ By implementing measures for increased efficiency and reliability of water delivery, along with improvements for ecosystem benefits, the California WaterFix will meet the State's responsibilities under the public trust doctrine that water resources be put to beneficial use to the fullest extent of which they are capable.

The guiding principle of California's water law and policy is contained in Article X, Section 2, of the California Constitution. This section requires that all uses of the state's water be both reasonable and beneficial. It places a significant limitation on water rights by prohibiting the waste, unreasonable use, unreasonable method of use, or unreasonable method of diversion of water.⁷²

Rights to use water are subject to State government's obligation under the Public Trust Doctrine as trustee of certain resources for Californians. As explained earlier, the Public Trust Doctrine is a legal doctrine that imposes responsibility on the State agencies to protect trust resources associated with California's waterways.⁷³ Originally, as noted earlier, the public trust doctrine only applied to the protection of fishing, navigation, and commerce on waterways. Its scope has been expanded to include environmental and recreational benefits. In California, these principles are found in Article 10, section 2, of the Constitution, regarding "reasonable and beneficial use," section 4 regarding navigation, in the California Endangered Species Act, the California Fish & Game Code, and the California Water Code.⁷⁴

When the California Department of Fish and Wildlife (DFW) considers whether to approve an incidental take permit for the California WaterFix pursuant to Fish & Game Code section 2081, DFW will be acting as trustee of the People of California for the fish and wildlife of the State. As explained earlier, the California WaterFix will have only four significant unavoidable effects on public trust resources, and two of them are on recreational resources that are beyond the jurisdiction of DFW. Of the other two significant unavoidable effects, one relates to non-native fish species, including the striped bass, which is a predator of the Delta smelt. The other such effect is an inescapable tradeoff associated with the restoration of habitat for aquatic species such as the Delta smelt and longfin smelt.

Impact WQ 14 – Effects on mercury concentrations resulting from implementation of Environmental Commitments 3, 4, 6-12, 15, and 16 – is an unavoidable consequence of improvements in aquatic conditions intended to benefit fish and other aquatic organisms. The mobilization of methylmercury is an inescapable byproduct of in-water work intended to improve habitat conditions for endangered and threatened species. The fact that Delta sediments include mercury is a legacy of the Gold Rush and other destructive activities

⁷¹ *The Public Trust Doctrine*, State Lands Commission, page 9.

⁷² CA Water Plan Update 2009, page 1.

⁷³ CA Water Plan Update 2009, page 2.

⁷⁴ *California Water Rights and the Public Trust Doctrine*, Fact Sheet #005-01, Waterscape.org.

associated with mining in California in the 19th and early 20th centuries. Although Impact WQ-14 is clearly a negative consequence, this adverse effect is more than outweighed by the ecological benefits associated with habitat restoration. Notably, this negative consequence would occur as a byproduct of habitat restoration even in the absence of new conveyance facilities.

Impact AQUA-201 – Effects of water operations on entrainment of non-covered aquatic species of primary management concern (striped bass and American shad) – is an unavoidable consequence of the construction and operation of new intake structures. Notably, the two species at issue are non-native fish, and the striped bass is a predator of the Delta smelt. This negative impact on two non-native species is also outweighed by the ecological benefits of the proposed project, including benefits to native fish species. New north Delta points of diversion are needed to reduce the dependence of both the State Water Project and the Central Valley Project on exports from the south Delta. Because of their far southerly location and their elevation above sea level, these pumps create “reverse flows” that pull river water southward (upstream, in effect) towards the intakes, rather than allowing it to flow downstream towards San Pablo Bay, San Francisco Bay, and, ultimately, the Pacific Ocean. Not surprisingly, these reverse flows cause, or contribute to, direct and indirect impacts on fish species such as Delta smelt, which are pulled towards the pumps, where adverse conditions, including the presence of predator species, await them. The reverse flows also adversely affect salmon migration patterns. The ecological problems with the current system could be greatly reduced by the construction and use of new north Delta intake structures with state-of-the-art fish screens. The impact to the two non-native species, then, is a tradeoff associated with the environmental benefits of reducing south Delta pumping and thereby reducing reversed flows in the southern Delta.

The State Water Resources Control Board (the Board) is charged with the comprehensive planning and allocation of water resources in California.⁷⁵ Any change in purpose, place of use, or point of diversion requires approval by the Board. DWR will seek to obtain the Board’s approval for the new points of diversion associated with the California WaterFix through the water rights permit process. Water rights permits carefully spell out the amounts, conditions, and construction timetables for proposed water projects. Before the Board issues a permit, it must take into account all prior rights and the availability of water in the basin. The Board considers, too, the flows needed to preserve in-stream uses such as recreation and fish and wildlife habitat. DWR, as the permit applicant, will follow the process set forth in the Board’s regulations, which includes public notice and a hearing process to address objections. The EIR/EIS prepared for the California WaterFix should provide sufficient environmental documentation to support action by the Board. A key finding the Board must make before a permit can be issued is that the applicant’s use is in the public interest, which is an overriding concern in all Board decisions. The difficulty

⁷⁵ *Effective Implementation of the Public Trust Doctrine in California Water Resources Decision-Making: A View From the Bench*, by Ronald Robie, 2012.

comes in balancing the potential value of a proposed or existing water diversion with the impact it may have on the public trust. The courts also have concurrent jurisdiction in this area.⁷⁶

As explained above, the Board will see that the California WaterFix will cause only four significant unavoidable effects on public trust resources. As explained above, two of these negative effects are tradeoffs associated with overall ecological improvements associated with the project, which will reduce the extent of reverse flows in the southern Delta and will include substantial amounts of in-water habitat restoration. The other two significant unavoidable effects on public trust resources both relate to recreational uses of the Sacramento River: REC-2 (Result in long-term reduction of recreation opportunities and experiences as a result of constructing the proposed water conveyance facilities); and REC-3 (Result in long-term reduction of recreational navigation opportunities as a result of constructing the proposed water conveyance facilities). As is evident from the preceding discussions, both of these impacts are the inevitable results of the construction and operation of new conveyance facilities. In other words, as with the two other significant unavoidable impacts mentioned above, these two recreational impacts are inevitable tradeoffs associated with overall ecological improvements associated with the project, which will reduce the extent of reverse flows in the southern Delta and will include substantial amounts of in-water habitat restoration.

The Board could also conclude that, notwithstanding these four significant unavoidable effects on public trust resources, approval of DWR's proposed new points of diversion would serve the public interest by furthering state policies set forth in the Delta Reform Act of 2009. As explained at length earlier, that legislation identified "the two coequal goals of providing a more reliable water supply for California and protecting, restoring, and enhancing the Delta ecosystem."⁷⁷ As the Legislature explicitly recognized, "the Sacramento-San Joaquin Delta ... serves Californians concurrently as both the hub of the California water system and the most valuable estuary and wetland ecosystem on the west coast of North and South America."⁷⁸ "The economies of major regions of the state depend on the ability to use water within the Delta watershed or to import water from the Delta watershed. More than two-thirds of the residents of the state and more than two million acres of highly productive farmland receive water exported from the Delta watershed."⁷⁹ By reducing the environmental damage associated with exports to the Bay Area, the San Joaquin Valley, and Southern California associated with the SWP and CVP, the California WaterFix should make those exports more dependable, thus providing a more stable business environment for the economies of those areas, including major industries such as high technology, agriculture, manufacturing, and service sectors.

⁷⁶ *The Water Rights Process*, State Water Resources Control Board, 2014.

⁷⁷ Cal. Pub. Resources Code, § 29702.

⁷⁸ Cal. Wat. Code, § 85002.

⁷⁹ *Id.*, § 85004[a].

In short, the California WaterFix provides a way to improve ecosystem health while also and protecting water supply reliability. The California WaterFix is grounded in concepts of efficiency and public benefit, and uses best available science for design and implementation. The Water Resources Control Board will have a chance to evaluate these efforts of public trust compliance when an application is made under the California WaterFix for additional points of diversion.

PART V: Statement of Overriding Considerations

California Public Resources Code section 21081, subdivision (b), and CEQA Guidelines section 15093 provide that, when a public agency decisionmaker approves a project that will have significant, unavoidable environmental impacts identified in a Final EIR, the decisionmaker must state in writing the reasons to support his, her, or its action based on the completed EIR and/or other information in the administrative record.

The Final EIR/EIS studied 614 potentially significant impacts for the Project. Based on substantial evidence, 490 will not be significant, 81 would be significant, but with proposed mitigation, which DWR is adopting, they will be less than significant, and 43 impacts may not be or cannot feasibly be mitigated to less than significant, and are determined to be significant and unavoidable. The Project's significant and potentially significant and unavoidable impacts, as described in the Final EIR/EIS are listed below prefaced by their identification number from the Final EIR/EIS. As explained in the Final EIR/EIS, several impacts have the potential to be less than significant after mitigation is implemented; however, due to uncertainty associated with the timing, nature, or completion of full funding of certain mitigation actions, including those that must be carried out and/or partly funded by other agencies, those impacts remain significant and unavoidable. Refer to Table 31-1 in Chapter 31 of the Final EIR/EIS for more information regarding the details of the listed impacts.

GW-6: Deplete groundwater supplies or interfere with groundwater recharge, alter local groundwater levels, reduce the production capacity of pre-existing nearby wells, or interfere with agricultural drainage as a result of implementing Environmental Commitments 3, 4, 6-12, 15, and 16.

GW-7: Degrade groundwater quality as a result of implementing Environmental Commitments 3, 4, 6-12, 15, and 16.

GW-9: Degrade groundwater quality.

WQ-14: Effects on mercury concentrations resulting from implementation of Environmental Commitments 3, 4, 6-12, 15 and 16.

SOILS-2: Loss of topsoil from excavation, overcovering, and inundation as a result of constructing the proposed water conveyance facilities.

SOILS-7: Loss of topsoil from excavation, overcovering, and inundation as a result of implementing the proposed Environmental Commitments 3, 4, 6–11.

AQUA-201: Effects of water operations on entrainment of non-covered aquatic species of primary management concern.

LU-3: Create physical structures adjacent to and through a portion of an existing community as a result of constructing the proposed water conveyance facility.

AG-1: Temporary conversion, short-term conversion, and permanent conversion of Important Farmland or of farmland under Williamson Act contracts or in Farmland Security Zones as a result of constructing the proposed water conveyance facility.

AG-2: Other effects on agriculture as a result of constructing and operating the proposed water conveyance facility.

AG-3: Temporary conversion, short-term conversion, and permanent conversion of Important Farmland or of land subject to Williamson Act contracts or in Farmland Security Zone as a result of implementing the proposed Environmental Commitments 3, 4, 6–11, 15, and 16.

AG-4: Other effects on agriculture as a result of implementing the proposed Environmental Commitments 3, 4, 6–11, 15, and 16.

REC-2: Result in long-term reduction of recreation opportunities and experiences as a result of constructing the proposed water conveyance facilities.

REC-3: Result in long-term reduction of recreational navigation opportunities as a result of constructing the proposed water conveyance facilities.

AES-1: Substantial alteration in existing visual quality or character during construction of conveyance facilities.

AES-2: Permanent effects on a scenic vista from presence of conveyance facilities.

AES-3: Permanent damage to scenic resources along a state scenic highway from construction of conveyance facilities.

AES-4: Creation of a new source of light or glare that would adversely affect views in the area as a result of construction and operation of conveyance facilities.

AES-6: Substantial alteration in existing visual quality or character during implementation of Environmental Commitments 3, 4, 6–12, 15, and 16.

CUL-1: Effects on identified archaeological sites resulting from construction of conveyance facilities.

CUL-2: Effects on archaeological sites to be identified through future inventory efforts.

CUL-3: Effects on archaeological sites that may not be identified through inventory efforts.

CUL-4: Effects on buried human remains damaged during construction.

CUL-5: Direct and indirect effects on eligible and potentially eligible historic architectural/built environment-resources resulting from construction activities.

CUL-6: Direct and indirect effects on unidentified and unevaluated historic architectural/built environment resources resulting from construction activities.

CUL-7: Effects of environmental commitments on cultural resources.

TRANS-1: Increased construction vehicle trips resulting in unacceptable level of service conditions.

TRANS-2: Increased construction vehicle trips exacerbating unacceptable pavement conditions.

TRANS-3: Increase in safety hazards, including interference with emergency routes during construction.

TRANS-6: Disruption of transit service during construction.

TRANS-10: Increased traffic volumes during implementation of Environmental Commitments 3, 4, 6–12, 15, and 16.

UT-6: Effects on regional or local utilities as a result of constructing the proposed water conveyance facilities.

UT-8: Effects on public services and utilities as a result of implementing the proposed Environmental Commitments 3, 4, 6–12, 15, and 16.

AQ-23: Generation of cumulative greenhouse gas emissions from increased CVP pumping as a result of implementation of water conveyance facility.

AQ-24: Generation of regional criteria pollutants from implementation of Environmental Commitments 3, 4, 6–11.

AQ-27: Generation of cumulative greenhouse gas emissions from implementation of Environmental Commitments 3, 4, 6–11.

NOI-1: Exposure of noise-sensitive land uses to noise from construction of water conveyance facilities.

NOI-2: Exposure of sensitive receptors to vibration or groundborne noise from construction of water conveyance facilities.

NOI-4: Exposure of noise-sensitive land uses to noise from implementation of proposed Environmental Commitments 3, 4, 6–10.

HAZ-8: Increased risk of bird – aircraft strikes during implementation of Environmental Commitments that create or improve wildlife habitat.

MIN-5: Loss of availability of locally important natural gas wells as a result of implementing Environmental Commitments 3, 4, 6–12, 15, and 16.

MIN-6: Loss of availability of extraction potential from natural gas fields as a result of implementing Environmental Commitments 3, 4, 6–12, 15, and 16.

PALEO-1: Destruction of unique or significant paleontological resources as a result of construction of water conveyance facilities.

In the Acting Director’s judgment, the benefits of the Project, as set forth below, outweigh these significant and unavoidable impacts. The following statement identifies the reasons why, in the Acting Director’s judgment, the benefits of the Project as approved outweigh its significant and unavoidable impacts. Any one of these reasons is sufficient to justify approval of the Project. Thus, even if a court were to conclude that not every reason is supported by substantial evidence, each additional reason would alone be sufficient to support the Acting Director’s determination. (See *Habitat and Watershed Caretakers v. City of Santa Cruz* (2013) 213 Cal.App.4th 1277, 1307-1308.) The substantial evidence supporting the various benefits can be found in the preceding findings, which are incorporated by reference into this Part (IV), and in the documents found in the Record of Proceedings, as defined on pages 4-5, herein.

The Project will improve California’s water conveyance system in response to increased demands upon, and risks to, water supply reliability, water quality, and the aquatic ecosystem. The Delta has long been an important resource for California, providing municipal, industrial, agricultural and recreational uses, fish and wildlife habitat, and water supply to large portions of the State. By several key criteria, however, such as declines in populations of several fish species, seismic risk to levees and the Delta infrastructure, continuing land subsidence, and rising sea level, the Delta is now widely considered to be in crisis. The Legislature formally recognized this when it enacted a comprehensive package of water bills in 2009, including the Delta Reform Act: “The Sacramento-San Joaquin Delta watershed and California’s water infrastructure are in crisis and existing Delta policies are not sustainable. Resolving the crisis requires fundamental reorganization of the state’s management of Delta watershed resources.” (California Water Code, § 85001, subd. (a).)

State policy regarding the Delta is summarized in the Delta Reform Act, which states: “[I]t is the intent of the Legislature to provide for the sustainable management of the Sacramento-San Joaquin Delta ecosystem, to provide for a more reliable water supply for the state, to protect and enhance the quality of water supply from the Delta” (*Id.*, § 85001, subd. (c)).

The Delta “serves Californians concurrently as both the hub of the California water system and the most valuable estuary and wetland ecosystem on the west coast of North and South America.” (*Id.*, § 85002.) For the Delta to continue to maintain these functions, the

Legislature has determined that an improved water conveyance system is necessary. (*Id.*, § 85020, sub. (f); see also *id.*, §§ 85304, 85320.) As discussed above in Part I, Historical Background, the need for an improved conveyance system was identified based on years of scientific study, extensive data gathered from various agencies and experts, and an elaborate process that involved agency and stakeholder input as well as robust public involvement. (See Final EIR/EIS, Appendix 3A, Identification of Water Conveyance Alternatives Conservation Measure 1.)

The ecological health of the Delta continues to be at risk, and the conflicts between species protection and Delta water exports have become more pronounced, as amply evidenced by the continuing court decisions regarding the intersection of the federal Endangered Species Act (ESA), the California Endangered Species Act (CESA), and the operations criteria of the State Water Project (SWP) and the federal Central Valley Project (CVP). Other factors, such as the continuing subsidence of lands within the Delta, increasing risk of seismic activity and levee failures, and sea level rise and potentially wider variations in hydraulic conditions associated with climate change, serve to further exacerbate these conflicts. Simply put, the system as it is currently designed and operated does not appear to be sustainable from either an environmental or an economic perspective, and a fundamental, systemic change to the current system is necessary. Change to the existing conveyance system is necessary if California is to “[a]chieve the two coequal goals of providing a more reliable water supply for California and protecting, restoring, and enhancing the Delta ecosystem.” (Pub. Resources Code, § 29702, subd. (a).)

The Acting Director finds that, of all of the Alternatives considered in the EIR/EIS, Alternative 4A most fully implements the Lead Agencies’ objectives to restore and protect ecosystem health, water supply reliability, and water quality within a stable regulatory framework. Notably, DWR’s own fundamental purpose in pursuing the project is to make physical and operational improvements to the SWP system in the Delta necessary to restore and protect ecosystem health, water supplies of the SWP and CVP south of the Delta, and water quality, consistent with statutory and contractual obligations. The Project will specifically result in the following benefits:

Protect our state’s water supplies through CVP/SWP water system upgrades

The SWP delivers water to 29 agricultural and municipal and industrial (M&I) contractors in northern California, the San Joaquin Valley, the Bay Area, the Central Coast, and southern California. Water contractors can receive up to a maximum of almost 4.2 million acre-feet, depending on the specific year’s allocation (DWR Bulletin 132-15, p. 274), providing water to 25 million Californians (Final EIR/EIS, Chapter 5, Water Supply, p. 5-25), over 60 percent of the state’s population, and about 750,000 acres of irrigated farmland (Final EIR/EIS, Chapter 1, Introduction, p. 1-8). The CVP, including deliveries to the north and south of the Delta, supplies an average of about 7 million acre-feet of water annually for agricultural, urban, and wildlife uses. These deliveries serve approximately 5 million acre-feet for farms,

which is enough to irrigate about one-third of the agricultural land in California, and about 600,000 acre-feet for municipal and industrial use, enough to supply close to 1 million households (Final EIR/EIS, Chapter 5, Water Supply, pp. 5-7; Chapter 1, Introduction, pp. 1-7 - 1-8). The SWP and CVP also provide for the State flood management, water quality maintenance, power generation, recreation, and fish and wildlife enhancement. Supplies conveyed through and diverted from the Delta by the SWP and CVP are at risk, however, due to the condition of many Delta Levees, potential seismic events, and the effects of climate change.

The potential for the failure of one or more Delta levees exists, which could impede the pumping of Delta water supplies from the current facilities in the south Delta (Final EIR/EIS, Appendix 5B, *Responses to Reduced South of Delta Water Supplies*, pp. 5B-1 - 5B-2). Some of the levees in the Delta are 150 years old, and levee failure is conceivable from a combination of scenarios including high river inflows, high tide, high winds, and seismic events, as well as general degradation from rodents, piping, or foundation movement. (Final EIR/EIS, Chapter 5, Water Supply, p. 5-63, and Appendix 3E, *Potential Seismic and Climate Change Risks to SWP/CVP Water Supplies*, pp. 3E-9 – 3E-15, 3E-20 – 3E-28). The Project (Alternative 4A) will entail the construction and operation of two tunnels up to 150 feet below ground that are designed to protect SWP and CVP water supplies. Three new intakes, each with 3,000 cubic-feet per second (cfs) capacity, will be installed along the Sacramento River in the northern Delta to protect against water supply disruption from failure of aging levees due to sea-level rise, earthquakes near subsided lands, and flood events.

Besides increasing the risk of levee failure, sea-level rise complicates efforts to manage salinity levels and preserve water quality for urban and agricultural water uses (Final EIR/EIS, Appendix 5B, p. 5B-1). Sea level in San Francisco Bay has risen approximately 7 inches (18 centimeters) over the last 100 years, affecting high tide events and salinity levels in the Delta (Chapter 29, Climate Change, p. 29-10, Table 29-2). The National Research Council (2012) projects that sea levels will further rise by 5.7 inches (+/- 2 inches) by 2030 and by 11 inches (+/- 3.6 inches) by 2050 (Chapter 29, Climate Change, p. 29-10, Table 29-2). Without the implementation of the Project, current reductions in the quality and quantity of SWP and CVP south of Delta water supplies would likely continue, and the reliability of these supplies would remain dependent on existing infrastructure and programs in an uncertain future. (Final EIR/EIS, Appendix 5E, *Responses to Reduced South of Delta Water Supplies*, pp. 5B-10-5B-14; Appendix 3E, *Potential Seismic and Climate Change Risks to SWP/CVP Water Supplies*, pp. 3E-27 – 3E-28.) By adding intakes along the Sacramento River (where they are less vulnerable to sea level rise compared to the existing south Delta export facilities), the Project allows for operational flexibility to respond to changing conditions in the Delta (Final EIR/EIS, Chapter 29, Climate

Change, p. 29-21). Alternating operations between the north and south Delta intakes will consider water quality conditions, hydrology, and other factors, such as risk to fish species (Final EIR/EIS, Chapter 3, Description of Alternatives, p. 3-238).

DWR's modeling of future conditions suggests that with current management and operations, and level of demand, the likelihood of major CVP and SWP reservoirs reaching dead storage levels (the level below which water cannot be released) will increase substantially as the climate warms (Final EIR/EIS, Chapter 29, Climate Change, p. 29-16). In these instances, there would be critical water shortages leading to potentially extreme impacts on agriculture, municipal, industrial, and ecological water uses. The Project will provide resiliency and adaptation benefits over the No Action/No Project alternative for dealing with the combined effect of increases in sea level rise and changes in upstream hydrology (Final EIR/EIS, Chapter 29, Climate Change, p. 29-20 – 29-22). The Project includes dual conveyance facilities, allowing water to be moved through the Delta when conditions permit and allowing water to be diverted from the Sacramento River in the northern Delta when conditions do not permit through Delta conveyance. By adding an alternative diversion point for Delta exports, a great deal of Delta management flexibility will be added, allowing managers more options for adaptively managing the Delta so that conditions can be optimized to provide benefits across all Delta water uses and habitat conditions. The Project will also provide more reliable water supplies, which will provide additional resilience and adaptability to increases in water demand as a result of higher temperatures, increased evapotranspiration and evaporation, and population growth that will occur independently of the project.

Protect and benefit California's economy

The Project will provide protections and benefits to California's economy. California cities that receive water from the Delta, including areas within the Bay Area and Silicon Valley, as well as Central and Southern California, produce hundreds of billions of dollars' worth of goods and services each year. A functioning water delivery system – one that can provide reliable supplies up to full contract amounts within regulatory limits and withstand the impacts of climate change and earthquakes – is critical to business growth and job creation.

In the absence of the Project, the negative economic impact of water export cutbacks would be felt statewide. Restrictions to Delta water exports would force local water agencies to provide more water through potentially overdrawn sources like local storage and groundwater. (Final EIR/EIS, Appendix 5B, *Responses to Reduced South of Delta Water Supplies*, p. 5B-34 – 5B-35.) Drought conditions in recent years have already demonstrated that these sources, particularly in areas such as Southern

California, will not be able to sustain over the long term in the face of shortages from supplies such as the State Water Project. Given the high cost of securing water to keep up with demand satisfied through Delta exports, there is a statewide economic benefit extending to potentially billions of dollars, depending on expected export levels in the future without the Project. (See Exhibit DWR-84, Testimony of Dr. Christopher Thornberg.)

In addition, California is the agricultural powerhouse of the United States – leading all other states in farm income. In areas south of the Delta, to the extent that unreliable or insufficient water supplies represent obstacles to agricultural production, the Project will support more stable agricultural activities by enabling broader crop selection or by reducing risk associated with uncertain water deliveries (Final EIR/EIS, Chapter 16, Socioeconomics, p. 16-292). Protections of agricultural production in these areas will prevent major decreases in seasonal and permanent on-farm employment, and will protect employment in industries closely associated with agricultural production (Final EIR/EIS, Chapter 16, Socioeconomics, 16-292).

Public infrastructure projects such as the Project are essential to many facets of the economy, typically providing a substantial social-economic benefit. (See Exhibit DWR-84, Testimony of Dr. Christopher Thornberg.) The construction of the Project will create 8,673 new construction jobs (Final EIR/EIS, Chapter 16, Socioeconomics, p. 16-1), and will generate revenue in a range of other sectors due to multiplier effects as spending made locally in connection to Project construction moves through the San Joaquin County economy and other regions of California. For example, new earned revenue by businesses and workers are in some portion spent back into local economies which will stimulate additional spending in the form of new hires, more pay for workers, renovations, or other goods or services. The construction of the Project is therefore likely to result in a substantial number of new jobs and economic activity, much of which will be concentrated in the Delta region. (See Exhibit DWR-84, Testimony of Dr. Christopher Thornberg.)

Protect endangered species

By reducing reverse flows and ensuring sufficient river flows for native fish species, the Project will enhance survival and recovery of listed species such as delta smelt, longfin smelt, and Chinook salmon. Under the Project, a dual conveyance system will be implemented in which water could be diverted from either the north or south Delta or both, depending on the needs of aquatic organisms, water quality, and hydrological conditions (Final EIR/EIS, Chapter 29, Climate Change, p. 29-21). The operational range included for the Project incorporates existing criteria from the USFWS and NMFS BiOps (including Fall X2 requirements), and adds additional

criteria for spring outflow (Final EIR/EIS, Chapter 3, Description of Alternatives, p. 3-262) aimed to protect aquatic species, such as longfin smelt (See *California Incidental Take Permit Application for the California WaterFix and its operation as part of the State Water Project*, Chapter 4, Take Analysis, p. 265).

The flexibility associated with the dual conveyance system under the Project will also allow water operations to better reflect natural seasonal flow patterns, including a more natural direction of river flows in the South Delta. Under the Project, reverse flows in Old and Middle Rivers will be reduced in all months except April, during which reverse flows will remain similar to Existing Conditions (Final EIR/EIS, Chapter 6, Surface Water, page 6-176 and Figure 6-39). Overall, water operations under the Project will result in reduced entrainment of aquatic species, such as delta smelt and longfin smelt, at the South Delta intakes compared to conditions without the Project (Final EIR/EIS, Chapter 11, Fish and Aquatic Resources, p. 11-3192 and 11-3204). The new water diversions in the north Delta will be equipped with state-of-the-art fish screens designed in consultation with USFWS, NMFS, and CDFW, operated to meet specific approach and sweep velocity requirements, and use real-time operations to minimize and avoid effects to migrating fish species.

A new adaptive management and monitoring program (AMMP) included under the Project will also address scientific uncertainties regarding benefits and impacts on Delta aquatic species. The AMMP will (1) use collaborative science, (2) guide the development and implementation of scientific investigations and monitoring for both permit compliance and adaptive management, and (3) apply new information and insights to management decisions and actions (Final EIR/EIS, Chapter 3, Description of Alternatives, p. 3-282). Monitoring and improving operations will provide benefits and/or minimize negative effects to aquatic species. Adaptive management of spring outflow, for example, can be used to make long-term changes to address uncertainties for longfin smelt and fall outflow for delta smelt among other species (Final EIR/EIS, Chapter 6, Surface Water, p. 6-170).

Improve State Water Project operational flexibility during critically dry years

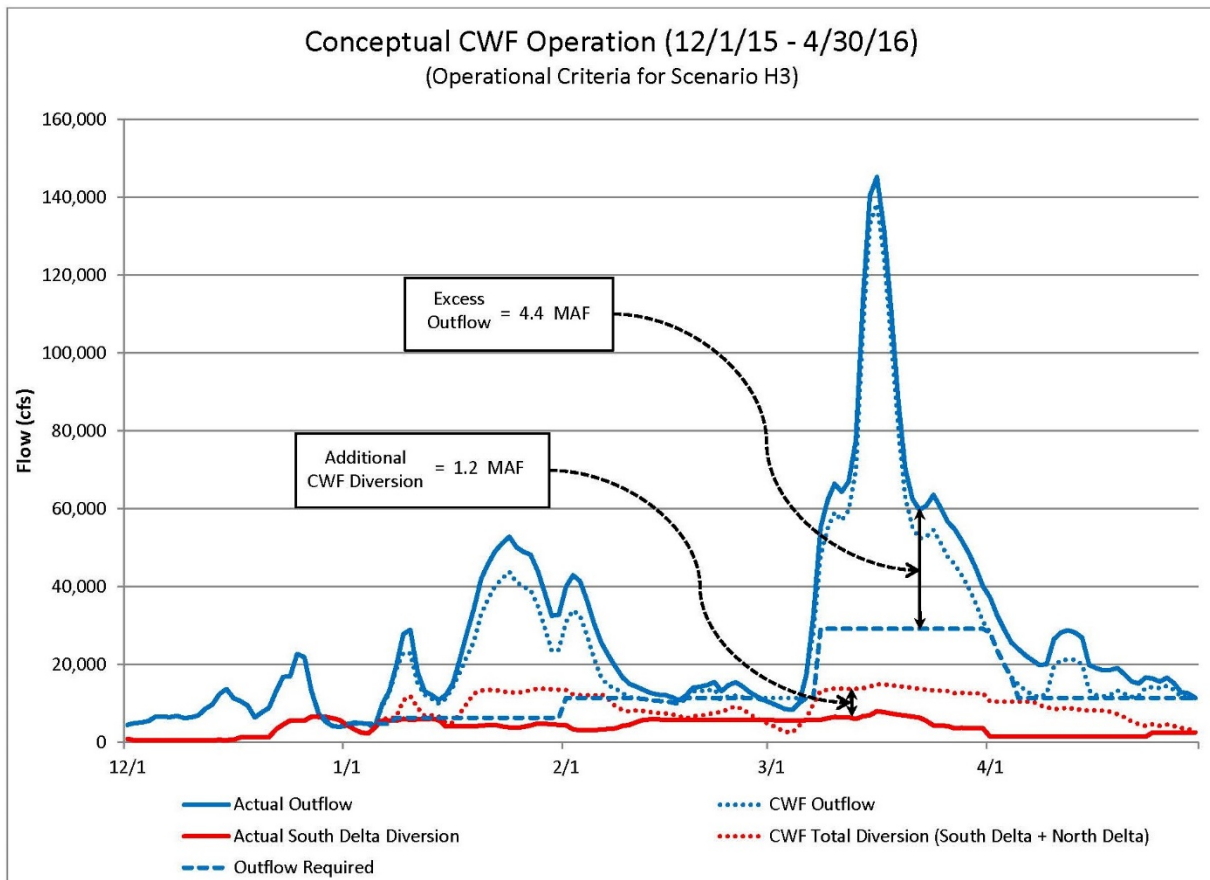
The California WaterFix will increase the options available to SWP/CVP operators to more effectively balance the Bay-Delta system in real-time to protect all beneficial uses of water whether for water supply, water quality, or fishery protection purposes. During critically dry years, the inability of the existing SWP/CVP to divert periodic and significant excess flows when southern Delta pumping is currently restricted represents a substantial lost opportunity to provide critically needed

water supplies at a time when inflow to the Delta far exceeds that needed to meet biological and water quality regulatory objectives.

For instance, during the winter of 2015-2016 precipitation in the northern part of the State was well above average during much of this period. However, due to the ongoing drought conditions earlier in the fall of 2015, Delta inflows were extremely low and salinity had intruded deeply into the interior Delta. As a result of the extremely dry conditions in the watershed, above average precipitation in December 2015 did not initially produce significant runoff. The salinity profile of the Delta did not change significantly until early January 2016 when Delta outflow became greater than what was required to meet D-1641 flow and salinity objectives. As sustained rains continued into late January 2016, and again in March 2016, the resulting Delta outflow was significantly greater than required to meet regulatory objectives.

At the same time Delta exports were severely limited primarily due to current operational restrictions to protect the endangered delta smelt and NMFS protected species residing near the southern Delta pumps. The inability of the SWP/CVP to divert these excess flows represents a substantial lost opportunity to recover from multiple years of drought. The California WaterFix would have allowed diversion of these excess flows at a location designed to minimize potential effects to sensitive species.

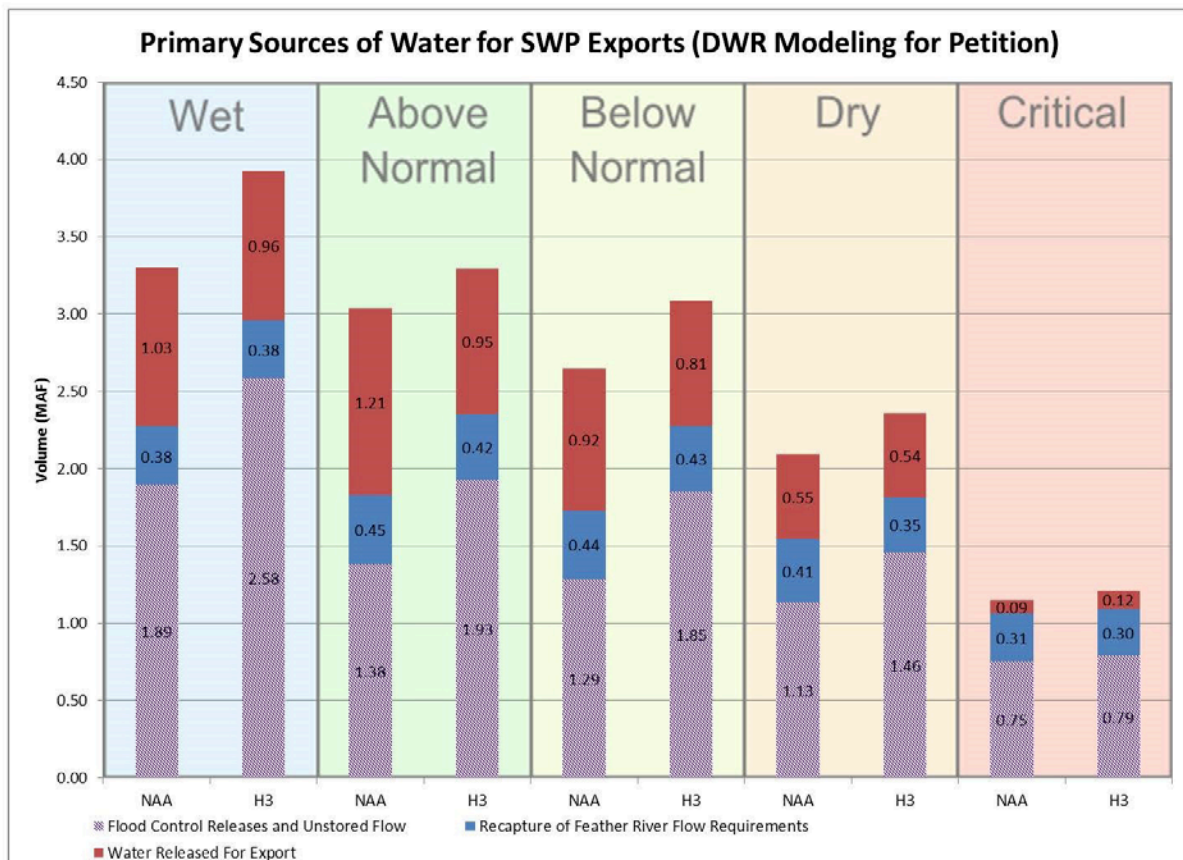
This circumstance is illustrated in the graphic below.



Although the foregoing “Additional California WaterFix Diversions” total over 1.2 MAF, this does not necessarily represent an equivalent increase in the total annual SWP/CVP diversions under California WaterFix. On average, the annual amount of water diverted and stored by the SWP/CVP, as a result of California WaterFix with the Initial Operational Criteria indicates that the combined SWP/CVP long-term average annual diversions may be the same as the no action alternative or may increase up to approximately 500 thousand acre feet (TAF). Though just over 1.2 MAF of water could have been diverted and stored January through April 2016 with the project in place, the proposed operating rules for California WaterFix would require reduced pumping during drier periods in order to protect the environment.

California WaterFix would enhance our ability to divert and store water during periods of high excess Delta flows at a location where there is less risk to native fish and fewer effects to Delta water quality. The water supply developed during these periods may be offset in part by reduced pumping at other periods of less favorable hydrology.

A second method of illustrating that California WaterFix exports will provide for added flexibility to divert excess flows beyond those needed for regulatory requirements can be understood by looking at the source of water for projected



exports under California WaterFix.

Comparative modeling of export sources presented in the EIR/EIS, Biological Assessment and the water rights hearing testimony for the California WaterFix indicates that a higher percentage of source water for exports will come from excess flows than from stored water for the SWP with the proposed project as compared with the no action alternative (NAA). Increased exports of excess flows are a result of increased opportunity to capture the periodic significant excess flow events discussed above. And although total exports increase as a result of the proposed California WaterFix project, there is actually a decrease in the volume of stored water from upstream Sacramento Valley reservoirs to be exported from the Delta.

Although the California WaterFix project would be neutral in relation to water management during the exceptional droughts of which we have just experienced or

in the event of adverse climatic changes, it would provide increased opportunities to capture excess flows in average to wet years over the long-term.

An additional benefit of the California WaterFix during drought periods is that the NDD will provide a more water efficient method of diverting from the Delta. In order to divert water from the southern Delta there are circumstances where additional water above and beyond that which will be exported must be released from storage to offset the potential for drawing salinity upstream on the San Joaquin River system. In periods of critically dry precipitation, when these additional releases occur it reduces stored water upstream of the Delta to a greater extent than will be necessary if the California WaterFix is built.

Summary of Conclusions

By this Statement of Overriding Considerations, the Acting Director of DWR finds that the remaining significant and unavoidable environmental impacts of the Project, summarized herein, are acceptable in light of the environmental, economic, legal, social, technological, and/or other considerations set forth herein, because the benefits of the Project outweigh its significant and unavoidable environmental impacts.

The Acting Director declares that DWR has adopted all feasible mitigation measures to reduce the Project's environmental impacts; considered the entire administrative record, including the Final EIR/EIS; and weighed the Project's benefits against its environmental impacts. After doing so, the Acting Director has determined that the Project's benefits outweigh its environmental impacts, and deems them acceptable, consistent with CEQA Guidelines section 15093.

Exhibit A: CEQA Findings of Fact for Significant and Unavoidable Impacts and Impacts that are Less Than Significant after Mitigation

Table 1: CEQA Findings of Fact for Significant and Unavoidable Impacts Proposed in Final EIR/EIS for California WaterFix Project (Alternative 4A).

Alternative 4A Potential Impact	Impact Conclusions Before Mitigation-CEQA	Adopted Mitigation Measures	Impact Conclusion After Mitigation-CEQA	Discussion	Findings of Fact
Groundwater					
<p>GW-6: Deplete groundwater supplies or interfere with groundwater recharge, alter local groundwater levels, reduce the production capacity of pre-existing nearby wells, or interfere with agricultural drainage as a result of implementing Environmental Commitments 3, 4, 6–12, 15, and 16</p> <p>(Final EIR/EIS, Chapter 7, Groundwater, pp. 7-121—7-122)</p>	Significant	<p><u>GW-5: Agricultural Lands seepage minimization</u></p> <p>Areas potentially subject to seepage caused by implementation of habitat restoration and enhancement actions or operation of water conveyance facilities will be monitored and evaluated on a site-specific basis by DWR prior to the commencement of construction activities to identify baseline groundwater conditions. Restoration sites, along with the sites of water conveyance features that could result in seepage, will be subsequently monitored once construction is completed. Monitoring will include placement of piezometers and/or periodic field checks to assess local groundwater levels and salinity and associated impacts on agricultural field conditions. In areas where operation of water conveyance facilities or habitat restoration is determined to result in seepage Impacts on adjacent parcels, potentially feasible additional mitigation measures will be developed in consultation with affected landowners. These measures may include installation or improvement of subsurface agricultural drainage or an equivalent drainage measure, as well as pumping to provide for suitable field conditions (groundwater levels near pre-project levels). Such measures will ensure that the drainage characteristics of affected areas would be maintained to the level existing prior to project construction.</p> <p>The implementation of this mitigation measure will follow the steps below:</p> <ul style="list-style-type: none">• DWR will be responsible for monitoring and evaluation to identify baseline groundwater conditions as well as monitoring after construction is complete.• Monitoring will occur at areas adjacent to the expanded Clifton Court Forebay portion at Byron Tract, where groundwater recharge from surface water would result in groundwater level increases, and other areas potentially affected by operation of the water conveyance facilities.• Monitoring and evaluation shall occur prior to	Significant & Unavoidable	<p>Implementation of the Environmental Commitments under Alternative 4A will result in additional increased frequency of inundation of areas associated with the proposed tidal habitat, channel margin habitat, and seasonally inundated floodplain restoration actions, which will result in increased groundwater recharge. Such increased recharge will result in groundwater level rises in some areas. More frequent inundation will also increase seepage, which is already difficult and expensive to control in most agricultural lands in the Delta (see Final EIR/EIS, Chapter 14, Agricultural Resources).</p> <p>(Final EIR/EIS, Chapter 7, Groundwater, pp. 7-121—7-122)</p>	<p>Impacts associated with the implementation of the Environmental Commitments under Alternative 4A will result in significant impacts. Mitigation Measure GW-5 will reduce this impact to a less-than-significant level in most instances by identifying areas where seepage conditions have worsened and installing additional subsurface drainage measures, as needed. In some instances, however, mitigation may be infeasible due to factors such as costs that would be infeasible to bear in light of the fair market value of the affected land. The impact is therefore significant and unavoidable as applied to such latter properties.</p> <p>Findings: Changes or alterations have been required in, or incorporated into, the project that substantially lessen, but do not avoid, the significant environmental effect as identified in the Final EIR/EIS in some instances. Impacts are therefore significant and unavoidable despite the adoption of feasible mitigation measures.</p> <p>(Final EIR/EIS, Chapter 7, Groundwater, pp. 7-121—7-122)</p>

Alternative 4A Potential Impact	Impact Conclusions Before Mitigation-CEQA	Adopted Mitigation Measures	Impact Conclusion After Mitigation-CEQA	Discussion	Findings of Fact
		<p>commencement of construction activities to identify baseline conditions and with sufficient time allotted to develop additional mitigation measures if needed. Monitoring of restoration sites, along with the sites of water conveyance features that could result in seepage will occur after construction is completed.</p> <ul style="list-style-type: none">• Monitoring shall include placement of piezometers and/or periodic field checks to assess local shallow groundwater levels and salinity and associated impacts on agricultural field conditions.• Monitoring will collect information on two thresholds:<ol style="list-style-type: none">1. Water surface elevation (recorded as depth to water)2. Shallow groundwater salinity (measured as specific conductance)• Monitoring of groundwater levels will occur on a daily basis to check real-time measured groundwater levels. This can be performed by equipping the piezometers with electronic water level probes which automatically record levels on a daily basis. Periodic field checks, including measurements of specific conductance will occur on a monthly basis and in the event groundwater levels are above identified thresholds.• Baseline conditions of shallow groundwater levels and salinity will be determined prior to construction through water level measurements and water testing at the installed piezometers in proximity to restoration areas and conveyance features that might affect drainage on adjacent lands.• Salinity will be determined by measuring specific conductance at the piezometers with a calibrated field probe before construction begins, and monthly during operation.• Visual observations will also be used to monitor associated impacts on agricultural field conditions. Visual surveys will be conducted during periodic field checks as well as by local landowners on a continual basis.• A seepage hotline will be established for landowners to report any visual observations of seepage or deteriorating			

Alternative 4A Potential Impact	Impact Conclusions Before Mitigation-CEQA	Adopted Mitigation Measures	Impact Conclusion After Mitigation-CEQA	Discussion	Findings of Fact
		<p>crop health as a result of an excessive rise in the water table and/or increasing root-zone salinity due to deteriorating shallow groundwater quality.</p> <ul style="list-style-type: none"> • All monitoring data will be reported on a monthly basis, and in an annual summary report prepared by DWR that will evaluate the potential impacts of the operation of Environmental Commitments for that year. The monthly reports will contain tabular water level and salinity data as well as compute changes in water levels and salinity from the previous months. The annual report will summarize monthly data and evaluate if impacts have occurred. • Groundwater levels at the affected areas will be maintained to the level existing prior to project construction. • Shallow groundwater salinity will be monitored prior to construction and a threshold will be determined in consultation with the local landowners, based on existing crop salinity tolerance (considerations will include both if shallow groundwater is used for irrigation or if shallow groundwater levels rise and encroach upon the root-zone area). <p>(Final MMRP, pp. 2-7 – 2-8; see also Final EIR/EIS, Chapter 7, Groundwater, pp. 7-55—7-56)</p>			
<p>GW-7: Degrade groundwater quality as a result of implementing Environmental Commitments 3, 4, 6–12, 15, and 16</p> <p>(Final EIR/EIS, Chapter 7, Groundwater, p. 7-122)</p>	Significant	<p><u>GW-7: Provide an alternative source of water</u></p> <p>For areas that will be on or adjacent to implemented restoration components, groundwater quality will be monitored by DWR prior to implementation to establish baseline groundwater quality conditions. Unacceptable degradation of groundwater quality will be determined by comparing post-implementation groundwater quality to relevant regulatory standards and with consideration of previously established beneficial uses. For wells affected by degradation in groundwater quality, water of a quality comparable to pre-project conditions would be provided. Options for replacing the water supply could include drilling an additional well or a deeper well to an aquifer zone with water quality comparable to or better than preconstruction conditions or replacement of potable water supply. Construction activities are anticipated to be localized and would not result in change in land uses. The well drilling activities would result in short-term noise impacts for several days.</p>	Significant & Unavoidable	<p>The increased inundation frequency in restoration areas from the Environmental Commitments under Alternative 4A will increase the localized areas exposed to saline and brackish surface water, which would result in increased groundwater salinity beneath such areas. The flooding of large areas with saline or brackish water will result in significant impacts on groundwater quality beneath or adjacent to flooded areas. It will not be possible to completely avoid this effect.</p> <p>(Final EIR/EIS, Chapter 7, Groundwater, p. 7-122)</p>	<p>If water supply wells in the vicinity of these areas are not useable because of water quality issues, Mitigation Measure GW-7 is available to address this effect, but because it is not possible to completely avoid this effect, the impact will remain significant and unavoidable.</p> <p>Findings: Changes or alterations have been required in, or incorporated into, the project that substantially lessen, but do not avoid, the significant environmental effect as identified in the Final EIR/EIS. Impacts are therefore significant and unavoidable despite the adoption of feasible mitigation measures.</p> <p>(Final EIR/EIS, Chapter 7, Groundwater, p.</p>

Alternative 4A Potential Impact	Impact Conclusions Before Mitigation-CEQA	Adopted Mitigation Measures	Impact Conclusion After Mitigation-CEQA	Discussion	Findings of Fact
		<p>(Chapter 31, <i>Other CEQA/NEPA Required Sections, including Mitigation and Environmental Commitment Impacts, Environmentally Superior Alternative, and Public Trust Considerations</i>, provides an assessment of the impacts of implementing proposed mitigation measures.)</p> <p>(Final MMRP, p. 2-9; see also Final EIR/EIS, Chapter 7, Groundwater, p. 7-58)</p>			7-122)
<p>GW-9: Degrade groundwater Quality</p> <p>(Final EIR/EIS Chapter 7, Groundwater, pp. 7-125—7-126)</p>	Significant	No feasible mitigation to address this impact	Significant & Unavoidable	<p>Total long-term average surface water deliveries under Alternative 4A at Late Long Term (LLT) conditions may be less than under Existing Conditions, and implementation of Alternative 4A at LLT will degrade groundwater quality in portions of the Southern California SWP Export Service Areas. This impact is considered significant due to the possibility of increased groundwater pumping and the resulting effects on regional groundwater flow patterns. There is no feasible mitigation available to address this significant impact.</p> <p>(Final EIR/EIS, Chapter 7, Groundwater, p. 7-125—7-126)</p>	<p>This impact is considered significant due to the possibility of increased groundwater pumping and the resulting effects on regional groundwater flow patterns. There is no feasible mitigation available to address this significant impact. The impact will be considered significant and unavoidable in these areas. Due to the uncertainties identified in connection with the potential response to Impact GW-8 under Alternative 4A in Southern California (refer to Final EIR/EIS, Chapter 7, Groundwater, pp. 7-123 – 7-125), the overall impact for Impact GW-9 Alternative 4A is considered significant and unavoidable.</p> <p>Findings: Impacts are significant and unavoidable and no feasible mitigation measures have been identified.</p> <p>(Final EIR/EIS Chapter 7, Groundwater, pp. 7-125—7-126)</p>
Water Quality					
<p>WQ-14: Effects on mercury concentrations resulting from implementation of Environmental Commitments 3, 4, 6–12, 15, and 16</p> <p>(Final EIR/EIS, Chapter 8, Water Quality, pp. 8-949—8-950)</p>	Significant	No feasible mitigation to address this impact	Significant & Unavoidable	<p>There will be no substantial, long-term increase in mercury or methylmercury concentrations or loads in the rivers and reservoirs upstream of the Delta or the waters exported to the SWP/CVP Export Service Areas due to implementation of Environmental Commitments 3, 4, 6–12, 15, and 16 relative to Existing Conditions. However, in the Delta, due to the small amount of tidal restoration areas proposed, relative to Existing</p>	<p>The effectiveness of minimization and mitigation actions implemented according to the mercury management plans is not known at this time, although the potential to reduce methylmercury concentrations exists based on current research. Although Environmental Commitment 12 will be implemented with the goal to reduce this potential effect, the uncertainties related to site specific restoration conditions and the potential for increases in methylmercury</p>

Alternative 4A Potential Impact	Impact Conclusions Before Mitigation-CEQA	Adopted Mitigation Measures	Impact Conclusion After Mitigation-CEQA	Discussion	Findings of Fact
				<p>Conditions, uptake of mercury from water and/or methylation of inorganic mercury may increase in localized areas as part of the creation of new, marshy, shallow, or organic-rich restoration areas. Although not quantifiable, on a local level, increases in methylmercury concentrations may be measurable. Methylmercury is Clean Water Act (CWA) Section 303(d)-listed within the affected environment, and therefore any potential measurable increase in methylmercury concentrations will make existing mercury-related impairment measurably worse. Because mercury is bioaccumulative, increases in water-borne mercury or methylmercury that could occur in some areas could bioaccumulate to somewhat greater levels in aquatic organisms and would, in turn, pose health risks to fish, wildlife, or humans. Design of restoration sites will be guided by Environmental Commitment 12, which requires development of site-specific mercury management plans as restoration actions are implemented.</p> <p>(Final EIR/EIS, Chapter 8, Water Quality, pp. 8-949—8-950)</p>	<p>concentrations in the Delta result in this potential impact being considered significant because, as described in the Discussion column any potential measurable increase in methylmercury concentrations would make existing mercury-related impairment measurably worse. (See also Developments after Publication of the Proposed Final Environmental Impact Report, Section 5.1.1. Project Updates for discussion on additional Environmental Commitment 4 acreage impacts from methylmercury.) No mitigation measures will be available until specific restoration actions are proposed. Therefore, this impact is considered significant and unavoidable.</p> <p>Findings: Impacts are significant and unavoidable and no feasible mitigation measures have been identified.</p> <p>(Final EIR/EIS, Chapter 8, Water Quality, p. 8-949—8-950)</p>
Soils					
<p>SOILS-2: Loss of topsoil from excavation, overcovering, and inundation as a result of constructing the proposed water conveyance facilities</p> <p>(Final EIR/EIS, Chapter 10, Soils, p. 10-153)</p>	Significant	<p><u>SOILS-2a: Minimize extent of excavation and soil disturbance</u></p> <p>A requirement of the General Permit is to minimize the extent of soil disturbance during construction. As described in Appendix 3B, <i>Environmental Commitments, AMMs, and CMs</i>, the Stormwater Pollution Prevention Plans (SWPPPs) prepared for construction activities will include a Best Management Practice (BMP) that specifies the preservation of existing vegetation through installation of temporary construction markers to preclude unnecessary intrusion of heavy equipment into non-work areas. DWR will ensure that the SWPPPs and BMPs limiting ground disturbance are included in the construction contracts and are properly executed during construction by the contractors.</p>	Significant & Unavoidable	<p>Construction of the water conveyance facilities will involve excavation, overcovering, and inundation of topsoil over extensive areas, thereby resulting in a substantial loss of topsoil despite a commitment for Disposal Site Preparation.</p> <p>(Final EIR/EIS, Chapter 10, Soils, p. 10-153)</p>	<p>The impact on soils in the Plan Area will be significant. Mitigation Measures SOILS-2a and SOILS-2b will minimize and compensate for these impacts, but not to a less-than-significant level because topsoil would be permanently lost over extensive areas. Therefore, this impact is considered significant and unavoidable.</p> <p>Findings: Changes or alterations have been required in, or incorporated into, the project that substantially lessen, but do not avoid, the significant environmental effect as identified in the Final EIR/EIS. Impacts</p>

Alternative 4A Potential Impact	Impact Conclusions Before Mitigation-CEQA	Adopted Mitigation Measures	Impact Conclusion After Mitigation-CEQA	Discussion	Findings of Fact
		<p>However, the BMP specifying preservation of existing vegetation may only limit the extent of the surface area disturbed and not the area of excavated soils. Accordingly, soil-disturbing activities will be designed such that the area to be excavated, graded, or overcovered is the minimum necessary to achieve the purpose of the activity.</p> <p>While minimizing the extent of soil disturbance will reduce the amount of topsoil lost, this will result in avoidance of this effect over only a small proportion of the total extent of the graded area that will be required to construct the habitat restoration areas, approximately 5% or less. Consequently, a large extent of topsoil will be affected even after implementation of this mitigation measure.</p> <p>(Final MMRP, p. 2-16; see also Final EIR/EIS Chapter 10, Soils, p. 10-97)</p> <p><u>SOILS-2b: Salvage, stockpile, and replace topsoil and prepare a topsoil storage and handling plan</u></p> <p>Depending on the thickness of the topsoil¹ at a given construction or restoration site, up to 3 feet of the topsoil will be salvaged from construction work areas, stockpiled, and then applied over the surface of spoil and RTM storage areas and borrow areas to the maximum extent practicable. Exceptions to this measure are areas smaller than 0.1 acre; areas of nonnative soil material, such as levees, where the near-surface soil does not consist of native topsoil; where the soil would be detrimental to plant growth; and any other areas identified by the soil scientist in evaluating topsoil characteristics (discussed below). This mitigation measure will complement and is related to activities recommended under Mitigation Measure AES-1c, in Chapter 17, <i>Aesthetics and Visual Resources</i> as well as to the environmental commitment for Disposal and Reuse of Spoils, RTM, and Dredged Material.</p> <p>Topsoil excavated to install conveyance or to relocate utilities will be segregated from the subsoil excavated from open-cut trenches, stockpiled, and reapplied to the surface after the pipe has been installed.</p> <p>The detailed design of the proposed project-related construction activities will incorporate an evaluation, based on review of soil survey maps supplemented by field investigations and prepared by a qualified soil scientist that specifies the thickness of the topsoil that should be salvaged, and that identifies areas in which no topsoil</p>			<p>are therefore significant and unavoidable despite the adoption of feasible mitigation measures.</p> <p>(Final EIR/EIS, Chapter 10, Soils, p. 10-153)</p>

¹ For the purposes of this mitigation measure, *topsoil* is defined as the O, Oi, Oe, Oa, A, Ap, A1, A2, A3, AB, and AC horizons. Three feet of topsoil was selected because it corresponds to the primary root zone depth of most crops grown in the Delta. With the exception of the Histosols (i.e., peat and muck soils), most of the topsoils in the Plan Area are less than 3 feet thick.

California WaterFix CEQA Findings of Fact and Statement of Overriding Considerations

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Alternative 4A Potential Impact	Impact Conclusions Before Mitigation-CEQA	Adopted Mitigation Measures	Impact Conclusion After Mitigation-CEQA	Discussion	Findings of Fact
		<p>should be salvaged. The soil scientist will use the exceptions listed above as the basis for identifying areas in which no topsoil should be salvaged. DWR will ensure that the evaluation is prepared by a qualified individual, that it adequately addresses all conveyance facilities, and that areas identified for topsoil salvage are incorporated into the project design and that the contractors execute the salvage operations.</p> <p>DWR will also prepare topsoil stockpiling and handling plans for the individual conveyance and restoration components, establishing such guidelines as the maximum allowable thickness of soil stockpiles, temporary stockpile stabilization/revegetation measures, and procedures for topsoil handling during salvaging and reapplication. The maximum allowable stockpile thickness will depend on the amount of time that the stockpile needs to be in place and is expected to range from approximately three to 10 feet. The plans will also specify that, where practicable, the topsoil be salvaged, transported, and applied to its destination area in one operation (i.e., without stockpiling) to minimize degradation of soil structure and the increase in bulk density as a result of excessive handling. The stockpiling and handling plans will also specify maximum allowable stockpile sideslope gradients, seed mixes to control wind and water erosion, cover crop seed mixes to maintain soil organic matter and nutrient levels, and all other measures to avoid soil degradation and soil erosional losses caused by excavating, stockpiling, and transporting topsoil. For staging areas and similar areas in which topsoil would not be excavated or overcovered, the stockpiling and handling plans will describe how the soil will be decompacted or otherwise remediated after demobilization, such as the depth and spacing of ripper shanks and number of passes made by the equipment. The intent of this provision will be to ensure that the soil will be returned to a similar bulk density and productivity as it was before the site was used as a staging area as much as practicable. DWR will ensure that each plan is prepared by a qualified individual, that it adequately addresses all relevant activities and facilities, and that its specifications are properly executed during construction by the contractors.</p> <p>Adherence to this measure will ensure that topsoil is appropriately salvaged, stockpiled, and reapplied. Nevertheless, adverse soil quality effects can also be associated with stockpiling and construction staging. Such effects commonly include increased bulk density, loss of soil carbon, degraded aggregate stability, reduced growth of the mycorrhizal fungi, and reduced nutrient cycling. Such effects may make the soil less productive after it is applied to its destination site, compared to its pre-salvage condition. Depending</p>			

Alternative 4A Potential Impact	Impact Conclusions Before Mitigation-CEQA	Adopted Mitigation Measures	Impact Conclusion After Mitigation-CEQA	Discussion	Findings of Fact
		<p>on the inherent soil characteristics, the manner in which it is handled and stockpiled, and the duration of its storage, the reapplied topsoil may recover quickly to its original condition or require many years to return to its pre-salvage physical, chemical, and biological condition (Strohmayer 1999; Vogelsang and Bever 2010). Implementation will be in compliance with the SWPPP.</p> <p>(Final MMRP, pp. 2-16 – 2-17; see also Final EIR/EIS, Chapter 10, Soils, pp. 10-97—10-99)</p>			
<p>SOILS-7: Loss of topsoil from excavation, overcovering, and inundation as a result of implementing the proposed Environmental Commitments 3–4, 6–11</p> <p>(Final EIR/EIS, Chapter 10, Soils, p. 10-157)</p>	Significant	<p><u>SOILS-2a: Minimize extent of excavation and soil disturbance.</u></p> <p>See Impact SOILS-2, above, for full mitigation measure.</p> <p>(Final MMRP, p. 2-16; see also Final EIR/EIS, Chapter 10, Soils, p. 10-97)</p> <p><u>SOILS-2b: Salvage, stockpile, and replace topsoil and prepare a topsoil storage and handling plan.</u></p> <p>See Impact SOILS-2, above, for full mitigation measure.</p> <p>(Final MMRP, pp. 2-16 – 2-17; see also Final EIR/EIS, Chapter 10, Soils, p. 10-97 – 10-99)</p>	Significant & Unavoidable	<p>Significant impacts could occur if there is loss of topsoil from excavation, overcovering, and inundation associated with restoration activities as a result of implementing the Environmental Commitments. Implementation of several Environmental Commitments will involve excavation, overcovering, and inundation (to create aquatic habitat areas) of topsoil over extensive areas, thereby resulting in a substantial loss of topsoil of over 1,000 acres.</p> <p>(Final EIR/EIS, Chapter 10, Soils, p. 10-157)</p>	<p>The impact will be significant. Mitigation Measures SOILS-2a and SOILS-2b will minimize and compensate for these impacts to a degree by minimizing topsoil loss, but not to a less-than significant level because topsoil would still be permanently lost over extensive areas. Therefore, this impact is considered significant and unavoidable.</p> <p>Findings: Changes or alterations have been required in, or incorporated into, the project that substantially lessen, but do not avoid, the significant environmental effect as identified in the Final EIR/EIS. Impacts are therefore significant and unavoidable despite the adoption of feasible mitigation measures.</p> <p>(Final EIR/EIS, Chapter 10, Soils, p. 10-157)</p>
Fish and Aquatic Resources					
<p>AQUA-201: Effects of water operations on entrainment of non-covered aquatic species of primary management concern</p> <p>(Final EIR/EIS, Chapter 11, Fish and Aquatic Resources, pp.11-3537 - 11-3539)</p>	Significant (Striped bass, American Shad)	No feasible mitigation to address this impact	Significant & Unavoidable (Striped bass, American Shad)	<p>Striped bass and American shad are non-native fish species popular with anglers in Northern California. As discussed in Chapter 11, Section 11.1.1.2, Upstream of the Delta, the species were introduced into the Sacramento-San Joaquin River Basin in the late 1880s. Both species migrate from the Pacific Ocean via the Delta into the San Joaquin River to spawn in the spring. Earlier life stages (eggs and larvae) of striped bass and American shad, however, would be susceptible to entrainment at the proposed north Delta intakes. For</p>	<p>Given the potential for appreciably greater entrainment of the earliest life stages, it is concluded with some uncertainty that the effects of entrainment on striped bass from Alternative 4A will be significant and unavoidable. Although American shad early life stages may rear to sufficiently large size above the Delta, they could also be entrained in appreciably greater magnitude than currently occurs and therefore it is also concluded that the effects of entrainment on American shad from Alternative 4A will also be significant and unavoidable.</p>

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				<p>striped bass and American shad in particular, much of the overall Central Valley populations may be spawned upstream of the proposed north Delta intakes and therefore will be susceptible. For Alternative 4A, as with other alternatives proposing water conveyance with north Delta intakes, there is the potential for an appreciable increase in magnitude of entrainment of early life stages.</p> <p>(Final EIR/EIS, Chapter 11, Fish and Aquatic Resources, pp. 11-3537 - 11-3539)</p>	<p>Findings: Impacts are significant and unavoidable and no feasible mitigation measures have been identified.</p> <p>(Final EIR/EIS, Chapter 11, Fish and Aquatic Resources, pp. 11-3537 - 11-3539)</p>
Land Use					
<p>LU-3: Create physical structures adjacent to and through a portion of an existing community as a result of constructing the proposed water conveyance facility</p> <p>(Final EIR/EIS, Chapter 13, Land Use, p. 13-166)</p>	Significant	<p><u>TRANS-1a: Implement site-specific construction traffic management plan</u></p> <p>Prior to construction, DWR will be responsible for project management and shall contract with one or more construction management firms to assist in ensuring that construction contractors' crews and schedules are coordinated and that the plans and specifications are being followed. DWR will also ensure development of site-specific construction traffic management plans (TMPs) that address the specific steps to be taken before, during, and after construction to minimize traffic impacts, including the mitigation measures and environmental commitments identified in this EIR/EIS. This will include potential expansion of the study area identified in this EIR/EIS to capture all potentially significantly affected roadway segments.</p> <p>DWR will be responsible for developing the TMPs in coordination with the applicable jurisdictions, including the following.</p> <ul style="list-style-type: none"> • Caltrans for state and federal facilities; • local agencies for local roads, including emergency responders; • transit providers; • rail operators; • the U.S. Coast Guard; • city and county parks departments; and • the California Department of Parks and Recreation (DPR). 	Significant & Unavoidable	<p>During the construction of the tunnels between Intakes 3 and 5 and the intermediate forebay, construction activities will occur to the north and south of the community of Hood, and a proposed temporary power line would cross through portions of the community. Even though access to and from the community would be maintained over the long-term, the nearby construction of the temporary work area would substantially alter the setting of the community in the near term. Similarly, the nearby construction of Intakes 3 and 5, although not adjacent to Hood, will create permanent physical structures approximately one-quarter mile north and one-half mile south of Hood that would substantially alter the community's surroundings.</p> <p>(Final EIR/EIS, Chapter 13, Land Use, p. 13-166)</p>	<p>Construction of permanent structures will result in a significant and unavoidable impact. Implementation of Mitigation Measures TRANS-1a and TRANS-1b would reduce the severity of this impact by supporting continued access to and from the community on transportation routes; however, permanent structures in the community's vicinity would remain, and the impact is considered significant and unavoidable.</p> <p>Findings: Changes or alterations have been required in, or incorporated into, the project that substantially lessen, but do not avoid, the significant environmental effect as identified in the Final EIR/EIS. Impacts are therefore significant and unavoidable despite the adoption of feasible mitigation measures.</p> <p>(Final EIR/EIS, Chapter 13, Land Use, p. 13-166)</p>

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		<p>DWR will also ensure that the TMPs are implemented prior to beginning construction at a site, including in-water construction sites. If necessary to minimize unexpected operational impacts or delays experienced during real-time construction, DWR will also be responsible for modifying the traffic management plan to reduce these effects. With the goal of minimizing construction traffic related effects on wildlife and in light of local community traffic interests, DWR will facilitate discussions in the development of the TMP to address methods for minimizing truck traffic impacts in ways that do not create local traffic hazards. Each TMP will address the following, as needed and appropriate after coordination with the entities listed above. Implementation of this measure will ensure operational traffic impacts and delays experienced during construction will be minimized to the greatest extent feasible.</p> <ul style="list-style-type: none">• Signage warning of roadway surface conditions such as loose gravel, steel plates or similar conditions that could be hazardous to road cycling activity on roadways open to bicycle traffic.• Signage and barricades to be used around the work sites.• In-water work areas will be indicated by buoys, signage, or other effective means to warn boaters of their presence and restrict access. Warning devices and signage (e.g., “boats keep out” or “no wake zone” labeled buoys) will be in compliance with the U.S. Coast Guard Private Aid to Navigation requirements (U.S. Coast Guard 2012) and effective during non-daylight hours and periods of dense fog.• Use of flag people or temporary traffic signals/signage as necessary to slow or detour traffic.• Notifications for the public, emergency providers, cycling organizations, bike shops, and schools, the U.S. Coast Guard, boating organizations, marinas, city and county parks departments, and DPR, where applicable, describing construction activities that could affect transportation and water navigation.• Outreach (via public meetings and/or flyers and other advertisements)• Procedures for construction area evacuation in the case of an emergency declared by county or other local authorities.• Alternate access routes via detours and bridges to maintain continual circulation for local travelers in and around construction zones, including bicycle riders, pedestrians, and boaters, where applicable.			

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		<ul style="list-style-type: none">• Description of construction staging areas, material delivery routes, and specification of construction vehicle travel hour limits.• Notifications to commercial and leisure boating community of proposed barge operations in the waterways, including posting notices at Delta marinas and public launch ramps. This information will provide details regarding construction site location(s), construction schedules, and identification of no-wake zone, speed restricted zones, and/or detours, where applicable.• No-wake zone and speed-restrictions will be established as part of development of the site-specific plans and will be determined to protect the safety of construction workers and recreationists.• Designation of areas where nighttime construction will occur.• To the extent feasible, position construction lighting to reduce glare to nighttime drivers.• Plans to relocate school bus drop-off and pick-up locations if they will be affected during construction.• Scheduling for oversized material deliveries to the work site and haul routes.• Provisions that direct haulers are to pull over in the event of an emergency. If an emergency vehicle is approaching on a narrow two-way roadway, specify measures to ensure that appropriate maneuvers will be conducted by the construction vehicles to allow continual access for the emergency vehicles at the time of an emergency.• Control for any temporary road closure, detour, or other disruption to traffic circulation, including any temporary partial water channel closures.• Designated offsite vehicle staging and parking areas.• Posted information for contact in case of emergency or complaint.• Daily construction time windows during which construction is restricted or rail operations would need to be suspended for any activity within railroad rights of way.• Coordination with rail providers (BNSF Railway, Amtrak, and UPRR) to develop alternative interim transportation modes (e.g., trucks or buses) that could be used to provide freight and/or passenger service during any longer term railroad closures.• Coordination with transit providers (SCT, Tri-Delta, Rio Vista, and Greyhound Bus Lines) to develop daily			

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		<p>construction time windows during which transit operations would not be either detoured or significantly slowed.</p> <ul style="list-style-type: none"> • Routinely post information to the 511.org website regarding construction delays and detours. • Other actions to be identified and developed as may be needed by the construction manager/ resident engineer to ensure that temporary impacts on transportation facilities are minimized. • For construction-related traffic implement maximum 45 mph speed limit on Hood Franklin Road west of Interstate 5. Include signage: “Caution: entering sensitive wildlife area.” • Further reduce speed limit in both directions to 35 mph for construction-related vehicles from ½ mile west of Interstate 5 to 1 mile west of Interstate 5. Add sign at Visitor Center entrance stating that facilities are for SLNWR visitors only. • Add a right hand turn lane on Hood Franklin Road at the entrance of the Stone Lakes Visitor Center. • For construction-related traffic, reduce speed limit to 35 mph on Lambert Road from 1 ½ miles west of Interstate 5 to 2 ¼ miles west of Interstate 5. Include signage: “Caution: entering sensitive wildlife area.” • In consultation with Caltrans and local transportation agencies, schedule construction traffic to minimize impacts to local community events (e.g., Pear Fair, holidays). • Schedule construction traffic to minimize impacts to agricultural transportation operations between agricultural areas and processing or marketing facilities during harvest season. <p>As additional mitigation to minimize delays to transit vehicles due to projected traffic congestion and to encourage use of alternative modes of travel, including transit, DWR is required to develop a Transportation Demand Management (TDM) program for construction contractor’s crews to reduce the number of project trips. The program shall include and implement any combination of measures that would reduce the project’s trips and associated parking demand. The measures include:</p> <ul style="list-style-type: none"> • Promote ride sharing programs by methods that may include designating a certain percentage of parking spaces for ride sharing vehicles, designating adequate passenger loading and unloading and waiting areas for ride sharing vehicles. • Provide public transit incentives such as fully-subsidized or low-cost monthly transit passes. 			

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		<ul style="list-style-type: none">• Provide shuttle service and/or funding for a shuttle for residents that are outside of walking distance from a transit line.• Offering a parking cash out program.• The plan also includes more passive measures to further reduce trips:• Addition of pedestrian and bicycle facilities; Provision of carpool/vanpool/ride-matching services;• Provision of transportation information for contractors;• Provision of a transportation information center. <p>(Final MMRP, pp. 2-87 – 2-91; see also Final EIR/EIS, Chapter 19, Transportation, pp. 19-53—19-56, 19-218 - 19-221)</p> <p><u>TRANS-1b: Limit hours or amount of construction activity on congested roadway segments</u></p> <p>Where feasible, DWR would limit construction activity to fit within available reserve capacity or shift construction activity to hours with more reserve capacity so as to achieve acceptable LOS conditions based on roadway location (Chapter 19, <i>Transportation</i>, Table 19-9, of the FINAL EIR/EIS). Feasibility will be based on factors like reserve capacity on roadways, timing of deliveries and staging of construction.</p> <p>Potential mitigation measure would be to minimize construction traffic activity during typical morning and evening commute time periods. This can be accomplished through a combination of scheduling and routing requirements.</p> <p>DWR will include in the bid specifications a requirement that the contractor submit a proposal for a process for determining when the hours of construction can feasibly be limited to avoid operational deficiencies on identified roadway segments as specified in Table 19-9 of the FINAL EIR/EIS. DWR will ensure that this process is adhered to throughout the project construction period.</p> <p>(Final MMRP, pp. 2-91 – 2-92; see also Final EIR/EIS, Chapter 19, Transportation, pp. 19-56, 19-221)</p>			
Agriculture					
AG-1: Temporary conversion, short-term conversion, and permanent conversion of	Significant	<u>AG-1: Develop an Agricultural Lands Stewardship Plan (ALSP) to maintain agricultural productivity and mitigate for loss of Important Farmland and land subject to Williamson Act contracts or in</u>	Significant & Unavoidable	Construction of physical structures associated with the water conveyance facility proposed under the Project will	Implementation of Mitigation Measure AG-1 will reduce these impacts by implementing activities such as siting project footprints to

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Important Farmland or of farmland under Williamson Act contracts or in Farmland Security Zones as a result of constructing the proposed water conveyance facility (Final EIR/EIS, Chapter 14, Agricultural Resources, pp. 14-191—14-192)		<p><u>Farmland Security Zones</u></p> <p>DWR shall develop Agricultural Lands Stewardship Plans (ALSPs) (i) prior to the commencement of any construction activities or other physical activities associated with the project that would involve adverse effects (under NEPA) or significant effects (under CEQA) on Important Farmland or land subject to Williamson Act contracts or in Farmland Security Zones, and (ii) as part of the site-specific environmental review for all other environmental commitment or other site-specific project activities that could involve adverse effects (under NEPA) or significant effects (under CEQA) on Important Farmland or land subject to Williamson Act contracts or in Farmland Security Zones. For each environmental commitment or site-specific project activity other than the water conveyance facility that would cause such effects, a draft ALSP will be included with any publicly circulated environmental document for the proposed environmental commitment or project activity in order to obtain public input. The Plans will contain the three elements identified below for this measure. If a programmatic ALSP is developed for the project, parts of the project, the Delta or parts of the Delta, DWR may rely on these plans to the extent that they include all the elements in this measure.</p> <p>(Final MMRP, p. 2-41; see also Final EIR/EIS, Chapter 14, Agricultural Resources, p. 14-114)</p> <p><u>AG-1a: Promote agricultural productivity of Important Farmland to the extent feasible</u></p> <p>DWR will ensure that the following measures are implemented to reduce adverse effects and/or significant effects as described above if the measures are applicable and feasible. Not all measures listed below may be feasible or applicable to each environmental commitment or to individual parts of each environmental commitment. Rather, these measures serve as an overlying mitigation framework to be used for mitigation of impacts caused by the implementation of specific environmental commitment. The applicability of measures listed below would vary based on the location, timing, nature, and feasibility of each environmental commitment.</p> <ul style="list-style-type: none">• Early Planning<ul style="list-style-type: none">○ Describe the current land use in the project area and identify acreage of all land devoted to agricultural use, including farmland of local importance, grazing		<p>occupy Important Farmland and land subject to Williamson Act contracts or in Farmland Security Zones, directly precluding agricultural use for the duration of construction. Temporary and short-term construction of facilities will convert approximately 1,495 acres of Important Farmland and 1,132 acres of land subject to Williamson Act contracts or in Farmland Security Zones to other uses. Physical structures will also permanently convert approximately 3,909 acres of Important Farmland and 2,035 acres of land subject to Williamson Act contracts or in Farmland Security Zones to other uses. As described in the Final EIR/EIS and in Appendix 3B, <i>Environmental Commitments, AMMs, and CMs</i>, it is anticipated that the RTM and dredged material would be removed from RTM storage areas (which represent a substantial portion of the permanent impact areas) and reused, as appropriate, as bulking material for levee maintenance, as fill material for habitat restoration projects, or other beneficial means of reuse identified for the material. Because these activities would convert a substantial amount of Important Farmland and land subject to Williamson Act contracts or in Farmland Security Zones to nonagricultural uses, however, they are considered significant impacts on the environment.</p> <p>(Final EIR/EIS, Chapter 14, Agricultural Resources, pp. 14-191—14-192)</p>	<p>encourage continued agricultural production; avoiding, relocating or replacing agricultural infrastructure in support of continued agricultural activities; engaging counties, owners/operators, and other stakeholders in developing optional agricultural stewardship approaches; and/or preserving agricultural land through offsite easements or other agricultural land conservation interests. However, these impacts will remain significant and unavoidable. The analysis includes impacts on irrigation or drainage facilities that may result from geotechnical investigations as well as the impacts from construction. As noted in Chapter 3, <i>Description of Alternatives</i>, Section 3.6.1.10, <i>Geotechnical Exploration</i>, however, DWR has made an environmental commitment to avoid direct impacts on known irrigation and drainage ditches during geotechnical exploration activities. The total length of affected irrigation or drainage facilities was identified prior to application of this environmental commitment and Mitigation Measure AG-1a. However, these impacts would remain significant and unavoidable after implementation of this measure because, (i) even after effects from the footprints of project facilities are minimized through design, they would continue to require the conversion of substantial amounts of Important Farmland and land subject to Williamson Act contracts or in Farmland Security Zones, (ii) conservation or preservation by means of acquiring agricultural land conservation interests, even at one-to-one ratio, will not avoid a net loss of Important Farmland and land subject to Williamson Act contracts or in Farmland Security Zones and (iii) the proposed optional agricultural stewardship approach does not focus principally on physical effects but, rather, focuses on supporting the Delta as an evolving place by</p>

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		<ul style="list-style-type: none">land, and confined animal agriculture.○ Describe the extent to which the project can be part of or complement existing or planned land uses for the Delta. For California WaterFix, this means consulting with county governments, the Delta Protection Commission, the Delta Conservancy and other individuals and organizations that are considering plans or activities designed for agricultural use; flood management; mitigation and enhancement relating to aquatic and terrestrial habitat; recreation; and tourism. This consultation is particularly important when there are multiple uses being considered for one specific area of land, but it is also important to look at how the project affects or fits into other plans for the region or sub-regions where the project is located.○ DWR should consult with farmers, local agencies and other State and federal agencies, including the California Natural Resources Agency, the California Department of Water Resources, the Central Valley Flood Protection Board, the California Department of Conservation, the California Department of Food and Agriculture, the California Department of Fish and Wildlife, the Delta Stewardship Council, the California Delta Protection Commission, the Delta Conservancy, the United States Fish and Wildlife Service, the National Marine Fisheries Service, and the U.S. Department of Agriculture, including the Natural Resources Conservation Service, to identify design features of the project, if any, that will benefit flood management, agricultural production and natural resource protection.○ Consider whether the proposed land use is consistent with State, regional and local plans. For the California WaterFix, this could include local General Plans, the Delta Protection Commission’s Land Use and Resource Management Plan and Economic Strategy, the Delta Stewardship Council’s Delta Plan, the California Water Plan Agriculture Strategy, the Delta Conservancy Strategy, the California Department of Food and Agriculture’s Ag Vision; the California Natural Resources Agency’s California Climate Adaptation Plan, and the California Fish and Wildlife Strategic Vision;○ Consider whether agriculture and/or habitat			<p>encouraging existing owners and operators to continue working on the land while maintaining the long-term viability of regional agricultural economies and the economic health of local governments and special districts in the Delta (Final EIR/EIS, Chapter 14, pp. 14-113 —14-114). For further discussion of potential incompatibilities with land use designations, see Final EIR/EIS, Chapter 13, Land Use.</p> <p>Findings: Changes or alterations have been required in, or incorporated into, the project that substantially lessen, but do not avoid, the significant environmental effect as identified in the Final EIR/EIS. Impacts are therefore significant and unavoidable despite the adoption of feasible mitigation measures.</p> <p>(Final EIR/EIS, Chapter 14, Agricultural Resources, pp. 14-191—14-192)</p>

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		<p>management activities undertaken pursuant to the proposed land use are consistent with State and local policies relating to flood protection and whether they might provide additional protection because, for example, they (i) provide flood management activities that provide additional protection for agricultural activities or (ii) prevent or divert potential higher groundwater levels that would thwart flood control efforts</p> <ul style="list-style-type: none">• <u>Site Related Avoidance and Mitigation</u><ul style="list-style-type: none">○ Site projects and project footprints to minimize the permanent conversion of Important Farmland, to nonagricultural uses.○ When identifying and selecting project areas, give priority to public lands and existing conservation lands.○ Where choices are possible among or between particular parcels or lands that are available for a project, DWR should look at the characteristics of the different parcels or lands to determine whether one choice would be better from an agricultural resource perspective. If choices can be made regarding different locations for a project and still achieve the project purposes, it may be possible to avoid areas that may have more value from an agricultural resources perspective such as whether the property is (1) “high quality” farmland, (2) unique or has special values, (3) important to maintaining viability of agriculture in a certain area, (4) important to maintaining habitat lands in agriculture in a certain area.○ Manage project operations to minimize the introduction of invasive species or weeds that may affect agricultural production on adjacent agricultural land.• Mitigate on Site<ul style="list-style-type: none">○ Design projects so as to optimize contiguous parcels of agricultural land of a size sufficient to support their efficient use for continued agricultural production.○ Where the construction or operation of a facility could limit access to ongoing agricultural operations, maintain a means of convenient access to these agricultural properties as part of project design, construction, and implementation.			

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		<ul style="list-style-type: none"> ○ At borrow sites to be returned to agricultural production, remove and stockpile, at a minimum, the upper 2 feet of topsoil and replace the topsoil after project completion as part of borrow site reclamation. ○ In areas permanently disturbed by project activities, and where topsoil is removed as part of project construction (e.g., stripping topsoil under a levee foundation) and not reused as part of the project, make the topsoil available to less productive agricultural lands that could benefit from the introduction of good-quality soil. ○ For temporarily impacted diversions: <ul style="list-style-type: none"> • Provide new water wells until diversion connection is reestablished to ensure agricultural production is maintained • Provide alternate water supply from a permitted source, such as trucking in water or negotiating with adjacent land owners • Compensate owners for production losses attributable to reduction in water supply from the impacted diversions ○ For permanently impacted diversions: <ul style="list-style-type: none"> • Carry out those measures for temporarily impacted diversions until the measures listed below are completed • Relocate and/or replace wells, pipelines, power lines, drainage systems, and other infrastructure that are needed for ongoing agricultural uses and would be adversely affected by project construction or operation. • Provide negotiated settlement that may include some of the above and/or compensation. ○ Minimize disturbance of Important Farmland and continuing agricultural operations during construction by (1) locating construction laydown and staging areas on sites that are fallow, already developed or disturbed, or are to be discontinued for use as agricultural land and (2) using existing roads to access construction areas. ○ Consult with landowners and agricultural operators to develop appropriate construction practices to minimize construction-related impairment of 			

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		<p>agricultural productivity. Practices may include coordinating the movement of heavy equipment and implementing traffic control measures.</p> <ul style="list-style-type: none">○ Consult with landowners and agricultural operators with the goal of sustaining existing agricultural operations, at the landowners’ discretion, until the individual agricultural parcels are needed for project construction.● Consult with landowners and agricultural operators on what role they can take if they wish be involved in project development. Issues to consider include whether:<ul style="list-style-type: none">○ Owner(s) or operator(s) could carry out project activities on their land. To the extent that Important Farmland is part of the project, consideration should be given to providing flexibility to the farmer. To the extent that Important Farmland is part of the project, consideration should also be given to developing working landscapes² on project lands○ Some or all of the ownership interests on any project land could remain in private hands or in the hands of a private conservancy in order to keep the property in nongovernmental ownership and thereby on the County tax base;○ Owner(s) and/or operator(s) of land displaced by project facilities and activities could maintain or obtain full or partial ownership of the land on which project activities will be carried out or could be compensated to manage said land;○ Existing agricultural operations on lands could be modified, through such things as crop change, new integrated pest management strategies, altered water usage, or full or partial conversion to habitat uses, in a manner that renders such operations consistent with the goals and objectives of the project by enhancing environmental outcomes in a manner beneficial to species covered by the project;○ Limited agriculture could take place within areas identified for habitat restoration under the project without undermining the achievement of the project			

² The Cal-Fed Working Landscapes Subcommittee of the Bay Delta Public Advisory Committee defined a working landscape as “a place where agriculture and other natural resource-based economic endeavors are conducted with the objective of maintaining the viability and integrity of its commercial and environmental values. On a working landscape, both private production, as well as public regulatory decisions account for the sustainability of families, businesses and communities, while protecting and enhancing the landscape’s ecological health. The working landscape is readily adaptable to change according to economic and ecosystem needs. With respect to CALFED, a working landscape is both an objective and a means to achieve it. A working landscape is efficiently managed largely by private agricultural landowners and managers who are supported and encouraged to manage their lands in ways that fulfill CALFED goals, allowing them to pursue ecological health goals while yielding economic returns on investments, and generating tax revenues that support their local governments” (California Bay-Delta Public Advisory Committee 2002).

California WaterFix CEQA Findings of Fact and Statement of Overriding Considerations

July 2017

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		<ul style="list-style-type: none"> goals and objectives; <ul style="list-style-type: none"> ○ Subsidies to allow economically viable rice farming on particular lands could be justified due to the environmental benefits of such rice farming such as the stabilization of subsiding areas or the creation of sinks for greenhouse gases and methylmercury; ○ Subsidies to assist the owner(s) and/or operator(s) to make a viable living managing wetlands or other habitat areas could be justified due to the environmental benefits of wetlands or habitat such as the stabilization of subsiding areas or the safer accumulation and isolation of greenhouse gases and methylmercury; • Implementation <ul style="list-style-type: none"> ○ The plans should include a framework that encourages adaptive management with regard to agricultural land management. ○ The plans should include reporting and monitoring actions necessary to show that the actions agreed to were being carried out. <p>(Final MMRP, pp. 2-41 – 2-44; see also Final EIR/EIS, Chapter 14, Agricultural Resources, pp. 14-114—14-118)</p> <p><u>AG-1b: Minimize impacts on land subject to Williamson Act contracts or in Farmland Security Zones</u></p> <p>DWR will ensure that the following measures are implemented as applicable to reduce effects and preserve agricultural uses on lands with designated agricultural preserves and subject to Williamson Act contracts or in Farmland Security Zones:</p> <ul style="list-style-type: none"> • DWR will comply with applicable provisions of California Government Code Sections 51290–51295 with regard to acquiring lands within agricultural preserves and subject to Williamson Act contracts. Sections 51290(a) and 51290(b) specify that State policy, consistent with the purpose of the Williamson Act to preserve and protect agricultural land, is to avoid locating public improvements and any public utilities improvements in agricultural preserves, whenever feasible. If it is infeasible to locate such improvements outside of a preserve, they will be located on land that is not under contract, if feasible. • More specifically, DWR will comply with the following basic 			

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		<p>requirements stated in the California Government Code:</p> <ul style="list-style-type: none">○ Whenever it appears that land within a preserve or under contract may be required for a public improvement, the DOC and the city or county responsible for administering the preserve must be notified (Section 51291(b)).○ Within 30 days of being notified, DOC and the city or county must forward comments, which will be considered by the proponents of the public improvement (Section 51291(b)).○ A public improvement generally may not be located within an agricultural preserve unless DWR makes specific findings to the effect that (1) the location is not based primarily on the lower cost of acquiring land in an agricultural preserve and (2) for agricultural land covered under a contract for any public improvement, no other land exists within or outside the preserve where it is reasonably feasible to locate the public improvement (Sections 51921(a) and 51921(b)). Findings do not need be made if the action falls within one of the exemptions in Section 51293. The contract is normally terminated when land is acquired by eminent domain or in lieu of eminent domain (Section 51295).○ DOC must be notified within 10 working days upon completion of the acquisition (Section 51291(c)).○ DOC and the city or county must be notified before completion of any proposed work of any significant changes related to the public improvement (Section 51291(d)). <p>If, after acquisition, the acquiring public agency determines that the property would not be used for the proposed public improvement, DOC and the city or county administering the involved preserve must be notified before the land is returned to private ownership. The land will be re-enrolled in a new contract or encumbered by an enforceable restriction at least as restrictive as that provided by the Williamson Act (Section 51295).</p> <p>(Final MMRP, p. 2-45; see also Final EIR/EIS, Chapter 14, Agricultural Resources, pp. 14-118—14-119)</p> <p><u>AG-1c: Consideration of an Optional Agricultural Land Stewardship</u></p>			

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		<p><u>Approach or Conventional Mitigation Approach</u></p> <p>Where DWR has determined that compliance with Mitigation Measures AG-1a and AG-1b is not sufficient to mitigate to a less than significant or adverse level the impacts from the conversion of Important Farmland or of land subject to Williamson Act contracts or in Farmland Security Zones, they will undertake additional feasible mitigation pursuant to this measure (AG-1c).</p> <p>Exceptions to this requirement will apply where the mitigation already being required for the biological resource values for the land at issue (e.g., for its value as habitat for Swainson’s hawk) pursuant to the cultivated lands natural community strategy of Environmental Commitment 3 already requires the equivalent of 1:1 mitigation (based on the net area of land remaining in agriculture) for impacts to Important Farmland or of land subject to Williamson Act contracts or in Farmland Security Zones, provided that the easements for biological values also incorporate agricultural preservation.</p> <p>DWR will determine the nature and form of any necessary additional mitigation after consultation with, at least, all of the following: (i) the County in which the affected property is located; (ii) the owner(s) and/or operator(s) of said property; (iii) the California Natural Resources Agency; (iv) the California Department of Water Resources; (v) the Central Valley Flood Protection Board; (vi) the California Department of Conservation; (vii) the California Department of Food and Agriculture; (viii) the California Department of Fish and Wildlife; (ix) the Delta Stewardship Council; (x) the California Delta Protection Commission; (xi) the Delta Conservancy; (xii) the United States Fish and Wildlife Service; (xiii) the National Marine Fisheries Service; and (xiv) the U.S. Department of Agriculture, including the Natural Resources Conservation Service. After consulting with these agencies, entities, and/or individuals, the DWR will determine whether or not, under the circumstances surrounding the conversion of particular agricultural lands, the best overall approach to the additional required mitigation is the conventional use of agricultural land conservation property interests (see discussion below on Conventional Mitigation Approach). In making this determination, DWR will give considerable weight to the willingness of the County in which the affected property is located and the owner(s) and/or operator(s) of said property to participate in an Optional Agricultural Land Stewardship Approach, which would seek opportunities to protect and enhance agriculture in the Delta as part of the project landscape</p>			

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		<p>and focus on maintaining economic activity on agricultural lands instead or in conjunction with the Conventional Mitigation Approach for purposes of CEQA/NEPA mitigation. Where the County and the owner(s) and/or operator(s) have a preference for participating in an Optional Agricultural Land Stewardship Approach, DWR will attempt to develop a feasible Optional Agricultural Land Stewardship alternative mitigation program acceptable not only to the County and the owner(s) and/or operator(s), but also to the California Department of Fish and Wildlife, the United States Fish and Wildlife Service, and the National Marine Fisheries Service. Where DWR, despite a good faith effort, cannot succeed in achieving the consensus necessary to carry out a feasible Optional Agricultural Land Stewardship Approach, they will undertake instead a Conventional Mitigation Approach, where necessary and feasible, based on the use of agricultural conservation property interests or other measures requiring the preservation or, enhancement of other land of similar agricultural quality in areas that are threatened with encroaching urban development.</p> <p>Specific strategies that could be used in formulating an Optional Agricultural Land Stewardship Approach are described in Appendix 14B, <i>Delta Agricultural Stewardship Strategies</i>. In determining the potential nature and form of an Optional Agricultural Land Stewardship Approach, DWR will, at a minimum, consider the following, as applicable:</p> <ul style="list-style-type: none">• whether there is Important Farmland in the Delta reasonably accessible to DWR and/or to the owner(s) and/or operators for use for agriculture and/or habitat management in a manner consistent with the goals and objectives of the California WaterFix;• whether there is Important Farmland that might not remain in agriculture if it was not protected by means of an agricultural conservation property interest because of threats of urban development (e.g. in the secondary zone in the Delta) or wind/solar and other non-renewable energy projects, or the productive value of which is so high, it should remain in agriculture instead of being used for restoration or other open-space projects because, for example, it is:<ul style="list-style-type: none">○ unique or has special values○ important to maintaining viability of agriculture in the region○ critical to prevent a “tipping” point that could lead to elimination of a crop in the region○ important to maintaining habitat lands in agriculture			

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		<p>in the region</p> <ul style="list-style-type: none">• whether Agricultural Land Stewardship Strategies³ benefit agricultural lands by providing feasible CEQA/NEPA mitigation (or providing funding for such mitigation) for potential significant environmental agricultural impacts at both the farm and the regional level. In determining whether the funds necessary to make an Optional Agricultural Land Stewardship Approach feasible are available, DWR will be guided by the principle that funds that might otherwise be used for off-site preservation or another form of compensation may be made available instead to assist with making the Optional Agricultural Land Stewardship Approach work. Such strategies could include:<ul style="list-style-type: none">○ Potential strategies to help maintain farming in the Delta<ul style="list-style-type: none">• Improve flood protection (Strategy 1)• Provide technical and financial assistance to help farmers maintain or improve agricultural production (Strategy 2)• Provide technical and financial assistance to help farmers comply with regulatory requirements for water quality (Strategy 3)• Control terrestrial weeds (Strategies 6a, 6b, and 6c)• Reduce conflict between agriculture and nearby habitat lands by creating a “good neighbor” policy (Strategy 7)• Work with other interests to explore the value of reinstating state funding of Williamson Act subventions (Strategy 8)• Work with counties to expand Williamson Act authorized uses to include open space/habitat lands in Williamson Act Preserves (Strategy 9)• Investigate options for in lieu tax revenue for counties and payments for local districts (Strategy 10)			

³ Strategies developed so far, and other materials relating to their development and implementation, can be found at <https://bdcpdf.l.water.ca.gov/home>. These are given as examples to consider at this time. It is expected that existing strategies will evolve and change over time and that additional strategies will be developed.

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		<ul style="list-style-type: none">• Provide for Agricultural Conservation Easements (Strategy 11)○ Potential strategies that provide incentives for conservation on farmland<ul style="list-style-type: none">• Partner with others to maintain and enhance environmental quality on farmland (Strategy 12)• Compensate farmers to manage agricultural land as habitat for wildlife (Strategy 13)• Provide incentives for farmers to take part in a market-based conservation program (Strategy 14)○ Potential strategies to manage land for purposes other than conventional crop production<ul style="list-style-type: none">• Provide technical and financial assistance to stabilize or reverse land subsidence on Delta island (Strategy 15)• Assist landowners to produce and sell greenhouse gas offset credits in the AB 32 Cap-and-Trade program (Strategy 16)• Compensate farmers to manage habitat lands (Strategy 17)• Designate carbon sequestration and subsidence reversal crops as agricultural production for regulatory and incentive programs (Strategy 18)○ Potential strategies that provide for economic development and other benefits<ul style="list-style-type: none">• Provide technical and financial assistance to develop an economic study of agricultural activity and related infrastructure (Strategy 19)• Provide technical and financial assistance for to promote economic development (Strategy 20)• Provide technical and financial assistance to promote transportation infrastructure improvements (Strategy 21)• Provide technical assistance to farmers to help in complying with the regulatory			

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		<p>framework present in the Delta (Strategy 22)</p> <ul style="list-style-type: none">• Provide technical, risk reduction, promotion, and financial assistance for farmers to manage land to incorporate recreation and tourism (Strategy 23)• Work with others to better align the regulatory system to help farmers who engage in ecological restoration and enhancement projects (Strategy 24)• Develop Agricultural Land Stewardship Plans (Strategy 25) <ul style="list-style-type: none">• In addition, DWR will explore the following funding sources to implement strategies that are in addition to those required under CEQA/NEPA in order to maintain agriculture In the Delta. These strategies include those listed above for CEQA/NEPA mitigation.<ul style="list-style-type: none">○ Work with the California Air Resources Board (CARB) to establish a greenhouse gas offset market using credits created through the development and restoration of wetlands.○ Seek available funding from CARB’s “Cap and Trade” program developed pursuant to the Global Warming Act Solutions Act of 2006 (AB 32).○ Work with others to explore the value of reinstating state funding for Williamson Act subventions from Cap and Trade Funding or other sources○ Consider recommending to the Governor and Legislature that funds for be included in any bond measure(s) placed on the statewide ballot (e.g. the Delta Investment Fund authorized by the Delta Reform Act).○ Work with other governmental and private entities to identify other funds that can be used for the Optional Agricultural Land Stewardship Approach. <p><i>Strategy for implementing a Conventional Mitigation Approach.</i></p> <p>Where DWR, despite a good faith effort, cannot succeed in achieving the consensus necessary to carry out a feasible Optional Agricultural Land Stewardship Approach, they will undertake instead, where necessary and feasible, a Conventional Mitigation Approach based</p>			

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		<p>on the purchase of property interests in agricultural lands (e.g., conservation easements) or other compensation arrangements (collectively referred to as “agricultural conservation property interests”), requiring the preservation and/or enhancement of other land of similar agricultural quality. The standard ratio for purchase of agricultural conservation property interests to mitigate for permanently converted Important Farmland not included, as discussed above, as part of mitigation for biological resources, will be at a ratio of 1:1 for similar types of Important Farmland.</p> <p>Where feasible, mitigation will generally result in the purchase of agricultural conservation property interests, such as easements on other agricultural lands of the same overall quality and acreage either directly or indirectly. The two preferred forms of mitigation in this context will be (i) the inclusion of sufficient acreages within agricultural preserves within California WaterFix lands to satisfy CEQA and NEPA agricultural resource mitigation in addition to meeting DWR objectives under the federal and state Endangered Species Acts and (ii) reliance on the California Farmland Conservancy Program or on other established programs in the Delta supported by the county where the project is located, the Delta Stewardship Council, the Delta Planning Commission, or the Delta Conservancy. Where DWR chooses to rely on the latter strategy, they will confirm, prior to submitting funds into any program both (a) that the program meets the standards under CEQA case law for a “reasonable mitigation plan” and (b) that they can spend the funds at issue for the preservation and, where appropriate, the enhancement, of land that is reasonably proximate to the land being impacted and of a similar quality or extent. Where these two preferred options are unavailable or infeasible, DWR will be responsible for purchasing agricultural conservation property interests on their own.</p> <p>Where feasible, agricultural land conservation interests should be acquired in the county in which the conversion will take place, provided that any such land either would be at-risk for conversion from agricultural uses in the absence of such long-term protection, unless such purchases would potentially put off-limits lands that may be needed for habitat purposes under Alternative 4A or are necessary for other habitat conservation plans. Thus, acquisition of such agricultural land conservation interests cannot be located in areas targeted for habitat restoration if doing so would thwart</p>			

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		<p>implementation of the habitat restoration objectives of the mitigation for California WaterFix.</p> <p>Where a property identified for purchase of an agricultural land conservation interest serves non-agricultural purposes such as providing wildlife habitat or flood control or flood management benefits, the terms of the agricultural land conservation interest will require the farm operator to continue to use the property in a manner that preserves these benefits (e.g., by continuing to support certain crop types known to provide, or be consistent with, such benefits) unless similar benefits are provided through some other means. The value of the agricultural land conservation interest would need to take such limitations on agricultural practices into account.</p> <p>Absent an adequate supply of similar quality Important Farmland within the county where conversion occurs, the agricultural land conservation interest may be obtained in another county. If so, the proponents will seek to obtain farmland of equivalent qualities, preferring locations within the greater Sacramento and Stockton metropolitan areas. The priority for purchase or encumbrance would be Important Farmland at-risk for conversion from agricultural uses to urban development without such long-term protection. However, no purchase shall conflict with or undermine the overall California WaterFix by potentially putting off-limits lands that may be needed for habitat purposes during the permit duration of the project.</p> <p>(Final MMRP, pp. 2-45 – 2-50; see also Final EIR/EIS, Chapter 14, Agricultural Resources, pp. 14-119—14-123)</p>			
<p>AG-2: Other effects on agriculture as a result of constructing and operating the proposed water conveyance facility</p> <p>(Final EIR/EIS, Chapter 14, Agricultural Resources, P. 14-192—14-195)</p>	Significant	<p><u>AG-1: Develop an Agricultural Lands Stewardship Plan (ALSP) to maintain agricultural productivity and mitigate for loss of Important Farmland and land subject to Williamson Act contracts or in Farmland Security Zones</u></p> <p>See Impact AG-1, above, for full mitigation measure.</p> <p>(Final MMRP, p. 2-41; see also Final EIR/EIS, Chapter 14, Agricultural Resources, p. 14-114)</p> <p><u>GW-1: Maintain water supplies in areas affected by construction dewatering and Conveyance Operations</u></p>	Significant & Unavoidable	<p>Water conveyance facility construction and operation will create a significant impact on agriculture by converting substantial amounts of Important Farmland to other uses through changes to groundwater elevation in localized areas and disruption of drainage and irrigation facilities. The analysis includes impacts on irrigation or drainage facilities that will result from geotechnical investigations as well as the impacts from construction. However, as</p>	<p>Implementation of Mitigation Measures AG-1, GW-1 (if site-specific geotechnical conditions result in localized groundwater elevation reductions; See <i>Developments after Publication of the Proposed Final Environmental Impact Report</i>, June 2017, for the changes to MM GW-1 resulting from comments received after publication), GW-5, and WQ-11 (including Mitigation Measure WQ-11e) will reduce the severity of these impacts by implementing activities such as siting project footprints to encourage</p>

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		<p>Prior to construction, DWR will determine the location of wells within the anticipated area of influence of construction sites at which dewatering would occur and the location of wells within the anticipated area of influence of conveyance operations on the Sacramento River above and below the north Delta intakes, within an approximately 4-mile wide corridor (about 2 miles on either side of the river). Based on available information, thorough site investigations, and desk studies, the location of wells, depths of the wells and the depth to groundwater within these wells will be determined. During construction dewatering, monitoring wells should be installed sufficiently close to the groundwater dewatering sites and along the Sacramento River, or if possible, water levels in existing wells will be monitored, in order to be able to detect changes in water levels attributable to dewatering activities and conveyance operations. Monitoring wells would continue to be used as part of a conveyance operation monitoring program. Monitoring would occur and be reported on a monthly basis with an annual summary report prepared by the project proponents for up to 5 years after commencement of conveyance operations. If monitoring data or other substantial evidence indicates that groundwater levels have declined in a manner that could adversely affect adjacent wells, temporarily rendering the wells unable to provide adequate supply to meet preexisting demands or planned land use demands, DWR will implement one or more of the following measures:</p> <ul style="list-style-type: none">• Offset domestic water supply losses attributable to construction dewatering activities and conveyance operations. DWR will ensure domestic water supplies provided by wells are maintained during construction and conveyance operations. Potential actions to offset these losses include installing cutoff walls in the form of sheet piles or slurry walls to depths below groundwater elevations, deepening, modifying or providing new wells used for domestic purposes to maintain water supplies at preconstruction levels, or securing potable water supplies from offsite sources. Offsite sources could include potable water transported from a permitted source or providing a temporary connection to nearby wells not adversely affected by dewatering or operations.• Offset agricultural water supply losses attributable to construction dewatering activities and conveyance operations. DWR will ensure agricultural water supplies are maintained during construction and operations or provide compensation to offset for crop production losses. If feasible, DWR will install sheet piles to depths below groundwater		<p>noted in Chapter 3, <i>Description of Alternatives</i>, Section 3.6.1.10, <i>Geotechnical Exploration</i>, DWR has made an environmental commitment to avoid direct impacts on known irrigation and drainage ditches during geotechnical exploration activities. The total length of affected irrigation or drainage facilities was identified prior to application of this environmental commitment and Mitigation Measure AG-1a. Water quality modeling results indicate that average EC levels at Emmaton would increase by up to 9% relative to Existing Conditions during the summer months of the drought period, and more generally in dry and critical water-year types. The increases during the drought period could cause substantial degradation of water quality and thereby impact the agricultural beneficial uses in the western Delta. The western Delta is Clean Water Act (CWA) Section 303(d)-listed for elevated EC and the increased EC degradation that could occur in the western Delta could make beneficial use impairment measurably worse. The comparison to Existing Conditions reflects changes in EC due to both Alternative 4A operations and climate change/sea level rise.</p> <p>(Final EIR/EIS, Chapter 14, Agricultural Resources, pp. 14-194—14-195)</p>	<p>continued agricultural production; monitoring changes in groundwater levels during construction; offsetting water supply losses attributable to construction dewatering activities; monitoring seepage effects; avoiding, relocating or replacing agricultural infrastructure in support of continued agricultural activities; engaging counties, owners/operators, and other stakeholders in developing optional agricultural stewardship approaches; and/or preserving agricultural land through offsite easements or other agricultural land conservation interests. Implementation of Mitigation Measure WQ-11 (including Mitigation Measure WQ-11e) will be expected to reduce the water quality effects on agricultural resources to a less-than-significant level. However, the impact related to conversion of Important Farmland will remain significant and unavoidable after implementation of these measures because, (i) the feasibility and effectiveness of phased actions to reduce EC levels is uncertain, (ii) conservation or preservation by means of acquiring agricultural land conservation interests, even at one-to-one ratio, will not avoid a net loss of Important Farmland, and (iii) the proposed optional agricultural stewardship approach does not focus principally on physical effects but, rather, focuses on supporting the Delta as an evolving place by encouraging existing owners and operators to continue working on the land while maintaining the long-term viability of regional agricultural economies and the economic health of local governments and special districts in the Delta.</p> <p>(Final EIR/EIS, Agricultural Resources, Chapter 14, p. 14-127).</p> <p>Findings: Changes or alterations have been required in, or incorporated into, the</p>

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		<p>elevations, or deepening, modifying or providing new wells to ensure agricultural production supported by water supplied by these wells is maintained. If deepening or modifying existing wells is not feasible, DWR will secure a temporary alternative water supply or compensate farmers for production losses attributable to a reduction in available groundwater supplies.</p> <p>Implementation of Mitigation Measure GW-1 will follow the steps below.</p> <ul style="list-style-type: none"> • DWR will be responsible for determining the area of influence of construction dewatering operations and conveyance operations and the location of potentially affected existing wells, in addition to the installation of potential new monitoring wells and the monitoring of existing wells. • Prior to commencement of construction activities DWR will determine the locations of existing wells which will require monitoring. In addition, shallow monitoring wells may be installed prior to construction dewatering operations and conveyance operations. Monitoring of water levels in these wells will occur during construction and up to 5 years during conveyance operations. Implementation of measures necessary to offset domestic and agricultural water supply losses will occur during construction and conveyance operations as necessary. • Monitoring wells will be installed; or, if feasible, water levels in existing wells will be monitored, in order to detect changes in water levels attributable to dewatering activities. Water levels in the installed monitoring wells and existing wells will be measured by DWR and/or construction contractors prior to construction dewatering and on a weekly or daily basis, as needed, during the entire construction dewatering period and on a monthly basis during conveyance operations. Upon completion of construction, the water levels in the monitoring wells will be measured and monitoring will continue for up to 6 months following termination of construction dewatering activities or less if groundwater levels reach preconstruction levels. During conveyance operations, monitoring will continue for 			<p>project that substantially lessen, but do not avoid, the significant environmental effect as identified in the Final EIR/EIS. Impacts are therefore significant and unavoidable despite the adoption of feasible mitigation measures.</p> <p>(Final EIR/EIS, Chapter 14, Agricultural Resources, pp. 14-194—14-195)</p>

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		<p>up to 5 years.</p> <ul style="list-style-type: none"> • All monitoring data will be reported on a monthly basis, and in an annual summary report prepared by DWR that will evaluate the impacts of the construction dewatering for that year. The monthly reports will contain tabular water level data as well as changes in water levels from the previous months. The annual report will summarize monthly data and show the most recent water level contour map as well as the preconstruction contour map. The final report will include water level contour maps for the area of the groundwater aquifer that is affected by dewatering showing initial, preconstruction water levels and final, post-construction and conveyance operations water levels. • If water level data indicate that dewatering operations or conveyance operations are responsible for reductions in well productivity such that water supplies are inadequate to meet existing or planned land use demands, mitigation will be required and implemented. • If monitoring data or other substantial evidence indicates that groundwater levels have declined in a manner that could adversely affect adjacent wells, temporarily rendering the wells unable to provide adequate supply to meet preexisting demands or planned land use demands, DWR will contact the affected landowners in a timely manner and implement one or more of the measures described above. <p>(Final MMRP, pp. 2-4 – 2-10; see also Final EIR/EIS, Chapter 7, Groundwater, pp. 7-51—7-52.) <i>See Developments after Publication of the Proposed Final Environmental Impact Report</i>, June 2017, for the changes to MM GW-1 resulting from comments received after publication.</p> <p><u>GW-5: Agricultural lands seepage minimization</u></p> <p>See Impact GW-6, above, for full mitigation measure.</p> <p>(Final MMRP, pp. 2-7 – 2-8; see also Final EIR/EIS, Chapter 7, Groundwater, pp. 7-55—7-56)</p> <p><u>WQ-11: Avoid or Minimize Reduced Water Quality Conditions</u></p>			

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		<p>The implementation of mitigation actions shall be focused on avoiding or minimizing those incremental effects attributable to implementation of Alternative 4A operations only. Mitigation actions to avoid or minimize the incremental EC effects attributable to climate change/sea level rise are not required because these changed conditions would occur with or without implementation of Alternative 4A. The goal of specific actions is to reduce/avoid additional exceedances of Delta EC objectives and reduce long-term average EC concentration increases to levels that would not adversely affect beneficial uses within the Delta, and would not make beneficial use impairment measurably worse. Implementation of Mitigation Measure WQ-11 would be expected to reduce effects on EC to a less-than-significant level.</p> <p>(Final MMRP, p. 2-13; see also Final EIR/EIS, Chapter 8, Water Quality, p. 8-943)</p> <p><u>WQ-11e: Implement Real-time Operations, Including Adaptively Managing Diversions at the North and South Delta Intakes, to Reduce or Eliminate Water Quality Degradation in the Western Delta</u></p> <p>Modeling results for Alternative 4A indicate water quality degradation for electrical conductivity (EC) in the Sacramento River at Emmaton in the months of July through September of below normal, dry and critical water year types, relative to the No Action Alternative (ELT). This mitigation measure establishes performance standards to address the modeled exceedances of Bay-Delta Water Quality Control Plan (WQCP) EC objectives and EC degradation such that impacts to beneficial uses affected by remaining degradation, following mitigation, would be less than significant.</p> <p>The Bay-Delta WQCP establishes water quality objectives for EC at Emmaton applicable from April 1 through August 15 for the protection of agricultural beneficial uses. To address exceedances of Bay-Delta WQCP EC objectives and EC degradation at Emmaton that has been modeled to occur in July and the first half of August of below normal, dry, and critical water years, DWR shall rely upon real-time operations (which cannot be fully captured in the modeling) to ensure that Bay-Delta WQCP Emmaton EC objectives are met. As a component of real-time operations, DWR shall ensure adequate releases from upstream reservoirs on a daily time-step and adaptively manage the split between north and south Delta diversions to achieve the Bay-Delta WQCP EC objectives at Emmaton. DWR is required to operate to meet these objectives under Existing Conditions, and would be required to operate to</p>			

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		<p>these objectives under the No Action Alternative. Thus, operation of the project alternative to achieve the Bay-Delta WQCP EC objectives would be consistent with Existing Conditions and the No Action Alternative and result in a minimization of EC degradation at Emmaton during July and the first half of August of below normal, dry, and critical water year types. Hence, the performance standard for July and the first half of August shall be the Bay-Delta WQCP Emmaton EC objectives.</p> <p>The Bay-Delta WQCP does not establish an EC objective at Emmaton for the latter half of August or September. To address EC degradation at Emmaton that has been modeled to occur during this period of the year with the project alternative, DWR shall manage upstream reservoir releases on a daily basis and adaptively manage the split between north and south Delta diversions of below normal, dry and critical water years. The performance standard for late August and September shall be compliance with the Threemile Slough standard in the North Delta Water Agency Agreement and the Bay-Delta WQCP municipal and industrial objective at Rock Slough as implemented within Decision 1641 or as modified in the future. Allowing sufficient flow in the Sacramento River at Emmaton, through real-time operations, would contribute to reduced EC levels at this location, relative to that modeled for the project alternative, and would reduce EC degradation at Emmaton in late August and September to less-than-significant levels.</p> <p>This mitigation measure is consistent with the adaptive management and real-time operations that would be utilized to minimize the project alternative's water quality effects to <i>Microcystis</i> in the summer months. This mitigation measure also is consistent with the Other (Non-Environmental) Commitment to address reverse flows in the Sacramento River at Freeport that may occur with the project alternative, which are most likely to occur in low flow months of dry and critical years.</p> <p>(Final MMRP, pp. 2-12 – 2-13; see also Final EIR/EIS, Chapter 8, Water Quality, pp. 8-943 – 8-944)</p>			
AG-3: Temporary conversion, short-term conversion, and permanent conversion of Important Farmland or of land subject to Williamson Act contracts or in Farmland Security Zone as a result of	Significant	<p><u>AG-1: Develop an Agricultural Lands Stewardship Plan (ALSP) to maintain agricultural productivity and mitigate for loss of Important Farmland and land subject to Williamson Act contracts or in Farmland Security Zones</u></p> <p>DWR shall develop Agricultural Lands Stewardship Plans (ALSPs) (i) prior to the commencement of any construction activities or other</p>	Significant & Unavoidable	The Project will restore up to approximately 18,411 acres of habitat under Environmental Commitments 3, 4, 6–11, 15, and 16. Additionally, up to 4.6 linear miles of channel margin habitat will be enhanced. Implementation of restoration activities and other	These impacts will remain significant and unavoidable after implementation of the identified mitigation measure because (i) even after effects from the footprints of the Environmental Commitments are minimized through design, they will continue to require the conversion of

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<p>implementing the proposed Environmental Commitments 3, 4, 6–11, 15, and 16</p> <p>(Final EIR/EIS, Chapter 14, Agricultural Resources, pp. 14-196—14-197)</p>		<p>physical activities associated with the project that would involve adverse effects (under NEPA) or significant effects (under CEQA) on Important Farmland or land subject to Williamson Act contracts or in Farmland Security Zones, and (ii) as part of the site-specific environmental review for all other environmental commitment or other site-specific project activities that could involve adverse effects (under NEPA) or significant effects (under CEQA) on Important Farmland or land subject to Williamson Act contracts or in Farmland Security Zones. For each environmental commitment or site-specific project activity other than the water conveyance facility that would cause such effects, a draft ALSP will be included with any publicly circulated environmental document for the proposed environmental commitment or project activity in order to obtain public input. The Plans will contain the three elements identified below for this measure. If a programmatic ALSP is developed for the project, parts of the project, the Delta or parts of the Delta, DWR may rely on these plans to the extent that they include all the elements in this measure.</p> <p>(Final MMRP, pp. 2-41; see also Final EIR/EIS, Chapter 14, Agricultural Resources, pp. 14-114)</p>		<p>conservation actions could result in conversion of a substantial amount of Important Farmland and conflict with land subject to Williamson Act contracts or in Farmland Security Zones, resulting in a significant impact on agricultural resources in the study area. Implementation of Mitigation Measure AG-1 will reduce the severity of these impacts by implementing activities such as siting features to encourage continued agricultural production; avoiding, relocating or replacing agricultural infrastructure in support of continued agricultural activities; engaging counties, owners/operators, and other stakeholders in developing optional agricultural stewardship approaches; and/or preserving agricultural land through offsite easements or other agricultural land conservation interests.</p> <p>(Final EIR/EIS, Chapter 14, Agricultural Resources, pp. 14-196—14-197)</p>	<p>substantial amounts of Important Farmland and land subject to Williamson Act contracts or in Farmland Security Zones (see also Developments after Publication of the Proposed Final Environmental Impact Report, Section 5.1.1. Project Updates for discussion on additional Environmental Commitment 4 acreage impacts to agricultural lands), (ii) conservation or preservation by means of acquiring agricultural land conservation interests, even at one-to-one ratio, will not avoid a net loss of Important Farmland and land subject to Williamson Act contracts or in Farmland Security Zones and (iii) the proposed optional agricultural stewardship approach does not focus principally on physical effects but, rather, focuses on providing, at a minimum, a neutral agricultural economic effect on affected lands in the Delta as a result of the Project, taking into consideration the desire of individual Delta farmers to continue working on their land, the long-term viability of regional agricultural economies, the economic health of local governments and special districts, and the Delta as an evolving place.</p> <p>Findings: Changes or alterations have been required in, or incorporated into, the project that substantially lessen, but do not avoid, the significant environmental effect as identified in the Final EIR/EIS. Impacts are therefore significant and unavoidable despite the adoption of feasible mitigation measures.</p> <p>(Final EIR/EIS, Chapter 14, Agricultural Resources, pp. 14-196—14-197)</p>
AG-4: Other effects on agriculture as a result of implementing the proposed Environmental Commitments 3,	Significant	<u>AG-1: Develop an Agricultural Lands Stewardship Plan (ALSP) to maintain agricultural productivity and mitigate for loss of Important Farmland and land subject to Williamson Act contracts or in Farmland Security Zones</u>	Significant & Unavoidable	Implementation of Environmental Commitments 3, 4, 6–11, 15, and 16 could create a significant impact on agriculture by converting substantial	These impacts will remain significant and unavoidable after implementation of the identified mitigation measures because (see also Developments after Publication of the

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4, 6–11, 15, and 16 (Final EIR/EIS, Chapter 14 Agricultural Resources, p. 14-198)		See impact AG-1, above, for full mitigation measure. (Final MMRP, pp. 2-41; see also Final EIR/EIS, Chapter 14, Agricultural Resources, p. 14-114) <u>GW-5: Agricultural lands seepage minimization</u> See impact GW-5, above, for full mitigation measure. (Final MMRP, pp. 2-7 — 2-8; see also Final EIR/EIS, Chapter 14, Agricultural Resources, pp. 14-40)		amounts of Important Farmland to other uses through changes to groundwater elevation and seepage or disruption of drainage and irrigation facilities. Further evaluation of these effects would depend on additional information relating to the location of these activities and other detailed information. Implementation of Mitigation Measures AG-1 and GW-5 will reduce the severity of these impacts by implementing activities such as siting features to encourage continued agricultural production; monitoring seepage effects; avoiding, relocating or replacing agricultural infrastructure in support of continued agricultural activities; engaging counties, owners/operators, and other stakeholders in developing optional agricultural stewardship approaches; and/or preserving agricultural land through offsite easements or other agricultural land conservation interests. (Final EIR/EIS, Chapter 14, Agricultural Resources, p. 14-198)	Proposed Final Environmental Impact Report, Section 5.1.1. Project Updates for discussion on additional Environmental Commitment 4 acreage impacts to agricultural lands), (i) seepage minimization may be infeasible in some instances, (ii) conservation or preservation by means of acquiring agricultural land conservation interests, even at one-to-one ratio, will not avoid a net loss of Important Farmland and (iii) the proposed optional agricultural stewardship approach does not focus principally on physical effects but, rather, focuses on supporting the Delta as an evolving place by encouraging existing owners and operators to continue working on the land while maintaining the long-term viability of regional agricultural economies and the economic health of local governments and special districts in the Delta. Findings: Changes or alterations have been required in, or incorporated into, the project that substantially lessen, but do not avoid, the significant environmental effect as identified in the Final EIR/EIS. Impacts are therefore significant and unavoidable despite the adoption of feasible mitigation measures. (Final EIR/EIS, Chapter 14, Agricultural Resources, p. 14-198)
Recreation					
REC-2: Result in long-term reduction of recreation opportunities and experiences as a result of constructing the proposed water conveyance facilities (Final EIR/EIS, Chapter 15, Recreation, p. 15-469)	Significant	<u>REC-2: Provide alternative bank fishing access sites</u> Construction-related impacts on informal fishing access sites near the proposed water conveyance facilities, such as along the east bank of the Sacramento River, in the vicinity of the proposed intakes, and in the vicinity of the expanded Clifton Court Forebay, would be considered significant because construction would alter the river bank and/or restrict access, making these sites unusable. To compensate for the loss of these informal sites during construction, DWR will enhance nearby formal fishing access sites, including	Significant & Unavoidable	Construction of the intakes and related water conveyance facilities will result in permanent and long-term (i.e., lasting over 2 years) impacts on well-established recreational opportunities and experiences in the study area because of access, noise, and visual setting disruptions that will result in loss of public use. These impacts would occur year-round. The identified mitigation	As explained in the Final EIR/EIS and the related discussion in this table, it is not certain that the identified mitigation measures (MM REC-2, BIO-75, AES-1a, AES-1b, AES-1c, AES-1d, AES-1e, AES-1f, AES-1g, AES-4a, AES-4b, TRANS-1a, TRANS-1b, TRANS-1c, NOI-1a, and NOI-1b) will reduce the significance of Impact REC-2 to less than significant in all the instances occurring within the entire study area throughout the years of construction.

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		<p>partnering with Yolo County to enhance the Clarksburg Fishing Access site on the west bank of the Sacramento River, and with the Sacramento County Department of Regional Parks to enhance the Cliffhouse Fishing Access site on the east bank of the Sacramento River and the Georgiana Slough Fishing Access site east of the Sacramento River, and with Contra Costa County to enhance fishing sites near Clifton Court Forebay, as well as other nearby sites. Prior to construction of the proposed water conveyance facilities, DWR will ensure adequate signage will be placed at the informal sites that would be directly affected by construction of the intakes, directing anglers to the formal sites. Upgrading the existing fishing access sites will be completed prior to beginning construction of the intakes. Where intake locations would remove existing public access to the Sacramento River for recreational purposes as part of design of the intakes, DWR will ensure that public access to the Sacramento River, including fishing access, will be incorporated into the design of the intakes. The access sites will be placed a reasonable distance from the intake to ensure the safety of recreationists and to compensate for the loss that would occur as a result of constructing the intakes.</p> <p>(Final MMRP, pp. 2-50 —2-51; see also Final EIR/EIS, Chapter 15, Recreation, pp. 15-267—15-268)</p> <p><u>BIO-75: Conduct preconstruction nesting bird surveys and avoid disturbance of nesting birds</u></p> <p>To reduce impacts on nesting birds, DWR will implement the measures listed below prior to construction and operations and maintenance activities.</p> <ul style="list-style-type: none"> • To the maximum extent feasible, vegetation (trees, shrubs, ruderal areas) removal and trimming will be scheduled during the nonbreeding season of birds (September 1–January 31). If vegetation cannot be removed in accordance with this timeframe, preconstruction/preactivity surveys for nesting birds and additional protective measures will be implemented as described below. • A qualified wildlife biologist with knowledge of the relevant species will conduct nesting surveys before the start of construction. A minimum of three separate surveys will be conducted within 30 days prior to construction, with the last survey within 3 days prior to construction. Surveys will include a search of all suitable nesting habitat (trees, shrubs, ruderal areas, field crops) in the construction area. In addition, a 500-foot radius around the construction area, where accessible, will be surveyed for nesting raptors and 		<p>measures, in combination with environmental commitments, will reduce some construction-related impacts by compensating for effects on wildlife habitat and species; minimizing the extent of changes to the visual setting, including nighttime light sources; manage construction-related traffic; and implementing noise reduction and complaint tracking measures.</p> <p>(Final EIR/EIS, Chapter 15, Recreation, p. 15-469)</p>	<p>Therefore, these impacts are considered significant and unavoidable.</p> <p>Findings: Changes or alterations have been required in, or incorporated into, the project that substantially lessen, but do not avoid, the significant environmental effect as identified in the Final EIR/EIS. Impacts are therefore significant and unavoidable despite the adoption of feasible mitigation measures.</p> <p>(Final EIR/EIS, Chapter 15, Recreation, p. 15-469—15-471)</p>

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		<p>species of special concern (except the Modesto song sparrow), and an area within 50 feet of construction will be surveyed for other non-special status nesting birds or birds protected by the MBTA. If no active nests are detected during these surveys, no additional measures are required.</p> <ul style="list-style-type: none">• If active nests are found in the survey area, no-disturbance buffers will be established around the nest sites to avoid disturbance or destruction of the nest site until the end of the breeding season (approximately September 1) or until a qualified wildlife biologist determines that the young have fledged and moved out of the project area (this date varies by species). A qualified wildlife biologist will monitor construction activities in the vicinity of the nests to ensure that construction activities do not affect nest success. The extent of the buffers will be determined by DWR biologists after consultation with USFWS and CDFW and will depend on the level of noise or construction disturbance, line-of-sight between the nest and the disturbance, ambient levels of noise and other disturbances, and other topographical or artificial barriers. Suitable buffer distances may vary between species. <p>(Final MMRP, pp. 2-27; see also Final EIR/EIS, Chapter 12, Terrestrial Biological Resources, pp 12-3574—12-3575)</p> <p><u>AES-1a: Locate new transmission lines and access routes to minimize the removal of trees and shrubs and pruning needed to accommodate new transmission lines and underground transmission lines where feasible</u></p> <p>DWR will make site-specific design decisions to locate new permanent transmission lines and access routes to minimize effects on vegetation where feasible. Design considerations will include the following actions.</p> <ul style="list-style-type: none">• Working with the design engineer, site-specific location adjustments will be identified to avoid adversely affecting mature tree and shrub groupings to the extent feasible and to avoid creating large, linear swaths of vegetation clearing through the construction of new transmission lines and access routes.			

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		<ul style="list-style-type: none">Where new transmission lines are located near trees along designated scenic route portions of SR 160 and River Road, the construction contractor will be required to utilize selective pruning techniques to avoid hard pruning of tree canopies that would negatively affect those scenic resources and views along those routes.Existing transmission corridors will be evaluated for placement of the new transmission lines to avoid creating new transmission corridors to the extent feasible.Undergrounding transmission lines. <p>Implementation of this measure will minimize the effects on existing visual quality and character that would result from removal and pruning of mature vegetation within proposed new transmission lines and access road routes. This measure will provide for a reduction in the number of trees and shrubs removed from installation of transmission lines and development of access roads.</p> <p>(Final MMRP, pp. 2-52; see also Final EIR/EIS, Chapter 17, Aesthetics and Visual Resources, pp. 17-197)</p> <p><u>AES-1b: Install visual barriers between construction work areas and sensitive receptors</u></p> <p>To reduce the impact on sensitive receptors from the change in existing visual quality, DWR will install temporary visual barriers at the construction work areas with direct line-of-sight from sensitive receptors. Barriers will be placed to obscure views of work areas where construction activity and equipment would be disruptive and lower the existing visual quality. These efforts will include the following actions and performance standards.</p> <ul style="list-style-type: none">Visual barriers will be installed to minimize sensitive receptors' (i.e., residents and recreational areas) views of construction work areas.<ul style="list-style-type: none">The visual barriers will be placed to protect residents and recreational areas that are located within 0.25 mile of a project construction site and where views to the work areas represent a significant visual impact.The visual barrier may include chain link fencing with			

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		<p>privacy slats, fencing with windscreen material, cofferdam, silt fence, wood or concrete barrier/soundwall, strategically placed landscaping, or other similar barrier.</p> <p>c. The visual barrier will be a minimum of 6 feet high to help to maintain the privacy of residents and block long-term ground-level views toward construction activities.</p> <p>While the visual barriers would introduce a visual intrusion, they would greatly reduce the visual effects associated with visible construction activities and screening construction activities and protecting privacy is deemed desirable. The visual barriers are an effective means of reducing the visibility of active construction work areas, thereby minimizing the impact on existing localized visual quality.</p> <p>(Final MMRP, pp. 2-53 — 2-54; see also Final EIR/EIS, Chapter 17, Aesthetics and Visual Resources, P. 17-197—17-198)</p> <p><u>AES-1c: Develop and implement a spoil/borrow and reusable tunnel material area management plan</u></p> <p>DWR will develop and implement a spoil/borrow and RTM area management plan consistent with the “Disposal and Reuse of Spoils, RTM, and Dredged Material,” in Appendix 3B, Environmental Commitments, AMMs, and CMs, to reduce the extent of negative visual alteration of existing visual quality or character of spoil and borrow sites from construction through remediation of terrain, revegetation, and other practices as described below. The purpose of this measure is to prevent flattened, highly regular, or engineered slopes which create visual discordance and incongruence from native topography and to re-establish natural looking vegetative communities that are indigenous to the project environment. The exception to grading flattened, regular sites is if the intended use of the site is agriculture. This mitigation measure will complement and is related to activities described under Mitigation Measure SOILS-2b, Chapter 10, Soils, Impact SOILS-2.</p> <p>Prior to construction mobilization, DWR will develop a management plan that identifies site-specific measures to remediate exposed soil and terrain to make it suitable for planned development, agriculture, or reuse as natural habitat and to mitigate visual effects. Existing</p>			

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		<p>information, such as topographical maps, vegetative surveys or records, and historical and existing photographs, that show preexisting, site-specific (or reference site) conditions prior to the conversion to agriculture will be evaluated and used as tools for restoring disturbed sites. Where appropriate, the management plan will consider recreational or mixed uses. In general, however, the majority of the sites will be evaluated for restoration to native habitat due to the amount of terrain alteration and vegetation and habitat loss resulting from construction of the water conveyance facilities. At a minimum, the management plan will meet the following performance standards.</p> <ul style="list-style-type: none">• Plantings will be native and indigenous to the area, and no invasive plant species will be used under any conditions. If indigenous plantings are not available, DWR will coordinate with CDFW to use a mutually acceptable plant mix palette.• In areas to be used for agriculture, the management grading plan will mimic the preexisting landform pattern to the greatest degree possible, given geotechnical or environmental constraints.• In areas of habitat restoration, the terrain will be designed and graded to be undulating, avoiding large, flat-sloped areas.• In areas of proposed development, a combination of terrains may be implemented to encourage visual variety.• Terrain will be designed and graded to be rounded, avoiding sharp angles and steep or abrupt grade breaks except for areas involved with agriculture.• Special attention will be paid to transitions between undisturbed and disturbed terrains to ensure that the transition appears as natural as possible and to blend the lines between the two for a natural, organic appearance.• The site will be visually surveyed prior to any vegetation removal for the presence of rock outcroppings, downed trees, or similar features.• Any restoration with trees will be placed to mimic natural patterns during management to provide visual congruity			

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		<p>once revegetation plantings mature and to restore the habitat values they provide.</p> <p>Implementation of this measure would be expected to result in successful management of borrow/spoils and RTM areas, thereby reducing the overall impact on the visual quality in the study area.</p> <p>(Final MMRP, pp. 2-54 — 2.55; see also Final EIR/EIS, Chapter 17, Aesthetics and Visual Resources, pp 17-198—17-199)</p> <p><u>AES-1d: Restore barge unloading facility sites once decommissioned</u></p> <p>DWR will restore barge unloading facility sites once the facilities are decommissioned and removed to minimize the impact on visual quality and character at these sites. Restoration of the decommissioned sites will meet the following performance standards.</p> <ul style="list-style-type: none">• Grading or re-contouring disturbed terrain.• Replacement plantings will be installed in areas where vegetation was removed.<ul style="list-style-type: none">a. Replacement plantings will be native and indigenous to the area. If indigenous plantings are not available, DWR will coordinate with CDFW to use a mutually acceptable plant mix palette.b. No invasive plant species will be used under any conditions. <p>Implementation of this measure will result in restoration of the barge unloading facility sites.</p> <p>(Final MMRP, pp. 2-56; see also Final EIR/EIS, Chapter 17, Aesthetics and Visual Resources, pp. 17-199)</p> <p><u>AES-1e: Apply aesthetic design treatments to all structures to the extent feasible</u></p> <p>DWR will use aesthetic design treatments, where and to the extent feasible, to minimize the impact on existing visual quality and character in the study area associated with the introduction of water conveyance structures.</p> <p>DWR will evaluate similar, local well-designed water conveyance structures, including those with historic value and use these features as design precedent to develop designs for the intake facilities, pumping plants, control structures, fish screens, operable barriers,</p>			

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		<p>and bridges, so that the resultant design will complement the natural landscape, be aesthetically pleasing, and minimize the effects of visual intrusion of the project facilities on the landscape, to the extent feasible.</p> <p>Where no local design precedent exists, DWR will research structure designs outside the local area. For example, the Freeport Regional Water Project intake facility design incorporates aesthetic design treatments that create a landmark feature in the landscape. The DWR will consider design details to ensure that all intake structures are complementary of one another so that these facilities do not create further visual discordance in the landscape.</p> <p>The following minimum performance standards will apply.</p> <ul style="list-style-type: none">• The height of new structures will be minimized as feasible. In addition, the visual intrusion of ancillary features (e.g., antennas or other equipment) will be minimized through proper siting.• New structures will be painted with a shade that is two to three shades darker than the general surrounding area, unless aesthetic design treatments indicate another color selection with the intent to specifically improve aesthetics. Otherwise, colors will be chosen from the Bureau of Land Management (BLM) Standard Environmental Colors Chart CC-001: June 2008. Because color selection will vary by location, DWR, working with the facility designers, will employ the use of color panels evaluated from key observation points during common lighting conditions (front versus backlighting) to aid in the appropriate color selection. DWR will select colors for the coloring of the most prevalent season. Panels will be a minimum of 3 by 2 feet in dimension and will be evaluated from various distances, but within 1,000 feet, to ensure the best possible color selection. Refer to http://www.blm.gov/bmp for more information on this technique and other best management practices and techniques for visual screening.<ul style="list-style-type: none">○ All paints used for the color panels and structures will be color matched directly from the physical color chart, rather than from any digital or color-reproduced versions of the color chart.○ Paints will be of a dull, flat, or satin finish only. Appropriate paint type will be selected for the finished structures to ensure long-term durability of the painted surfaces.			

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		<ul style="list-style-type: none">○ DWR will maintain the paint color over time.● In the design of permanent transmission poles and chain link fencing, DWR will consult with utility providers on incorporating the following design measures.<ul style="list-style-type: none">○ Transmission poles and towers will be painted or powder coated with colors selected using the BLM selection techniques to make the structures recede into the visual landscape.○ Chain link fences will be plastic or vinyl coated with colors selected using the BLM selection techniques to make chain link fences to appear more see-through than non-treated, light grey fencing that acts as a visual barrier to a degree. Finishes will be selected for their ability to achieve the correct color selection, durability, and environmental safety.● DWR will implement aesthetic design features at concrete or shotcrete structures that are highly visible to the public. These features may include mimicking natural material (e.g., stone or rock surfacing) and integral color, in the same theme, to reduce visibility and to better blend with the landscape.● DWR will evaluate bridge crossing designs using lattice steel, consistent with other bridges in the Delta. Such a structure would be less visually confining than concrete structures, provide better visual access to points beyond, allow light to travel through the structure, and may appear less like a visual barrier within the landscape.● DWR will ensure that visible pipelines, guardrails, and signs will be of a material or color that helps surfaces to blend better with the surroundings. These elements will be constructed with low-sheen and non-reflective surface materials to reduce potential for glare, and the use of glossy paints or surfaces would be avoided. <p>Implementation of this measure and application of the aesthetic design treatments for alternative structure would help minimize the impact on visual quality from the development of the water conveyance structures in the study area, using techniques that serve to make the structures blend into the surrounding environment, to the extent possible. However, the overall change in visual character would still be substantial because physical structures of this scale do not presently exist.</p> <p>(Final MMRP, pp. 2-57 — 2.58; see also Final EIR/EIS, Chapter 17, Aesthetics and Visual Resources, P. 17-199—17-201)</p>			

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		<p><u>AES-1f: Locate concrete batch plants and fuel stations away from sensitive visual resources and receptors and restore sites upon removal of facilities</u></p> <p>DWR will locate concrete batch plants and fuel stations in construction work areas away from sensitive visual resources (i.e., state scenic highways) and receptors to minimize the impact on visual quality. In addition, these sites will be restored after construction to minimize the long-term impact on localized visual character. The relocation approach for the individual facilities is described below. DWR will incorporate these facility location changes into the design plans prior to construction.</p> <ul style="list-style-type: none">• Locate the concrete batch plants and fuel stations that are proposed to be adjacent to SR 160, near the intakes so that these operations are set back from the state scenic highway as far as site conditions allow. These features will be located toward the east side of the intake, in closer proximity to the shaft site.• Structures associated with the concrete batch plants and fuel stations will be designed, to the extent feasible to be low-profile to reduce their apparent scale and visual prominence within the viewshed.• In addition, the structures and storage piles associated with the concrete batch plants and fuel stations for the canal alignment just south of Snodgrass Slough and on Webb Tract north of False River will be set as far west from the waterways, as possible.• Structures and storage piles associated with the concrete batch plants and fuel stations east of Byron Highway will be set back off of the highway as much as possible and toward the northern edge of the proposed sites. The same principles will be applied to the concrete batch plant and fuel station along Willow Point Road, for the western canal alignment.• Locate the concrete batch plant and fuel station proposed between Intakes W3 and W4 to an arrangement opposite each other along the agricultural access road, instead of			

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		<p>adjacent to one another. They will be placed in closer proximity to the existing development at this location so that they appear to be more of a continuation of existing development.</p> <ul style="list-style-type: none">• All disturbed terrain will be restored.• Replacement plantings will be installed in areas where vegetation was removed.<ul style="list-style-type: none">a. Replacement plantings will be native and indigenous to the area or will match surrounding agricultural plantings.b. No invasive plant species will be used under any conditions. <p>Implementation of this measure will minimize the impact on visual quality from the construction and use of the concrete batch plant and fuel station facilities. In addition, this measure will help restore the concrete batch plant and fuel station locations to a preconstruction condition.</p> <p>(Final MMRP, pp. 2-59; see also Final EIR/EIS, Chapter 17, Aesthetics and Visual Resources, pp. 17-201—17-202)</p> <p><u>AES-1g: Implement best management practices to implement project landscaping plan</u></p> <p>DWR will apply additional landscape treatments and use best management practices as part of implementing the project landscaping plan (as set forth by DWR’s WREM No. 30a requirements) to restore and maintain local character, improve aesthetics, and reduce the visual scale of the proposed water conveyance elements in the study area.</p> <p>In addition to the guidance set forth in DWR’s WREM No. 30a, <i>Architectural Motif, State Water Project</i>, in those aesthetic areas significantly impacted by the project, DWR will utilize landscaping to minimize such impacts by relying on one or more of the following: street trees, welcome signs, decorative lighting, and other streetscape design techniques. In addition, trees, shrubs, and grasslands native to the study area will be planted to preserve the visual integrity of the landscape, provide habitat conditions suitable</p>			

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		<p>for native vegetation and wildlife, and ensure that a maximum number and variety of well-adapted plants are maintained.</p> <p>The following practices will be adhered to in implementing the project landscaping plan.</p> <ul style="list-style-type: none">• Design and implement low impact development (LID) measures that disperse and reduce runoff by using such features as vegetated buffer strips between paved areas that catch and infiltrate runoff, bioswales, cisterns, and detention basins. In addition, DWR will evaluate the potential use of pervious paving to improve infiltration and to reduce the amount of surface runoff from entering waterways and the stormwater system. However, LID measures will not be used where infiltration could result in adverse environmental effects.• Vegetative accents and screening will be used to aid in a perceived reduction in the scale and mass of the built features, while accentuating the design treatments that will be applied to built features. Plant selection will be based on its ability to screen built features and provide aesthetic accents.• Realignments of SR 160 and South River Road will be landscaped in a manner that visually ties the new alignment in to the old alignment by implementing roadside landscaping that helps achieve a continuation of the existing roadside vegetation while screening built features.• Landscape berms, combined with tree and shrub plantings will be used to help screen built features from existing viewpoints by allowing for additional height. The landscape berms will be constructed in a manner that has a more natural form, as opposed to one that is highly regular and levee-like. The berms will be seeded with a native meadow erosion control seed mix and be planted to comply with directions set forth below.<ul style="list-style-type: none">a. Plantings will be native and indigenous to the area, and no invasive plant species will be used under any conditions. If indigenous plantings are not available, DWR will coordinate with CDFW to use a mutually			

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		<p>acceptable plant mix palette.</p> <p>b. The species list will include trees, shrubs, and an herbaceous understory of varying heights, as well as both evergreen and deciduous types. Plant variety will increase the effectiveness of revegetated areas by providing multiple layers, seasonality, diverse habitat, and reduced susceptibility to disease.</p> <ul style="list-style-type: none">• The use of native grass and wildflower seed in erosion control measures will be required where such a measure would improve aesthetics.c. Wildflowers will provide seasonal interest to areas where trees and shrubs are removed or grading has occurred.d. Species will be chosen that are native and indigenous to the study area and for their appropriateness to the surrounding habitat. For example, upland grass and wildflower species will be chosen for drier, upland areas and wetter grass species will be chosen for wetland areas.e. If not appropriate to the surrounding habitat, wildflowers will not be included in the seed mix.f. Under no circumstances will invasive plant species be used in any erosion control measures.• Vegetation will be planted within 2 years following project completion.• Design of the landscaping plan will maximize the use of planting zones that do not need irrigation, such as seeding with a native grassland and wildflower meadow mix, which reduces or eliminates the need for a permanent irrigation system.• If an irrigation system is required, an irrigation and maintenance program will be implemented during the plant establishment period and carried on, as needed, to ensure plant survival. Areas that are irrigated will use a smart watering system that evaluates the existing site conditions			

Alternative 4A Potential Impact	Impact Conclusions Before Mitigation-CEQA	Adopted Mitigation Measures	Impact Conclusion After Mitigation-CEQA	Discussion	Findings of Fact
		<p>and plant material against weather conditions to avoid overwatering of such areas. To avoid undue water flows, the irrigation system will be managed in such a manner that any broken spray heads, pipes, or other components are fixed within 1–2 days, or the zone or system will be shut down until it can be repaired.</p> <ul style="list-style-type: none"> • All measures prescribed above to screen facilities will not act to degrade or eliminate scenic vistas or be designed in a manner that negatively affects views from scenic roadways. • These measures will not be implemented where implementation would constitute an adverse effect on sensitive habitats or sensitive species. <p>Implementation of this measure will reduce the effects on local visual quality from introduction of the water conveyance facilities.</p> <p>(Final MMRP, pp. 2-60—2-62; see also Final EIR/EIS, Chapter 17, Aesthetics and Visual Resources, P. 17-202—17-203)</p> <p><u>AES-4a: Limit construction to daylight hours within 0.25 mile of residents</u></p> <p>To the extent feasible and within safety standards, DWR will minimize the effect of nighttime construction light and glare on residences within 0.25 miles of the intake construction sites by limiting non-tunnel related surface construction past daylight hours (which varies according to season), minimizing the use of high-wattage lighting sources to operate in the dark, and minimizing introduction of new nighttime light and glare sources in these areas. DWR will establish a construction hotline which will enable residents to report any construction violation including construction activities outside of daylight hours.</p> <p>(Final MMRP, pp. 2-63; see also Final EIR/EIS, Chapter 17, Aesthetics and Visual Resources, P. 17-214)</p> <p><u>AES-4b: Minimize fugitive light from portable sources used for construction</u></p> <p>DWR will minimize fugitive light from portable lighting sources used during construction by adhering to the following practices, at a minimum.</p>			

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		<ul style="list-style-type: none">• Project -related light and glare will be minimized to the maximum extent feasible, given safety considerations.• Color-corrected halide lights will be used.• Portable lights will be operated at the lowest feasible wattage and height.• All lights will be screened and directed down toward work activities and away from the night sky and nearby residents to the maximum extent safely possible.• The number of nighttime lights used will be minimized to the greatest extent possible. <p>Implementation of this measure will reduce—to the extent feasible as governed by site-specific safety requirements—the overall amount of new daytime and nighttime light and glare introduced to the project vicinity during construction.</p> <p>(Final MMRP, pp. 2-63—2-64; see also Final EIR/EIS, Chapter 17, Aesthetics and Visual Resources, p. 17-215)</p> <p><u>AES-4c: Install visual barriers along access routes, where necessary, to prevent light spill from truck headlights toward residences</u></p> <p>DWR will evaluate construction routes and identify portions of access routes where the use of visual barriers would minimize the introduction of new light and glare from construction truck headlights and the impact on nearby residents.</p> <p>DWR will install a visual barrier along portions of access routes where screening would prevent excessive light spill toward residents from truck headlights being used during nighttime construction activities. These visual barriers will meet the following performance criteria.</p> <ul style="list-style-type: none">• The visual barrier will be a minimum of 5 feet high and will provide a continuous surface impenetrable by light. This height may be obtained by installing a temporary structure, such as fencing (e.g., chain link with privacy slats) or a semi-permanent structure, such as a concrete barrier (e.g., a			

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		<p>roadway median barrier or architectural concrete wall system) retrofitted with an approved visual screen, if necessary, to meet the required height.</p> <ul style="list-style-type: none">• The visual barriers will be of a material or have a color treatment appropriate for the location and traffic safety requirements. The use of glossy materials will be avoided. <p>Implementation of this measure will minimize the extent of construction truck headlight glare intruding into nearby residential areas.</p> <p>(Final MMRP, pp. 2-64; see also Final EIR/EIS, Chapter 17, Aesthetics and Visual Resources, p. 17-215)</p> <p><u>AES-4d: Avoid the use of blue rich white LED lighting</u></p> <p>DWR will install exterior LED lighting that avoids the use of blue rich white light lamps and use a correlated color temperature that is no higher than 3,000 Kelvin, consistent with the International Dark-Sky Associations Fixture Seal of Approval program (International Dark-Sky Association 2010a, 2010b, 2015). In addition, LED lights will use shielding to ensure that nuisance glare and light spill does not affect materially sensitive residential viewers. Lights will be placed at the lowest feasible height to ensure that light trespass affecting residences is limited. If needed, the height of lights will be lowered to account for the increase in lighting area provided by LED lighting. Implementation of this measure will minimize the effects of light and glare associated with blue rich white LED lighting from intruding into nearby areas.</p> <p>(Final MMRP, p 2-65; see also Final EIR/EIS, Chapter 17, Aesthetics and Visual Resources, pp. 17-215—17-216)</p> <p><u>TRANS-1a: Implement site-specific construction traffic management plan</u></p> <p>Prior to construction, DWR will be responsible for project management and shall contract with one or more construction management firms to assist in ensuring that construction contractors' crews and schedules are coordinated and that the plans and specifications are being followed. DWR will also ensure development of site-specific construction traffic management plans (TMPs) that address the specific steps to be taken before, during, and after construction to minimize traffic impacts, including the</p>			

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		<p>mitigation measures and environmental commitments identified in this EIR/EIS. This will include potential expansion of the study area identified in this EIR/EIS to capture all potentially significantly affected roadway segments.</p> <p>DWR will be responsible for developing the TMPs in coordination with the applicable jurisdictions, including the following.</p> <ul style="list-style-type: none">• Caltrans for state and federal facilities;• local agencies for local roads, including emergency responders;• transit providers;• rail operators;• the U.S. Coast Guard;• city and county parks departments; and• the California Department of Parks and Recreation (DPR) <p>DWR will also ensure that the TMPs are implemented prior to beginning construction at a site, including in-water construction sites. If necessary to minimize unexpected operational impacts or delays experienced during real-time construction, DWR will also be responsible for modifying the traffic management plan to reduce these effects. With the goal of minimizing construction traffic related effects on wildlife and in light of local community traffic interests, DWR will facilitate discussions in the development of the TMP to address methods for minimizing truck traffic impacts in ways that do not create local traffic hazards. Each TMP will address the following, as needed and appropriate after coordination with the entities listed above. Implementation of this measure will ensure operational traffic impacts and delays experienced during construction will be minimized to the greatest extent feasible.</p> <ul style="list-style-type: none">• Signage warning of roadway surface conditions such as loose gravel, steel plates or similar conditions that could be hazardous to road cycling activity on roadways open to bicycle traffic.• Signage and barricades to be used around the work sites.• In-water work areas will be indicated by buoys, signage, or other effective means to warn boaters of their presence and restrict access. Warning devices and signage (e.g., “boats keep out” or “no wake zone” labeled buoys) will be in compliance with the U.S. Coast Guard Private Aid to Navigation requirements (U.S. Coast Guard 2012) and effective during non-daylight hours and periods of dense fog.			

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		<ul style="list-style-type: none">• Use of flag people or temporary traffic signals/signage as necessary to slow or detour traffic.• Notifications for the public, emergency providers, cycling organizations, bike shops, and schools, the U.S. Coast Guard, boating organizations, marinas, city and county parks departments, and DPR, where applicable, describing construction activities that could affect transportation and water navigation.• Outreach (via public meetings and/or flyers and other advertisements)• Procedures for construction area evacuation in the case of an emergency declared by county or other local authorities.• Alternate access routes via detours and bridges to maintain continual circulation for local travelers in and around construction zones, including bicycle riders, pedestrians, and boaters, where applicable.• Description of construction staging areas, material delivery routes, and specification of construction vehicle travel hour limits.• Notifications to commercial and leisure boating community of proposed barge operations in the waterways, including posting notices at Delta marinas and public launch ramps. This information will provide details regarding construction site location(s), construction schedules, and identification of no-wake zone, speed restricted zones, and/or detours, where applicable.• No-wake zone and speed-restrictions will be established as part of development of the site-specific plans and will be determined to protect the safety of construction workers and recreationists.• Designation of areas where nighttime construction will occur.• To the extent feasible, position construction lighting to reduce glare to nighttime drivers.• Plans to relocate school bus drop-off and pick-up locations if they will be affected during construction.• Scheduling for oversized material deliveries to the work site and haul routes.• Provisions that direct haulers are to pull over in the event of an emergency. If an emergency vehicle is approaching on a narrow two-way roadway, specify measures to ensure that appropriate maneuvers will be conducted by the construction vehicles to allow continual access for the emergency vehicles at the time of an emergency.			

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		<ul style="list-style-type: none">• Control for any temporary road closure, detour, or other disruption to traffic circulation, including any temporary partial water channel closures.• Designated offsite vehicle staging and parking areas.• Posted information for contact in case of emergency or complaint.• Daily construction time windows during which construction is restricted or rail operations would need to be suspended for any activity within railroad rights of way.• Coordination with rail providers (BNSF Railway, Amtrak, and UPRR) to develop alternative interim transportation modes (e.g., trucks or buses) that could be used to provide freight and/or passenger service during any longer term railroad closures.• Coordination with transit providers (SCT, Tri-Delta, Rio Vista, and Greyhound Bus Lines) to develop daily construction time windows during which transit operations would not be either detoured or significantly slowed.• Routinely post information to the 511.org website regarding construction delays and detours.• Other actions to be identified and developed as may be needed by the construction manager/ resident engineer to ensure that temporary impacts on transportation facilities are minimized.• For construction-related traffic implement maximum 45 mph speed limit on Hood Franklin Road west of Interstate 5. Include signage: "Caution: entering sensitive wildlife area."• Further reduce speed limit in both directions to 35 mph for construction-related vehicles from ½ mile west of Interstate 5 to 1 mile west of Interstate 5. Add sign at Visitor Center entrance stating that facilities are for SLNWR visitors only.• Add a right hand turn lane on Hood Franklin Road at the entrance of the Stone Lakes Visitor Center.• For construction-related traffic, reduce speed limit to 35 mph on Lambert Road from 1 ½ miles west of Interstate 5 to 2 ¼ miles west of Interstate 5. Include signage: "Caution: entering sensitive wildlife area."• In consultation with Caltrans and local transportation agencies, schedule construction traffic to minimize impacts to local community events (e.g., Pear Fair, holidays).• Schedule construction traffic to minimize impacts to agricultural transportation operations between agricultural areas and processing or marketing facilities during harvest season.			

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		<p>As additional mitigation to minimize delays to transit vehicles due to projected traffic congestion and to encourage use of alternative modes of travel, including transit, DWR is required to develop a Transportation Demand Management (TDM) program for construction contractor’s crews to reduce the number of project trips. The program shall include and implement any combination of measures that would reduce the project’s trips and associated parking demand. The measures include:</p> <ul style="list-style-type: none">• Promote ride sharing programs by methods that may include designating a certain percentage of parking spaces for ride sharing vehicles, designating adequate passenger loading and unloading and waiting areas for ride sharing vehicles.• Provide public transit incentives such as fully-subsidized or low-cost monthly transit passes.• Provide shuttle service and/or funding for a shuttle for residents that are outside of walking distance from a transit line.• Offering a parking cash out program.• The plan also includes more passive measures to further reduce trips:<ul style="list-style-type: none">• Addition of pedestrian and bicycle facilities;• Provision of carpool/vanpool/ride-matching services;• Provision of transportation information for contractors;• Provision of a transportation information center. <p>(Final MMRP, pp. 2-87—2-91; see also Final EIR/EIS, Chapter 19, Transportation, pp. 19-218—19-221)</p> <p><u>TRANS-1b: Limit hours or amount of construction activity on congested roadway segments</u></p> <p>Where feasible, DWR would limit construction activity to fit within available reserve capacity or shift construction activity to hours with more reserve capacity so as to achieve acceptable LOS conditions based on roadway location (Chapter 19, Transportation, Table 19-9, of the FINAL EIR/EIS). Feasibility will be based on factors like reserve capacity on roadways, timing of deliveries and staging of construction.</p> <p>Potential mitigation measure would be to minimize construction traffic activity during typical morning and evening commute time</p>			

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		<p>periods This can be accomplished through a combination of scheduling and routing requirements.</p> <p>DWR will include in the bid specifications a requirement that the contractor submit a proposal for a process for determining when the hours of construction can feasibly be limited to avoid operational deficiencies on identified roadway segments as specified in Table 19-9 of the FINAL EIR/EIS. DWR will ensure that this process is adhered to throughout the project construction period..</p> <p>(Final MMRP, pp. 2-91—2-92; see also Final EIR/EIS, Chapter 19, Transportation, p. 19-221)</p> <p><u>TRANS-1c: Make good faith efforts to enter into mitigation agreements to enhance capacity of congested roadway segments</u></p> <p>Prior to commencement of construction activities substantially affecting transportation facilities, DWR will make a good faith effort to enter into mitigation agreements with affected state, regional, or local agencies (“affected agencies”) to verify the location, extent, timing, and fair share cost to be paid for reducing congestion to the identified roadway segments specified in Table 19-9 of the FINAL EIR/EIS.</p> <p>Implementation of this measure is intended to provide funding from DWR sufficient to provide its fair share of the cost of reducing congestion so that traffic operating conditions (i.e., LOS) on study area roadways do not operate at a level of service or delay that is worse than the pre-project conditions (to the extent feasible in light of costs, logistics, and other factors). DWR will include in the bid specifications requirements that the contractor(s) ensure that all enhancements are conducted in compliance with applicable standards of affected agencies and with any applicable mitigation agreements, as described below.</p> <p>In attempting in good faith to enter into mitigation agreements with affected agencies, DWR will be guided by the following principles. DWR will be responsible for their fair share costs of all feasible temporary congestion reducing programs and improvements jointly determined by DWR and the affected agencies to be necessary, feasible, and available to reduce the severity of the project’s temporary significant construction-related transportation impacts. Fair share calculations will account not only for traffic levels as they existed at the time of the public release of the Draft EIR/EIS, but also for “background growth” between that time frame and the</p>			

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		<p>commencement of construction activities, as well as any probable future projects in the affected agency or neighboring agencies that will likely contribute to the need for, and directly benefit from, temporary congestion reduction.</p> <p>The DWR's contribution toward such improvements shall take any, or some combination, of the following forms:</p> <ol style="list-style-type: none">1. Construction of improvements, which may be subject to fee credits and/or reimbursement, coordinated by the affected agency, from other fee-paying development projects if available with respect to improvements that would also benefit such fee-paying development projects;2. The payment of impact fees to the affected agency in amounts that constitute DWR's fair share contributions to the construction of the required improvements, consistent with the affected agency's Capital Improvement Program ("CIP") or other funding program that meets the definition of a "reasonable plan for mitigation" under CEQA case law (i.e., a plan that ensures that (i) the fees collected from DWR will be used for their intended purposes, and (ii) the improvements will actually be built within a reasonable period of time);3. The payment of adopted regional impact fees that would provide funding for transportation facilities that are affected by multiple agencies, except where DWR's payments of other fees or construction of improvements within the affected agency will create credit against the payment of regional impact fees;4. The payment of impact fees to the affected agency in amounts that constitute DWR's fair share contributions to the construction of improvements within other agencies and not the affected agency, which payments to the affected agency and transmittal of fees to other agency would occur through one or more enforceable agreements, provided that for each required improvement there is a reasonable plan for mitigation that ensures that (i) the fees collected from DWR will be used for their intended purposes, and (ii) the improvements will actually be built within a reasonable period of time; and/or5. The payment of impact fees to the Caltrans in amounts that constitute DWR's fair share contributions to the construction of improvements on federal or state highways or freeways needed in part because of the project, to be made available to Caltrans if and			

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		<p>when Caltrans, DWR, and any other the affected agency enter into an enforceable agreement consistent with state law, provided that, for each required improvement, Caltrans has a reasonable mitigation plan that ensures that (i) the fees collected from DWR will be used for their intended purposes, and (ii) the improvements will actually be built within a reasonable period of time.</p> <p>In order to obtain the most fair, accurate, and up-to-date calculations of DWR's fair share of the costs of required improvements, the agreement(s) reached between DWR and the affected agency or agencies will also provide for the following: (i) that the traffic models to be used be mutually acceptable to both DWR and the affected agency or agencies; and (ii) that the calculations account for (A) newly approved projects cumulatively that contribute to transportation-related impacts and that therefore should contribute to the funding of necessary improvements, and (B) up-to-date cost calculations for the construction of needed improvements based on recent changes in the costs of materials, labor, and other inputs.</p> <p>(Final MMRP, pp. 2-92—2-94; see also Final EIR/EIS, Chapter 19, Transportation pp. 19-221—19-223)</p> <p><u>NOI-1a: Employ noise-reducing construction practices during construction</u></p> <p>During construction, DWR will employ best practices to reduce construction noise at noise-sensitive land uses.</p> <p>Best practices listed below will be applied on a case by case basis, such that construction noise levels at noise sensitive receptors do not exceed 60 dBA (one-hour Leq) during daytime hours (7:00 a.m. to 10:00 p.m.) and 50 dBA (one-hour Leq) during nighttime hours (10:00 p.m. to 7:00 a.m.) measured at noise sensitive receptors. Some construction activities that are required to occur during night time hours, such as activities at tunnel boring launch pads and tunnel shaft locations would not be subject to these construction time limitations.</p> <p>Measures that may be used to limit construction noise include the following:</p> <ul style="list-style-type: none">• Limiting above-ground noise-generating construction operations to the hours between 7 a.m. and 7 p.m. except as limited above, at certain locations.• Prohibiting gasoline or diesel engines from having unmuffled			

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		<p>exhaust.</p> <ul style="list-style-type: none"> • Requiring that all construction equipment powered by gasoline or diesel engines have sound-control devices that are at least as effective as those originally provided by the manufacturer and that all equipment be operated and maintained to minimize noise generation. • Preventing excessive noise by shutting down idle vehicles or equipment. • Using noise-reducing enclosures around noise-generating equipment. • Selecting haul routes that affect the fewest number of people. • Constructing barriers between noise sources and noise-sensitive land uses as determined appropriate by the construction contractor or take advantage of existing barrier features (e.g., terrain, structures) to block sound transmission to noise-sensitive land uses. For a barrier to be feasible, it must provide at least 5 dB of noise reduction and obstruct the line of sight between the noise-sensitive land use(s) and noise emitting components of on-site construction equipment. <p>(Final MMRP, pp. 2-127—2-128; see also Final EIR/EIS, Chapter 23, Noise, p. 23-113)</p> <p><u>NOI-1b: Prior to construction, initiate a complaint/response tracking program</u></p> <p>Prior to construction, DWR will make a construction schedule available to residents living in the vicinity of the construction areas before construction begins, and designate a noise disturbance coordinator. The coordinator will be responsible for responding to complaints regarding construction noise, will determine the cause of the complaint, and will ensure that reasonable measures are implemented to correct the problem when feasible. A contact telephone number for the noise disturbance coordinator will be conspicuously posted on construction site fences and will be included in the notification of the construction schedule.</p> <p>(Final MMRP, pp. 2-128—2-129; see also Final EIR/EIS, Chapter 23, Noise, p. 23-133)</p>			
REC-3: Result in long-term reduction of recreational navigation opportunities as a	Significant	<u>TRANS-1a: Implement site-specific construction traffic management plan.</u>	Significant & Unavoidable	Impacts on boat passage and navigation in the study area will result from the construction of the intakes, temporary	Mitigation Measure TRANS-1a will reduce impacts on marine navigation by development and implementation of site-

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<p>result of constructing the proposed water conveyance facilities</p> <p>(Final EIR/EIS, Chapter 15, Recreation, pp. 15-472 and 15-275)</p>		<p>See Impact REC-2, above, for full mitigation measure. (Final MMRP, pp. 2-87 —2-90; see also Final EIR/EIS, Chapter 19, Transportation, pp. 19-218—19-221)</p>		<p>barge unloading facilities, siphons, and the operable barrier at the head of Old River. Impacts from intake and barge unloading facilities will last approximately 5 years and include obstruction and delays to boat passage and navigation as a result of channel obstructions in addition to compliance with temporary speed zones. Temporary partial channel closures could impede boat movement and restrict recreational opportunities. In waterways where waterskiing, wakeboarding, and tubing occur, recreation opportunities would be eliminated during construction. DWR has made a commitment to partner with existing programs operating in the Delta to reduce expansion of the multiple species of invasive aquatic vegetation in the Delta which currently can limit access to boats and reduce swimming areas. DWR will contribute funds to further the Department of Boating and Waterway’s aquatic weed control programs in the Delta. The funds will be transferred prior to, or concurrent with, commencement of construction (Appendix 3B, <i>Environmental Commitments, AMMs, and CMs</i>). While the environmental commitments will reduce impacts on water-based recreation (water-skiing, wakeboarding, tubing) in these areas by creating alternative recreation opportunities for those eliminated during construction, impacts from the intakes and barge unloading facilities will be long-term, and are therefore considered significant and unavoidable. Construction of the operable barrier and the siphons would last for 2 years (short-term) and will not result in long-term reduction of recreation opportunities. The operable barrier at the Head of Old River will have a boat lock which will be in use</p>	<p>specific construction traffic management plans, including specific measures related to management of barges and stipulations to notify the commercial and leisure boating communities of construction and barge operations in the waterways, but will not be able to completely mitigate the impacts on all the waterways. The impact is considered significant and unavoidable.</p> <p>Findings: Changes or alterations have been required in, or incorporated into, the project that substantially lessen, but do not avoid, the significant environmental effect as identified in the Final EIR/EIS. Impacts are therefore significant and unavoidable despite the adoption of feasible mitigation measures.</p> <p>(Final EIR/EIS, Chapter 15, Recreation, pp. 15-471 - 15-472 and 15-275)</p>

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				whenever the barrier is completely or partially closed. Passage through the boat lock could take between 15-20 minutes depending on the water surface elevations. (Final EIR/EIS, Chapter 15, Recreation, pp. 15-471 - 15-472 and 15-275)	
Aesthetics					
AES-1: Substantial alteration in existing visual quality or character during construction of conveyance facilities (Final EIR/EIS, Chapter 17, Aesthetics and Visual Resources, p. 17-320)	Significant	<u>AES-1a: Locate new transmission lines and access routes to minimize the removal of trees and shrubs and pruning needed to accommodate new transmission lines and underground transmission lines where feasible</u> DWR will make site-specific design decisions to locate new permanent transmission lines and access routes to minimize effects on vegetation where feasible. Design considerations will include the following actions. <ul style="list-style-type: none">Working with the design engineer, site-specific location adjustments will be identified to avoid adversely affecting mature tree and shrub groupings to the extent feasible and to avoid creating large, linear swaths of vegetation clearing through the construction of new transmission lines and access routes.Where new transmission lines are located near trees along designated scenic route portions of SR 160 and River Road, the construction contractor will be required to utilize selective pruning techniques to avoid hard pruning of tree canopies that would negatively affect those scenic resources and views along those routes.Existing transmission corridors will be evaluated for placement of the new transmission lines to avoid creating new transmission corridors to the extent feasible.Undergrounding transmission lines. Implementation of this measure will minimize the effects on existing visual quality and character that would result from removal and pruning of mature vegetation within proposed new transmission lines and access road routes. This measure will provide for a reduction in the number of trees and shrubs removed from installation of transmission lines and development of access roads. (Final MMRP, p. 2-52; see also Final EIR/EIS, Chapter 17, Aesthetics and Visual Resources, pp. 17-197)	Significant & Unavoidable	Construction of Alternative 4A will substantially alter the existing visual quality and character present in the study area. The long-term nature of construction of the intakes, pipeline/tunnel, work areas, spoil/borrow and 31 RTM areas, shaft sites, barge unloading facilities, and operable barrier; presence and visibility of heavy construction equipment; proximity to sensitive receptors; relocation of residences and agricultural buildings; removal of riparian vegetation and other mature vegetation or landscape plantings; earthmoving and grading that result in changes to topography in areas that are predominantly flat; addition of large-scale industrial structures (intakes and related facilities); remaining presence of large-scale borrow/spoil and RTM area landscape effects; and introduction of tall, steel transmission lines will all contribute to this impact. (Final EIR/EIS, Chapter 17, Aesthetics and Visual Resources, p. 17-320)	This impact will be significant because of the substantial visual changes that will result from conveyance facility construction. Mitigation Measures AES-1a through AES-1g will reduce impacts, but not to a less-than-significant level because not all of the visual changes can be eliminated and permanent changes will be made to the regional landscape. Thus, Alternative 4A will result in significant and unavoidable impacts on the existing visual quality and character in the study area. Findings: Changes or alterations have been required in, or incorporated into, the project that substantially lessen, but do not avoid, the significant environmental effect as identified in the Final EIR/EIS. Impacts are therefore significant and unavoidable despite the adoption of feasible mitigation measures. (Final EIR/EIS, Chapter 17, Aesthetics and Visual Resources, p. 17-320)

Alternative 4A Potential Impact	Impact Conclusions Before Mitigation-CEQA	Adopted Mitigation Measures	Impact Conclusion After Mitigation-CEQA	Discussion	Findings of Fact
		<p><u>AES-1b: Install visual barriers between construction work areas and sensitive receptors</u></p> <p>See Impact REC-2 , above, for full mitigation measure.</p> <p>(Final MMRP, pp. 2-54—2-55; see also Final EIR/EIS, Chapter 17, Aesthetics and Visual Resources, pp. 17-197—17-198)</p> <p><u>AES-1c: Develop and implement a spoil/borrow and reusable tunnel material area management plan</u></p> <p>See Impact REC-2, above, for full mitigation measure.</p> <p>(Final MMRP, pp. 2-55—2.56; see also Final EIR/EIS, Chapter 17, Aesthetics and Visual Resources, pp. 17-198—17-199)</p> <p><u>AES-1d: Restore barge unloading facility sites once decommissioned</u></p> <p>See Impact REC-2, above, for full mitigation measure.</p> <p>(Final MMRP, pp. 2-57; see also Final EIR/EIS, Chapter 17, Aesthetics and Visual Resources, p. 17-199)</p> <p><u>AES-1e: Apply aesthetic design treatments to all structures to the extent feasible</u></p> <p>See Impact REC-2, above, for full mitigation measure.</p> <p>(Final MMRP, pp. 2-58—2.59; see also Final EIR/EIS, Chapter 17, Aesthetics and Visual Resources, pp. 17-199—17-201)</p> <p><u>AES-1f: Locate concrete batch plants and fuel stations away from sensitive visual resources and receptors and restore sites upon removal of facilities</u></p> <p>See Impact REC-2, above, for full mitigation measure.</p> <p>(Final MMRP, pp. 2-60; see also Final EIR/EIS, Chapter 17, Aesthetics and Visual Resources, pp.17-201—17-202)</p> <p><u>AES-1g: Implement best management practices to implement project landscaping plan</u></p>			

Alternative 4A Potential Impact	Impact Conclusions Before Mitigation-CEQA	Adopted Mitigation Measures	Impact Conclusion After Mitigation-CEQA	Discussion	Findings of Fact
		<p>See Impact REC-2, above, for full mitigation measure.</p> <p>(Final MMRP, pp. 2-61—2.63; see also Final EIR/EIS, Chapter 17, Aesthetics and Visual Resources, pp. 17-202—17-203)</p>			
<p>AES-2: Permanent effects on a scenic vista from presence of conveyance facilities</p> <p>(Final EIR/EIS, Chapter 17, Aesthetics and Visual Resources, p. 17-322)</p>	Significant	<p><u>AES-1a: Locate new transmission lines and access routes to minimize the removal of trees and shrubs and pruning needed to accommodate new transmission lines and underground transmission lines where feasible</u></p> <p>See Impact AES-1, above, for full mitigation measure.</p> <p>(Final MMRP, pp. 2-52—2-53; see also Final EIR/EIS, Chapter 17, Aesthetics and Visual Resources, pp. 17-197)</p> <p><u>AES-1c: Develop and implement a spoil/borrow and reusable tunnel material area management plan</u></p> <p>See Impact AES-1, above, for full mitigation measure.</p> <p>(Final MMRP, pp. 2-53—2-54; see also Final EIR/EIS, Chapter 17, Aesthetics and Visual Resources, pp. 17-198—17-199)</p> <p><u>AES-1e: Apply aesthetic design treatments to all structures to the extent feasible</u></p> <p>See Impact AES-1, above, for full mitigation measure.</p> <p>(Final MMRP, pp. 2-57—2-58; see also Final EIR/EIS, Chapter 17, Aesthetics and Visual Resources, pp. 17-199—17-201)</p>	Significant & Unavoidable	<p>Construction of conveyance facilities under Alternative 4A will have permanent effects on a scenic vista from the presence of the conveyance facilities. Because permanent access roads generally follow existing rights-of-way, they will have less-than-significant impacts on scenic vistas. The presence of the intake structures and Clifton Court Forebay pumping plants, large-scale borrow/spoil and RTM area landscape effects, shaft site pads and access hatches, and transmission lines will result in significant impacts on scenic vistas because they will result in a reduction in the visual quality in some locations and introduce dominant visual elements that will result in noticeable changes in the visual character of scenic vistas in the study area.</p> <p>(Final EIR/EIS, Chapter 17, Aesthetics and Visual Resources, p. 17-322)</p>	<p>Mitigation Measure AES-1a, AES-1c, and AES-1e will reduce these impacts, but not to a less-than-significant level because noticeable changes in the visual character of scenic vistas in the study area will still occur. Thus, impacts on scenic vistas associated with Alternative 4A are considered significant and unavoidable.</p> <p>Findings: Changes or alterations have been required in, or incorporated into, the project that substantially lessen, but do not avoid, the significant environmental effect as identified in the Final EIR/EIS. Impacts are therefore significant and unavoidable despite the adoption of feasible mitigation measures.</p> <p>(Final EIR/EIS, Chapter 17, Aesthetics and Visual Resources, p. 17-322)</p>
<p>AES-3: Permanent damage to scenic resources along a state scenic highway from construction of conveyance facilities</p> <p>(Final EIR/EIS, Chapter 17, Aesthetics and Visual Resources, p. 17-322—17-323 p. 17-211)</p>	Significant	<p><u>AES-1a: Locate new transmission lines and access routes to minimize the removal of trees and shrubs and pruning needed to accommodate new transmission lines and underground transmission lines where feasible</u></p> <p>See Impact AES-1, above, for full mitigation measure.</p> <p>(Final MMRP, pp. 2-52—2-53; see also Final EIR/EIS, Chapter 17, Aesthetics and Visual Resources, pp. 17-197)</p> <p><u>AES-1c: Develop and implement a spoil/borrow and reusable tunnel material area management plan</u></p>	Significant & Unavoidable	<p>Intakes 2, 3, and 5, the RTM area north of Intake 2, and the intermediate forebay will be immediately and prominently visible in the foreground from SR 160 and will result in an overall noticeable effect on viewers relative to their current experience of the study area’s scenic resources along SR 160 and River Road, where the landscape sensitivity level is high. Visual elements introduced by the intakes, RTM area north of Intake 2, and the intermediate forebay associated with Alternative 4A will</p>	<p>Although Mitigation Measures AES-1a, AES-1c, and AES-1e will reduce some aspects of the impact, the mitigation will not reduce the impact to a less than significant level in all instances. Thus, impacts on scenic resources along a state scenic highway associated with Alternative 4A will be significant and unavoidable.</p> <p>Findings: Changes or alterations have been required in, or incorporated into, the project that substantially lessen, but do not avoid, the significant environmental effect</p>

Alternative 4A Potential Impact	Impact Conclusions Before Mitigation-CEQA	Adopted Mitigation Measures	Impact Conclusion After Mitigation-CEQA	Discussion	Findings of Fact
		<p>See Impact AES-1, above, for full mitigation measure.</p> <p>(Final MMRP, pp. 2-54—2-55; see also Final EIR/EIS, Chapter 17, Aesthetics and Visual Resources, pp. 17-198—17-199)</p> <p><u>AES-1e: Apply aesthetic design treatments to all structures to the extent feasible</u></p> <p>See Impact AES-1, above, for full mitigation measure.</p> <p>(Final MMRP, pp. 2-57—2-58; see also Final EIR/EIS, Chapter 17, Aesthetics and Visual Resources, pp. 17-199—17-201)</p>		<p>conflict with the existing forms, patterns, colors, and textures along River Road and SR 160; will dominate riverfront visible from SR 160; and will alter broad views and the general nature of the visual experience presently available from River Road and SR 160. These changes will reduce the visual quality near intake structure locations and result in noticeable changes in the visual character of scenic vista viewsheds in the study area.</p> <p>(Final EIR/EIS, Chapter 17, Aesthetics and Visual Resources, pp. 17-322—17-323; p. 17-211)</p>	<p>as identified in the Final EIR/EIS. Impacts are therefore significant and unavoidable despite the adoption of feasible mitigation measures.</p> <p>(Final EIR/EIS, Chapter 17, Aesthetics and Visual Resources, pp. 17-322—17-323; p. 17-211)</p>
<p>AES-4: Creation of a new source of light or glare that would adversely affect views in the area as a result of construction and operation of conveyance facilities</p> <p>(Final EIR/EIS, Chapter 17, Aesthetics and Visual Resources, pp. 17-323—17-324)</p>	Significant	<p><u>AES-4a: Limit construction to daylight hours within 0.25 mile of residents</u></p> <p>See Impact REC-2, above, for full mitigation measure.</p> <p>(Final MMRP, pp. 2-63; see also Final EIR/EIS, Chapter 17, Aesthetics and Visual Resources, p. 17-214)</p> <p><u>AES-4b: Minimize fugitive light from portable sources used for construction</u></p> <p>See Impact REC-2, above, for full mitigation measure.</p> <p>(Final MMRP, pp. 2-63—2-64; see also Final EIR/EIS, Chapter 17, Aesthetics and Visual Resources, p. 17-215)</p> <p><u>AES-4c: Install visual barriers along access routes, where necessary, to prevent light spill from truck headlights toward residences</u></p> <p>See Impact REC-2, above, for full mitigation measure.</p> <p>(Final MMRP, pp. 2-64; see also Final EIR/EIS, Chapter 17, Aesthetics and Visual Resources, pp. 17-215)</p> <p><u>AES-4d: Avoid the use of blue rich white light LED lighting</u></p> <p>DWR will install exterior LED lighting that avoids the use of blue rich white light lamps and use a correlated color temperature that is no higher than 3,000 Kelvin, consistent with the International Dark-Sky</p>	Significant & Unavoidable	<p>The impacts associated with light and glare under Alternative 4A are significant because there are a larger number of viewers in and around the waterways, intake structures, and intermediate forebay; project facilities will increase the amount of nighttime lighting in the Delta above existing ambient light levels; blue-rich white light lamps (BRWL) LED lighting could exasperate project lighting impacts; and the study area currently experiences low levels of light because there are fewer light/glare producers than are typical in urban areas.</p> <p>(Final EIR/EIS, Chapter 17, Aesthetics and Visual Resources, pp. 17-323—17-324)</p>	<p>Mitigation Measures AES-4a through AES-4d will partially reduce these impacts but not to a less-than-significant level because all instances of light and glare impacts will not be reduced by the available mitigation measures. Thus, the new sources of daytime and nighttime light and glare associated with Alternative 4A will result in significant and unavoidable impacts on public views in the project vicinity.</p> <p>Findings: Changes or alterations have been required in, or incorporated into, the project that substantially lessen, but do not avoid, the significant environmental effect as identified in the Final EIR/EIS. Impacts are therefore significant and unavoidable despite the adoption of feasible mitigation measures.</p> <p>(Final EIR/EIS, Chapter 17, Aesthetics and Visual Resources, p. 17-323—17-324)</p>

Alternative 4A Potential Impact	Impact Conclusions Before Mitigation-CEQA	Adopted Mitigation Measures	Impact Conclusion After Mitigation-CEQA	Discussion	Findings of Fact
		<p>Associations Fixture Seal of Approval program (International Dark-Sky Association 2010a, 2010b, 2015). In addition, LED lights will use shielding to ensure that nuisance glare and light spill does not affect materially sensitive residential viewers. Lights will be placed at the lowest feasible height to ensure that light trespass affecting residences is limited. If needed, the height of lights will be lowered to account for the increase in lighting area provided by LED lighting. Implementation of this measure will minimize the effects of light and glare associated with blue rich white LED lighting from intruding into nearby areas.</p> <p>(Final MMRP, pp. 2-65; see also Final EIR/EIS, Chapter 17, Aesthetics and Visual Resources, pp. 17-215 – 17-216)</p>			
<p>AES-6: Substantial alteration in existing visual quality or character during implementation of Environmental Commitments 3, 4, 6–12, 15, and 16</p> <p>(Final EIR/EIS, Chapter 17, Aesthetics and Visual Resources, pp. 17-325—17-327)</p>	Significant	<p><u>AES-1a: Locate new transmission lines and access routes to minimize the removal of trees and shrubs and pruning needed to accommodate new transmission lines and underground transmission lines where feasible</u></p> <p>See Impact AES-1, above, for full mitigation measure.</p> <p>(Final MMRP, pp. 2-53; see also Final EIR/EIS, Chapter 17, Aesthetics and Visual Resources, pp. 17-197)</p> <p><u>AES-1b: Install visual barriers between construction work areas and sensitive receptors</u></p> <p>See Impact AES-1, above, for full mitigation measure.</p> <p>(Final MMRP, pp. 2-54—2-55; see also Final EIR/EIS, Chapter 17, Aesthetics and Visual Resources, pp. 17-197—17-198)</p> <p><u>AES-1c: Develop and implement a spoil/borrow and reusable tunnel material area management plan</u></p> <p>See Impact AES-1, above, for full mitigation measure.</p> <p>(Final MMRP, pp. 2-55—2-56; see also Final EIR/EIS, Chapter 17, Aesthetics and Visual Resources, pp. 17-198—17-199)</p> <p><u>AES-1d: Restore barge unloading facility sites once decommissioned</u></p> <p>See Impact AES-1, above, for full mitigation measure.</p> <p>(Final MMRP, pp. 2-57; see also Final EIR/EIS, Chapter 17, Aesthetics</p>	Significant & Unavoidable	<p>Implementation of Environmental Alternative 4A has the potential to affect existing visual quality and character, views of scenic vistas, views from scenic highways, and introduce new sources of light and glare in the study area. These potential impacts are considered to be significant because implementation of the Environmental Commitments will potentially change views from public areas, negatively affect sensitive receptors and require multiple year construction at specific locations that are currently unknown.</p> <p>(Final EIR/EIS, Chapter 17, Aesthetics and Visual Resources, pp. 17-325—17-327)</p>	<p>Implementing mitigation measures AES-1a through AES-1g will partially reduce the impacts of Alternative 4A on aesthetic and visual resources but not to a less-than-significant level because restoration and other actions implemented under this alternative could create considerable changes to the visual character of sensitive receptors that may not be fully mitigated by these mitigation measures. Thus, implementation of Environmental Commitments under Alternative 4A will result in significant and unavoidable impacts on the existing visual quality and character in the study area.</p> <p>Findings: Changes or alterations have been required in, or incorporated into, the project that substantially lessen, but do not avoid, the significant environmental effect as identified in the Final EIR/EIS. Impacts are therefore significant and unavoidable despite the adoption of feasible mitigation measures.</p> <p>(Final EIR/EIS, Chapter 17, Aesthetics and Visual Resources, pp. 17-325—17-327)</p>

Alternative 4A Potential Impact	Impact Conclusions Before Mitigation-CEQA	Adopted Mitigation Measures	Impact Conclusion After Mitigation-CEQA	Discussion	Findings of Fact
		<p>and Visual Resources, pp. 17-199)</p> <p><u>AES-1e: Apply aesthetic design treatments to all structures to the extent feasible</u></p> <p>See Impact AES-1, above, for full mitigation measure.</p> <p>(Final MMRP, pp. 2-58—2-59; see also Final EIR/EIS, Chapter 17, Aesthetics and Visual Resources, pp.17-199—17-201)</p> <p><u>AES-1f: Locate concrete batch plants and fuel stations away from sensitive visual resources and receptors and restore sites upon removal of facilities</u></p> <p>See Impact AES-1, above, for full mitigation measure.</p> <p>(Final MMRP, pp. 2-58—2-59; see also Final EIR/EIS, Chapter 17, Aesthetics and Visual Resources, pp. 17-201—17-202)</p> <p><u>AES-1g: Implement best management practices to implement project landscaping plan</u></p> <p>See Impact AES-1, above, for full mitigation measure.</p> <p>(Final MMRP, pp. 2-61—2-63; see also Final EIR/EIS, Chapter 17, Aesthetics and Visual Resources, pp. 17-202—17-203)</p> <p><u>AES-4a: Limit construction to daylight hours within 0.25 mile of residents</u></p> <p>See Impact AES-4, above, for full mitigation measure.</p> <p>(Final MMRP, pp 2-64; see also Final EIR/EIS, Chapter 17, Aesthetics and Visual Resources, p. 17-214)</p> <p><u>AES-4b: Minimize fugitive light from portable sources used for construction</u></p> <p>See Impact AES-4, above, for full mitigation measure.</p> <p>(Final MMRP, pp. 2-64—2-65; see also Final EIR/EIS, Chapter 17, Aesthetics and Visual Resources, p. 17-215)</p> <p><u>AES-4c: Install visual barriers along access routes, where necessary, to prevent light spill from truck headlights toward residences</u></p>			

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		<p>See Impact AES-4, above, for full mitigation measure.</p> <p>(Final MMRP, pp. 2-65; see also Final EIR/EIS, Chapter 17, Aesthetics and Visual Resources, pp. 17-215)</p> <p><u>AES-4d: Avoid the use of blue rich white light LED lighting</u></p> <p>See Impact AES-4, above, for full mitigation measure.</p> <p>(Final MMRP, pp. 2-66; see also Final EIR/EIS, Chapter 17, Aesthetics and Visual Resources, pp. 17-215 - 17-216)</p>			
Cultural Resources					
<p>CUL-1: Effects on identified archaeological sites resulting from construction of conveyance facilities</p> <p>(Final EIR/EIS, Chapter 18, Cultural Resources, pp. 18-213—18-214)</p>	Significant	<p><u>CUL-1: Prepare a data recovery plan and perform data recovery excavations on the affected portion of the deposits of identified and significant archaeological sites</u></p> <p>Prior to ground-disturbing construction, DWR will implement treatment for identified and register eligible archaeological sites affected by Alternative 4A construction.</p> <p><i>Basis for Selection of Treatment</i></p> <p>Identified archaeological resources occur in the footprint of large features that would be constructed under this alternative. Because they occur within the footprint of these features, avoidance may not be feasible. These objectives include protection of other sensitive environmental resources where possible. Because of the density and location of other sensitive environmental resources such as natural communities and habitats, relocation of proposed facilities necessary to ensure all historical resources are preserved in places is unlikely to be feasible. Furthermore, the large, linear, nature of proposed conveyance facilities would result in overlap with cultural resources across almost any potential alignment because of the manner in which cultural resources are distributed in the study area. These same facilities will require ongoing maintenance and operational activities that would likely be inconsistent with dedicated conservation easements or other land management methods designed to preserve existing resources in place. For these reasons, preservation of all potentially affected archaeological sites through capping with soil or incorporation into conservation easements or green space is not likely to be feasible. Accordingly, data recovery is proposed to retrieve the scientifically important material that remains in these deposits. This data recovery</p>	Significant & Unavoidable	<p>Construction of conveyance facilities will affect 10 identified archaeological resources that occur in the footprint of this alternative. DWR identified these resources and found that they are likely to qualify as historical resources or unique archaeological resources under CEQA (see the individual site descriptions in Appendix 18B, Identified Cultural Resources Potentially Affected by the BDCP Alternatives, Section 18B.1.1, Archaeological Site Descriptions). This impact will be significant because construction could materially alter or destroy the physical integrity of the resource and/or their potential to yield information useful in archaeological research through excavation and disruption of the spatial associations that contain meaningful information. Identified but currently inaccessible resources may also be significant under other register criteria; indirect effects such as introduction of inconsistent changes to the setting may also diminish the significance of these resources.</p> <p>(Final EIR/EIS, Chapter 18, Cultural Resources, pp. 18-213—18-214)</p>	<p>Mitigation Measure CUL-1 will reduce this impact, by recovering data at affected significant archaeological sites and by monitoring and protecting resources during construction. However, this measure will not ensure preservation of the physical integrity of the resources or ensure that all of the scientifically important material will be retrieved because feasible archaeological excavation only typically retrieves a sample of the deposit, and portions of the site containing important information may remain after treatment. The impact on identified archaeological sites is considered significant and unavoidable because construction could damage the remaining portions of the deposit.</p> <p>Findings: Changes or alterations have been required in, or incorporated into, the project that substantially lessen, but do not avoid, the significant environmental effect as identified in the Final EIR/EIS. Impacts are therefore significant and unavoidable despite the adoption of feasible mitigation measures.</p> <p>(Final EIR/EIS, Chapter 18, Cultural Resources, pp. 18-213—18-214)</p>

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		<p>excavation will conform to the following standards that meet the Secretary of the Department of the Interior’s professional qualification standards provided in 36 CFR 68.</p> <ul style="list-style-type: none">• DWR will retain a qualified archaeological consultant to conduct data recovery excavations necessary to retrieve material that would otherwise be lost (material with scientifically important data associated with the significance of the resource). Qualified archaeological consultant here means a consultant with demonstrated experience conducting effective data recovery excavations at the kinds of sites subject to treatment, including qualification under the Secretary of the Interior’s Professional Qualification Standards (36 CFR 61).• DWR will prepare, and deposit with the relevant information center of the California Historic Records Information System (CHRIS), a data recovery plan prior to conducting these excavations, as required under State CEQA Guidelines Section 15126.4(b)(3)(C). The plan will provide a literature review of recent regional archaeological research and a summary of regional research questions. The plan will incorporate the methods prescribed above and include a more detailed description of the sampling and excavation methods that are appropriate for the regional research questions. The plan will not disclose the location of the resources subject to treatment in a manner that would allow their location by the public and inadvertent damage.• Data recovery excavations will remove a sample of the affected portion of the deposit to retrieve scientifically important material. Excavation will be conducted in representative levels, and material removed will be divided and screened through a combination of 1/4” and 1/8” mesh screen, so as to capture both the gross cultural constituents and the finer material that can only be captured in fine mesh. Excavation will be conducted in 10-centimeter levels so that the horizontal association of different cultural materials is recorded. Removed material will be segregated by type and bagged with labels noting their horizontal and vertical location relative to an established datum point. The datum point will be recorded in the field with GPS to at least 10-centimeter horizontal and vertical accuracy. If, in the course of data recovery excavations, it is determined that, contrary to available evidence, the resource lacks integrity, data recovery excavations will cease.• Faunal material (animal bone) will be segregated and			

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		<p>studied by a qualified faunal analyst to identify the species pursued, relative abundance and diversity of different species present, and the manner in which the prey were processed by the prehistoric occupants.</p> <ul style="list-style-type: none">• Obsidian glass will be retrieved and studied through both X-ray fluorescence (a method that allows the source of the obsidian to be identified) and obsidian hydration analysis (a method that allows approximate determination of the time when the material was subject to human modification).• Soil samples will be retrieved, with their horizontal and vertical location recorded, for flotation analysis (a method of separating light organic material such as fine plant remains from the deposit, in order to identify plant species pursued by prehistoric populations).• Because some of the resources subject to treatment contain human remains, provisions for such remains are necessary. If human remains are discovered in these deposits during data recovery, the county coroner will be contacted as required in California Health and Safety Code Section 7050.5. If the coroner confirms the remains are of prehistoric origin, the Native American Heritage Commission (NAHC) will be contacted and given the opportunity to identify a most likely descendent (MLD). The MLD will be given the opportunity to reinter the remains with appropriate dignity. If the NAHC fails to identify the MLD or if the parties cannot reach agreement as to how to reinter the remains as described in California PRC Section 5097.98(e), the landowner will reinter the remains at a location not subject to further disturbance. DWR will ensure the protections prescribed in California PRC Section 5097.98(e), are performed, such as the use of conservation easements and recording of the location with whichever county in which the remains are found as well as the relevant information center of the CHRIS and the NAHC.• After completion of data recovery excavations DWR and appropriate federal agencies will prepare a data recovery report synthesizing the results of data recovery and associated studies and analysis. The consultant or staff archaeologists will synthesize the results of these studies and summarize the results relative to regional research questions in the data recovery report. The report will be filed with the relevant information center of the CHRIS. DWR and appropriate federal agencies will also store the recovered material at an appropriate facility for curation. Relevant			

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		<p>federal curation standards such as 36 CFR 79 will be followed where applicable.</p> <ul style="list-style-type: none">Construction phase monitoring and resource protection: During construction on or near the resource, DWR and appropriate federal agencies will retain a qualified archaeologist (a person knowledgeable in the identification of the kind of resources known to occur), to observe excavations over any remaining portions of the deposit that are sensitive for buried human remains or which may contain other significant buried archaeological material that could be inadvertently damaged. If human remains are discovered the archaeologist will direct compliance with the requirements of California Health and Safety Code Section 7050.5 and California PRC Section 5097.98 and the relevant federal agency with responsibility for Section 106 will be contacted. In addition DWR and the appropriate federal agencies will use fencing, flagging, or other appropriate means to exclude unnecessary disturbance and activity from sensitive resources during construction. <p>The U.S. Fish and Wildlife Service, National Marine Fisheries Service, and the U.S. Army Corps of Engineers are entering into a Programmatic Agreement with the California State Historic Preservation Officer for the implementation of NHPA Section 106 for their undertakings associated with the project. The effects of Federal undertakings (actions) on historic properties (eligible for or listed on the National Register of Historic Places) will be taken into account through the implementation of this programmatic agreement.</p> <p>(Final MMRP, pp. 2-67—2-69; see also Final EIR/EIS, Chapter 18, Cultural Resources, pp. 18-131—18-133)</p>			
<p>CUL-2: Effects on archaeological sites to be identified through future inventory efforts</p> <p>(Final EIR/EIS, Chapter 18, Cultural Resources, pp. 18-214—18-215)</p>	Significant	<p><u>CUL-2: Conduct inventory, evaluation, and treatment of archaeological resources</u></p> <p>Prior to ground-disturbing construction, DWR will implement the following mitigation measures.</p> <ul style="list-style-type: none">Because DWR and federal agencies could not feasibly access the majority of the footprint for this alternative, a cultural resource inventory has not been completed for the entire footprint. Prior to ground-disturbing construction, DWR will ensure that an inventory and evaluation report for cultural resources is completed. The inventory will cover the federal	Significant and Unavoidable	<p>The footprint for the Project is sensitive for both prehistoric and historic-era resources that cannot be identified at this time because much of the footprint is not legally accessible. Because many of these resources are likely to have prehistoric and historic significance, they are likely to qualify as historical resources or unique archaeological sites under CEQA or historic properties under the Section 106 of the NHPA. Ground-</p>	<p>Mitigation Measure CUL-2 will address the impacts of both prehistoric and historic resources through conducting inventories, evaluating significance, and proposing treatment of archaeological and historic resources as well as monitoring during the construction phase. But this mitigation measure cannot guarantee that all eligible or significant resources will be preserved in place, or that all important information will be retrieved before construction destroys</p>

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		<p>Areas of Potential Effect (APE) for relevant undertakings.</p> <ul style="list-style-type: none">• The scope of the inventory will include the entire area where effects may occur. Such effects consist of direct disturbance through excavation or indirect damage through vibration or changes to the setting, where the setting may be relevant for archaeological resources.• The work will be led or supervised by cultural resource specialists that meet the Secretary of the Department of the Interior’s professional qualification standards provided in 36 CFR 61.• Inventory methods will include pedestrian surveys and other any other appropriate sampling methods identified by DWR and the federal lead agencies.• Identified resources will be mapped and described on forms provided by the California State Parks forms (“DPR” forms). Mapping will be performed by recording data points with GPS hardware that can be imported and managed digitally.• For all identified resources DWR and appropriate federal agencies will evaluate the resources to determine if they are any of the following.• Historical resources (State CEQA Guidelines Section 15064.5[a])• Unique archaeological resources under CEQA (California PRC Section 21083.2[g])• Historic properties (36 CFR 60.4)• Eligible for local registers• The recorded resources and the resource evaluations will be summarized in an inventory report. In the inventory report DWR and appropriate federal agencies will also determine if individual resources qualifying as unique archaeological sites, historical resources, or historic properties will require mitigation to the extent feasible, as described below. DWR will make such a determination if the project would involve any of the following consequences.• Demolish or materially alter the qualities that make the resource eligible for listing in the CRHR (State CEQA Guidelines Section 15064.5[b][2][A], [C]).• Demolish or materially alter the qualities that justify the inclusion of the resource on a local register or its identification in an historical resources survey meeting the requirements of California PRC Section 5024.1(g), unless DWR establishes by a preponderance of evidence that the resource is not historically or culturally significant (State CEQA Guidelines Section 15064.5[b][2][B]).		<p>disturbing construction may materially alter the significance of these resources by altering their character-defining features, resulting in a significant effect. Mitigation Measure CUL-2 will address the impacts of both prehistoric and historic resources through conducting inventories, evaluating significance, and proposing treatment of archaeological and historic resources as well as monitoring during the construction phase.</p> <p>(Final EIR/EIS, Chapter 18, Cultural Resources, p. 18-214—18-215)</p>	<p>these resources. The scale of the project, investment into existing designs, and the presence of other important environmental resources such as habitat, natural communities, and wetlands that should be avoided are constraints on the flexibility and feasibility of avoidance. For these reasons, this impact will be significant and unavoidable.</p> <p>Findings: Changes or alterations have been required in, or incorporated into, the project that substantially lessen, but do not avoid, the significant environmental effect as identified in the Final EIR/EIS. Impacts are therefore significant and unavoidable despite the adoption of feasible mitigation measures.</p> <p>(Final EIR/EIS, Chapter 18, Cultural Resources, p. 18-214—18-215)</p>

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		<ul style="list-style-type: none">Alter, directly or indirectly, the qualities that make a resource eligible for listing in the NRHP (36 CFR 800.5[a][1]).Demolish or materially impair the qualities that allow a resource to qualify as a unique archaeological site (California PRC Section 21083.2).For all resources qualifying as unique archaeological resources, historical resources, or historic properties that would be subject to significant effects, DWR will develop and implement treatment. Such treatment will consist of the following, in order of priority.It should be noted that this order of priority applies to mitigation on historical resources performed to satisfy CEQA. Relevant federal agencies with management responsibilities for cultural resources will implement mitigation for adverse effects to satisfy Section 106 of the NHPA, which does not specify this order of priority.Preservation in place where feasible, in light of costs, logistics, technological, and environmental considerations, and the extent to which avoidance is consistent with the objectives of the project, through methods such as redesign of relevant facilities to avoid destruction or damage to eligible cultural resources, capping resources with fill, or deeding resources into conservation easements.Review and study of existing collections previously retrieved from affected resources, where feasible, in lieu of data recovery excavations.Data recovery excavations that retrieve the information that makes the resource eligible for CRHR or NRHP listing, or that qualifies the site as a unique archaeological resource. If data recovery through excavation is the only feasible mitigation, a data recovery plan, which makes provisions for adequately recovering the scientifically consequential information from and about the historical resource, will be prepared and adopted prior to any excavation being undertaken. Such studies will be deposited with the relevant information center of the CHRIS. Excavation as mitigation will be restricted to those parts of the resource that would be damaged or destroyed by the project. If, in the course of data recovery excavations, it is determined that contrary to available evidence, the resource lacks integrity, data recovery excavations will cease. The data recovery plan will specify the basis for the significance of the resource and methods for retrieving the consequential information from			

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		<p>the site. After completion of excavation DWR will retain a qualified archaeological consultant to synthesize the findings into a data recovery report describing the findings and will deposit the report at the relevant information center of the CHRIS.</p> <ul style="list-style-type: none">• The treatment plan, prepared consistent with the Final Programmatic Agreement, will identify treatment methods that are proposed by the Lead Agencies and other public entities. The plan will also specify the basis for selecting a particular mitigation measure.• For archaeological sites that qualify as historical resources, the DWR will consider preservation in place as the preferred treatment where feasible, in light of costs, logistics, technological, and environmental considerations and the extent to which avoidance is consistent with the objectives of the project• If preservation in place of archaeological sites that qualify as historical resources or unique archaeological resources is not feasible in light of costs, logistics, technological considerations, the location of the find, and the extent to which preservation of the find is consistent or inconsistent with the design and objectives of the project, the DWR will include a discussion in the treatment plan describing why the selected mitigation serves the interests protected by CEQA better than preservation in place.• Construction phase monitoring: During construction on or near resources sensitive for human remains or archaeological resources, DWR will retain a qualified archaeologist to observe excavations over any remaining portions of the deposit that are sensitive for buried deposits or human remains. If human remains are discovered the archaeologist will direct compliance with the requirements of California Health and Safety Code Section 7050.5 and California PRC Section 5097.98 and the relevant federal agency with responsibility for Section 106 will be contacted. If Native American human remains are discovered on federal land, work in the immediate vicinity will cease, and DWR will contact the relevant representative of the federal agency where the remains were discovered, as prescribed in 25 USC Section 3002(d) (NAGPRA). After notification from the relevant agency representative and treatment of the remains as required under NAGPRA, work may continue. Disposition of the remains will follow the ownership priority described in NAGPRA (25 USC Section 3002[a]).			

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		<p>The USFWS, NMFS, and the USACE are entering into a Programmatic Agreement with the California State Historic Preservation Officer for the implementation of NHPA Section 106 for their undertakings associated with the project. The effects of Federal undertakings (actions) on historic properties (eligible for or listed on the National Register of Historic Places) will be taken into account through the implementation of this programmatic agreement.</p> <p>(Final MMRP, pp. 2-70—2-72; see also Final EIR/EIS, Chapter 18, Cultural Resources, pp. 18-135—18-137)</p>			
<p>CUL-3: Effects on archaeological sites that may not be identified through inventory efforts</p> <p>(Final EIR/EIS, Chapter 18, Cultural Resources, p. 18-215)</p>	Significant	<p><u>CUL-3: Implement an archaeological resources discovery plan, perform training of construction workers, and conduct construction monitoring</u></p> <p>Prior to ground-disturbing construction, DWR will include a cultural resources discovery plan in the contract conditions of the construction contractor, incorporating the following actions to be taken in the event of the inadvertent discovery of cultural resources.</p> <ul style="list-style-type: none"> An archaeological monitor will be present to observe construction at geographic locations that are sensitive for unidentified cultural resources. Such locations consist of construction near identified sites (within a 100-foot radius around the known boundaries of identified resources), and where ground-disturbing construction will occur within 500 feet of major water features. In the event of an archaeological resources discovery, work will cease in the immediate vicinity of the find (typically 100-feet), based on the direction of the archaeological monitor or the apparent distribution of cultural resources if no monitor is present. A qualified archaeologist will assess the significance of the find and make recommendations for further evaluation and treatment as necessary. Discovered resources will be mapped and described on forms provided by the DPR. Mapping will be performed by recording data points with GPS hardware that can be imported and managed 	Significant and Unavoidable	<p>Construction has the potential to disturb previously unidentified archaeological sites qualifying as historical resources or unique archaeological resources, for CEQA purposes, or historic properties, for NRHP purposes.</p> <p>(Final EIR/EIS, Chapter 18, Cultural Resources, p. 18-215)</p>	<p>Mitigation Measure CUL-3 will reduce but not entirely avoid the potential for this impact, by implementing construction worker training, monitoring, and discovery protocols. This impact will remain significant and unavoidable because archaeological resources may not be identified prior to disturbance.</p> <p>Findings: Changes or alterations have been required in, or incorporated into, the project that substantially lessen, but do not avoid, the significant environmental effect as identified in the Final EIR/EIS. Impacts are therefore significant and unavoidable despite the adoption of feasible mitigation measures.</p> <p>(Final EIR/EIS, Chapter 18, Cultural Resources, p. 18-215)</p>

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		<p>digitally.</p> <ul style="list-style-type: none">• Evaluation and treatment will follow the standards and order of priority described above for Mitigation Measure CUL-2. After receiving recommendations from the qualified archaeologist, DWR, USFWS, NMFS, and USACE will jointly determine the feasibility of such recommendations, and particularly any recommended avoidance measures, in light of factors such as costs, logistics, technological, and environmental considerations and the extent to which avoidance is consistent with the objectives of the project.• If human remains are discovered as part of a larger cultural deposit, DWR and the contractors will coordinate with the county coroner and Native American Heritage Commission to make the determinations and perform the management steps prescribed in California Health and Safety Code Section 7050.5 and California PRC Section 5097.98.• If Native American human remains are discovered on federal land, work in the immediate vicinity will cease, and DWR will contact the relevant representative of the federal agency where the remains were discovered, as prescribed in 25 USC Section 3002(d) (NAGPRA). After notification from the relevant agency representative and treatment of the remains as required under NAGPRA, work may continue. Disposition of the remains will follow the ownership priority described in NAGPRA (25 USC Section 3002[a]), as defined below under Mitigation Measure CUL-4.• DWR and appropriate federal agencies will provide pre-construction training of all construction personnel engaged in construction that has the potential to affect archaeological resources. This training will provide instruction on how to identify resources in the field and appropriate measures to be taken if a discovery or potential discovery occurs.			

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		<p>DWR will include a list of DWR cultural-resources staff that can respond to cultural resource discoveries and provide management direction following discoveries in the construction training materials, and will also provide this list as well as these discovery requirements to the supervisory field staff for the construction workers.</p> <p>The U.S. Fish and Wildlife Service, National Marine Fisheries Service, and the U.S. Army Corps of Engineers are entering into a Programmatic Agreement with the California State Historic Preservation Officer for the implementation of NHPA Section 106 for their undertakings associated with the project. The effects of Federal undertakings (actions) on historic properties (eligible for or listed on the National Register of Historic Places) will be taken into account through the implementation of this programmatic agreement.</p> <p>(Final MMRP, pp. 2-74—2-75; see also Final EIR/EIS, Chapter 18, Cultural Resources, pp. 18-138—18-140)</p>			
<p>CUL-4: Effects on buried human remains damaged during construction</p> <p>(Final EIR/EIS, Chapter 18, Cultural Resources, p. 18-216)</p>	Significant	<p><u>CUL-4: Follow state and federal law governing human remains if such resources are discovered during construction</u></p> <p>If human remains are discovered as part a larger cultural deposit, DWR and the construction contractors will coordinate with the county coroner and NAHC to make the determinations and perform the management steps prescribed in California Health and Safety Code Section 7050.5 and California PRC Section 5097.98. The provisions of these state laws apply unless discoveries occur on land owned or controlled by the federal government. For discoveries on federal land the bulleted procedures for NAGPRA, provided below will be followed. Compliance with state law for discoveries occurring on private or state lands requires the following steps.</p> <ul style="list-style-type: none"> • Notification of the county coroner so the coroner may determine if an investigation regarding the cause of death is required. If the coroner determines that the remains are of prehistoric Native American origin, the coroner will notify the NAHC. • Upon notification the NAHC will identify the MLD, and the MLD will be given the opportunity to reinter the remains with appropriate dignity. If the NAHC fails to identify the MLD or if the parties cannot reach agreement as to how to 	Significant and Unavoidable	<p>The project area is sensitive for buried human remains and construction of Alternative 4A will likely result in disturbance of these features. Disturbance of human remains, including remains interred outside of cemeteries is considered a significant impact.</p> <p>(Final EIR/EIS, Chapter 18, Cultural Resources, p. 18-216)</p>	<p>Mitigation Measure CUL-4 will reduce the severity of this impact by following state and federal guidelines, including notifying the county coroner and the NAHC, if human remains are discovered during construction. This impact is considered significant and unavoidable, however, because the mitigation does not guarantee that human remains would be discovered and treated in advance of construction and the scale of construction makes it technically and economically infeasible to perform the level of sampling necessary to identify all such resources prior to construction.</p> <p>Findings: Changes or alterations have been required in, or incorporated into, the project that substantially lessen, but do not avoid, the significant environmental effect as identified in the Final EIR/EIS. Impacts are therefore significant and unavoidable despite the adoption of feasible mitigation measures.</p>

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		<p>reinter the remains as described in California PRC Section 5097.98(e), DWR will reinter the remains at a location not subject to further disturbance. DWR will ensure the protections prescribed in California PRC Section 5097.98(e), are performed, such as the use of conservation easements and recording of the location with the relevant county and information center of the CHRIS.</p> <p>If Native American human remains are discovered on federal land, work in the immediate vicinity will cease, and DWR will contact the relevant representative of the federal agency where the remains were discovered, as prescribed in 25 USC Section 3002(d) (NAGPRA). After notification from the relevant agency representative and treatment of the remains as required under NAGPRA, work may continue. Disposition of the remains will follow the ownership priority described in NAGPRA (25 USC Section 3002[a]):</p> <ul style="list-style-type: none">• Where the lineal descendants can be found, the lineal descendants own the remains.• Where the lineal descendants cannot be found, the remains belong to the Indian tribe on whose land the remains were found.• If the remains are discovered on other lands owned or controlled by the federal government and the lineal descendants cannot be determined, the remains belong to the Indian tribe that is culturally affiliated with the remains, or the tribe that aboriginally occupied the land where the remains were discovered.• “Indian Tribe” here means federally recognized tribes identified in the list of such tribes published by the Bureau of Indian Affairs in the Federal Register as well as in the tribal directory compiled by the Bureau of Indian Affairs (BIA). <p>The Bureau of Reclamation, U.S. Fish and Wildlife Service, National Marine Fisheries Service, and the U.S. Army Corps of Engineers are entering into a Programmatic Agreement with the California State Historic Preservation Officer for the implementation of NHPA Section 106 for their undertakings associated with the project. The effects of Federal undertakings (actions) on historic properties (eligible for or listed on the National Register of Historic Places) will be taken into account through the implementation of this programmatic agreement.</p> <p>(Final MMRP, pp. 2-76—2-77; see also Final EIR/EIS, Chapter 18,</p>			(Final EIR/EIS, Chapter 18, Cultural Resources, p. 18-216)

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		Cultural Resources, pp. 18-140—18-141)			
<p>CUL-5: Direct and indirect effects on eligible and potentially eligible historic architectural/built environment-resources resulting from construction activities</p> <p>(Final EIR/EIS, Chapter 18, Cultural Resources, p. 18-216 - 18-217)</p>	Significant	<p><u>CUL-5: Consult with relevant parties, prepare and implement a built environment treatment plan</u></p> <p>All mitigation will be undertaken by individuals who meet the Secretary of the Interior’s professional qualifications and have demonstrable experience conducting the following recommended measures. In preparation of the built environment treatment measures relevant parties will be consulted. Such parties may include but are not limited to the State Historic Preservation Officer (SHPO), the Advisory Council on Historic Preservation (ACHP), local historical societies, and other interested parties such as local preservation and community organizations. DWR will perform the following measures as part of mitigation and monitoring for compliance with CEQA. Appropriate federal agencies will perform these measures as part of their management responsibilities performed to satisfy Section 106 of the NHPA.</p> <p>A built environment treatment plan (BETP) will be prepared by an architectural historian with demonstrated experience preparing treatment for similar kinds of resources, and reviewed by relevant parties prior to any demolition or ground-disturbing activity for all built-environment resources subject to adverse effects or significant impacts. Recommended property specific mitigation is identified in Appendix 18B, Identified Resources Potentially Affected by the BDCP Alternatives, Tables 18B-17 through 18B-31 of the FINAL EIR/EIS and will be implemented in accordance with the specifics developed in the BETP.</p> <p>The following protective measures and monitoring protocols will be implemented for historic resources in close proximity to the project but that are not anticipated to be directly affected by demolition or construction but which may be subject to direct effects such as vibration or inadvertent damage activities:</p> <ul style="list-style-type: none"> Historic Structures Reports (HSR) will be prepared for buildings and structures adjacent to the project for which detailed information is required to develop protection measures. These will be done for buildings and structures that appear to be in poor condition and, therefore, potentially sensitive to construction-related activities such as vibration. Preconstruction stabilization or temporary removal of these buildings may be necessary. 	Significant and Unavoidable	<p>Impacts on eligible and potentially eligible historic architectural/built environment-resources resulting from construction activities are considered significant because construction may require demolition or alter the character of the resource to such a degree that each resource may no longer be able to convey its significance. Mitigation Measure CUL-5 will reduce the impact by implementing a built environment treatment plan that includes preparing an HSR, assessing preconstruction conditions, implementing protection measures, and preparing HABS/HAER/HALS records, or equivalent documentation, for CRHR and NRHP-eligible historic buildings and structures that will be demolished.</p> <p>(Final EIR/EIS, Chapter 18, Cultural Resources, pp. 18-216 - 18-217)</p>	<p>Although Mitigation Measure CUL-5 will reduce the impact, the impact on eligible and potentially eligible historic architectural/built environment-resources will remain significant and unavoidable because even with mitigation, the scale and location of the project, along with the constraints imposed by other environmental resources make avoidance of all significant effects unlikely.</p> <p>Findings: Changes or alterations have been required in, or incorporated into, the project that substantially lessen, but do not avoid, the significant environmental effect as identified in the Final EIR/EIS. Impacts are therefore significant and unavoidable despite the adoption of feasible mitigation measures.</p> <p>(Final EIR/EIS, Chapter 18, Cultural Resources, p. 18-217)</p>

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		<ul style="list-style-type: none">• Preconstruction condition assessments will be prepared for buildings and structures adjacent to the project that are stable, but could be unintentionally damaged during construction. Should there be any question as to whether or not the project caused damage, these condition assessments will provide confirmation of the preconstruction condition.• Precautions to protect built resources from construction vehicles, debris and dust may include fencing or debris meshing. Temporary mothballing, and fire and intrusion protection may be needed if the buildings are unoccupied during construction.• Protective measures will be field checked as needed during construction by a qualified architectural historian with demonstrated experience conducting monitoring of this nature. Vibration monitoring may be required for buildings determined to be susceptible to vibration damage that are in close proximity to construction activities or machinery that cause vibration.• These measures are designed to avoid direct effects such as vibration that may result in structural damage or inadvertent direct effects such as demolition.• Redesign of relevant facilities will be used to avoid destruction or damage where feasible. <p>For built resources that will be directly and adversely impacted, the BETP will specify resource-specific treatment measures such as, but not limited to the following examples of treatments used to minimize effects on built-environment resources:</p> <ul style="list-style-type: none">• Historic American Building Survey (HABS) documentation will be prepared for CRHR and NRHP-eligible historic buildings and structures that will be demolished (National Park Service 2000). These reports will include written and photographic documentation of the significant and character-defining features of these properties. These reports will minimize the adverse effect by capturing and preserving a description of the significant information and characteristics associated with the resource.• In recent years, the National Park Service and National Archives have issued directives indicating that they will not accept formal submissions under the HABS program unless the resource being documented is a rare, unusual, or exceptionally high-quality example of its type, due to the huge volume of submissions generated by environmental			

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		<p>mitigation requirements. The BETP will indicate whether the HABS documentation will be formally submitted to the National Park Service for review and approval, based on a consideration of the rarity or caliber of the resource being mitigated, or instead will be prepared informally for distribution to local repositories or for re-use for interpretive or educational programs.</p> <ul style="list-style-type: none">• For formal HABS documentation, reports are subject to review and approval by the National Park Service. Following approval, DWR will produce sufficient copies for distribution to repositories identified in the BETP, including the Library of Congress, the California State Library, the University of California Water Resources Center Archives, and any local repositories, as appropriate and agreed upon with the SHPO and interested parties. Distribution will further enhance the mitigation of the adverse effect because it will ensure that the significance is retained and conveyed to a wide audience.• For informal HABS documentation, report contents may be prepared in high-resolution digital format, rather than being produced to the high archival standards required by the National Park Service for formal submissions. DWR will produce sufficient copies for distribution to repositories identified in the BETP, which may include the California State Library, the University of California Water Resources Center Archives, and any local repositories, as appropriate and agreed upon with the SHPO and interested parties.• As applicable, Historic American Landscape Survey (HALS) records and Historic American Engineering Record (HAER) documents will be prepared for historic water-associated resources (National Park Service 2005). The levees and other CRHR and NRHP-eligible linear historic features will be recorded following HAER guidelines. Additionally the settings will be recorded following HALS guidelines. These reports will include written and photographic documentation of the significant and character-defining features of these properties. The HALS and HAER reports will minimize the adverse effect by capturing and retaining a description of the significant engineering and design information associated with the resource.• In recent years, the National Park Service and National Archives have issued directives indicating that they will not accept formal submissions under the HALS and HAER programs unless the resource being documented is a rare, unusual, or exceptionally high-quality example of its type,			

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		<p>due to the huge volume of submissions generated by environmental mitigation requirements. The BETP will indicate whether the HALS or HAER documentation will be formally submitted to the National Park Service for review and approval, based on a consideration of the rarity or caliber of the resource being mitigated, or instead will be prepared informally for distribution to local repositories or for re-use for interpretive or educational programs.</p> <ul style="list-style-type: none">• Formal HALS/HAER submissions are subject to review and approval by the National Park Service. Following approval, DWR will produce sufficient copies for distribution to repositories identified in the BETP, including the Library of Congress, the California State Library, the University of California Water Resources Center Archives, and any local repositories, as appropriate and agreed upon with the SHPO and interested parties. Distribution will further enhance the mitigation of the adverse effect because it will ensure that the significance is retained and conveyed to a wide audience.• For informal HALS/HAER documentation, report contents may be prepared in high-resolution digital format, rather than being produced to the high archival standards required by the National Park Service for formal submissions. DWR will produce sufficient copies for distribution to repositories identified in the BETP, which may include the California State Library, the University of California Water Resources Center Archives, and any local repositories, as appropriate and agreed upon with the SHPO and interested parties.• Preparation of interpretive or educational media such as displays in public spaces, print materials, or websites. Interpretive and educational media may incorporate written, photographic, and archival documentation, such as those compiled for informal HABS/HAER/HALS reports), oral history interviews, video, or animation to tell the story of the heritage represented by the impacted resource. Interpretive media is an appropriate mitigation for resources that are CRHR- or NRHP-eligible because they are associated with events that have made a significant contribution to the broad patterns of California's history and cultural heritage or that are associated with persons important in our past.• Salvage of materials will be performed to the extent feasible to enable the restoration of similar buildings, structures, or water-conveyance features outside of the area of direct impact. Salvage will further minimize adverse effects by using salvaged materials to ensure that similar resources are			

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		<p>restored and maintained in manner that will ensure the significance of the resource is preserved.</p> <ul style="list-style-type: none"> Relocation of historic buildings that would otherwise be demolished. Following the Secretary of the Interior’s standards to restore built resources outside of the area of direct effect that are of the same type as resources that will be demolished by project construction. Other appropriate treatment methods that are identified in relation to particular resources that are affected. <p>The USFWS, NMFS, and the U.S. Army Corps of Engineers are entering into a Programmatic Agreement with the California State Historic Preservation Officer for the implementation of NHPA Section 106 for their undertakings associated with the Plan Area. The effects of Federal undertakings (actions) on historic properties (eligible for or listed on the National Register of Historic Places) will be taken into account through the implementation of this programmatic agreement.</p> <p>(Final MMRP, pp. 2-78—2-81; see also Final EIR/EIS, Chapter 18, Cultural Resources, pp. 18-142—18-145)</p>			
<p>CUL-6: Direct and indirect effects on unidentified and unevaluated historic architectural/built environment resources resulting from construction activities</p> <p>(Final EIR/EIS, Chapter 18, Cultural Resources, pp. 18-217—18-218)</p>	Significant	<p><u>CUL-6: Conduct a survey of inaccessible properties to assess eligibility, determine if these properties will be adversely impacted by the project, and develop treatment to resolve or mitigate adverse impacts</u></p> <p>Because DWR does not have legal access to the majority of the footprint for this alternative, a built resources inventory has not been completed for the entire footprint for this alternative. Prior to construction, DWR will ensure that an inventory and evaluation report is completed within all areas where effects on built resources may occur. This subsequent survey will be conducted in a manner consistent with the May–June 2012 survey.</p> <ul style="list-style-type: none"> The scope of the inventory will include the entire area where effects may occur that were inaccessible or partially inaccessible in the first survey efforts. Such effects consist of direct disturbance, damage through vibration, or changes to the setting. The work will be led or supervised by architectural 	Significant and Unavoidable	<p>Construction of the project will result in direct and indirect effects on unidentified and unevaluated historic architectural/built environment resources resulting from construction activities, including changes to the setting. Direct demolition or changes to the setting will be material alterations because they will either remove the resource or alter the resource character, resulting in an inability of the resource to convey its significance. Many of these resources are likely to qualify as historic properties or historical resources under the NHPA and CEQA. Mitigation Measure CUL-6 will reduce these impacts by requiring that surveys be conducted on previously inaccessible properties to determine if constructing the water conveyance facilities will adversely affect the properties and if so, the development and implementation of</p>	<p>Although Measure CUL-6 will reduce these impacts, the scale of the project and the constraints imposed by other environmental resources make avoidance of all significant effects unlikely. For these reasons this impact remains significant and unavoidable even with implementation of the mitigation measure.</p> <p>Findings: Changes or alterations have been required in, or incorporated into, the project that substantially lessen, but do not avoid, the significant environmental effect as identified in the Final EIR/EIS. Impacts are therefore significant and unavoidable despite the adoption of feasible mitigation measures.</p> <p>(Final EIR/EIS, Chapter 18, Cultural Resources, pp. 18-217—18-218)</p>

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		<p>historians that meet the Secretary of the Department of the Interior’s professional qualification standards provided in 36 CFR 61.</p> <ul style="list-style-type: none">• Inventory methods and evaluation will include pedestrian surveys, photographic documentation, historical research using both primary and secondary sources, and interviews and oral histories.• Newly identified resources will be mapped and described on forms provided by the DPR. Mapping will be performed by recording data points with GPS hardware that can be imported and managed digitally.• For all identified resources, DWR will evaluate the resources to determine if they are any of the following.• Historical resources (State CEQA Guidelines Section 15064.5[a])• Significant historic resources under CEQA (California PRC Section 21084.1)• Historic properties (36 CFR 60.4)• Eligible for local registers <p>The recorded resources and the resource evaluations will be summarized in an inventory report. In the inventory report, DWR will also determine if individual resources qualifying as historical resources or historic properties will be subject to significant effects. DWR will make such a finding if the project would result in the following.</p> <ul style="list-style-type: none">• Demolish or materially alter the qualities that make the resource eligible for listing in the CRHR (State CEQA Guidelines Section 15064.5[b][2][A],[C]).• Demolish or materially alter the qualities that justify the inclusion of the resource on a local register or its identification in an historical resources survey meeting the requirements of California PRC Section 5024.1(g), unless DWR establishes by a preponderance of evidence that the resource is not historically or culturally significant (State CEQA Guidelines Section 15064.5[b][2][B]).		<p>treatment plans.</p> <p>(Final EIR/EIS, Chapter 18, Cultural Resources, pp. 18-217—18-218)</p>	

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		<ul style="list-style-type: none">Alter, directly or indirectly, the qualities that make a resource eligible for listing in the NRHP (36 CFR 800.5[a][1]).Cause a substantial adverse change in the significance of an historical resource (California PRC Section 21084.1). <p>Where built-environment resources that are listed or qualify for listing in the CRHR or NRHP, or that have been designated as locally significant, or are otherwise identified by DWR as historical resources will be subject to significant effects, DWR will prepare a BETP. The treatment plan will provide detailed descriptions of treatment measures that will be implemented to avoid, protect, minimize, and mitigate adverse effects on historic properties in accordance with the Secretary of the Interior’s Standards for the Treatment of Historic Properties (36 CFR 68) and the National Park Service’s Guidelines for the Treatment of Cultural Landscapes. The treatment plan will describe work to be done prior to, during, and after construction.</p> <ul style="list-style-type: none">Where feasible, in light of costs, logistics, technological and environmental considerations, and the extent to which avoidance is consistent with the objectives of the project, DWR will first seek to avoid demolition or materially altering the historical resource by avoidance measures, such as the following.Construction condition assessments or HSRs of properties adjacent to construction to determine if these properties are at risk of being damaged.Redesign of relevant facilities to avoid destruction or damage.Determination of tolerable levels of construction vibrationStabilization design and implementation to ensure fragile built resources are not damaged by construction activitiesTemporarily moving built resources, or other measures determined appropriate.If avoidance is not feasible, DWR will implement treatment			

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		<p>measures such as, but not limited to the following examples of treatments used to minimize effects on built-environment resources.</p> <ul style="list-style-type: none"> • Redesign of relevant facilities to minimize the scale or extent of damage to eligible or listed built resources. • Design standards to minimize the visual impact and to ensure context-appropriate design. • Complete documentation in accordance with HABS/HAER/HALS programs, including written and photographic documentation of the significant qualities of the CRHR and NRHP listed and determined eligible districts or individually eligible resources (where resources cannot be avoided). • Relocation of historic buildings that would otherwise be demolished. • Following the Secretary of the Interior’s standards to restore built resources outside of the area of direct effect that are of the same type as resources that will be demolished by the project. • Other appropriate treatment methods that are identified in relation to particular resources that are affected. <p>The USFWS, NMFS, and the USACE are entering into a Programmatic Agreement with the California State Historic Preservation Officer for the implementation of NHPA Section 106 for their undertakings associated with the project. The effects of Federal undertakings (actions) on historic properties (eligible for or listed on the National Register of Historic Places) will be taken into account through the implementation of this programmatic agreement.</p> <p>(Final MMRP, pp. 2-82—2-85; see also Final EIR/EIS, Chapter 18, Cultural Resources, pp. 18-147—18-149)</p>			
<p>CUL-7: Effects of environmental commitments on cultural resources</p> <p>(Final EIR/EIS, Chapter 18,</p>	Significant	<p><u>CUL-7: Conduct cultural resource studies and adopt cultural resource mitigation measures for cultural resource impacts associated with implementation of Environmental Commitments 3, 4, 6–12, 15, and 16</u></p>	Significant and Unavoidable	Implementation of Environmental Commitments will require ground-disturbing activities that could alter the significant characteristics of NRHP-, CRHR-, and/or local registry-eligible	Measure CUL-6 will reduce these impacts but not to a less than significant level. Due to the acreage that could be disturbed as a result of implementing the environmental commitments (see also Developments after

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Cultural Resources, pp. 18-218 - 18-219)		<p>As part of the design process for all Environmental Commitments other than water conveyance construction that could involve adverse effects on cultural resources within the meaning of NEPA, or significant impacts on cultural resources within the meaning of CEQA, DWR will conduct additional site-specific cultural resource studies and develop site-specific strategies for addressing impacts on cultural resources. The cultural resource studies will include the following steps.</p> <ul style="list-style-type: none"> Record searches at the relevant information centers of the CHRIS to retrieve records of identified resources. Inventories will consist of surveys using both historical and map research as well as field-inspection. Evaluation will consist of assessment of identified resources to determine if they have both significance and integrity sufficient to qualify for the CRHR, and NRHP, as well as any relevant local registers. Cultural resource inventories and evaluations that identify archaeological resources and built-environment resources. Correspondence or discussion with the Native American contacts on file with the NAHC and relevant tribes from the list of relevant federally recognized tribes that qualify as Indian tribes, as used in 36 CFR 800.16(m), maintained by the BIA, in order to identify resources that may be known to the Native American community, and to incorporate their preferences for treatment and management. Resource-specific evaluations that apply the criteria to determine if the identified resources qualify as historical resources (State CEQA Guidelines Section 15064.5[a]) or unique archaeological resources under CEQA (California PRC Section 21083.2[g]), historic properties (36 CFR 60.4), or are eligible for local registers. Resource-specific treatment for historical resources, unique archaeological resources, and historic properties that would be materially impaired as defined in CEQA (State CEQA Guidelines Section 15064.5[b][1]) or adversely affected, as defined in the Section 106 regulations (36 CFR 800.5[a][1]). Treatment and mitigation will include the following elements and steps. Treatment for archaeological resources qualifying as historical resources that are subject to significant effects will follow the order of preference described in State CEQA Guidelines Section 15126.4[b][3]. Treatment for unique archaeological resources subject to 		<p>cultural resources, including prehistoric and historic archaeological sites, TCPs, and built-environment resources such as historic architectural structures and rural historic landscapes. The same construction may damage unique archaeological sites. This construction will likely result in materially adverse changes for the following reasons.</p> <ul style="list-style-type: none"> Ground-disturbing construction in archaeological sites disrupts the spatial associations that contain information useful in research, thus diminishing or destroying the basis for the significance of the resource. Ground-disturbing construction may either directly demolish or indirectly affect the setting of built-environment resources, resulting in an inability of the resource to convey its significance. Ground-disturbing construction may either directly demolish or change the setting of TCPs resulting in an inability of the resource to convey its significance. Ground-disturbing construction may inadvertently disturb human remains. <p>The alteration of a resource that changes the characteristics that convey its significance is a material alteration under CEQA. The inadvertent disturbance of human remains is a significant impact under CEQA under the CEQA Guidelines Appendix G checklist. Because construction will materially alter these categories of resources and disturb human remains, it will result in a</p>	<p>Publication of the Proposed Final Environmental Impact Report, Section 5.1.1. Project Updates for discussion on additional Environmental Commitment 4 acreage impacts to cultural resources), as well as the multiple constraints associated with other environmental resources that require mitigation or avoidance, it is unlikely that all important cultural resources will be avoided. Therefore, this impact remains significant and unavoidable.</p> <p>Findings: Changes or alterations have been required in, or incorporated into, the project that substantially lessen, but do not avoid, the significant environmental effect as identified in the Final EIR/EIS. Impacts are therefore significant and unavoidable despite the adoption of feasible mitigation measures.</p> <p>(Final EIR/EIS, Chapter 18, Cultural Resources, p. 18-219)</p>

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		<p>significant effects will conform to the mitigation prescribed under CEQA (California PRC Section 21083.2[b])</p> <ul style="list-style-type: none"> • Treatment for historic properties subject to adverse effects will seek to avoid or minimize the consequences of the project that would diminish the characteristics that make the historic property eligible for inclusion in the NRHP. • Treatment plans or mitigation measures in environmental documents will include monitoring and discovery plans that provide for observation of construction to avoid inadvertent effects on previously unidentified human remains and cultural resources, to the extent feasible. • Treatment plans or mitigation measures in environmental documents will also include the notification and consultation provisions required for discoveries of human remains provided in California Health and Safety Code Section 7050.5 and California PRC Section 5097.98. • If Native American human remains are discovered on federal land, work in the immediate vicinity will cease and DWR will contact the relevant representative of the federal agency where the remains were discovered, as prescribed in 25 USC Section 3002(d) (NAGPRA). After notification from the relevant agency representative and treatment of the remains as required under NAGPRA, work may continue. Disposition of the remains will follow the ownership priority described in NAGPRA (25 USC Section 3002[a]). • For federal agency undertakings, management will be coordinated through a PA and memoranda of agreement, as described in 18.2.1.3, Compliance with Section 106 of the National Historic Preservation Act of the FINAL EIR/EIS. <p>The USFWS, NMFS, and the USACE are entering into a Programmatic Agreement with the California State Historic Preservation Officer for the implementation of NHPA Section 106 for their undertakings associated with the project. The effects of Federal undertakings (actions) on historic properties (eligible for or listed on the National Register of Historic Places) will be taken into account through the implementation of this programmatic agreement.</p> <p>(Final MMRP, pp. 2-85—2-87; see also Final EIR/EIS, Chapter 18, Cultural Resources, pp. 18-151—18-152)</p>		<p>significant impact. Mitigation Measure CUL-7 will reduce these impacts by identifying and evaluating resources, avoiding resources where possible, and developing treatment where avoidance is not possible. In addition, construction will be monitored.</p> <p>(Final EIR/EIS, Chapter 18, Cultural Resources, pp. 18-218 - 18-219)</p>	
Transportation					
TRANS-1: Increased construction vehicle trips	Significant	<u>TRANS-1a: Implement site-specific construction traffic management plan</u>	Significant and	Construction under Alternative 4A will add hourly traffic volumes to study area	Mitigation Measures TRANS-1a through TRANS-1c will reduce the severity of this

Alternative 4A Potential Impact	Impact Conclusions Before Mitigation-CEQA	Adopted Mitigation Measures	Impact Conclusion After Mitigation-CEQA	Discussion	Findings of Fact
resulting in unacceptable level of service conditions (Final EIR/EIS, Chapter 19, Transportation, pp. 19-357 - 19-358)		<p>Prior to construction, DWR will be responsible for project management and shall contract with one or more construction management firms to assist in ensuring that construction contractors' crews and schedules are coordinated and that the plans and specifications are being followed. DWR will also ensure development of site-specific construction traffic management plans (TMPs) that address the specific steps to be taken before, during, and after construction to minimize traffic impacts, including the mitigation measures and environmental commitments identified in this EIR/EIS. This will include potential expansion of the study area identified in this EIR/EIS to capture all potentially significantly affected roadway segments.</p> <p>DWR will be responsible for developing the TMPs in coordination with the applicable jurisdictions, including the following.</p> <ul style="list-style-type: none">• Caltrans for state and federal facilities;• local agencies for local roads, including emergency responders;• transit providers;• rail operators;• the U.S. Coast Guard;• city and county parks departments; and• the California Department of Parks and Recreation (DPR) <p>DWR will also ensure that the TMPs are implemented prior to beginning construction at a site, including in-water construction sites. If necessary to minimize unexpected operational impacts or delays experienced during real-time construction, DWR will also be responsible for modifying the traffic management plan to reduce these effects. With the goal of minimizing construction traffic related effects on wildlife and in light of local community traffic interests, DWR will facilitate discussions in the development of the TMP to address methods for minimizing truck traffic impacts in ways that do not create local traffic hazards. Each TMP will address the following, as needed and appropriate after coordination with the entities listed above. Implementation of this measure will ensure operational traffic impacts and delays experienced during construction will be minimized to the greatest extent feasible.</p> <ul style="list-style-type: none">• Signage warning of roadway surface conditions such as loose gravel, steel plates or similar conditions that could be hazardous to road cycling activity on roadways open to bicycle traffic.	Unavoidable	roadways that will exceed acceptable LOS thresholds. This is considered a significant impact. (Final EIR/EIS, Chapter 19, Transportation, pp. 19-357 - 19-358)	<p>impact, but not to less than significant levels. DWR cannot ensure that required roadway capacity improvements outlined under TRANS-1c will be fully funded or constructed prior to the project's contribution to the impact. If an improvement identified in the mitigation agreement(s) contemplated by Mitigation Measure TRANS-1c is not fully funded and constructed before the project's contribution to the impact is made, a significant impact in the form of unacceptable LOS would occur. This impact would be significant and unavoidable. If, however, all improvements required to avoid significant impacts prove to be feasible and any necessary agreements are completed before the project's contribution to the effect is made, impacts would be less than significant.</p> <p>Findings: Changes or alternations have been required in, or incorporated into, the project that, if fully implemented, will avoid the significant environmental effect as identified in the Final EIR/EIS. Because full implementation would require actions by third party agencies that DWR cannot control, DWR conservatively considers the impact to be significant and unavoidable. DWR finds that such third party agencies can and should participate. If such third party agencies do ultimately fully participate in implementing the measure, the significant environmental effect would be mitigated to a less than significant level.</p> <p>(Final EIR/EIS, Chapter 19, Transportation, p. 19-358)</p>

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		<ul style="list-style-type: none">• Signage and barricades to be used around the work sites.• In-water work areas will be indicated by buoys, signage, or other effective means to warn boaters of their presence and restrict access. Warning devices and signage (e.g., “boats keep out” or “no wake zone” labeled buoys) will be in compliance with the U.S. Coast Guard Private Aid to Navigation requirements (U.S. Coast Guard 2012) and effective during non-daylight hours and periods of dense fog.• Use of flag people or temporary traffic signals/signage as necessary to slow or detour traffic.• Notifications for the public, emergency providers, cycling organizations, bike shops, and schools, the U.S. Coast Guard, boating organizations, marinas, city and county parks departments, and DPR, where applicable, describing construction activities that could affect transportation and water navigation.• Outreach (via public meetings and/or flyers and other advertisements)• Procedures for construction area evacuation in the case of an emergency declared by county or other local authorities.• Alternate access routes via detours and bridges to maintain continual circulation for local travelers in and around construction zones, including bicycle riders, pedestrians, and boaters, where applicable.• Description of construction staging areas, material delivery routes, and specification of construction vehicle travel hour limits.• Notifications to commercial and leisure boating community of proposed barge operations in the waterways, including posting notices at Delta marinas and public launch ramps. This information will provide details regarding construction site location(s), construction schedules, and identification of no-wake zone, speed restricted zones, and/or detours, where applicable.• No-wake zone and speed-restrictions will be established as part of development of the site-specific plans and will be determined to protect the safety of construction workers and recreationists.• Designation of areas where nighttime construction will occur.• To the extent feasible, position construction lighting to reduce glare to nighttime drivers.• Plans to relocate school bus drop-off and pick-up locations if they will be affected during construction.			

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		<ul style="list-style-type: none">• Scheduling for oversized material deliveries to the work site and haul routes.• Provisions that direct haulers are to pull over in the event of an emergency. If an emergency vehicle is approaching on a narrow two-way roadway, specify measures to ensure that appropriate maneuvers will be conducted by the construction vehicles to allow continual access for the emergency vehicles at the time of an emergency.• Control for any temporary road closure, detour, or other disruption to traffic circulation, including any temporary partial water channel closures.• Designated offsite vehicle staging and parking areas.• Posted information for contact in case of emergency or complaint.• Daily construction time windows during which construction is restricted or rail operations would need to be suspended for any activity within railroad rights of way.• Coordination with rail providers (BNSF Railway, Amtrak, and UPRR) to develop alternative interim transportation modes (e.g., trucks or buses) that could be used to provide freight and/or passenger service during any longer term railroad closures.• Coordination with transit providers (SCT, Tri-Delta, Rio Vista, and Greyhound Bus Lines) to develop daily construction time windows during which transit operations would not be either detoured or significantly slowed.• Routinely post information to the 511.org website regarding construction delays and detours.• Other actions to be identified and developed as may be needed by the construction manager/ resident engineer to ensure that temporary impacts on transportation facilities are minimized.• For construction-related traffic implement maximum 45 mph speed limit on Hood Franklin Road west of Interstate 5. Include signage: "Caution: entering sensitive wildlife area."• Further reduce speed limit in both directions to 35 mph for construction-related vehicles from ½ mile west of Interstate 5 to 1 mile west of Interstate 5. Add sign at Visitor Center entrance stating that facilities are for SLNWR visitors only.• Add a right hand turn lane on Hood Franklin Road at the entrance of the Stone Lakes Visitor Center.• For construction-related traffic, reduce speed limit to 35 mph on Lambert Road from 1 ½ miles west of Interstate 5 to 2 ¼ miles west of Interstate 5. Include signage: "Caution:			

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		<p>entering sensitive wildlife area.”</p> <ul style="list-style-type: none">• In consultation with Caltrans and local transportation agencies, schedule construction traffic to minimize impacts to local community events (e.g., Pear Fair, holidays).• Schedule construction traffic to minimize impacts to agricultural transportation operations between agricultural areas and processing or marketing facilities during harvest season. <p>As additional mitigation to minimize delays to transit vehicles due to projected traffic congestion and to encourage use of alternative modes of travel, including transit, DWR is required to develop a Transportation Demand Management (TDM) program for construction contractor’s crews to reduce the number of project trips. The program shall include and implement any combination of measures that would reduce the project’s trips and associated parking demand. The measures include:</p> <ul style="list-style-type: none">• Promote ride sharing programs by methods that may include designating a certain percentage of parking spaces for ride sharing vehicles, designating adequate passenger loading and unloading and waiting areas for ride sharing vehicles.• Provide public transit incentives such as fully-subsidized or low-cost monthly transit passes.• Provide shuttle service and/or funding for a shuttle for residents that are outside of walking distance from a transit line.• Offering a parking cash out program.• The plan also includes more passive measures to further reduce trips:• Addition of pedestrian and bicycle facilities;• Provision of carpool/vanpool/ride-matching services;• Provision of transportation information for contractors;• Provision of a transportation information center. <p>(Final MMRP, pp. 2-87—2-91; see also Final EIR/EIS, Chapter 19, Transportation, pp. 19-218—19-221)</p> <p><u>TRANS-1b: Limit hours or amount of construction activity on congested roadway segments</u></p> <p>Where feasible, DWR would limit construction activity to fit within available reserve capacity or shift construction activity to hours with more reserve capacity so as to achieve acceptable LOS conditions</p>			

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		<p>based on roadway location (Chapter 19, Transportation, Table 19-9, of the FINAL EIR/EIS). Feasibility will be based on factors like reserve capacity on roadways, timing of deliveries and staging of construction.</p> <p>Potential mitigation measure would be to minimize construction traffic activity during typical morning and evening commute time periods This can be accomplished through a combination of scheduling and routing requirements.</p> <p>DWR will include in the bid specifications a requirement that the contractor submit a proposal for a process for determining when the hours of construction can feasibly be limited to avoid operational deficiencies on identified roadway segments as specified in Table 19-9 of the FINAL EIR/EIS. DWR will ensure that this process is adhered to throughout the project construction period.</p> <p>(Final MMRP, pp. 2-91—2-92; see also Final EIR/EIS, Chapter 19, Transportation, p. 19-221)</p> <p><u>TRANS-1c: Make good faith efforts to enter into mitigation agreements to enhance capacity of congested roadway segments</u></p> <p>Prior to commencement of construction activities substantially affecting transportation facilities, DWR will make a good faith effort to enter into mitigation agreements with affected state, regional, or local agencies (“affected agencies”) to verify the location, extent, timing, and fair share cost to be paid for reducing congestion to the identified roadway segments specified in Table 19-9 of the FINAL EIR/EIS.</p> <p>Implementation of this measure is intended to provide funding from DWR sufficient to provide its fair share of the cost of reducing congestion so that traffic operating conditions (i.e., LOS) on study area roadways do not operate at a level of service or delay that is worse than the pre-project conditions (to the extent feasible in light of costs, logistics, and other factors). DWR will include in the bid specifications requirements that the contractor(s) ensure that all enhancements are conducted in compliance with applicable standards of affected agencies and with any applicable mitigation agreements, as described below.</p> <p>In attempting in good faith to enter into mitigation agreements with affected agencies, DWR will be guided by the following principles. DWR will be responsible for their fair share costs of all feasible</p>			

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		<p>temporary congestion reducing programs and improvements jointly determined by DWR and the affected agencies to be necessary, feasible, and available to reduce the severity of the project’s temporary significant construction-related transportation impacts. Fair share calculations will account not only for traffic levels as they existed at the time of the public release of the Draft EIR/EIS, but also for “background growth” between that time frame and the commencement of construction activities, as well as any probable future projects in the affected agency or neighboring agencies that will likely contribute to the need for, and directly benefit from, temporary congestion reduction.</p> <p>The DWR’s contribution toward such improvements shall take any, or some combination, of the following forms:</p> <ol style="list-style-type: none">1. Construction of improvements, which may be subject to fee credits and/or reimbursement, coordinated by the affected agency, from other fee-paying development projects if available with respect to improvements that would also benefit such fee-paying development projects;2. The payment of impact fees to the affected agency in amounts that constitute DWR’s fair share contributions to the construction of the required improvements, consistent with the affected agency’s Capital Improvement Program (“CIP”) or other funding program that meets the definition of a “reasonable plan for mitigation” under CEQA case law (i.e., a plan that ensures that (i) the fees collected from DWR will be used for their intended purposes, and (ii) the improvements will actually be built within a reasonable period of time);3. The payment of adopted regional impact fees that would provide funding for transportation facilities that are affected by multiple agencies, except where DWR’s payments of other fees or construction of improvements within the affected agency will create credit against the payment of regional impact fees;4. The payment of impact fees to the affected agency in amounts that constitute DWR’s fair share contributions to the construction of improvements within other agencies and not the affected agency, which payments to the affected agency and transmittal of fees to other agency would occur through one or more enforceable agreements, provided that for each required improvement there is a reasonable plan for mitigation that ensures that (i) the fees collected from DWR will be used for their intended			

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		<p>purposes, and (ii) the improvements will actually be built within a reasonable period of time; and/or</p> <p>5. The payment of impact fees to the Caltrans in amounts that constitute DWR's fair share contributions to the construction of improvements on federal or state highways or freeways needed in part because of the project, to be made available to Caltrans if and when Caltrans, DWR, and any other the affected agency enter into an enforceable agreement consistent with state law, provided that, for each required improvement, Caltrans has a reasonable mitigation plan that ensures that (i) the fees collected from DWR will be used for their intended purposes, and (ii) the improvements will actually be built within a reasonable period of time.</p> <p>In order to obtain the most fair, accurate, and up-to-date calculations of DWR's fair share of the costs of required improvements, the agreement(s) reached between DWR and the affected agency or agencies will also provide for the following: (i) that the traffic models to be used be mutually acceptable to both DWR and the affected agency or agencies; and (ii) that the calculations account for (A) newly approved projects cumulatively that contribute to transportation-related impacts and that therefore should contribute to the funding of necessary improvements, and (B) up-to-date cost calculations for the construction of needed improvements based on recent changes in the costs of materials, labor, and other inputs.</p> <p>(Final MMRP, pp. 2-93—2-94; see also Final EIR/EIS, Chapter 19, Transportation, pp. 19-221—19-223)</p>			
<p>TRANS-2: Increased construction vehicle trips exacerbating unacceptable pavement conditions</p> <p>(Final EIR/EIS, Chapter 19, Transportation, pp.19-358—19-359)</p>	Significant	<p><u>TRANS-2a: Prohibit construction activity on physically deficient roadway segments</u></p> <p>DWR will include in the bid specifications prohibitions against construction traffic from using roadway segments with pavement conditions below the thresholds identified in this study [i.e., an International Roughness Index (IRI) rating greater than 170 or a Pavement Condition Index (PCI) rating worse than 55], to the extent feasible. Implementation of this measure would prohibit all construction traffic on the 46 of the 116 roadway segments that were determined to be physically deficient as listed in Table 19-26 of the FINAL EIR/EIS, if feasible. Implementation of Trans-2a would require routing of construction traffic to use the remaining 70 roadway segments that meet pavement conditions thresholds. It should be noted that this may require construction traffic to make circuitous travel routes and/or be unable to access project construction sites.</p>	Significant and Unavoidable	<p>Construction under Alternative 4A will add traffic trips to study area roadways that will exacerbate unacceptable pavement conditions. This will be a significant impact.</p> <p>(Final EIR/EIS, Chapter 19, Transportation, pp.19-358—19-359)</p>	<p>Mitigation Measures TRANS-2a through TRANS-2c will reduce the severity of this impact, but not necessarily to a less than significant level, as DWR cannot ensure that the agreements or encroachment permits will be obtained from the relevant transportation agencies. If an agreement or encroachment permit is not obtained, a significant impact in the form of deficient pavement conditions will occur. This impact would be significant and unavoidable. If, however, mitigation agreement(s) or encroachment permit(s) providing for the improvement or replacement of pavement are obtained and any other necessary agreements are completed, impacts will be reduced to a less than significant level.</p>

Alternative 4A Potential Impact	Impact Conclusions Before Mitigation-CEQA	Adopted Mitigation Measures	Impact Conclusion After Mitigation-CEQA	Discussion	Findings of Fact
		<p>Therefore, in the event that TRANS-2a is not feasible, TRANS-2b will be implemented. Implementation of Trans-2b would require limiting the total number and/or weight of construction traffic using the 46 roadway segments that do not meet pavement conditions thresholds.</p> <p>(Final MMRP, pp. 2-94; see also Final EIR/EIS, Chapter 19, Transportation, pp. 19-229)</p> <p><u>TRANS-2b: Limit construction activity on physically deficient roadway segments</u></p> <p>If complete avoidance of physically deficient roadway segments as described in Mitigation Measure TRANS-2a is not feasible, construction activity will be limited to the extent possible on the deficient roadways identified in Table 19-26 of the FINAL EIR/EIS. Implementation of Trans-2b would require limiting the total number and/or weight of construction traffic using the 46 roadway segments that do not meet pavement conditions thresholds. Implementation of TRANS-2b will reduce continuing deterioration of pavement conditions on the most damaged roadways in the study area. DWR will include in the bid specifications requirements that limit the amount of construction traffic on roadway segments with pavement conditions below the thresholds identified in this study (i.e., an IRI rating greater than 170 or a PCI rating worse than 55), if feasible. If use of physically deficient roadways cannot be avoided or limited as specified in Mitigation Measures TRANS-2a and TRANS-2b, Mitigation Measure 2c will be implemented. Trucks would be prohibited and construction traffic would be limited to passenger vehicles on travel routes with pavement conditions worse than the thresholds identified in this study (i.e., an IRI rating greater than 170 or a PCI rating worse than 55).</p> <p>(Final MMRP, pp. 2-95; see also Final EIR/EIS, Chapter 19, Transportation, pp. 19-229—19-230)</p> <p><u>TRANS-2c: Improve physical condition of affected roadway segments as stipulated in mitigation agreements or encroachment permits</u></p> <p>If use of physically deficient roadways cannot be avoided or limited as specified in Mitigation Measures TRANS-2a and TRANS-2b, it may be necessary to improve the deficient roadways identified in Table 219-26 of the FINAL EIR/EIS or make other necessary infrastructure</p>			<p>Findings: Changes or alternations have been required in, or incorporated into, the project that, if fully implemented, will avoid the significant environmental effect as identified in the Final EIR/EIS. Because full implementation will require actions by third party agencies that DWR cannot control, DWR conservatively considers the impact to be significant and unavoidable. DWR finds that such third party agencies can and should participate. If such third party agencies do ultimately fully participate in implementing the measure, the significant environmental effect will be mitigated to a less than significant level.</p> <p>(Final EIR/EIS, Chapter 19, Transportation, p. 19-359)</p>

Alternative 4A Potential Impact	Impact Conclusions Before Mitigation-CEQA	Adopted Mitigation Measures	Impact Conclusion After Mitigation-CEQA	Discussion	Findings of Fact
		<p>improvements, if any, before construction to make them suitable for use during construction. Additionally, all affected roadways would be returned to preconstruction condition or better following construction. Implementation of this measure will ensure that construction activities will not worsen pavement or levee conditions, relative to Existing Conditions.</p> <p>Prior to construction, DWR will make a good faith effort to enter into mitigation agreements with or to obtain encroachment permits from affected agencies to verify what the location, extent, timing, and fair share cost to be paid by DWR for any necessary pre- and post-construction physical improvements. The fair share amount would be either the cost to return the affected roadway segment to its preconstruction condition or a contribution to programmed planned improvements. Repairs may be preventive or rehabilitative and occur before or after construction and may include overlays, other surface treatments, or roadway reconstruction. The flood protection benefits of roadways will also be considered in developing and implementing activities pursuant to this measure.</p> <p>Pre-construction analyses of existing pavement conditions will be conducted just prior to starting construction for any proposed construction traffic travel routes. The preconstruction pavement analysis will establish the baseline for required improvements and will be based on the PCI or IRI methodologies described in this EIR/EIS or an equivalent method as agreed to by DWR and the affected agencies. Relevant flood protection agencies will also be consulted during the design of roadway improvements.</p> <p>DWR will include in the bid specifications stipulations that require the contractor(s) to conduct the pre-construction pavement analysis and conduct all improvements in compliance with applicable standards of affected agencies, as stipulated in the mitigation agreements or encroachment permits.</p> <p>Monitoring programs needed during construction will be evaluated during design. Construction contracts will include prescriptive specification requirements for monitoring levees to ensure that structural integrity and flood protection capacity are maintained. These requirements will be consistent with common industry standards such as those found in Chapter 9, Geology and Seismicity, Section 9.2</p> <p>It is not anticipated that project construction could cause the need for major transportation infrastructure improvements, such as the need to upgrade or repair existing bridges or the need to construct</p>			

Alternative 4A Potential Impact	Impact Conclusions Before Mitigation-CEQA	Adopted Mitigation Measures	Impact Conclusion After Mitigation-CEQA	Discussion	Findings of Fact
		<p>new highway interchanges. To the extent that construction activities could cause the need for such major transportation infrastructure improvements, DWR retain the flexibility to seek alternative means of transporting people, equipment, and materials to construction sites, such as via barges, to avoid the need for such major infrastructure improvements, if any.</p> <p>(Final MMRP, pp. 2-96—2-97; see also Final EIR/EIS, Chapter 19, Transportation, p. 19-230)</p>			
<p>TRANS-3: Increase in safety hazards, including interference with emergency routes during construction</p> <p>(Final EIR/EIS, Chapter 19, Transportation, pp. 19-359—19-360)</p>	Significant	<p><u>TRANS-1c: Make good faith efforts to enter into mitigation agreements to enhance capacity of congested roadway segments</u></p> <p>See Impact TRANS-1, above, for full mitigation measure. (Final MMRP, pp. 2-92—2-94; see also Final EIR/EIS, Chapter 19, Transportation, pp. 19-221—19-223)</p>	Significant and Unavoidable	<p>Construction of Alternative 4A will increase the amount of trucks using the transportation system in the study area, which will increase the potential for safety hazards, including conflicts with farming operations, emergency services, and recreational and commuter traffic. Minor delays and congestion created by rerouted traffic during the temporary realignment of Byron Highway/South Pacific Railroad could also create localized interferences with emergency service response times in the vicinity of Bryon Highway. This will be a significant impact.</p> <p>Mitigation Measure TRANS-1c will reduce the severity of this impact, but because DWR cannot ensure that the improvements will be fully funded or constructed prior to the project’s contribution to the impact, the impact is considered significant and unavoidable.</p> <p>(Final EIR/EIS, Chapter 19, Transportation, pp. 19-359—19-360)</p>	<p>Mitigation Measure TRANS-1c will reduce the severity of this impact. If an improvement identified in the mitigation agreement(s) is not fully funded and constructed before the project’s contribution to the impact is made, a significant impact in the form of increased safety hazards will occur. If, however, all improvements required to avoid significant impacts prove to be feasible and any necessary agreements are completed before the project’s contribution to the effect is made, impacts will be less than significant.</p> <p>Findings: Changes or alternations have been required in, or incorporated into, the project that, if fully implemented, will avoid the significant environmental effect as identified in the Final EIR/EIS. Because full implementation will require actions by third party agencies that DWR cannot control, DWR conservatively considers the impact to be significant and unavoidable. The lead agency finds that such third party agencies can and should participate. If such third party agencies do ultimately fully participate in implementing the measure, the significant environmental effect will be mitigated to a less than significant level.</p> <p>(Final EIR/EIS, Chapter 19, Transportation, p. 19-360)</p>
TRANS-6: Disruption of transit service during construction	Significant	<u>TRANS-1a: Implement site-specific construction traffic management plan</u>	Significant and	Construction activities associated with Alternative 4A will increase LOS below	Measures TRANS-1a through TRANS-1c are available to reduce this impact. If an

Alternative 4A Potential Impact	Impact Conclusions Before Mitigation-CEQA	Adopted Mitigation Measures	Impact Conclusion After Mitigation-CEQA	Discussion	Findings of Fact
(Final EIR/EIS, Chapter 19, Transportation, pp. 19-361—19-362)		<p>See Impact TRANS-1, above, for full mitigation measure.</p> <p>(Final MMRP, pp. 2-87—2-91; see also Final EIR/EIS, Chapter 19, Transportation, pp. 19-218—19-221)</p> <p><u>TRANS-1b: Limit hours or amount of construction activity on congested roadway segments</u></p> <p>See Impact TRANS-1, above, for full mitigation measure.</p> <p>(Final MMRP, pp. 2-91—2-92; see also Final EIR/EIS, Chapter 19, Transportation, p. 19-221)</p> <p><u>TRANS-1c: Make good faith efforts to enter into mitigation agreements to enhance capacity of congested roadway segments</u></p> <p>See Impact TRANS-1, above, for full mitigation measure.</p> <p>(Final MMRP, pp. 2-92—2-94; see also Final EIR/EIS, Chapter 19, Transportation, pp. 19-221—19-223)</p>	Unavoidable	<p>applicable thresholds, as well as exacerbate already unacceptable LOS conditions. Increased congestion resulting from construction traffic will result in a significant impact on transit routes and schedules, particularly along the SCT Link/Delta Route and Greyhound bus lines. Mitigation Measures TRANS-1a through TRANS-1c are available to reduce this impact, but because DWR is not solely responsible for the timing, nature, or complete funding of required improvements, the impact is considered significant and unavoidable.</p> <p>(Final EIR/EIS, Chapter 19, Transportation, p. 19-361—19-362)</p>	<p>improvement identified in the mitigation agreement(s) is not fully funded and constructed before the project's contribution to the effect is made, a significant and unavoidable impact in the form of disruptions to transit service will occur. If, however, all improvements required to avoid adverse effects prove to be feasible and any necessary agreements are completed before the project's contribution to the impact is made, impacts will be less than significant.</p> <p>Findings: Changes or alternations have been required in, or incorporated into, the project that, if fully implemented, will avoid the significant environmental effect as identified in the final EIR. Because full implementation will require actions by third party agencies that DWR cannot control, DWR conservatively considers the impact to be significant and unavoidable. DWR finds that such third party agencies can and should participate. If such third party agencies do ultimately fully participate in implementing the measure, the significant environmental effect will be mitigated to a less than significant level.</p> <p>(Final EIR/EIS, Chapter 19, Transportation, pp. 19-361—19-362)</p>
<p>TRANS-10: Increased traffic volumes during implementation of Environmental Commitments 3, 4, 6–12, 15, and 16</p> <p>(Final EIR/EIS, Chapter 19, Transportation, pp. 19-363—19-364)</p>	Significant	<p><u>TRANS-1a: Implement site-specific construction traffic management plan</u></p> <p>See Impact TRANS-1, above, for full mitigation measure.</p> <p>(Final MMRP, pp. 2-87—2-91; see also Final EIR/EIS, Chapter 19, Transportation, pp. 19-218—19-221)</p> <p><u>TRANS-1b: Limit hours or amount of construction activity on congested roadway segments</u></p> <p>See Impact TRANS-1, above, for full mitigation measure.</p> <p>(Final MMRP, pp. 2-91—2-92; see also Final EIR/EIS, Chapter 19,</p>	Significant and Unavoidable	<p>Impacts on roadways could result in circulation delays or the inability to maintain adequate vehicular access in or around restoration or enhancement work zones. Roads and highways in and around Suisun Marsh could experience increases in traffic volumes, resulting in localized congestion and conflicts with local traffic. Maintenance and monitoring of the restoration areas would also generate some vehicle trips.</p> <p>(Final EIR/EIS, Chapter 19, Transportation, pp. 19-363—19-364)</p>	<p>The impact of increased traffic volumes during implementation of Environmental Commitments 3, 4, 6–12, 15, and 16 would be significant. (See also Developments after Publication of the Proposed Final Environmental Impact Report, Section 5.1.1. Project Updates for discussion on additional Environmental Commitment 4 acreage impacts to transportation.) Mitigation Measures TRANS-1a through TRANS-1c are available to reduce the severity of this impact, but DWR cannot ensure that the improvements will be fully funded or constructed prior to the project's</p>

Alternative 4A Potential Impact	Impact Conclusions Before Mitigation-CEQA	Adopted Mitigation Measures	Impact Conclusion After Mitigation-CEQA	Discussion	Findings of Fact
		<p>Transportation, pp. 19-221)</p> <p><u>TRANS-1c: Make good faith efforts to enter into mitigation agreements to enhance capacity of congested roadway segments</u></p> <p>See Impact TRANS-1, above, for full mitigation measure.</p> <p>(Final MMRP, pp. 2-92—2-94; see also Final EIR/EIS, Chapter 19, Transportation, pp. 19-221—19-223)</p>			<p>contribution to the impact. If an improvement identified in the mitigation agreement(s) is not fully funded and constructed before the project’s contribution to the impact is made, a significant impact will occur. Therefore, the project’s impacts on roadway segment LOS will be conservatively significant and unavoidable. If, however, all improvements required to avoid significant impacts prove to be feasible and any necessary agreements are completed before the project’s contribution to the effect is made, impacts will be less than significant.</p> <p>Findings: Changes or alternations have been required in, or incorporated into, the project that, if fully implemented, would avoid the significant environmental effect as identified in the final EIR. Because full implementation would require actions by third party agencies that DWR cannot control, DWR conservatively considers the impact to be significant and unavoidable. DWR finds that such third party agencies can and should participate. If such third party agencies do ultimately fully participate in implementing the measure, the significant environmental effect would be mitigated to a less than significant level.</p> <p>(Final EIR/EIS, Chapter 19, Transportation, p. 19-364)</p>
Public Services- Utilities					
<p>UT-6: Effects on regional or local utilities as a result of constructing the proposed water conveyance facilities</p> <p>(Final EIR/EIS, Chapter 20, Public Services and Utilities, pp. 20-192—20-193)</p>	Significant	<p><u>UT-6a: Verify locations of utility infrastructure</u></p> <p>Before beginning construction, DWR will confirm utility/infrastructure locations through consultation with utility service providers, preconstruction field surveys, and services such as Underground Service Alert. The DWR will find the exact location of underground utilities by safe and acceptable means, including use of hand and modern techniques as well as customary types of equipment. Information regarding the size, color, and location of existing utilities must be confirmed before construction activities begin. DWR will confirm the specific location of all high priority</p>	Significant and Unavoidable	<p>Most project features will avoid disrupting existing facilities by crossing over or under infrastructure. However, construction of facilities would conflict with existing utility facilities in some locations. Regional power transmission lines and one natural gas pipeline would require relocation. Because the relocation and potential disruption of utility infrastructure would be required, this impact would be significant.</p>	<p>Mitigation Measures UT-6a, UT-6b, and UT-6c are available to reduce these impacts through measures that will avoid disruption of utility infrastructure. But DWR cannot ensure that all the appropriate utility providers and local agencies will coordinate efforts on other construction projects to minimize disturbance to communities. If such coordination does not occur, it will result in a significant impact in the form of disruptions to public utility service.</p>

Alternative 4A Potential Impact	Impact Conclusions Before Mitigation-CEQA	Adopted Mitigation Measures	Impact Conclusion After Mitigation-CEQA	Discussion	Findings of Fact
		<p>utilities (i.e., pipelines carrying petroleum products, oxygen, chlorine, toxic or flammable gases; natural gas in pipelines greater than 6 inches in diameter, or with normal operating measures, greater than 60 pounds per square inch gauge; and underground electric supply lines, conductors, or cables that have a potential to ground more than 300 volts that do not have effectively grounded sheaths) and such locations will be highlighted on all construction drawings.</p> <p>The contract specifications will require that the contractor provide weekly updates on planned excavation for the upcoming week and identify when construction will occur near a high priority utility. On days when this work will occur, construction managers will attend tailgate meetings with contractor staff to review all measures—those identified in the Mitigation Monitoring and Reporting Program and in the construction specifications—regarding such excavations. The contractor’s designated health and safety officer will specify a safe distance to work near high-pressure gas lines, and excavation closer to the pipeline will not be authorized until the designated health and safety officer confirms and documents in the construction records that: (1) the line was appropriately located in the field by the utility owner using as-built drawings and a pipeline-locating device, and (2) the location was verified by hand by the construction contractor. The designated health and safety officer will provide written confirmation to DWR that the line has been adequately located, and excavation will not start until this confirmation has been received by DWR.</p> <p>(Final MMRP, pp. 2-98—2-99; see also Final EIR/EIS, Chapter 20, Public Services and Utilities, pp. 20-130)</p> <p><u>UT-6b: Relocate utility infrastructure in a way that avoids or minimizes any effect on operational reliability</u></p> <p>In places where utility lines would be relocated, existing corridors will be utilized to the greatest extent possible, in the following order of priority: (1) existing utility corridors; (2) highway and railroad corridors; (3) recreation trails, with limitations; and (4) new corridors.</p> <p>New poles or towers will be erected and cable-pulled prior to being connected to existing systems. Natural gas pipeline relocation will be constructed by one of several methods including cut-and-cover, trenching, or placement on at-grade saddles. Active natural gas wells in the proposed water conveyance facilities area will be abandoned</p>		<p>However, out of 629 oil and natural gas wells in the five county area, only four to six wells may need to be moved or abandoned. The 629 wells amount to 1-6% of the county’s production, so the potential loss of 4 to 6 wells would not significantly impact utilities.</p> <p>(Final EIR/EIS, Chapter 20, Public Services and Utilities, pp. 20-192—20-193)</p>	<p>Accordingly, this impact is considered significant and unavoidable. If, however, coordination with all appropriate utility providers and local agencies to integrate with other construction projects and minimize disturbance to communities is successful under Mitigation Measure UT-6b, the impact will be less-than-significant.</p> <p>Findings: Changes or alternations have been required in, or incorporated into, the project that, if fully implemented, would avoid the significant environmental effect as identified in the final EIR. Because full implementation would require actions by third party agencies that DWR cannot control, DWR conservatively considers the impact to be significant and unavoidable. DWR finds that such third party agencies can and should participate. If such third party agencies do ultimately fully participate in implementing the measure, the significant environmental impact would be mitigated to a less than significant level.</p> <p>(Final EIR/EIS, Chapter 20, Public Services and Utilities, p. 20-193)</p>

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		<p>to a depth below the tunnel.</p> <p>Decisions regarding agricultural irrigation and drainage ditches will be made based on site-specific conditions. Planned measures shall include one or more of the following.</p> <ul style="list-style-type: none"> • New or modified irrigation pumping plants. • Extended delivery pipes. • New or modified drainage ditches. • New or modified drainage pumping plants. <p>Any utility relocation will be coordinated with all appropriate utility providers and local agencies to integrate with other construction projects and minimize disturbance to communities, as required by California Water Code §11590. DWR will notify the public in advance of any relocation that is anticipated to disrupt utility service. DWR will contact utility owners if construction causes any damage and promptly reconnect disconnected cables and lines with approval of the owners.</p> <p>(Final MMRP, pp. 2-100 - 2-101; see also Final EIR/EIS, Chapter 20, Public Services and Utilities, pp. 20-130—20-131)</p> <p><u>UT-6c: Relocate utility infrastructure in a way that avoids or minimizes any effect on worker and public health and safety</u></p> <p>While any excavation is open, DWR will protect, support, or remove underground utilities as necessary to safeguard employees. DWR and/or construction contractors will notify local fire departments if a gas utility is damaged causing a leak or suspected leak, or if damage to a utility results in a threat to public safety.</p> <p>(Final MMRP, p. 2-101; see also Final EIR/EIS, Chapter 20, Public Services and Utilities, pp. 20-131)</p>			
<p>UT-8: Effects on public services and utilities as a result of implementing the proposed Environmental Commitments 3, 4, 6–12, 15, and 16</p> <p>(Final EIR/EIS, Chapter 20, Public Services and Utilities, pp. 20-194—20-197)</p>	Significant	<p><u>UT-6a: Verify locations of utility infrastructure</u></p> <p>See Impact UT-6, above, for full mitigation measure.</p> <p>(Final MMRP, pp. 2-98—2-99; see also Final EIR/EIS, Chapter 20, Public Services and Utilities, pp. 20-130)</p> <p><u>UT-6b: Relocate utility infrastructure in a way that avoids or minimizes any effect on operational reliability</u></p>	Significant and Unavoidable	Significant impacts will occur if implementation of the Environmental Commitments results in the need for the provision of, or the need for, new or physically altered government facilities from the increased need for public services; construction of new water and wastewater treatment facilities or generate a need for new water supply entitlements; generate solid waste in	Implementation of the Environmental Commitments under Alternative 4A is not likely to require alteration or construction of new government facilities due to increased need for public services and utilities. Several measures to reduce stressors on covered species could result in water supply requirements, but are not expected to require substantial increases in demand on municipal water and

Alternative 4A Potential Impact	Impact Conclusions Before Mitigation-CEQA	Adopted Mitigation Measures	Impact Conclusion After Mitigation-CEQA	Discussion	Findings of Fact
		<p>See Impact UT-6, above, for full mitigation measure.</p> <p>(Final MMRP, pp.2-100 - 2-101; see also Final EIR/EIS, Chapter 20, Public Services and Utilities, pp. 20-130—20-131)</p> <p><u>UT-6c: Relocate utility infrastructure in a way that avoids or minimizes any effect on worker and public health and safety</u></p> <p>See Impact UT-6, above, for full mitigation measure.</p> <p>(Final MMRP, p. 2-101; see also Final EIR/EIS, Chapter 20, Public Services and Utilities, pp. 20-131)</p>		<p>excess of permitted landfill capacity; or result in the disruption or relocation of utilities.</p> <p>(Final EIR/EIS, Chapter 20, Public Services and Utilities, pp. 20-194—20-197)</p>	<p>wastewater treatment services. Construction and operation activities associated with the Environmental Commitments will result in a less-than-significant impact on solid waste management facilities based on the capacity of the landfills in the region, and the waste diversion requirements set forth by the State of California.</p> <p>Potential impacts of implementing conservation components on law enforcement, fire protection, and emergency response services within the ROAs will be less-than-significant with the incorporation of environmental commitments into this alternative and will minimize construction-related accidents associated with hazardous materials spills, contamination, and fires that may result from implementation of the Environmental Commitments (Appendix 3B, Environmental Commitments, AMMs, and CMs).</p> <p>The need for new or expanded water facilities and the potential to disrupt utilities in the study area as a result of construction of operation of conservation and other stressor reductions is unknown at this time, nor have construction and operational details been settled upon. However, because the habitat restoration and enhancement activities consist of restoration consistent with open space, the need for new or expanded wastewater treatment facilities is unlikely. While Mitigation Measures UT-6a, UT-6b, and UT-6c will reduce the significance of impacts on utilities; it is uncertain whether these mitigations will reduce this impact in every case. Therefore, this impact is considered significant and unavoidable.</p> <p>Findings: Changes or alterations have been required in, or incorporated into, the project that substantially lessen, but do not avoid, the significant environmental effect</p>

Alternative 4A Potential Impact	Impact Conclusions Before Mitigation-CEQA	Adopted Mitigation Measures	Impact Conclusion After Mitigation-CEQA	Discussion	Findings of Fact
					as identified in the Final EIR/EIS. Impacts are therefore significant and unavoidable despite the adoption of feasible mitigation measures. (Final EIR/EIS, Chapter 20, Public Services and Utilities, pp. 20-194—20-197)
Air Resources					
AQ-23: Generation of cumulative greenhouse gas emissions from increased CVP pumping as a result of implementation of water conveyance facility (Final EIR/EIS, Chapter 22, Air Quality and Greenhouse Gases, pp. 22-519—22-520)	Significant	No feasible mitigation to address this impact	Significant and Unavoidable	Operation of the CVP is a federal activity beyond the control of any State agency such as DWR, and the power purchases by private entities or public utilities in the private marketplace necessitated by a reduction in available CVP-generated hydroelectric power are beyond the control of the State, just as they are beyond the control of Reclamation. (Final EIR/EIS, Chapter 22, Air Quality and Greenhouse Gases, pp. 22-519—22-520)	There are no feasible mitigation measures that will reduce this potentially significant indirect impact, which is solely attributable to operations of the CVP and not the SWP, to a less-than-significant level. This impact is therefore determined to be significant and unavoidable. Findings: Impacts are significant and unavoidable and no feasible mitigation measures have been identified. (Final EIR/EIS, Chapter 22, Air Quality and Greenhouse Gases, pp. 22-519—22-520)
AQ-24: Generation of regional criteria pollutants from implementation of Environmental Commitments 3, 4, 6–11 (Final EIR/EIS, Chapter 22, Air Quality and Greenhouse Gases, p. 22-520)	Significant	<u>AQ-24: Develop an Air Quality Mitigation Plan (AQMP) to ensure air district regulations and recommended mitigation are incorporated into future environmental commitments and associated project activities</u> DWR will develop an Air Quality Mitigation Plan (AQMP) prior to the commencement of any construction, operational, or other physical activities associated with Environmental Commitments 3, 4, and 6-11 that would involve adverse effects to air quality. The AQMP will be incorporated into the project design for all project activities. DWR will ensure that the following measures are implemented to reduce local and regional air quality impacts. Not all measures listed below may be feasible or applicable to each Environmental Commitment. Rather, these measures serve as an overlying mitigation framework to be used for specific environmental commitments. The applicability of measures listed below may also vary based on the lead agency, location, timing, available technology, and nature of each environmental commitments. <ul style="list-style-type: none"> Implement basic and enhanced dust control measures recommended by local air districts in the project-area. Applicable control measures may include, but are not limited 	Significant and Unavoidable	Construction and operational emissions associated with the Environmental Commitments would result in a significant impact if the incremental difference, or increase, relative to Existing Conditions exceeds the applicable local air district thresholds. (Final EIR/EIS, Chapter 22, Air Quality and Greenhouse Gases, p. 22-520)	Mitigation Measure AQ-24 would be available to reduce this effect, but may not be sufficient to reduce emissions below applicable air quality management district thresholds. (See also Developments after Publication of the Proposed Final Environmental Impact Report, Section 5.1.1. Project Updates for discussion on additional Environmental Commitment 4 acreage impacts to air quality.) Consequently, this impact will be significant and unavoidable. Findings: Changes or alterations have been required in, or incorporated into, the project that substantially lessen, but do not avoid, the significant environmental effect as identified in the Final EIR/EIS. Impacts are therefore significant and unavoidable despite the adoption of feasible mitigation measures. (Final EIR/EIS, Chapter 22, Air Quality and Greenhouse Gases, p. 22-520)

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		<p>to, watering exposed surfaces, suspended project activities during high winds, and planting vegetation cover in disturbed areas.</p> <ul style="list-style-type: none"> Require construction equipment be kept in proper working condition according to manufacturer’s specifications. Ensure emissions from all off-road diesel-powered equipment used to construct the project do not exceed applicable air district rules and regulations (e.g., nuisance rules, opacity restrictions). Reduce idling time by either shutting equipment off when not in use or limiting the time of idling to less than required by the current statewide idling restriction. Reduce criteria pollutant exhaust emissions by requiring the latest emissions control technologies. Applicable control measures may include, but are not limited to, engine retrofits, alternative fuels, electrification, and add-on technologies (e.g., DPF). Undertake in good faith an effort to enter into a development mitigation contract with the local air district to offset criteria pollutant emissions below applicable air district thresholds through the payment of mitigation fees. <p>Implementation of this measure will reduce criteria pollutant emissions generated by construction, operational, or other physical activities associated with Environmental Commitments 3, 4, and 6-11. The applicability of measures listed above may vary based on the lead agency, location, timing, available technology, and nature of each conservation measure. If the above measures do not contribute to emissions reductions, guidelines will be developed to ensure that criteria pollutants generated during construction and project operations are reduced to the maximum extent practicable.</p> <p>(Final MMRP, pp. 2-124—2-125; see also Final EIR/EIS, Chapter 22, Air Quality and Greenhouse Gases, pp. 22-332—22-333)</p>			
<p>AQ-27: Generation of cumulative greenhouse gas emissions from implementation of Environmental Commitments 3, 4, 6–11</p> <p>(Final EIR/EIS, Chapter 22, Air Quality and Greenhouse Gases, pp.22-522—22-523)</p>	Significant	<p><u>AQ-24: Develop an Air Quality Mitigation Plan (AQMP) to ensure air district regulations and recommended mitigation are incorporated into future environmental commitments and associated project activities</u></p> <p>See Impact AQ-24, above, for full mitigation measure.</p> <p>(Final MMRP p. 2-124 – 2-125; see also Final EIR/EIS, Chapter 22, Air Quality and Greenhouse Gases, p. 22-332—22-333)</p>	Significant and Unavoidable	<p>The Environmental Commitments under Alternative 4A will result in a significant impact if activities are inconsistent with applicable GHG reduction plans, do not contribute to a lower carbon future, or generate excessive emissions, relative to other projects throughout the state.</p> <p>(Final EIR/EIS, Chapter 22, Air Quality</p>	<p>Mitigation Measures AQ-24 and AQ-27 will be available to reduce this impact, but may not be sufficient to reduce to a less-than-significant level. (See also Developments after Publication of the Proposed Final Environmental Impact Report, Section 5.1.1. Project Updates for discussion on additional Environmental Commitment 4 acreage impacts to air quality.) Consequently, this</p>

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		<p><u>AQ-27 Prepare a land use sequestration analysis to quantify and mitigate (as needed) GHG flux associated with environmental commitments and associated project activities</u></p> <p>DWR will prepare a land use sequestration analysis to evaluate GHG flux associated with implementation of Environmental Commitments 3, 4, and 6-11. The land use analysis will evaluate the one-time carbon storage loss associated with vegetation removal, soil carbon content, and existing and future with project GHG flux. In the event that the land use analysis demonstrates a net positive GHG flux, feasible strategies to reduce GHG emissions will be undertaken. To the extent feasible, mitigation will require project design changes so that land uses that serve as carbon sinks (i.e., result in net decreases in carbon) are not replaced with other uses that are sources (i.e., result in net increases in carbon) of GHG emissions.</p> <p><u>(Final MMRP, pp. 2- 126 – 2-127; see also Final EIR/EIS, Chapter 22, Air Quality and Greenhouse Gases, pp. 22-336)</u></p>		and Greenhouse Gases, pp.22-522—22-523)	<p>impact is will be significant and unavoidable.</p> <p>Findings: Changes or alterations have been required in, or incorporated into, the project that substantially lessen, but do not avoid, the significant environmental effect as identified in the Final EIR/EIS. Impacts are therefore significant and unavoidable despite the adoption of feasible mitigation measures.</p> <p>(Final EIR/EIS, Chapter 22, Air Quality and Greenhouse Gases, p. 22-522)</p>
Noise					
<p>NOI-1: Exposure of noise-sensitive land uses to noise from construction of water conveyance facilities</p> <p>(Final EIR/EIS, chapter 23, Noise, p. 23-195—23-196)</p>	Significant	<p><u>NOI-1a: Employ noise-reducing construction practices during construction</u></p> <p>During construction, DWR will employ best practices to reduce construction noise at noise-sensitive land uses.</p> <p>Best practices listed below will be applied on a case by case basis, such that construction noise levels at noise sensitive receptors do not exceed 60 dBA (one-hour Leq) during daytime hours (7:00 a.m. to 10:00 p.m.) and 50 dBA (one-hour Leq) during nighttime hours (10:00 p.m. to 7:00 a.m.) measured at noise sensitive receptors. Some construction activities that are required to occur during night time hours, such as activities at tunnel boring launch pads and tunnel shaft locations would not be subject to these construction time limitations.</p> <p>Measures that may be used to limit construction noise include the following:</p> <ul style="list-style-type: none"> Limiting above-ground noise-generating construction operations to the hours between 7 a.m. and 7 p.m. except as limited above, at certain locations. 	Significant and Unavoidable	<p>The impact of exposing noise-sensitive land uses during construction to noise levels above the 60 dBA Leq (1hr) daytime, the 50 dBA Leq nighttime, and/or the 5 dB traffic noise increase threshold would be considered significant. Based on reasonable worst-case modeling, the following significant impacts are expected as a result of Alternative 4A construction.</p> <ul style="list-style-type: none"> Intakes: Sensitive receptors within 2,000 feet of an active intake construction site could be exposed to construction noise in excess of the 60 dBA Leq (1hr) daytime threshold. The nighttime threshold of 50 dBA Leq would be exceeded at a distance of 2,800 feet. As shown in Table 23-61, 114 residential parcels, 8 natural/recreational parcels, and 249 agricultural parcels would be affected by 	<p>As part of the project, DWR will implement the noise abatement plan as outlined in Appendix 3B, Environmental Commitments, AMMs, and CMs. Mitigation Measures NOI-1a and NOI-1b will further reduce noise impacts on sensitive land uses. Although implementation of these measures will reduce the impact, it is not anticipated that feasible measures will be available in all situations to reduce construction noise to levels below the applicable thresholds. This impact will therefore be significant and unavoidable.</p> <p>Findings: Changes or alterations have been required in, or incorporated into, the project that substantially lessen, but do not avoid, the significant environmental effect as identified in the Final EIR/EIS. Impacts are therefore significant and unavoidable despite the adoption of feasible mitigation measures.</p> <p>(Final EIR/EIS, Chapter 23, Noise, pp. 23-</p>

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		<ul style="list-style-type: none"> Prohibiting gasoline or diesel engines from having unmuffled exhaust. Requiring that all construction equipment powered by gasoline or diesel engines have sound-control devices that are at least as effective as those originally provided by the manufacturer and that all equipment be operated and maintained to minimize noise generation. Preventing excessive noise by shutting down idle vehicles or equipment. Using noise-reducing enclosures around noise-generating equipment. Selecting haul routes that affect the fewest number of people. Constructing barriers between noise sources and noise-sensitive land uses as determined appropriate by the construction contractor or take advantage of existing barrier features (e.g., terrain, structures) to block sound transmission to noise-sensitive land uses. For a barrier to be feasible, it must provide at least 5 dB of noise reduction and obstruct the line of sight between the noise-sensitive land use(s) and noise emitting components of on-site construction equipment. <p>(Final MMRP, pp. 2-127 – 2-128; see also Final EIR/EIS, Chapter 23, Noise, pp. 23-133)</p> <p><u>NOI-1b: Prior to construction, initiate a complaint/response tracking program</u></p> <p>Prior to construction, DWR will make a construction schedule available to residents living in the vicinity of the construction areas before construction begins, and designate a noise disturbance coordinator. The coordinator will be responsible for responding to complaints regarding construction noise, will determine the cause of the complaint, and will ensure that reasonable measures are implemented to correct the problem when feasible. A contact telephone number for the noise disturbance coordinator will be conspicuously posted on construction site fences and will be included in the notification of the construction schedule.</p>		<p>daytime noise levels in excess of this threshold during construction. The nighttime threshold would be exceeded at 177 residential parcels, 10 natural/recreational parcels, and 277 agricultural parcels.</p> <ul style="list-style-type: none"> Conveyance and Associated Facilities: Sensitive receptors within 1,200 feet of an active tunnel work area could be exposed to construction noise in excess of the daytime (7 a.m. to 10 36 p.m.) noise threshold of 60 dBA Leq (1hr). The nighttime threshold of 50 dBA Leq would be exceeded at a distance of 2,800 feet. As shown in Table 23-62, 136 residential parcels, 12 38 natural/recreational parcels, and 713 agricultural parcels would be affected by daytime noise levels in excess of this threshold during construction. The nighttime threshold would be exceeded at 243 residential parcels, 34 natural/recreational parcels, and 1,293 agricultural parcels. Truck Trips and Worker Commutes: Traffic noise from truck trips and worker commutes would result in an increase of 5 dB or more compared to existing traffic noise levels at residences and outdoor use areas along 50 project roadway segments in the study area as shown in Table 23-63. The increase in noise levels would be significant and exceed the project threshold for traffic noise. Power Transmission Lines: 	195—23-196)

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		(Final MMRP, pp. 2-128 – 2-129; see also Final EIR/EIS, Chapter 23, Noise, pp. 23-133)		<p>Sensitive receptors within 800 feet of an active transmission line construction area could be exposed to construction noise in excess of the daytime (7 a.m. to 10p.m.) noise threshold of 60 dBA Leq (1hr). The nighttime threshold of 50 dBA Leq would be exceeded at a distance of 1,800 feet from the construction area. As noted above, several residential land uses are near the proposed transmission line construction footprint. Likewise, Delta Elementary School and Delta High School on the west bank of the Sacramento River are within half a mile of the proposed Intake 2 transmission lines.</p> <ul style="list-style-type: none">• Borrow/spoil areas: Sensitive receptors within 800 feet of equipment operating in the borrow/spoil area could be exposed to construction noise in excess of the daytime (7 a.m. to 10p.m.) noise threshold of 60 dBA Leq (1hr). The nighttime threshold of 50 dBA Leq would be exceeded at a distance of 1,800 feet from the area. Borrow/spoil areas are located throughout the conveyance alignment and are generally adjacent to or in close proximity of intake pumping plant sites, forebays, and main tunnel construction shafts. <p>(Final EIR/EIS, Chapter 23, Noise, pp. 23-195—23-196)</p>	
NOI-2: Exposure of sensitive receptors to vibration or groundborne noise from	Significant	<u>NOI-2: Employ vibration-reducing construction practices during construction of water conveyance facilities</u>	Significant and Unavoidable	Groundborne vibrations during tunneling would not exceed 0.008 in/sec PPV at 60-foot tunnel depth and will	Although Mitigation Measure NOI-2 will reduce the impact, it is not anticipated that feasible measures will be available in all

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construction of water conveyance facilities (Final EIR/EIS, Chapter 23, Noise, pp. 23-196—23-197)		<p>During construction, DWR will implement vibration-reducing construction practices such that vibration from pile driving does not exceed 0.2 in/sec PPV at nearby residences.</p> <p>The DWR will ensure that the following measures are implemented to reduce adverse effects and/or significant effects as described above if the measures are applicable and feasible. Not all measures listed below may be feasible. Rather, these measures serve as an overlying mitigation framework to be used for specific construction practices. The applicability of measures listed below would vary based on the location, timing, nature, and feasibility of each activity. Locating equipment as far as practical from vibration-sensitive (and noise-sensitive) land uses (at least 100 feet) Use of alternative pile driving methods such as vibratory driving, hydraulic press-in driving, or use of pre-drilled pile holes.</p> <p>Depending on the equipment selected, the measures identified above can reduce vibration from pile driving to below 0.2 in/sec PPV at nearby residences. The specific noise reduction cannot be currently quantified since the actual equipment to be used is unknown and that the contractor may have alternative ways to achieve the performance limit. If the above measures are determined feasible, DWR will retain a qualified acoustical consultant or engineering firm to conduct vibration monitoring at potentially affected buildings to measure the actual vibration levels during construction and ensure vibration from pile driving does not exceed 0.2 in/sec PPV.</p> <p>For cases where the above measures are not feasible, the resident or property owner will be notified in writing prior to construction activity that construction may occur within 100 feet of their building. A representative for the DWR will inspect the potentially affected buildings prior to construction to inventory existing cracks in paint, plaster, concrete, and other building elements. DWR will retain a qualified acoustical consultant or engineering firm to conduct vibration monitoring at potentially affected buildings to measure the actual vibration levels during construction. Following completion of construction, a representative for the DWR will conduct a second inspection to inventory changes in existing cracks and new cracks or damage, if any, that occurred as a result of construction-induced vibration. If new damage is found, then the DWR will promptly arrange to have the damage repaired, or will reimburse the property owner for appropriate repairs.</p> <p>In addition, if construction activity is required within 100 feet of residences or other vibration-sensitive buildings, a designated</p>		<p>therefore be less than significant. Likewise, locomotives are not expected to generate significant noise levels because they will travel at low speeds between 5 and 10 miles per hour. The impact of exposing residential structures to groundborne vibration during intake construction, however, will be significant as reasonable worst-case modeling indicates that up to 70 residential parcels could be exposed to vibration levels in excess of 0.2 in/sec PPV during intake pile driving.</p> <p>(Final EIR/EIS, Chapter 23, Noise, pp. 23-196—23-197)</p>	<p>situations to reduce vibration to levels below the applicable thresholds. This impact is therefore considered significant and unavoidable.</p> <p>Findings: Changes or alterations have been required in, or incorporated into, the project that substantially lessen, but do not avoid, the significant environmental effect as identified in the Final EIR/EIS. Impacts are therefore significant and unavoidable despite the adoption of feasible mitigation measures.</p> <p>(Final EIR/EIS, Chapter 23, Noise, p. 23-197)</p>

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		<p>complaint coordinator will be responsible for handling and responding to any complaints received during such periods of construction. A reporting program will be required that documents complaints received, actions taken, and the effectiveness of these actions in resolving disputes.</p> <p>(Final MMRP, pp. 2-129 – 2-130; see also Final EIR/EIS, Chapter 23, Noise, pp. 23-136—23-137)</p>			
<p>NOI-4: Exposure of noise-sensitive land uses to noise from implementation of proposed Environmental Commitments 3, 4, 6–10</p> <p>(Final EIR/EIS, Chapter 23, Noise, pp. 23-198—23-199)</p>	Significant	<p><u>NOI-1a: Employ noise-reducing construction practices during construction</u></p> <p>See Impact NOI-1a, above, for full mitigation measure.</p> <p>(Final MMRP, p. 2-127 – 2-128; see also Final EIR/EIS, Chapter 23, Noise, p. 23-133)</p> <p><u>NOI-1b: Prior to construction, initiate a complaint/response tracking program</u></p> <p>See Impact NOI-1b, above, for full mitigation measure.</p> <p>(Final MMRP, pp. 2-128 – 2-129; see also Final EIR/EIS, Chapter 23, Noise, pp. 23-133)</p>	Significant and Unavoidable	<p>Noise levels during implementation of Environmental Commitments 3, 4, and 6–10 are expected to vary according to the type of construction equipment and techniques used, but may exceed the daytime noise threshold within 1,200 feet of an active restoration work area and the nighttime threshold within 2,800 feet. The impact of exposing sensitive receptors to noise increases above established thresholds is considered significant.</p> <p>(Final EIR/EIS, Chapter 23, Noise, pp. 23-198—23-199)</p>	<p>Mitigation Measures NOI-1a and NOI-1b, which require noise-reducing construction practices and development of a complaint/response tracking program, will reduce noise impacts on sensitive land uses. However, it is not anticipated that feasible measures will be available in all situations to reduce construction noise to levels below the applicable thresholds. (See also Developments after Publication of the Proposed Final Environmental Impact Report, Section 5.1.1. Project Updates for discussion on additional Environmental Commitment 4 acreage impacts from noise.) This impact will therefore be significant and unavoidable.</p> <p>Findings: Changes or alterations have been required in, or incorporated into, the project that substantially lessen, but do not avoid, the significant environmental effect as identified in the Final EIR/EIS. Impacts are therefore significant and unavoidable despite the adoption of feasible mitigation measures.</p> <p>(Final EIR/EIS, Chapter 23, Noise, p. 23-198)</p>
Hazards and Hazardous Materials					
HAZ-8: Increased risk of bird – aircraft strikes during implementation of Environmental Commitments that create or improve wildlife	Significant	<p><u>HAZ-8: Consult with individual airports and USFWS, and relevant regulatory agencies</u></p> <p>The FAA requires commercial service airports to maintain a safe operation, including conducting hazard assessments for wildlife</p>	Significant and Unavoidable	Implementation of Environmental Commitments 3, 4, and 6–11, because they would create or improve wildlife habitat, will potentially attract waterfowl and other birds to areas in	Mitigation Measure HAZ-8 could reduce the severity of this impact by minimizing bird strike hazards, but this impact will not be reduced to a less-than-significant level because of the inherent uncertainty related

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habitat (Final EIR/EIS, Chapter 24, Hazards and Hazardous Materials, p. 24-250)		<p>attractants within 5 miles of an airport. The hazard assessment is submitted to FAA, which determines if the airport needs to develop a Wildlife Hazard Management Plan. (15 CFR 139). The airport’s Wildlife Hazard Management Plan contains measures to reduce wildlife hazards, including habitat modification (e.g., vegetation management, filling in of wetlands), wildlife control measures (e.g., harassment, trapping and removing), and use of a radar-based alert system.</p> <p>DWR will consult with the individual airports and USFWS during the design process for individual restoration activities, when site-specific locations and design plans are being finalized. At that time, appropriate management plans, strategies, and protocols would be developed to reduce, minimize and/or avoid wildlife hazards on air safety. Site-specific measures will be developed once information on the design, location, and implementation of Environmental Commitments 3, 4, and 6-11 is sufficient to permit a project-level analysis.</p> <p>This mitigation measure will ensure that the potential for increased bird- aircraft strikes as a result of implementing Environmental Commitments 3, 4, and 6-11 in the vicinity of airports are minimized to the greatest extent possible.</p> <p>(Final MMRP, pp. 2-137; see also Final EIR/EIS, Chapter 24, Hazards and Hazardous Materials, pp. 24-174—24-175)</p>		<p>proximity to existing airport flight zones, and thereby potentially result in an increase in bird-aircraft strikes. The potential for this impact is considered significant because of the increased wildlife restoration projects that could occur in the vicinity of Travis Air Force Base; Rio Vista Municipal Airport; Funny Farm Airport; Sacramento International Airport; and Byron Airport.</p> <p>(Final EIR/EIS, Chapter 24, Hazards and Hazardous Materials, p. 24-250)</p>	<p>to bird strike risks. Therefore this impact is significant and unavoidable.</p> <p>Findings: Changes or alterations have been required in, or incorporated into, the project that substantially lessen, but do not avoid, the significant environmental effect as identified in the Final EIR/EIS. Impacts are therefore significant and unavoidable despite the adoption of feasible mitigation measures.</p> <p>(Final EIR/EIS, Chapter 24, Hazards and Hazardous Materials, p. 24-250)</p>
Minerals					
MIN-5: Loss of availability of locally important natural gas wells as a result of implementing Environmental Commitments 3, 4, 6–12, 15, and 16 (Final EIR/EIS, Chapter 26, Mineral Resources, pp. 26-129—26-130)	Significant	<p><u>MIN-5: Design Environmental Commitments 4 and 10 to avoid displacement of active natural gas wells to the extent feasible</u></p> <p>During final design of Environmental Commitments 4 and 10, DWR will avoid permanent inundation of or construction over active natural gas well sites where feasible to minimize the need for well abandonment or relocation.</p> <p>(Final MMRP, pp. 2-138; see also Final EIR/EIS, Chapter 26, Mineral Resources, pp. 26-130)</p>	Significant and Unavoidable	<p>Although the number of natural gas wells likely to be affected may be a small percentage of the total wells in the study area, and some wells may be relocated using conventional or directional drilling, there is potential to affect a significant number of locally important gas wells. Consequently, this impact is considered significant.</p> <p>(Final EIR/EIS, Chapter 26, Mineral Resources, pp. 26-129—26-130)</p>	<p>Although Mitigation Measure MIN-5 will be implemented to reduce this impact, it cannot assure that all or a substantial portion of a county’s existing natural gas wells will remain accessible after implementation of the Environmental Commitments (see also Developments after Publication of the Proposed Final Environmental Impact Report, Section 5.1.1. Project Updates for discussion on additional Environmental Commitment 4 acreage impacts to mineral resources). This impact is therefore significant and unavoidable.</p> <p>Findings: Changes or alterations have been required in, or incorporated into, the project that substantially lessen, but do not</p>

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					<p>avoid, the significant environmental effect as identified in the Final EIR/EIS. Impacts are therefore significant and unavoidable despite the adoption of feasible mitigation measures.</p> <p>(Final EIR/EIS, Chapter 26, Mineral Resources, p. 26-130)</p>
<p>MIN-6: Loss of availability of extraction potential from natural gas fields as a result of implementing Environmental Commitments 3, 4, 6-12, 15, and 16</p> <p>(Final EIR/EIS, Chapter 26, Mineral Resources, p. 26-130—26-131)</p>	Significant	<p><u>MIN-6: Design Environmental Commitments 4 and 10 to maintain drilling access to natural gas fields to the extent feasible</u></p> <p>During final design of actions to offset the impacts of constructing and operating the water conveyance facilities, DWR will identify means to maintain access to natural gas fields that could be adversely affect by implementing Environmental Commitments 4 and 10 where feasible. These could include preserving non-inundated lands either over or adjacent to natural gas fields adequate in size to allow drilling to occur. These measures will ensure that drilling access to natural gas fields is maintained to the greatest extent practicable.</p> <p>(Final MMRP, pp. 2-139; see also Final EIR/EIS, Chapter 26, Mineral Resources, pp. 26-131)</p>	Significant and Unavoidable	<p>The areal extent of lands overlying study area natural gas fields that will be inundated by restoration actions depends on final footprints for these measures. Most of these natural gas fields will still be accessible from outside the inundated areas using either conventional or directional drilling, although feasibility of access would depend on the exact configuration of inundation and the availability of adjacent drilling sites. Although the overall extent of affected natural gas fields in the region is low to moderate, there is potential for a locally significant impact on access to natural gas fields if they are permanently covered (inundated) such that the resource cannot be recovered.</p> <p>(Final EIR/EIS, Chapter 26, Mineral Resources, pp. 26-130—26-131)</p>	<p>Implementation of Mitigation Measure MIN-6 will reduce this impact, but not to a less-than-significant level. Because implementation of Mitigation Measure MIN-6 cannot assure that all or a substantial portion of existing natural gas fields will remain accessible after implementation of the Environmental Commitments, this impact is significant and unavoidable.</p> <p>Findings: Changes or alterations have been required in, or incorporated into, the project that substantially lessen, but do not avoid, the significant environmental effect as identified in the Final EIR/EIS. Impacts are therefore significant and unavoidable despite the adoption of feasible mitigation measures.</p> <p>(Final EIR/EIS, Chapter 26, Mineral Resources, pp. 26-130—26-131)</p>
Paleontological					
<p>PALEO-1: Destruction of unique or significant paleontological resources as a result of construction of water conveyance facilities</p> <p>(Final EIR/EIS, Chapter 27, Paleontological Resources, pp. 27-94—27-95)</p>	Significant	<p><u>PALEO-1a: Prepare a monitoring and mitigation plan for paleontological resources</u></p> <p>Before ground-breaking construction begins, DWR will retain a qualified paleontologist or geologist (as defined by the Society of Vertebrate Paleontology [SVP] Standard Procedures [Society of Vertebrate Paleontology 2010]) to develop a comprehensive Paleontological Resources Monitoring and Mitigation Plan (PRMMP) for the project, to help avoid directly or indirectly destroying a unique or significant paleontological resource.</p> <p>The PRMMP will be consistent with the SVP Standard Procedures</p>	Significant and Unavoidable	<p>Construction of the water conveyance facilities under Alternative 4A could cause the destruction of unique paleontological resources. The ground-disturbing activities associated with Alternative 4A will occur in geologic units sensitive for paleontological resources and could therefore have the potential to damage or destroy those resources. Direct or indirect destruction of significant paleontological resources as defined by the Society of Vertebrate</p>	<p>Implementation of Mitigation Measures PALEO-1a through PALEO-1d will reduce the effects of surface-related ground disturbance to a less-than-significant level, but excavation for the tunnels necessary for Alternative 4A will likely destroy unique or significant paleontological resources in the Plan Area. This impact is therefore considered significant and unavoidable.</p> <p>Findings: Changes or alterations have been required in, or incorporated into, the</p>

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		<p>(Society of Vertebrate Paleontology 2010) and the SVP Conditions of Receivership (Society of Vertebrate Paleontology 1996) and will require the following.</p> <ul style="list-style-type: none">• A paleontological resources specialist (PRS) will be designated or retained for construction activities. The PRS will have paleontological resources management qualifications consistent with the description of a qualified paleontologist in the SVP Standard Procedures (Society of Vertebrate Paleontology 2010). The PRS will be responsible for implementing all aspects of the PRMMP, managing any additional paleontological monitors needed for construction activities, and serving as a qualified resource in the event of unanticipated paleontological finds. The PRS may, but need not necessarily, be the same individual who prepared the PRMMP. The PRS will be retained or designated prior to the start of ground-breaking construction. A qualified PRS is defined as a person with a M.S. or Ph.D. in paleontology, paleobiology, or geology, with strong working knowledge of local paleontology and geology, and professional expertise with paleontological procedures and techniques. The PRS may designate a paleontological monitor to be present during earth-moving activities. A paleontological monitor is defined as a person with a BS/BA in geology or paleontology and a minimum of 1 year of monitoring experience in local sedimentary rocks. Experience may be substituted for academic training on approval from the contracting agency. The PRS and paleontological monitor(s) will be notified by the Lead Agency or Resident Engineer in advance of the start of construction activity. The PRS and paleontological monitor(s) will attend any required safety training programs.• Preconstruction surveys (with salvage and/or protection in place, as appropriate) will be conducted in areas where construction activities would result in surface disturbance of geologic units identified as highly sensitive for paleontological resources.• Preconstruction and construction-period coordination procedures and communications protocols will be established, including procedures to alert all construction personnel involved with earthmoving activities about the possibility of encountering fossils as set forth in Mitigation Measure PALEO-1c and communications regarding the stop		<p>Paleontology (SVP) (2010) would constitute a significant impact under CEQA.</p> <p>(Final EIR/EIS, Chapter 27, Paleontological Resources, pp. 27-94—27-95)</p>	<p>project that substantially lessen, but do not avoid, the significant environmental effect as identified in the Final EIR/EIS. Impacts are therefore significant and unavoidable despite the adoption of feasible mitigation measures.</p> <p>(Final EIR/EIS, Chapter 27, Paleontological Resources, p. 27-95)</p>

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		<p>work, evaluate and treat appropriately response in the event of a paleontological discovery, as discussed in Mitigation Measure PALEO-1d.</p> <ul style="list-style-type: none">• All ground-disturbing activities involving highly sensitive units will be monitored by qualified monitors. Monitoring will initially be conducted full time for grading and excavation, but the PRMMP may provide for monitoring frequency in any given location to be reduced once 50% of the ground-disturbing activity in that location has been completed, if the reduction is appropriate based on the implementing PRS's professional judgment in consideration of actual site conditions. Monitoring will also be conducted throughout drilling operations. The monitoring program for tunneling operations will be developed in conjunction with the facility design and geotechnical teams, in consideration of the tunneling method selected.• Sampling and data recovery procedures that are consistent with the SVP Standard Procedures (Society of Vertebrate Paleontology 2010) and the SVP Conditions of Receivership (Society of Vertebrate Paleontology 1996) will be established.• A repository plan will be developed that provides for appropriate curation of recovered materials, if necessary.• Mitigation monitoring report preparation guidelines will be established that are consistent with the SVP Standard Procedures guidelines (Society of Vertebrate Paleontology 2010). The report will include, at a minimum, discussions of effects, regulatory requirements, purpose of mitigation, regional geologic context, Plan Area stratigraphy, stratigraphic and geographic distribution of paleontological resources, field and laboratory methods and procedures, fossil recovery, and paleontological significance. The report will also include geological cross sections and stratigraphic sections depicting fossil discovery localities and excavated rock units; maps showing the activity location and vicinity, as well as geology and location of discovered fossil localities; appropriate illustrations depicting monitoring conditions, field context of collecting localities, quarry maps, and laboratory activities; and appendices including an itemized listing of catalogued fossil specimens, complete descriptions of all fossil collecting localities, an explanation of report			

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		<p>acronyms and terms, and a signed curation agreement with an approved paleontological repository.</p> <ul style="list-style-type: none">Procedures for preparing, identifying, and analyzing fossil specimens and data recovered will be established, consistent with the SVP Conditions of Receivership (Society of Vertebrate Paleontology 1996 and 2010) and any specific requirements of the designated repository institution. <p>Implementation of this measure will ensure that unique or scientifically significant paleontological resources in the alternative footprint are systematically identified, documented, avoided or protected from damage where feasible, or recovered and curated so they remain available for scientific study.</p> <p>(Final MMRP, pp. 2-141 – 2-143; see also Final EIR/EIS, Chapter 23, Paleontological Resources, p. 23-63—23-65)</p> <p><u>PALEO-1b: Review 90% design submittal and develop specific language identifying how the mitigation measures will be implemented along the alignment</u></p> <p>To help avoid directly or indirectly destroying a unique or significant paleontological resource, DWR will have a qualified individual review the 90% design submittal to finalize the identification of construction activities involving geologic units considered highly sensitive for paleontological resources. Evaluation will consider the anticipated depth of disturbance, the selected construction technique, and the geology of the alignment. This work may be carried out in conjunction with or as part of the development of the PRMMP (Mitigation Measure PALEO-1a). The evaluation may be carried out by the PRS or an individual meeting the SVP’s requirements for a qualified vertebrate paleontologist (per Society of Vertebrate Paleontology 2010) and will be conducted in collaboration with the design and geotechnical teams. If the evaluation is performed by a paleontologist, it will be reviewed and verified by a California-licensed professional geologist. The purpose of this evaluation will be to develop specific language identifying how the mitigation measures will be applied to the various phases of construction along the alignment (e.g., which areas would require monitors). This language will be included in the construction documents for implementation by DWR. The language will be based on the following framework.</p> <ul style="list-style-type: none">One onsite paleontological monitor will likely be			

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		<p>sufficient to handle observation of most ground-disturbing activities. However, if additional paleontological monitors are needed, the PRS will coordinate with the Resident Engineer. This communication is imperative and fundamental to the success of this PRMMP and to compliance with CEQA and NEPA.</p> <ul style="list-style-type: none">• Whenever possible, sedimentary rocks exposed during trenching and other deep excavation work will be inspected. Ideally, this monitoring will involve inspection of fresh bedrock exposures. However, observation of some work may not be possible for safety reasons and inspection from these operations will be restricted to spoils. In this case, the monitor will inspect spoils as they are stockpiled and remove any matrix blocks containing paleontological resources. Construction personnel, namely the Resident Engineer/Lead, must communicate depths of excavated materials and their approximate location to the field monitor.• Recording of stratigraphic data will be an ongoing aspect of excavation monitoring, to provide context for any eventual fossil discoveries. Outcrops exposed in active cuts and finished slopes will be examined and geologic features recorded on grading plans and in field notes. The goal of this work is to delimit the nature of fossiliferous unconsolidated sedimentary deposits within the Plan Area, determine their areal distribution and depositional contacts, and record any evidence of structural deformation. Standard geologic and stratigraphic data collected include lithologic descriptions (e.g., color, sorting, texture, structures, and grain size), stratigraphic relationships (e.g., bedding type, thickness, and contacts), and topographic position. Stratigraphic sections will be routinely measured, areas containing exposures of fossiliferous sedimentary rocks will be documented, and fossil localities will be recorded on measured stratigraphic sections.• If fossils are discovered, the following procedures will be followed. The monitor or PRS will inform the Resident Engineer who will determine the			

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		<p>appropriate course of action. For all excavations except those relating to the tunnels, mitigation will consist of one of the following: diverting, directing, or temporarily halting ground-disturbing activities in the area of discovery to allow for preliminary evaluation of potentially significant paleontological resources and to determine whether additional mitigation (i.e., collection, curation or other preservation) is required. Where excavations relate to construction of the tunnels, such measures will be infeasible because the fossils will most likely have been destroyed by the tunnel boring machines before they could have been identified.</p> <p>The significance of the discovered resources will be determined by the PRS in consultation with appropriate contractor representatives. Because of the infrequency of fossil preservation, fossils are considered to be nonrenewable resources. Because of their rarity, and because of the scientific information they provide, fossils can be highly significant records of ancient life. Given this, fossils can be considered to be of significant scientific interest if one or more of the following criteria apply.</p> <ul style="list-style-type: none">• Provide data on the evolutionary relationships and developmental trends among organisms, both living and extinct.• Provide data useful in determining the age(s) of the rock unit or sedimentary stratum, including data important in determining the depositional history of the region and the timing of geologic events therein.• Provide data regarding the development of biological communities or interaction between paleobotanical and paleozoological biotas.• Demonstrate unusual or spectacular circumstances in the history of life.• Are in short supply and/or in danger of being depleted or destroyed by the elements, vandalism, or commercial exploitation, and are not found in other geographic locations. <p>They can include fossil remains of large to very small aquatic and</p>			

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		<p>terrestrial vertebrates (including animal trackways), remains of plants and animals previously not represented in certain portions of the stratigraphy, and fossils that might aid stratigraphic correlations, particularly those offering data for the interpretation of tectonic events, geomorphologic evolution, paleoclimatology, and the relationships of aquatic and terrestrial species.</p> <ul style="list-style-type: none">• Recovery methods will vary to some degree depending on the types of fossils discovered (e.g., invertebrate macrofossils, invertebrate microfossils, vertebrate macrofossils, vertebrate microfossils, or plant fossils). Many fossil specimens discovered during excavation monitoring are readily visible to the naked eye and large enough to be easily recognized and removed. Upon discovery of such macrofossils, the paleontological monitor will temporarily flag the discovery site for avoidance and evaluation, as described above. Actual recovery of unearthed macrofossils can involve several techniques, including immediate collection, hand quarrying, plaster-jacketing, and/or large-scale quarrying. The PRS and the contracting agency representative will evaluate the discovery and take action to protect or remove the resource within the shortest period of time possible.• Many significant vertebrate fossils (e.g., small mammal, bird, reptile, amphibian, or fish remains) often are too small to be readily visible in the field, but are nonetheless significant and worthy of attention. The potential discovery of microvertebrate sites is anticipated and can include sites that produce remains of large vertebrate fossils from fine-grained deposits, sites with an obvious concentration of small vertebrate fossil remains, and sites that based on lithology alone (e.g., paleosols) appear to have a potential for producing small vertebrate fossil remains. Microvertebrate sites will be sampled by collecting bulk quantities of sedimentary matrix. An adequate sample comprises approximately 12 cubic meters (6,000 lbs or 2,500 kg) of matrix for each formation, or as determined by the PRS (Society of Vertebrate Paleontology 2010). The uniqueness of the recovered fossils may dictate salvage of larger amounts. However, conditions in the field may make			

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		<p>it impossible to recover such large samples. To avoid construction delays, bulk matrix samples will be transported to an offsite location for processing.</p> <ul style="list-style-type: none">• The discovery of fossil plants is possible in the Plan Area. Paleobotanical specimens typically occur in fine-grained, laminated strata (e.g., shale) and will require special recovery techniques. Large blocks (>2 feet) of sedimentary rock are hand quarried from the temporary outcrop and then split along bedding plains to reveal compressed fossil plant material (e.g., leaves, stems, and flowers). Individual slabs are then wrapped in newsprint to minimize destructive desiccation of the fossils. Specimens that are delaminating or flaking badly may need to be coated with special consolidants.• Oriented matrix samples may be collected for paleomagnetic analysis. Such sampling will likely only be necessary in instances where long, continuous sections of stratified rocks are producing fossils from several different stratigraphic horizons or where vertebrate fossils are being collected in stratigraphic sections lacking in biochronologically useful microfossils. Likewise, it may be necessary to collect stratigraphically positioned samples of fine matrices pollen analysis or aid in addressing questions of geologic age, depositional environment, or paleoecology.• All fossil discoveries will include the collection of stratigraphic data to delimit the nature of the fossil-bearing sedimentary rock unit, determine its areal distribution and depositional contacts, record any evidence of structural deformation, generate lithologic descriptions of fossil-bearing strata, determine stratigraphic relationships (bedding type, thickness, and contacts), and topographic position, measure stratigraphic sections, and describe taphonomic details. <p>Implementation of this measure will ensure that mitigation procedures are followed so that unique or scientifically significant paleontological resources in the alternative footprint are systematically identified, documented, avoided or protected from</p>			

Alternative 4A Potential Impact	Impact Conclusions Before Mitigation-CEQA	Adopted Mitigation Measures	Impact Conclusion After Mitigation-CEQA	Discussion	Findings of Fact
		<p>damage where feasible, or recovered and curated so they remain available for scientific study.</p> <p>(Final MMRP pp.2-144 – 2-147; see also Final EIR/EIS, Chapter 27, Paleontological Resources, pp. 27-65—27-67)</p> <p><u>PALEO-1c: Educate construction personnel in recognizing fossil material</u></p> <p>In order to reduce the likelihood of directly or indirectly destroying a unique or significant paleontological resource, DWR will require that all construction personnel receive training provided by a qualified paleontologist experienced in teaching non-specialists, to ensure that they can recognize fossil materials in the event any are discovered during construction. Training will include information on the possibility of encountering fossils during construction, the types of fossils likely to be seen and how to recognize them, and proper procedures in the event fossils are encountered. All field management and supervisory personnel and construction workers involved with ground-disturbing activities will be required to take this training prior to beginning work. Training materials will include an informational brochure that provides contacts and summarizes procedures in the event paleontological resources are encountered. Implementation of this measure will ensure that unique or scientifically significant paleontological resources have a high likelihood of being identified during construction so they can be avoided or treated appropriately.</p> <p>(Final MMRP, p. 2-147; see also Final EIR/EIS, Chapter 27, Paleontological Resources, pp. 27-68)</p> <p><u>PALEO-1d: Collect and preserve substantial potentially unique or significant fossil remains when encountered</u></p> <p>To help avoid directly or indirectly destroying a unique or significant paleontological resource, DWR will ensure that if substantial potentially unique or significant fossil remains (particularly vertebrate remains) are discovered during ground-disturbing activities, the construction crew will be directed to immediately cease work in the vicinity of the find and notify the PRS, consistent with the PRMMP described under Mitigation Measure PALEO-1a. A newly discovered resource may need to be fenced off to protect it from inadvertent intrusions by machinery or protect the location from vandalism. If extensive recovery and jacketing is needed, the</p>			

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		<p>area will be fenced off with temporary fencing and a 3- to 5-meter (10- to 15-foot) buffer will be included in the fenced area around the locality. If specific construction activities preclude placement of a buffer of this width, the monitor will stake a mutually agreeable buffer prior to fencing. The PRS will evaluate the resource and prepare a mitigation plan in accordance with SVP guidelines (2010). The mitigation plan may include a field survey, construction monitoring, sampling and data recovery procedures, museum storage coordination for any specimen recovered, and a report of findings. Recommendations determined by DWR to be necessary and feasible will be implemented before construction can resume at the site where the paleontological resources were discovered. Except for the fossils destroyed by tunnel boring machines, implementation of this measure will ensure that unique or scientifically significant paleontological resources identified during construction are protected from damage or treated and documented appropriately to preserve their scientific value.</p> <p>(Final MMRP pp. 2-147 – 2-148; see also Final EIR/EIS, Chapter 27, Paleontological Resources, pp. 27-68)</p>			

Table 2: CEQA Findings of Fact for Less-than-Significant Impacts after Mitigation Proposed in Final EIR/EIS for California WaterFix Project (Alternative 4A).

Alternative 4A Potential Impact	Impact Conclusions Before Mitigation- CEQA	Proposed Mitigation	Impact Conclusion After Mitigation- CEQA	CEQA Conclusions	Findings of Fact
Surface Water					
SW-4: Substantially alter the existing drainage pattern or substantially increase the rate or amount of surface runoff in a manner that would result in flooding during construction of conveyance facilities (Final EIR/EIS, Chapter 6, Surface Water, pp. 6-176 – 6-177)	Significant	<p><u>SW-4: Implement measures to reduce runoff and sedimentation</u></p> <p>DWR will have to demonstrate no-net-increase in runoff due to construction activities during peak flows. To achieve this, proponents will implement measures to prevent an increase in runoff volume and rate from land-side construction areas and to prevent an increase in sedimentation in the runoff from the construction area as compared to Existing Conditions. To reduce the potential for adverse impacts from large amounts of runoff from paved and impervious surfaces during construction, operations, or maintenance, the proponents will design and implement onsite drainage systems in areas where construction drainage is required. Drainage studies will be prepared for each construction location to assess the need for, and to finalize, other drainage-related design measures, such as a new onsite drainage system or new cross drainage facilities. Based on study findings, if it is determined that onsite stormwater detention storage is required, detention facilities will be located within the existing construction area.</p> <p>To avoid changes in the courses of waterbodies, DWR will design measures to prevent a net increase in sediment discharge or accumulation in water-bodies compared to Existing Conditions to avoid substantially affecting river hydraulics during peak conditions. A detailed sediment transport study for all water-based facilities will be conducted and a sediment management plan will be prepared and implemented during construction. The sediment management plan will include periodic and long-term sediment removal actions.</p> <p>Prior to use of existing stormwater channels, drainage ditches, or irrigation canals for conveyance of dewatering flows, a hydraulic analysis of the existing channels will be completed to determine available capacity for conveyance of anticipated dewatering flows. If the conveyance capacity is not adequate, new conveyance facilities or methods for discharge into the groundwater will be developed. In accordance with National Pollutant Discharge Elimination System (NPDES) requirements and requirements of the Stormwater Pollution Prevention Plan (SWPPP), water</p>	Less than Significant (Final EIR/EIS, Chapter 6, Surface Water, p. 6-177)	<p>Alternative 4A will result in alterations to drainage patterns, stream courses, and runoff; and potential for slightly increased surface water elevations near the intakes in the rivers and streams during construction and operations of facilities located within the waterway. Although intakes have been designed and located on-bank to minimize changes to river flow characteristics, some localized water elevation changes will occur upstream and adjacent to each cofferdam at the intake sites due to facility location within the river. These localized surface elevation changes will not exceed an increase of 0.10 feet at any intake location even under flood flow conditions.</p> <p>Potential impacts will occur due to increased stormwater runoff from paved areas that will increase flows in local drainages, and from changes in sediment accumulation near the intakes. These impacts are considered significant.</p> <p>(Final EIR/EIS, Chapter 6, Surface water, p. 6-177)</p>	<p>Mitigation Measure SW-4 will reduce this impact to a less-than-significant level by implementing a number of measures which will prevent an increase in runoff volume and rate from land-side construction areas; and which will prevent an increase in sedimentation in the runoff from the construction areas.</p> <p>Findings: Changes or alterations have been required in, or incorporated into, the project that avoid the significant environmental effect as identified in the Final EIR/EIS. Impacts will be less than significant with mitigation.</p> <p>(Final EIR/EIS, Chapter 6, Surface Water, p. 6-177)</p>

Alternative 4A Potential Impact	Impact Conclusions Before Mitigation- CEQA	Proposed Mitigation	Impact Conclusion After Mitigation- CEQA	CEQA Conclusions	Findings of Fact
		<p>quality analyses of the dewatering flows will be conducted to avoid water quality contamination.</p> <p>As described in Section 3.6.1.1, <i>North Delta Intakes</i>, facilities to be constructed along the levees would be designed to provide flood neutrality during construction and operations. Facilities located along the levees, including cofferdams at the intake locations, would be designed to provide continued flood management at the same level of flood protection as the existing levees; or if applicable, to a higher standard for flood management engineering and permitting requirements if the standards are greater than the existing levee design. New facilities would be designed to withstand the applicable flood management standards through construction of flood protection embankments or construction on engineered fill to raise the facilities to an elevation above the design flood elevation for that specific location. The levee design criteria would consider the most recent criteria, including new guidelines for urban and rural levees (DWR 2013, 2014).</p> <p>(Final MMRP pp. 2-1 – 2-2; see also Final EIR/EIS, Chapter 6, Surface water, pp. 6-63 – 6-64 & 6-177)</p>			
SW-5: Substantially alter the existing drainage pattern or substantially increase the rate or amount of surface runoff in a manner that would result in flooding during construction of habitat restoration area facilities (Final EIR/EIS, Chapter 6, Surface Water, pp. 6-177 – 6-178)	Significant	<p><u>SW-4: Implement measures to reduce runoff and sedimentation</u></p> <p>See Impact SW-4, above, for full mitigation measure. (Final MMRP pp. 2-1 – 2-2; see also Final EIR/EIS, Chapter 6, Surface water, p. 6-63 – 6-64 & 6-178)</p>	Less than Significant (Final EIR/EIS, Chapter 6, Surface Water, pp. 6-177 – 6-178)	<p>Alternative 4A will include construction of the restoration area facilities under Environmental Commitments 3, 4, and 6–11. Under existing regulations, the USACE, CVFPB, and DWR will require the habitat restoration projects to be flood neutral. The specific permits/decisions/approvals required are identified in Table 1-2 in Final EIR/EIS, Chapter 1, <i>Introduction</i>. Measures to reduce flood potential will include channel dredging to increase channel capacities and decrease channel velocities and/or water surface elevations.</p> <p>Alternative 4A will result in alterations to drainage patterns, stream courses, and runoff; and potential for increased surface water elevations in the rivers and streams during construction and operations of facilities located within the waterway. These impacts are considered significant. (Final EIR/EIS, Chapter 6, Surface water, pp. 6-177 – 6-178)</p>	<p>Alternative 4A will result in alterations to drainage patterns, stream courses, and runoff; and potential for increased surface water elevations in the rivers and streams during construction and operations of facilities located within the waterway. These impacts are considered significant. Mitigation Measure SW-4 will reduce this impact to a less-than-significant level by implementing a number of measures which will prevent an increase in runoff volume and rate from land-side construction areas; and which will prevent an increase in sedimentation in the runoff from the construction areas.</p> <p>Findings: Changes or alterations have been required in, or incorporated into, the project that avoid the significant environmental effect as identified in the Final EIR/EIS. Impacts will be less than significant with mitigation. (Final EIR/EIS, Chapter 6, Surface Water, pp. 6-177 – 6-178)</p>

Alternative 4A Potential Impact	Impact Conclusions Before Mitigation- CEQA	Proposed Mitigation	Impact Conclusion After Mitigation- CEQA	CEQA Conclusions	Findings of Fact
SW-6: Create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff. (Final EIR/EIS, Chapter 6, Surface Water, pp. 6-178)	Significant	<u>SW-4: Implement measures to reduce runoff and sedimentation</u> See Impact SW-4, above, for full mitigation measure. (Final MMRP pp. 2-1 – 2-2; see also Final EIR/EIS, Chapter 6, Surface Water, pp. 6-178)	Less than Significant (Final EIR/EIS, Chapter 6, Surface Water, p. 6-178)	Alternative 4A actions will include installation of dewatering facilities in accordance with permits issued by the Regional Water Quality Control Board and CVFPB (see Section 6.2.2.4). Alternative 4A will include provisions to design the dewatering system in accordance with these permits to avoid significant impacts on surface water quality and flows. Increased runoff will occur from facilities sites during construction or operations and will result in significant impacts if the runoff volume exceeds the capacities of local drainages. These impacts are considered significant. (Final EIR/EIS, Chapter 6, Surface Water, p. 6-178)	Increased runoff will occur from facilities sites during construction or operations and will result in significant impacts if the runoff volume exceeds the capacities of local drainages. These impacts are considered significant. Mitigation Measure SW-4 will reduce this potential impact to a less-than-significant level. Findings: Changes or alterations have been required in, or incorporated into, the project that avoid the significant environmental effect as identified in the Final EIR/EIS. Impacts will be less than significant with mitigation. (Final EIR/EIS, Chapter 6, Surface Water, p. 6-178)
SW-7: Expose people or structures to a significant risk of loss, injury or death involving flooding due to the construction of new conveyance facilities (Final EIR/EIS, Chapter 6, Surface Water, pp. 6-178 – 6-179)	Significant	<u>SW-7: Implement Measures to Reduce Flood Damage</u> Determination of design flood elevation will consider the effects of sea level rise for the lifetime of the project, as determined by the US Army Corps of Engineers (USACE), Central Valley Flood Protection Board (CVFPB), and DWR. A 200-year level of flood protection will be provided for all applicable new facilities. For levee modifications, the level of flood protection will be the same as required for the modified levee without the new facilities. (Final MMRP pp. 2-2 – 2-3; see also Final EIR/EIS, Chapter 6, Surface water, pp. 6-67 & 6-179)	Less than Significant (Final EIR/EIS, Chapter 6, Surface Water, p. 6-179)	Alternative 4A will not result in an increase in exposure of people or structures to flooding due to construction of the conveyance facilities because the project proponents will be required to comply with the requirements of USACE CVFPB, and DWR to avoid increased flood potential and levee failure due to construction and operation of the facilities as described in Section 6.2.2.4, <i>Central Valley Flood Protection Board</i> . If the design flood elevations did not consider sea level rise to reduce impacts, these impacts are considered significant. (Final EIR/EIS, Chapter 6, Surface water, pp. 6-179)	If the design flood elevations did not consider sea level rise to reduce impacts, these impacts are considered significant. Mitigation Measure SW-7 will reduce this impact to a less-than-significant level. Findings: Changes or alterations have been required in, or incorporated into, the project that avoid the significant environmental effect as identified in the Final EIR/EIS. Impacts will be less than significant with mitigation. (Final EIR/EIS, Chapter 6, Surface water, pp. 6-179)
SW-8: Expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding due to habitat restoration (Final EIR/EIS, Chapter 6, Surface Water, pp. 6-179 – 6-180)	Significant	<u>SW-8: Implement Measures to Address Potential Wind Fetch Issues</u> Measures will be implemented to prevent an increase in potential damage from wind-driven waves across expanded open water areas at habitat restoration locations. These measures will be designed based upon wind fetch studies that will be completed prior to construction of habitat restoration areas with increased open water in the Delta. To reduce the potential for adverse impacts from the increased open water areas during wind events, levees that would be subject to	Less than Significant (Final EIR/EIS, Chapter 6, Surface Water, p. 6-179 – 6-180)	Alternative 4A will not result in an increase in exposure of people or structures to flooding due to the construction or operations of Environmental Commitments because the facilities will be required to comply with the requirements of the USACE, CVFPB, and DWR to avoid increased flood potential. Increased wind fetch near open water areas of habitat restoration will cause potential damage to adjacent levees. These impacts are considered significant.	Increased wind fetch near open water areas of habitat restoration will cause potential damage to adjacent levees. These impacts are considered significant. Mitigation Measure SW-8 will reduce this potential impact to a level of less than significant. Findings: Changes or alterations have been required in, or incorporated into, the project that avoid the significant environmental effect as identified in the Final EIR/EIS. Impacts will be less than significant with mitigation.

Alternative 4A Potential Impact	Impact Conclusions Before Mitigation- CEQA	Proposed Mitigation	Impact Conclusion After Mitigation- CEQA	CEQA Conclusions	Findings of Fact
		increased wind-driven waves will be strengthened and possibly raised to avoid levee damage from waves or water entering the landside of the levee due to high waves. Other mechanisms to reduce the effects of wind fetch will be considered to the extent feasible in the design of restoration areas, consistent with the biological goals and objectives of the project. (Final MMRP pp. 2-3; see also Final EIR/EIS, Chapter 6, Surface Water, p. 6-68 & 6-180)		(Final EIR/EIS, Chapter 6, Surface Water, pp. 6-179 – 6-180)	(Final EIR/EIS, Chapter 6, Surface Water, pp. 6-179 – 6-180)
SW-9: Place within a 100-year flood hazard area structures which would impede or redirect flood flows, or be subject to inundation by mudflow (Final EIR/EIS, Chapter 6, Surface Water, pp. 6-180 – 6-181)	Significant	<u>SW-4: Implement measures to reduce runoff and sedimentation</u> See Impact SW-4, above, for full mitigation measure. (Final MMRP pp. 2-1 – 2-2; see also Final EIR/EIS, Chapter 6, Surface Water, pp. 6-63 – 6-64 & 6-181)	Less than Significant (Final EIR/EIS, Chapter 6, Surface Water, p. 6-180)	Alternative 4A will not result in an impedance or redirection of flood flows or conditions that will cause inundation by mudflow due to construction or operations of the conveyance facilities or construction of the Environmental Commitments because the project proponents will be required to comply with the requirements of USACE, CVFPB, and DWR to avoid increased flood potential as described in Section 6.2.2.4, <i>Central Valley Flood Protection Board</i> . Potential adverse impacts will occur due to increased stormwater runoff from paved areas that will increase flows in local drainages, as well as changes in sediment accumulation near the intakes. These impacts are considered significant. (Final EIR/EIS, Chapter 6, Surface Water, p. 6-180)	Potential adverse impacts will occur due to increased stormwater runoff from paved areas that will increase flows in local drainages, as well as changes in sediment accumulation near the intakes. These impacts are considered significant. Mitigation Measure SW-4 will reduce this potential impact to a less-than-significant level by implementing a number of measures which will prevent an increase in runoff volume and rate from land-side construction areas; and which will prevent an increase in sedimentation in the runoff from the construction areas. Findings: Changes or alterations have been required in, or incorporated into, the project that avoid the significant environmental effect as identified in the Final EIR/EIS. Impacts will be less than significant with mitigation. (Final EIR/EIS, Chapter 6, Surface Water, p. 6-180)
Groundwater					
GW-5: During operations of new facilities, interfere with agricultural drainage in the Delta (Final EIR/EIS, Chapter 7, Groundwater, p. 7-121)	Significant	<u>GW-5: Agricultural lands seepage minimization</u> Areas potentially subject to seepage caused by implementation of habitat restoration and enhancement actions or operation of water conveyance facilities will be monitored and evaluated on a site-specific basis by DWR prior to the commencement of construction activities to identify baseline groundwater conditions. Restoration sites, along with the sites of water conveyance features that could result in seepage, will be subsequently monitored once construction is completed. Monitoring will include placement of piezometers and/or periodic field checks to assess local groundwater levels and salinity and associated impacts on agricultural field conditions. In areas where operation of water conveyance facilities or habitat restoration is determined to result in seepage impacts on	Less than Significant (Final EIR/EIS, Chapter 7, Groundwater, p. 7-121)	Due to the measures described in Appendix 3B, <i>Environmental Commitments, AMMs, and CMs</i> , related to installation of slurry cutoff walls, the Intermediate Forebay and the expanded Clifton Court Forebay will include a seepage cutoff wall to the impervious layer and a toe drain around the forebay embankment, to capture water and pump it back into the forebay. (Final EIR/EIS, Chapter 7, Groundwater, p. 7-121)	The design measures will greatly reduce any potential for seepage onto adjacent lands and avoid interference with agricultural drainage in the vicinity of the Intermediate Forebay and Clifton Court Forebay. Once constructed, the operation of the forebay will be monitored to ensure seepage does not exceed performance requirements, as described under Mitigation Measure GW-5. Findings: Changes or alterations have been required in, or incorporated into, the project that avoid the significant environmental effect as identified in the Final EIR. Impacts will be less

Alternative 4A Potential Impact	Impact Conclusions Before Mitigation- CEQA	Proposed Mitigation	Impact Conclusion After Mitigation- CEQA	CEQA Conclusions	Findings of Fact
		<p>adjacent parcels, potentially feasible additional mitigation measures will be developed in consultation with affected landowners. These measures may include installation or improvement of subsurface agricultural drainage or an equivalent drainage measure, as well as pumping to provide for suitable field conditions (groundwater levels near pre-project levels). Such measures will ensure that the drainage characteristics of affected areas would be maintained to the level existing prior to project construction.</p> <p>The implementation of this mitigation measure will follow the steps below:</p> <ul style="list-style-type: none">• DWR will be responsible for monitoring and evaluation to identify baseline groundwater conditions as well as monitoring after construction is complete.• Monitoring will occur at areas adjacent to the expanded Clifton Court Forebay portion at Byron Tract, where groundwater recharge from surface water would result in groundwater level increases, and other areas potentially affected by operation of the water conveyance facilities.• Monitoring and evaluation shall occur prior to commencement of construction activities to identify baseline conditions and with sufficient time allotted to develop additional mitigation measures if needed. Monitoring of restoration sites, along with the sites of water conveyance features that could result in seepage will occur after construction is completed.• Monitoring shall include placement of piezometers and/or periodic field checks to assess local shallow groundwater levels and salinity and associated impacts on agricultural field conditions.• Monitoring will collect information on two thresholds:<ol style="list-style-type: none">1. Water surface elevation (recorded as depth to water)2. Shallow groundwater salinity (measured as specific conductance)• Monitoring of groundwater levels will occur on a daily basis to check real-time measured			<p>than significant with mitigation.</p> <p>(Final EIR/EIS, Chapter 7, Groundwater, p. 7-121)</p>

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		<p>groundwater levels. This can be performed by equipping the piezometers with electronic water level probes which automatically record levels on a daily basis. Periodic field checks, including measurements of specific conductance will occur on a monthly basis and in the event groundwater levels are above identified thresholds.</p> <ul style="list-style-type: none">• Baseline conditions of shallow groundwater levels and salinity will be determined prior to construction through water level measurements and water testing at the installed piezometers in proximity to restoration areas and conveyance features that might affect drainage on adjacent lands.• Salinity will be determined by measuring specific conductance at the piezometers with a calibrated field probe before construction begins, and monthly during operation.• Visual observations will also be used to monitor associated impacts on agricultural field conditions. Visual surveys will be conducted during periodic field checks as well as by local landowners on a continual basis.• A seepage hotline will be established for landowners to report any visual observations of seepage or deteriorating crop health as a result of an excessive rise in the water table and/or increasing root-zone salinity due to deteriorating shallow groundwater quality.• All monitoring data will be reported on a monthly basis, and in an annual summary report prepared by DWR that will evaluate the potential impacts of the operation of ECs for that year. The monthly reports will contain tabular water level and salinity data as well as compute changes in water levels and salinity from the previous months. The annual report will summarize monthly data and evaluate if impacts have occurred.• Groundwater levels at the affected areas will be maintained to the level existing prior to project construction.• Shallow groundwater salinity will be			

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		<p>monitored prior to construction and a threshold will be determined in consultation with the local landowners, based on existing crop salinity tolerance (considerations will include both if shallow groundwater is used for irrigation or if shallow groundwater levels rise and encroach upon the root-zone area).</p> <p>(Final MMRP pp. 2-7 – 2-8; Final EIR/EIS, Chapter 7, Groundwater, p. 7-55 – 7-56 & 7-121)</p>			
Water Quality					
WQ-11: Effects on electrical conductivity concentrations resulting from facilities operations and maintenance (Final EIR/EIS, Chapter 8, Water Quality, p. 8-936 – 8-944)	Significant	<p><u>WQ-11: Avoid, minimize, or offset, as feasible, reduced water quality conditions</u></p> <p>The implementation of mitigation actions shall be focused on avoiding or minimizing those incremental effects attributable to implementation of Alternative 4A operations only. Mitigation actions to avoid or minimize the incremental EC effects attributable to climate change/sea level rise are not required because these changed conditions will occur with or without implementation of Alternative 4A. The goal of specific actions is to reduce/avoid additional exceedances of Delta EC objectives and reduce long-term average EC concentration increases to levels that will not adversely affect beneficial uses within the Delta, and will not make beneficial use impairment measurably worse. Implementation of Mitigation Measure WQ-11 will be expected to reduce effects on EC to a less-than-significant level.</p> <p>(Final MMRP, pp. 2-13; see also Final EIR/EIS, Chapter 8, Water Quality, pp. 8-943)</p> <p><u>WQ-11e: Adaptively Manage Diversions at the North and South Delta Intakes to Reduce or Eliminate Water Quality Degradation in Western Delta</u></p> <p>Modeling results for Alternative 4A indicate water quality degradation for electrical conductivity (EC) in the Sacramento River at Emmaton in the months of July through September of below normal, dry and critical water year types, relative to the No Action Alternative (ELT). This mitigation measure establishes performance standards to address the modeled exceedances of Bay-Delta Water Quality Control Plan (WQCP) EC objectives and EC</p>	Less than Significant (Final EIR/EIS, Chapter 8, Water Quality, p. 8-942 – 8-943)	<p>River flow rate and reservoir storage reductions that will occur under Alternative 4A, relative to Existing Conditions, are not expected to result in a substantial adverse change in EC levels in the reservoirs and rivers upstream of the Delta, given that: changes in the quality of watershed runoff and reservoir inflows will not be expected to occur in the future; the state’s regulation of point-source discharge effects on Delta salinity-elevating parameters and the expected further regulation as salt management plans are developed; the salt-related TMDLs adopted and being developed for the San Joaquin River; and the expected improvement in lower San Joaquin River average EC levels commensurate with the lower EC of the irrigation water deliveries from the Delta.</p> <p>Relative to Existing Conditions, Alternative 4A will not result in any substantial increases in long-term average EC levels in the SWP/CVP Export Service Areas, and exceedance of the Bay-Delta WQCP EC objective will be infrequent. Average EC levels for the entire period modeled will decrease at both the Banks and Jones pumping plants and, thus, Alternative 4A will not contribute to additional beneficial use impairment related to elevated EC in the SWP/CVP Export Service Areas waters. Rather, Alternative 4A will improve long-term EC levels in the SWP/CVP Export Service Areas, relative to Existing Conditions. Further, relative to Existing Conditions,</p>	<p>Implementation of Mitigation Measure WQ-11 will be expected to reduce these effects to a less-than-significant level by requiring DWR to adaptively manage diversions at the north and south Delta intakes to reduce or eliminate water quality degradation in the western delta (Mitigation Measure WQ-11e) and requiring DWR to adaptively manage Head of Old River Barrier and diversions at the north and south delta intakes to reduce or eliminate exceedances of the Bay-Delta WQCP objective at Prisoners Point.</p> <p>Findings: Changes or alterations have been required in, or incorporated into, the project that avoid the significant environmental effect as identified in the Final EIR/EIS. Impacts will be less than significant with mitigation. (Final EIR/EIS, Chapter 8, Water Quality, pp. 8-942 – 8-943)</p>

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		<p>degradation such that impacts to beneficial uses affected by remaining degradation, following mitigation, would be less than significant.</p> <p>The Bay-Delta WQCP establishes water quality objectives for EC at Emmaton applicable from April 1 through August 15 for the protection of agricultural beneficial uses. To address exceedances of Bay-Delta WQCP EC objectives and EC degradation at Emmaton that has been modeled to occur in July and the first half of August of below normal, dry, and critical water years, DWOR shall rely upon real-time operations (which cannot be fully captured in the modeling) to ensure that Bay-Delta WQCP Emmaton EC objectives are met. As a component of real-time operations, DWR shall ensure adequate releases from upstream reservoirs on a daily time-step and adaptively manage the split between north and south Delta diversions to achieve the Bay-Delta WQCP EC objectives at Emmaton. DWR is required to operate to meet these objectives under Existing Conditions, and would be required to operate to these objectives under the No Action Alternative. Thus, operation of the project alternative to achieve the Bay-Delta WQCP EC objectives would be consistent with Existing Conditions and the No Action Alternative and result in a minimization of EC degradation at Emmaton during July and the first half of August of below normal, dry, and critical water year types. Hence, the performance standard for July and the first half of August shall be the Bay-Delta WQCP Emmaton EC objectives.</p> <p>The Bay-Delta WQCP does not establish an EC objective at Emmaton for the latter half of August or September. To address EC degradation at Emmaton that has been modeled to occur during this period of the year with the project alternative, DWR shall manage upstream reservoir releases on a daily basis and adaptively manage the split between north and south Delta diversions of below normal, dry and critical water years. The performance standard for late August and September shall be compliance with the Threemile Slough standard in the North Delta Water Agency Agreement and the Bay-Delta WQCP municipal and industrial objective at Rock Slough as implemented within Decision 1641 or as modified in the future. Allowing sufficient flow in the Sacramento River at Emmaton, through real-time operations, would contribute</p>		<p>Alternative 4A will not result in substantial increases in long-term average EC in Suisun Marsh. Thus, EC levels in Suisun Marsh are not expected to further degrade existing EC levels and thus will not contribute additionally to adverse effects on the fish and wildlife beneficial uses. Because EC is not bioaccumulative, any changes in long-term average EC levels will not directly cause bioaccumulative problems in fish and wildlife. Suisun Marsh is CWA Section 303(d) listed as impaired due to elevated EC, but EC levels are not expected to change substantially under Alternative 4A, relative to Existing Conditions, and thus it is not expected that they will contribute to additional beneficial use impairment. In the Plan Area, Alternative 4A is not expected to result in an increase in the frequency with which Bay-Delta WQCP EC objectives are exceeded, except for at the San Joaquin River at Prisoners Point (fish and wildlife objective; 6% increase). The increased frequency of exceedance of the fish and wildlife objective at Prisoners Point will contribute to adverse effects on aquatic life (specifically, indirect adverse effects on striped bass spawning), though there is a high degree of uncertainty associated with this impact. However, by adaptively managing the Head of Old River Barrier and the fraction of south Delta versus north Delta diversions, EC levels at Prisoners Point will likely be decreased to a level that will not adversely affect aquatic life beneficial uses. Average EC levels at Emmaton were modeled to increase by 9% during the drought period. The largest monthly average increases in EC will occur during the summer months of the drought period, and more generally in below normal, dry and critical water year types. The increases in drought period average EC levels modeled will cause substantial water quality degradation that will potentially contribute to adverse effects on the agricultural beneficial</p>	

Alternative 4A Potential Impact	Impact Conclusions Before Mitigation- CEQA	Proposed Mitigation	Impact Conclusion After Mitigation- CEQA	CEQA Conclusions	Findings of Fact
		<p>to reduced EC levels at this location, relative to that modeled for the project alternative, and would reduce EC degradation at Emmaton in late August and September to less-than-significant levels.</p> <p>This mitigation measure is consistent with the adaptive management and real-time operations that would be utilized to minimize the project alternative’s water quality effects to <i>Microcystis</i> in the summer months. This mitigation measure also is consistent with the Other (Non-Environmental) Commitment to address reverse flows in the Sacramento River at Freeport that may occur with the project alternative, which are most likely to occur in low flow months of dry and critical years.</p> <p>(Final MMRP, pp. 2-13 – 2-14; see also Final EIR/EIS, Chapter 8, Water Quality, pp. 8-943 – 8-944)</p> <p><u>WQ-11f: Adaptively Manage Head of Old River Barrier and Diversions at the North and South Delta Intakes to Reduce or Eliminate Exceedances of the Bay-Delta WQCP Objective at Prisoners Point</u></p> <p>Modeling results for Alternative 4A indicated additional exceedances of the Bay-Delta WQCP objective for protection of striped bass between Jersey Point and Prisoners Point at Prisoners Point. It is expected that by adaptively managing the Head of Old River Barrier and the fraction of south Delta versus north Delta diversions, exceedances of the EC objective at Prisoners Point could be avoided, and EC levels at Prisoners Point would be decreased to a level that would not adversely affect aquatic life beneficial uses. DWR shall adaptively manage the Head of Old River Barrier and the split between north and south Delta diversions during April-May to avoid exceedances of the objective at Prisoners Point. These actions would not be required in critical water years, when the objective does not apply. DWR shall consult with the CDFW, USFWS, NMFS, and Reclamation to ensure that such actions are warranted to avoid adverse impacts of salinity on striped bass spawning in the San Joaquin River between Jersey Point and Prisoners Point, and to minimize adverse effects these mitigation actions may have on other species. As such, the mitigation performance standard for April and May shall be in compliance with the Bay-Delta WQCP EC</p>		<p>uses in the western Delta. The comparison to Existing Conditions reflects changes in EC due to both Alternative 4A operations and climate change/sea level rise. The adverse effects expected to occur at Emmaton will be due in part to the effects of climate change/sea level rise, and in part due to Alternative 4A operations. This is evidenced by the increases in EC in the No Action Alternative (ELT) at Emmaton relative to Existing Conditions, as well as the fact that a lesser level of adverse effects is expected at Emmaton under Alternative 4A relative to the No Action Alternative (ELT). During summer of below normal, dry and critical water years, additional flow in the Sacramento River at Emmaton will reduce or eliminate increases in EC. It is expected that for July–September of below normal, dry and critical water years, real-time operations that will include more precise management of upstream reservoir releases on a daily basis and less pumping from the north Delta intakes and greater reliance on south Delta intakes than that modeled will allow for enough flow in the Sacramento River at Emmaton to reduce water quality degradation to levels closer to the No Action Alternative that will not be expected to adversely affect beneficial uses. Because EC is not bioaccumulative, the increases in long-term average EC levels will not directly cause bioaccumulative problems in aquatic life or humans. The western Delta is CWA Section 303(d) listed for elevated EC and the increased EC degradation that was modeled in the western Delta will make beneficial use impairment measurably worse. (Final EIR/EIS, Chapter 8, Water Quality, pp. 8-942 – 8-943)</p>	

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		objective at Prisoners Point. (Final MMRP, pp. 2-15; see also Final EIR/EIS, Chapter 8, Water Quality, pp. 8-944)			
Geology and Seismicity					
GEO-5: Loss of property, personal injury, or death from structural failure resulting from construction-related ground motions during construction of water conveyance features (Final EIR/EIS, Chapter 9, Geology and Seismicity, pp. 9-290 – 9-293)	Significant	<p><u>TRANS-2a: Prohibit construction activity on physically deficient roadway segments</u></p> <p>DWR will include in the bid specifications prohibitions against construction traffic from using roadway segments with pavement conditions below the thresholds identified in this study [i.e., an International Roughness Index (IRI) rating greater than 170 or a Pavement Condition Index (PCI) rating worse than 55], to the extent feasible. Implementation of this measure would prohibit all construction traffic on the 46 of the 116 roadway segments that were determined to be physically deficient as listed in Table 19-26 of the FINAL EIR/EIS, if feasible. Implementation of Trans-2a would require routing of construction traffic to use the remaining 70 roadway segments that meet pavement conditions thresholds. It should be noted that this may require construction traffic to make circuitous travel routes and/or be unable to access project construction sites. Therefore, in the event that TRANS-2a is not feasible, TRANS-2b will be implemented. Implementation of Trans-2b would require limiting the total number and/or weight of construction traffic using the 46 roadway segments that do not meet pavement conditions thresholds.</p> <p>(Final MMRP, pp. 2-94; see also Final EIR/EIS, Chapter 19, Transportation, pp. 19-70 & 19-293)</p> <p><u>TRANS-2b: Limit construction activity on physically deficient roadway segments</u></p> <p>If complete avoidance of physically deficient roadway segments as described in Mitigation Measure TRANS-2a is not feasible, construction activity will be limited to the extent possible on the deficient roadways identified in Table 19-26 of the FINAL EIR/EIS. Implementation of Trans-2b would require limiting the total number and/or weight of construction traffic using the 46 roadway segments that do not meet pavement conditions thresholds. Implementation of TRANS-2b will reduce continuing deterioration of pavement conditions on the most</p>	Less than Significant (Final EIR/EIS, Chapter 9, Geology and Seismicity, p. 9-292)	Construction-related ground motions and traffic effects could initiate liquefaction, which could cause failure of structures during construction. The impact could be significant. (Final EIR/EIS, Chapter 9, Geology and Seismicity, p. 9-292)	Because DWR will conform to Cal-OSHA and other state code requirements and conform to applicable design guidelines and standards, such as USACE design measures, in addition to implementation of Mitigation Measures TRANS-2a and TRANS-2b, as well as the maintenance and reconstruction of levees through Mitigation Measure TRANS-2c, the hazard will be controlled to a level that will protect worker safety (see Appendix 3B, Environmental Commitments, AMMs, and CMs). Further, DWR has made an environmental commitment (see Appendix 3B) that the construction methods recommended by the geotechnical engineer are included in the design of project facilities and construction specifications to minimize the potential for construction-induced liquefaction. DWR also has committed to ensure that these methods are followed during construction. Proper execution of these environmental commitments will result in no increased likelihood of loss of property, personal injury or death due to construction of Alternative 4A. The impact will be less than significant. Findings: Changes or alterations have been required in, or incorporated into, the project that avoid the significant environmental effect as identified in the Final EIR. Impacts will be less than significant with mitigation. (Final EIR/EIS, Chapter 9, Geology and Seismicity, p. 9-292)

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		<p>damaged roadways in the study area. DWR will include in the bid specifications requirements that limit the amount of construction traffic on roadway segments with pavement conditions below the thresholds identified in this study (i.e., an IRI rating greater than 170 or a PCI rating worse than 55), if feasible. If use of physically deficient roadways cannot be avoided or limited as specified in Mitigation Measures TRANS-2a and TRANS-2b, Mitigation Measure 2c will be implemented. Trucks would be prohibited and construction traffic would be limited to passenger vehicles on travel routes with pavement conditions worse than the thresholds identified in this study (i.e., an IRI rating greater than 170 or a PCI rating worse than 55).</p> <p>(Final MMRP, pp. 2-95; see also Final EIR/EIS, Chapter 19, Transportation, pp. 19-70 & 19-293)</p>			
Fish and Aquatic Resources					
AQUA-1: Effects of construction of water conveyance facilities on delta smelt (Final EIR/EIS, Chapter 11, Fish and Aquatic Resources, pp. 11-3172 – 11-3191)	Significant (noise associated with pile driving)	<p><u>AQUA-1a: Minimize the use of impact pile driving to address effects of pile driving and other construction-related underwater noise</u></p> <p>DWR will include specification in any construction contracts involving the installation of in-water or nearshore pilings, that piles will be installed using vibratory methods, or other non-impact driving methods, wherever feasible, especially outside of the in-water work window. Such methods have been shown to effectively minimize physical or substantial behavioral effects on fish and other aquatic species. The method selected will be based on geotechnical studies that will be conducted to determine the feasibility of vibratory installation of sheet pile, intake pipe foundation piles, and dock piles for barge landings. Additionally, the vibratory hammer will be started gradually to alert fish in the area that vibration will occur.</p> <p>(Final MMRP, pp. 2-19; see also Final EIR/EIS, Chapter 11, Fish and Aquatic Resources, pp. 11-3191)</p> <p><u>AQUA-1b: Monitor underwater noise and, if necessary, use an attenuation device to reduce effects of pile driving and other construction-related underwater noise</u></p> <p>If the use of vibratory methods as contemplated by Mitigation Measure AQUA-1a cannot feasibly be implemented during pile driving activities that occur in-water, DWR will instead monitor pile-driving noise and attenuate it, if necessary, through the dewatering of the cofferdam area and/or the installation of a bubble curtain</p>	Less than Significant (Final EIR/EIS, Chapter 11, Fish and Aquatic Resources, p. 11-3191)	The impact of the construction of the water conveyance facilities on delta smelt or critical habitat will not be significant except for construction noise associated with pile driving outside the work window. (Final EIR/EIS, Chapter 11, Fish and Aquatic Resources, pp. 11-302, 11-1412, & 11-3191)	<p>The potential impact on delta smelt from construction activities is considered less than significant due to implementation of the measures described in Appendix 3B, such as <i>Environmental Training; Stormwater Pollution Prevention Plan; Erosion and Sediment Control Plan; Hazardous Materials Management Plan; Spill Prevention, Containment, and Countermeasure Plan; Disposal of Spoils, Reusable Tunnel Material, and Dredged Material; Fish Rescue and Salvage Plan; and Barge Operations Plan</i>. These measures will guide rapid and effective response in the case of inadvertent spills of hazardous materials.</p> <p>Although not likely to occur in the area of effect, the direct effects of underwater construction noise on delta smelt that may be present will be a significant impact if delta smelt are exposed because of the high likelihood that it will cause injury or death to some fish in the immediate vicinity of the activity. Implementation of Mitigation Measures AQUA-1a and AQUA-1b will reduce that noise impact to a less-than-significant level by minimizing the use of impact pile driving to address the effects of pile driving and other construction-related underwater noise (Mitigation Measures AQUA-1a) and requiring DWR to monitor underwater noise and, if</p>

Alternative 4A Potential Impact	Impact Conclusions Before Mitigation- CEQA	Proposed Mitigation	Impact Conclusion After Mitigation- CEQA	CEQA Conclusions	Findings of Fact
		<p>or other attenuation device to minimize underwater noise. This obligation does not apply to sheet pile installations, where it would not be feasible to surround the entire sheet pile wall, and which are expected to be installed using a vibratory hammer for the majority of the time. Where impact pile driving is required, DWR will monitor underwater sound levels to ensure compliance with the underwater noise thresholds at a distance appropriate for protection of the species (183 dB SEL_{cumulative} for fish less than 2 grams; 187 dB SEL_{cumulative} for fish greater than 2 grams). If such monitoring shows that noise could exceed applicable thresholds, physical or operational attenuation methods will be implemented to ensure compliance with these thresholds.</p> <p>(Final MMRP, pp. 2-20; see also Final EIR/EIS, Chapter 11, Fish and Aquatic Resources, pp. 11-3191)</p>			<p>necessary, use an attenuation device to reduce the effects of pile driving and other construction-related underwater noise (Mitigation Measures AQUA-1b).</p> <p>Findings: Changes or alterations have been required in, or incorporated into, the project that avoid the significant environmental effect as identified in the Final EIR/EIS. Impacts will be less than significant with mitigation.</p> <p>(Final EIR/EIS, Chapter 11, Fish and Aquatic Resources, pp. 11-302, 11-1412, & 11-3191)</p>
AQUA-19: Effects of construction of water conveyance facilities on longfin smelt (Final EIR/EIS, Chapter 11, Fish and Aquatic Resources, p. 11-3203)	Significant (noise associated with pile driving)	<p><u>AQUA-1a: Minimize the use of impact pile driving to address effects of pile driving and other construction-related underwater noise</u></p> <p>See Impact AQUA-1a, above, for full mitigation measure. (Final MMRP, pp. 2-19; see also Final EIR/EIS, Chapter 11, Fish and Aquatic Resources, pp. 11-3191 & 11-3203)</p> <p><u>AQUA-1b: Monitor underwater noise and, if necessary, use an attenuation device to reduce effects of pile driving and other construction-related underwater noise</u></p> <p>See Impact AQUA-1b, above, for full mitigation measure. (Final MMRP, pp. 2-20; see also Final EIR/EIS, Chapter 11, Fish and Aquatic Resources, p. 11-3191 & 11-3203)</p>	Less than Significant (Final EIR/EIS, Chapter 11, Fish and Aquatic Resources, p. 11-3203)	The impact of the construction of water conveyance facilities on longfin smelt will not be significant except for construction noise associated with pile driving. (Final EIR/EIS, Chapter 11, Fish and Aquatic Resources, pp. 11-339 – 11-340, 11-1422, & 11-3203)	<p>The potential impact on longfin smelt from construction activities is considered less than significant due to implementation of the measures described in Appendix 3B, including <i>Environmental Training; Stormwater Pollution Prevention Plan; Erosion and Sediment Control Plan; Hazardous Materials Management Plan; Spill Prevention, Containment, and Countermeasure Plan; Disposal of Spoils, Reusable Tunnel Material, and Dredged Material; Fish Rescue and Salvage Plan; and Barge Operations Plan</i>. These measures will reduce the amount of turbidity from in-water construction and will guide rapid and effective response in the case of inadvertent spills of hazardous materials. In combination with the species natural tolerance to elevated turbidity levels, they will be expected to protect longfin smelt from any adverse water quality effect resulting from project construction. The direct effects of underwater construction noise on longfin smelt will be a significant impact because of the high likelihood that it will cause death to some fish in the immediate vicinity of the noise. However, Mitigation Measures AQUA-1a and AQUA-1b will minimize the potential effects from underwater noise and will reduce the severity of impacts to a less-than-significant level by minimizing the use of impact pile driving to address the effects of pile driving and other</p>

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					<p>construction-related underwater noise (Mitigation Measures AQUA-1a) and requiring DWR to monitor underwater noise and, if necessary, use an attenuation device to reduce the effects of pile driving and other construction-related underwater noise (Mitigation Measures AQUA-1b).</p> <p>Findings: Changes or alterations have been required in, or incorporated into, the project that avoid the significant environmental effect as identified in the Final EIR/EIS. Impacts will be less than significant with mitigation. (Final EIR/EIS, Chapter 11, Fish and Aquatic Resources, pp. 11-339 – 11-340, & 11-1422, 11-3203)</p>
<p>AQUA-22: Effects of water operations on spawning, egg incubation, and rearing habitat for longfin smelt (Final EIR/EIS, Chapter 11, Fish and Aquatic Resources, pp. 11-3206 – 11-3212)</p>	Significant	<p><u>AQUA-22d: DWR will consult with CDFW as part of the 2081 incidental take permit process to include spring outflow criteria as necessary to fully mitigate any impacts of operation-related take of longfin smelt attributable to the project, with adjustments through Adaptive Management as appropriate. Implementation of any necessary spring outflow criteria will occur through coordinated operations of the CVP and SWP.</u></p> <p>DWR will consult with DFW as part of the 2081 incidental take permit process to include spring outflow criteria as necessary to fully mitigate any impacts of operation-related take of longfin smelt attributable to the project, with adjustments through Adaptive Management as appropriate. Implementation of any necessary spring outflow criteria will occur through coordinated operations of the CVP and SWP. (Final MMRP, p. 2-21; see also Final EIR/EIS, Chapter 11, Fish and Aquatic Resources, pp. 11-3211 – 11-3212)</p>	Less than Significant (Final EIR/EIS, Chapter 11, Fish and Aquatic Resources, pp. 11-3209 – 11-3211)	<p>Under Alternative 4A scenario H3_ELТ, average Delta outflow during winter/spring generally will be similar to Existing Conditions during December-March, with some exceptions by water year type, and lower in April-June (Final EIR/EIS, Chapter 11, p. 3210, Table 11-4A-8). Under Scenario H4_ELТ, average Delta outflows generally will be similar to Existing Conditions, but will be lower in June.</p> <p>Average relative abundance of longfin smelt, as estimated by the Kimmerer et al. (2009) method which directly correlates winter-spring Delta outflow to longfin smelt abundance, is up to 19% to 22% lower under Scenario H3_ELТ compared to Existing Conditions (17–19% lower across all water year types; Chapter 11, p. 3209, Table 11-4A-7). For H4_ELТ, which includes enhanced spring outflow, the longfin smelt abundance is up to 10% to 12% lower compared to Existing Conditions (5–7% lower across all water year types), based on Kimmerer et al. (2009).</p> <p>Contrary to the NEPA conclusion in the Final EIR/EIS, these results indicate that the difference between Existing Conditions and Alternative 4A will be significant because the alternative will substantially reduce relative abundance based on Kimmerer et al.</p>	<p>Based on the Kimmerer et al. regression applied for this analysis, H3 will result in a significant impact on longfin smelt due to a substantial decrease in abundance, while H4 will have a beneficial impact because the abundance will be increased. Because of the potential for this alternative to substantially reduce longfin smelt abundance, this impact will be significant. Implementing Mitigation Measure AQUA-22d will reduce this impact to a less-than-significant level by including spring outflow criteria as necessary to fully mitigate any impacts of operation-related take of longfin smelt attributable to the project, with adjustments through Adaptive Management as appropriate. Implementation of any necessary spring outflow criteria will occur through coordinated operations of the CVP and SWP. Findings: Changes or alterations have been required in, or incorporated into, the project that avoid the significant environmental effect as identified in the Final EIR. Impacts will be less than significant with mitigation. (Final EIR/EIS, Chapter 11, Fish and Aquatic Resources, pp. 11-3209 – 11-3211)</p>

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				(2009).This interpretation of the biological modeling results, however, is likely attributable to different modeling assumptions for four factors: sea level rise, climate change, future water demands, and implementation of the alternative. As discussed in Section 11.3.3 of the Final EIR/EIS, because of differences between the CEQA and NEPA baselines, it is sometimes possible for CEQA and NEPA significance conclusions to vary between one another under the same impact discussion. The baseline for the CEQA analysis is Existing Conditions at the time the second NOP for the EIR/EIS was prepared (2009). Both the action alternative and the NEPA baseline (NAA) models anticipated future conditions that will occur at 2025, including the projected effects of climate change (precipitation patterns), sea level rise and future water demands, as well as implementation of required actions under the 2008 USFWS BiOp and the 2009 NMFS BiOp. Because the action alternative modeling does not partition the effects of implementation of the alternative from the effects of sea level rise, climate change and future water demands, the comparison to Existing Conditions may not offer a clear understanding of the impact of the alternative on the environment. This suggests that the NEPA analysis, which compares results between the alternative and NAA_ELT, is a better approach with respect to these issues because it isolates the effect of the alternative from those of sea level rise, climate change, and future water demands. When compared to NAA_ELT and informed by the NEPA analysis in the Final EIR/EIS, the average longfin smelt abundance, based on Kimmerer et al. (2009), was up to 8–11% less under H3_ELT (across all water years: 6% decrease to 3% increase; Chapter 11, p. 3209, Table 11-4A-7). Abundance relative to NAA_ELT increased up to 18% to 22%	

Alternative 4A Potential Impact	Impact Conclusions Before Mitigation- CEQA	Proposed Mitigation	Impact Conclusion After Mitigation- CEQA	CEQA Conclusions	Findings of Fact
				(across all water years: 5–6% increase) for H4_ELT, which includes enhanced spring outflow compared to NAA_ELT (Final EIR/EIS, Chapter 11, p. 3207, Table 11-4A-6). These results represent the increment of change attributable to the alternative, and addressing the limitations of the comparison based on the CEQA baseline (Existing Conditions). Furthermore, the Adaptive Management and Monitoring Program included in Alternative 4A will allow for an evaluation of the necessary volume and timing of spring outflow. (Final EIR/EIS, Chapter 11, Fish and Aquatic Resources, p. 11-3209 – 11-3211)	
AQUA-23: Effects of water operations on rearing habitat for longfin smelt (Final EIR/EIS, Chapter 11, Fish and Aquatic Resources, p. 11-3212)	Significant	<u>AQUA-22d: DWR will consult with CDFW as part of the 2081 incidental take permit process to include spring outflow criteria as necessary to fully mitigate any impacts of operation-related take of longfin smelt attributable to the project, with adjustments through Adaptive Management as appropriate. Implementation of any necessary spring outflow criteria will occur through coordinated operations of the CVP and SWP.</u> See Impact AQUA-22d, above, for full mitigation measure. (Final MMRP, p. 2-21; see also Final EIR/EIS, Chapter 11, Fish and Aquatic Resources, pp. 11-3211 – 11-3212)	Less than Significant (Final EIR/EIS, Chapter 11, Fish and Aquatic Resources, p. 11-3212)	Under Alternative 4A scenario H3_ELT, average Delta outflow during winter/spring generally will be similar to Existing Conditions during December-March, with some exceptions by water year type, and lower in April-June (Final EIR/EIS, Chapter 11, p. 3210, Table 11-4A-8). Under Scenario H4_ELT, average Delta outflows generally will be similar to Existing Conditions, but will be lower in June. Average relative abundance of longfin smelt, as estimated by the Kimmerer et al. (2009) method which directly correlates winter-spring Delta outflow to longfin smelt abundance, is up to 19% to 22% lower under Scenario H3_ELT compared to Existing Conditions (17–19% lower across all water year types; Chapter 11, p. 3209, Table 11-4A-7). For H4_ELT, which includes enhanced spring outflow, the longfin smelt abundance is up to 10% to 12% lower compared to Existing Conditions (5–7% lower across all water year types), based on Kimmerer et al. (2009). Contrary to the NEPA conclusion in the Final EIR/EIS, these results indicate that the difference between Existing Conditions and Alternative 4A will be significant because the alternative will substantially reduce relative abundance based on Kimmerer et al. (2009).	Based on the Kimmerer et al. regression applied for this analysis, H3 will result in a significant impact on longfin smelt due to a substantial decrease in abundance, while H4 will have a beneficial impact because the abundance will be increased. Because of the potential for this alternative to substantially reduce longfin smelt abundance, this impact will be significant. Implementing Mitigation Measure AQUA-22d will reduce this impact to a less-than-significant level by including spring outflow criteria as necessary to fully mitigate any impacts of operation-related take of longfin smelt attributable to the project, with adjustments through Adaptive Management as appropriate. Implementation of any necessary spring outflow criteria will occur through coordinated operations of the CVP and SWP. Findings: Changes or alterations have been required in, or incorporated into, the project that avoid the significant environmental effect as identified in the Final EIR/EIS. Impacts will be less than significant with mitigation. (Final EIR/EIS, Chapter 11, Fish and Aquatic Resources, pp. 11-3209 – 11-3212)

Alternative 4A Potential Impact	Impact Conclusions Before Mitigation- CEQA	Proposed Mitigation	Impact Conclusion After Mitigation- CEQA	CEQA Conclusions	Findings of Fact
				<p>This interpretation of the biological modeling results, however, is likely attributable to different modeling assumptions for four factors: sea level rise, climate change, future water demands, and implementation of the alternative. As discussed above and in Section 11.3.3 of the Final EIR/EIS, because of differences between the CEQA and NEPA baselines, it is sometimes possible for CEQA and NEPA significance conclusions to vary between one another under the same impact discussion. The baseline for the CEQA analysis is Existing Conditions at the time the second NOP for the EIR/EIS was prepared (2009). Both the action alternative and the NEPA baseline (NAA) models anticipated future conditions that will occur at 2025, including the projected effects of climate change (precipitation patterns), sea level rise and future water demands, as well as implementation of required actions under the 2008 USFWS BiOp and the 2009 NMFS BiOp. Because the action alternative modeling does not partition the effects of implementation of the alternative from the effects of sea level rise, climate change and future water demands, the comparison to Existing Conditions may not offer a clear understanding of the impact of the alternative on the environment. This suggests that the NEPA analysis, which compares results between the alternative and NAA_ELT, is a better approach with respect to these issues because it isolates the effect of the alternative from those of sea level rise, climate change, and future water demands. When compared to NAA_ELT and informed by the NEPA analysis, the average longfin smelt abundance, based on Kimmerer et al. (2009), was up to 8–11% less under H3_ELT (across all water years: 6% decrease to 3% increase; Chapter 11, p. 3209, Table 11-4A-7). Abundance relative to NAA_ELT increased up to 18% to 22% (across all water years: 5–6% increase) for H4_ELT, which includes</p>	

Alternative 4A Potential Impact	Impact Conclusions Before Mitigation- CEQA	Proposed Mitigation	Impact Conclusion After Mitigation- CEQA	CEQA Conclusions	Findings of Fact
				enhanced spring outflow compared to NAA_ELT (Final EIR/EIS, Chapter 11, p. 3207, Table 11-4A-6). These results represent the increment of change attributable to the alternative, and addressing the limitations of the comparison based on the CEQA baseline (Existing Conditions). Furthermore, the Adaptive Management and Monitoring Program included in Alternative 4A will allow for an evaluation of the necessary volume and timing of spring outflow. Based on the Kimmerer et al. regression applied for this analysis, however, H3 will result in a significant impact on longfin smelt due to a substantial decrease in abundance, while H4 will have a beneficial impact because the abundance will be increased. Because of the potential for Alternative 4A to substantially reduce longfin smelt abundance, this impact is considered significant. (Final EIR/EIS, Chapter 11, Fish and Aquatic Resources, pp. 11-3209 – 11-3212)	
AQUA-24: Effects of water operations on migration conditions for longfin smelt (Final EIR/EIS, Chapter 11, Fish and Aquatic Resources, p. 11-3212)	Significant	<u>AQUA-22d: DWR will consult with CDFW as part of the 2081 incidental take permit process to include spring outflow criteria as necessary to fully mitigate any impacts of operation-related take of longfin smelt attributable to the project, with adjustments through Adaptive Management as appropriate. Implementation of any necessary spring outflow criteria will occur through coordinated operations of the CVP and SWP.</u> See Impact AQUA-22d, above, for full mitigation measure. (Final MMRP, pp. 2-21; see also Final EIR/EIS, Chapter 11, Fish and Aquatic Resources, pp. 11-3211 – 11-3212)	Less than Significant (Final EIR/EIS, Chapter 11, Fish and Aquatic Resources, p. 11-3212)	Under Alternative 4A scenario H3_ELT, average Delta outflow during winter/spring generally will be similar to Existing Conditions during December-March, with some exceptions by water year type, and lower in April-June (Final EIR/EIS, Chapter 11, p. 3210, Table 11-4A-8). Under Scenario H4_ELT, average Delta outflows generally will be similar to Existing Conditions, but will be lower in June. Average relative abundance of longfin smelt, as estimated by the Kimmerer et al. (2009) method which directly correlates winter-spring Delta outflow to longfin smelt abundance, is up to 19% to 22% lower under Scenario H3_ELT compared to Existing Conditions (17–19% lower across all water year types; Final EIR/EIS, Chapter 11, p. 3209, Table 11-4A-7). For H4_ELT, which includes enhanced spring outflow, the longfin smelt abundance is up to 10% to 12% lower compared to Existing Conditions (5–7% lower across all water year types), based on	Based on the Kimmerer et al. regression applied for this analysis, H3 will result in a significant impact on longfin smelt due to a substantial decrease in abundance, while H4 will have a beneficial impact because the abundance will be increased. Because of the potential for this alternative to substantially reduce longfin smelt abundance, this impact will be significant. Implementing Mitigation Measure AQUA-22d will reduce this impact to a less-than-significant level by including spring outflow criteria as necessary to fully mitigate any impacts of operation-related take of longfin smelt attributable to the project, with adjustments through Adaptive Management as appropriate. Implementation of any necessary spring outflow criteria will occur through coordinated operations of the CVP and SWP. Findings: Changes or alterations have been required in, or incorporated into, the project that avoid the significant environmental effect as identified in the Final EIR. Impacts will be less than significant with mitigation. (Final EIR/EIS, Chapter 11, Fish and Aquatic

Alternative 4A Potential Impact	Impact Conclusions Before Mitigation- CEQA	Proposed Mitigation	Impact Conclusion After Mitigation- CEQA	CEQA Conclusions	Findings of Fact
				<p>Kimmerer et al. (2009). Contrary to the NEPA conclusion in the Final EIR/EIS, these results indicate that the difference between Existing Conditions and Alternative 4A will be significant because the alternative will substantially reduce relative abundance based on Kimmerer et al. (2009). This interpretation of the biological modeling results, however, is likely attributable to different modeling assumptions for four factors: sea level rise, climate change, future water demands, and implementation of the alternative. As discussed above and in Section 11.3.3 of the Final EIR/EIS, because of differences between the CEQA and NEPA baselines, it is sometimes possible for CEQA and NEPA significance conclusions to vary between one another under the same impact discussion. The baseline for the CEQA analysis is Existing Conditions at the time the second NOP for the EIR/EIS was prepared (2009). Both the action alternative and the NEPA baseline (NAA) models anticipated future conditions that will occur at 2025, including the projected effects of climate change (precipitation patterns), sea level rise and future water demands, as well as implementation of required actions under the 2008 USFWS BiOp and the 2009 NMFS BiOp. Because the action alternative modeling does not partition the effects of implementation of the alternative from the effects of sea level rise, climate change and future water demands, the comparison to Existing Conditions may not offer a clear understanding of the impact of the alternative on the environment. This suggests that the NEPA analysis, which compares results between the alternative and NAA_ELT, is a better approach with respect to these issues because it isolates the effect of the alternative from those of sea level rise, climate change, and future water demands. When compared to NAA_ELT and informed by the NEPA analysis, the average longfin</p>	Resources, pp. 11-3209 – 11-3212)

Alternative 4A Potential Impact	Impact Conclusions Before Mitigation- CEQA	Proposed Mitigation	Impact Conclusion After Mitigation- CEQA	CEQA Conclusions	Findings of Fact
				smelt abundance, based on Kimmerer et al. (2009), was up to 8–11% less under H3_ELT (across all water years: 6% decrease to 3% increase; Chapter 11, p. 3209, Table 11-4A-7). Abundance relative to NAA_ELT increased up to 18% to 22% (across all water years: 5–6% increase) for H4_ELT, which includes enhanced spring outflow compared to NAA_ELT (Chapter 11, p. 3207, Table 11-4A-6). These results represent the increment of change attributable to the alternative, and addressing the limitations of the comparison based on the CEQA baseline (Existing Conditions). Furthermore, the Adaptive Management and Monitoring Program included in Alternative 4A will allow for an evaluation of the necessary volume and timing of spring outflow. Based on the Kimmerer et al. regression applied for this analysis, however, H3 will result in a significant impact on longfin smelt due to a substantial decrease in abundance, while H4 will have a beneficial impact because the abundance will be increased. Because of the potential for Alternative 4A to substantially reduce longfin smelt abundance, this impact is considered significant. (Final EIR/EIS, Chapter 11, Fish and Aquatic Resources, pp. 11-3209 – 11-3212)	
AQUA-37: Effects of construction of water conveyance facilities on Chinook salmon (winter-run ESU) (Final EIR/EIS, Chapter 11, Fish and Aquatic Resources, p. 11-3214 – 11-3217)	Significant (noise associated with pile driving)	<u>AQUA-1a: Minimize the use of impact pile driving to address effects of pile driving and other construction-related underwater noise</u> See Impact AQUA-1a, above, for full mitigation measure. (Final MMRP pp. 2-19; see also Final EIR/EIS, Chapter 11, Fish and Aquatic Resources, pp. 11-3191 & 11-3217) <u>AQUA-1b: Monitor underwater noise and, if necessary, use an attenuation device to reduce effects of pile driving and other construction-related underwater noise</u> See Impact AQUA-1b, above, for full mitigation measure. (Final MMRP pp. 2-20; see also Final EIR/EIS, Chapter 11, Fish and Aquatic Resources, pp. 11-3191 & 11-3217)	Less than Significant (Final EIR/EIS, Chapter 11, Fish and Aquatic Resources, p. 11-3216 – 11-3217)	The impact of the construction of the water conveyance facilities on winter-run Chinook salmon will not be significant except for construction noise associated with pile driving. The potential impact on Chinook salmon from construction activities will be considered less than significant due to the timing of construction activities and the implementation of the environmental commitments described under Impact AQUA-1 for delta smelt and in Appendix 3B, <i>Environmental Commitments, AMMs, and CMs, such as Environmental Training; Stormwater Pollution Prevention Plan; Erosion and Sediment Control Plan; Hazardous Materials</i>	The direct effects of underwater construction noise on Chinook salmon will be a significant impact because of the high likelihood that it will cause injury or death to most impacted fish in the immediate vicinity of the activity. However, implementation of Mitigation Measures AQUA-1a and AQUA-1b will minimize the potential effects from underwater noise and will reduce the severity of impacts to a less-than-significant level by minimizing the use of impact pile driving to address the effects of pile driving and other construction-related underwater noise (Mitigation Measures AQUA-1a) and requiring DWR to monitor underwater noise and, if necessary, use an attenuation device to reduce the effects of pile driving and other construction-

Alternative 4A Potential Impact	Impact Conclusions Before Mitigation- CEQA	Proposed Mitigation	Impact Conclusion After Mitigation- CEQA	CEQA Conclusions	Findings of Fact
				<p><i>Management Plan; Spill Prevention, Containment, and Countermeasure Plan; Disposal of Spoils, Reusable Tunnel Material, and Dredged Material; Fish Rescue and Salvage Plan; and Barge Operations Plan.</i></p> <p>These measures will be expected to protect Chinook salmon from any adverse water quality effect (turbidity, hazardous spills) resulting from project construction. Construction will not be expected to increase predation rates relative to Existing Conditions. Construction will result in both temporary and permanent alteration of rearing and migratory habitats used by Chinook salmon. However, these effects are not expected to be significant because the loss of habitat is not substantial compared to the amount of habitat currently available in combination with the amount of new habitat that will result from restoration, and the current habitat is of low quality. (Final EIR/EIS, Chapter 11, Fish and Aquatic Resources, pp. 11-367, 11-1432, & 11-3216 – 11-3217)</p>	<p>related underwater noise (Mitigation Measures AQUA-1b).</p> <p>Construction of Alternative 4A involves several elements with the potential to affect winter-run Chinook salmon. However, these turbidity and hazardous material spill effects will be effectively avoided and/or minimized through implementation of environmental commitments (see Impact AQUA-1 and Appendix 3B, <i>Environmental Commitments, AMMs, and CMs: Environmental Training; Stormwater Pollution Prevention Plan; Erosion and Sediment Control Plan; Hazardous Materials Management Plan; Spill Prevention, Containment, and Countermeasure Plan; Disposal of Spoils, Reusable Tunnel Material, and Dredged Material; Fish Rescue and Salvage Plan; and Barge Operations Plan</i>).</p> <p>Findings: Changes or alterations have been required in, or incorporated into, the project that avoid the significant environmental effect as identified in the Final EIR/EIS. Impacts will be less than significant with mitigation. (Final EIR/EIS, Chapter 11, Fish and Aquatic Resources, pp. 11-367, 11-1432, & 11-3216 – 11-3217)</p>
AQUA-55: Effects of construction of water conveyance facilities on Chinook salmon (spring-run ESU) (Final EIR/EIS, Chapter 11, Fish and Aquatic Resources, pp. 11-3247 – 11-3248)	Significant (noise associated with pile driving)	<p><u>AQUA-1a: Minimize the use of impact pile driving to address effects of pile driving and other construction-related underwater noise</u></p> <p>See Impact AQUA-1a, above, for full mitigation measure. (Final MMRP, pp. 2-19; see also Final EIR/EIS, Chapter 11, Fish and Aquatic Resources, pp. 11-3191 & 11-3248)</p> <p><u>AQUA-1b: Monitor underwater noise and, if necessary, use an attenuation device to reduce effects of pile driving and other construction-related underwater noise</u></p> <p>See Impact AQUA-1b, above, for full mitigation measure. (Final MMRP, pp. 2-20; see also Final EIR/EIS, Chapter 11, Fish and Aquatic Resources, pp. 11-3191 & 11-3248)</p>	Less than Significant (Final EIR/EIS, Chapter 11, Fish and Aquatic Resources, p. 11-3248)	<p>The impact of the construction of water conveyance facilities on spring-run Chinook salmon will not be significant except for construction noise associated with pile driving. Construction is not expected to increase predation rates relative to Existing Conditions. Construction will result in both temporary and permanent alteration of rearing and migratory habitats used by Chinook salmon. However, these effects are not expected to be significant because the loss of habitat is not substantial compared to the amount of habitat currently available in combination with the amount of new habitat that will result from restoration. (Final EIR/EIS, Chapter 11, Fish and Aquatic Resources, pp. 11-406, 11-1460, & 11-3248)</p>	<p>Potential effects of construction of the water conveyance facilities on spring-run Chinook salmon will be similar to those discussed for winter-run Chinook salmon (see Impact AQUA-37 for winter run Chinook salmon). Construction of Alternative 4A involves several elements with the potential to affect spring-run Chinook salmon. However, these turbidity and hazardous material spill effects will be effectively avoided and/or minimized through implementation of environmental commitments (see Impact AQUA-1 and Appendix 3B, <i>Environmental Commitments, AMMs, and CMs: Environmental Training; Stormwater Pollution Prevention Plan; Erosion and Sediment Control Plan; Hazardous Materials Management Plan; Spill Prevention, Containment, and Countermeasure Plan; Disposal of Spoils, Reusable Tunnel Material, and Dredged Material;</i></p>

Alternative 4A Potential Impact	Impact Conclusions Before Mitigation- CEQA	Proposed Mitigation	Impact Conclusion After Mitigation- CEQA	CEQA Conclusions	Findings of Fact
					<p><i>Fish Rescue and Salvage Plan; and Barge Operations Plan</i>).</p> <p>The direct effects of underwater construction noise on Chinook salmon will be a significant impact because of the high likelihood that it will cause injury or death to most impacted fish in the immediate vicinity of the activity. However, implementation of Mitigation Measures AQUA-1a and AQUA-1b will minimize the potential effects from underwater noise and will reduce the severity of impacts to a less-than-significant level by minimizing the use of impact pile driving to address the effects of pile driving and other construction-related underwater noise (Mitigation Measures AQUA-1a) and requiring DWR to monitor underwater noise and, if necessary, use an attenuation device to reduce the effects of pile driving and other construction-related underwater noise (Mitigation Measures AQUA-1b).</p> <p>The potential impact on spring-run Chinook salmon from construction activities will be considered less than significant due to implementation of the environmental commitments described under Impact AQUA-1 for delta smelt and in Appendix 3B, such as <i>Environmental Training; Stormwater Pollution Prevention Plan; Erosion and Sediment Control Plan; Hazardous Materials Management Plan; Spill Prevention, Containment, and Countermeasure Plan; Disposal of Spoils, Reusable Tunnel Material, and Dredged Material; Fish Rescue and Salvage Plan; and Barge Operations Plan</i>. These measures will be expected to protect Chinook salmon from any adverse water quality effect (turbidity, spills of hazardous materials) resulting from project construction.</p> <p>Findings: Changes or alterations have been required in, or incorporated into, the project that avoid the significant environmental effect as identified in the Final EIR/EIS. Impacts will be less than significant with mitigation.</p> <p>(Final EIR/EIS, Chapter 11, Fish and Aquatic Resources, pp. 11-406, 11-1460, & 11-3248)</p>
AQUA-73: Effects of	Significant	AQUA-1a: Minimize the use of impact pile driving to	Less than	The impact of construction of the water	The potential impact on Chinook salmon from

Alternative 4A Potential Impact	Impact Conclusions Before Mitigation- CEQA	Proposed Mitigation	Impact Conclusion After Mitigation- CEQA	CEQA Conclusions	Findings of Fact
construction of water conveyance facilities on Chinook salmon (fall- and late fall–run ESU) (Final EIR/EIS, Chapter 11, Fish and Aquatic Resources, p. 11-3292 – 11-3293)	(noise associated with pile driving)	<p><u>address effects of pile driving and other construction-related underwater noise</u></p> <p>See Impact AQUA-1a, above, for full mitigation measure. (Final MMRP, pp. 2-19; see also Final EIR/EIS, Chapter 11, Fish and Aquatic Resources, pp. 11-3191 & 11-3293)</p> <p><u>AQUA-1b: Monitor underwater noise and, if necessary, use an attenuation device to reduce effects of pile driving and other construction-related underwater noise</u></p> <p>See Impact AQUA-1b, above, for full mitigation measure. (Final MMRP, pp. 2-20; see also Final EIR/EIS, Chapter 11, Fish and Aquatic Resources, pp. 11-3191 & 11-3293)</p>	Significant (Final EIR/EIS, Chapter 11, Fish and Aquatic Resources, p. 11-3293)	<p>conveyance facilities on fall-run/late fall–run Chinook salmon will not be significant except for construction noise associated with pile driving.</p> <p>Construction is not expected to increase predation rates relative to Existing Conditions. Construction will result in both temporary and permanent alteration of rearing and migratory habitats used by Chinook salmon. However, these impacts are not expected to be significant because the loss of habitat is not substantial compared to the amount of habitat currently available in combination with the amount of new habitat that will result from restoration. (Final EIR/EIS, Chapter 11, Fish and Aquatic Resources, pp. 11-441, 11-1511, & 11-3293)</p>	<p>construction activities are considered less than significant due to implementation of the environmental commitments described in Appendix 3B, <i>Environmental Commitments, AMMs, and CMs; these are Environmental Training; Stormwater Pollution Prevention Plan; Erosion and Sediment Control Plan; Hazardous Materials Management Plan; Spill Prevention, Containment, and Countermeasure Plan; Disposal of Spoils, Reusable Tunnel Material, and Dredged Material; Fish Rescue and Salvage Plan; and Barge Operations Plan</i>. Pertinent details of these plans are provided under Impact AQUA-1 for delta smelt. These measures will be expected to protect Chinook salmon from any adverse water quality effect (turbidity and spills of hazardous materials) resulting from project construction. The direct effects of underwater construction noise on Chinook salmon will be a significant impact because of the high likelihood that it will cause injury or death to most impacted fish in the immediate vicinity of the activity. Implementation of Mitigation Measures AQUA-1a and AQUA-1b will reduce that noise impact to a less-than-significant level by minimizing the use of impact pile driving to address the effects of pile driving and other construction-related underwater noise (Mitigation Measures AQUA-1a) and requiring DWR to monitor underwater noise and, if necessary, use an attenuation device to reduce the effects of pile driving and other construction-related underwater noise (Mitigation Measures AQUA-1b). Findings: Changes or alterations have been required in, or incorporated into, the project that avoid the significant environmental effect as identified in the Final EIR/EIS. Impacts will be less than significant with mitigation. (Final EIR/EIS, Chapter 11, Fish and Aquatic Resources, pp. 11-441, 11-1511, & 11-3293)</p>
AQUA-91: Effects of construction of water conveyance facilities on steelhead	Significant (noise associated with pile	<p><u>AQUA-1a: Minimize the use of impact pile driving to address effects of pile driving and other construction-related underwater noise</u></p> <p>See Impact AQUA-1a, above, for full mitigation measure.</p>	Less than Significant (Final EIR/EIS, Chapter 11, Fish	The impact of the construction of water conveyance facilities on steelhead will not be significant except for construction noise associated with pile driving.	The potential impact on steelhead caused by water quality changes (i.e. turbidity) from construction activities is considered less than significant due to implementation of the

Alternative 4A Potential Impact	Impact Conclusions Before Mitigation- CEQA	Proposed Mitigation	Impact Conclusion After Mitigation- CEQA	CEQA Conclusions	Findings of Fact
(Final EIR/EIS, Chapter 11, Fish and Aquatic Resources, pp. 11-3363 – 11-3365)	driving)	<p>(Final MMRP, pp. 2-19; see also Final EIR/EIS, Chapter 11, Fish and Aquatic Resources, pp. 11-3191 & 11-3365) <u>AQUA-1b: Monitor underwater noise and, if necessary, use an attenuation device to reduce effects of pile driving and other construction-related underwater noise</u></p> <p>See Impact AQUA-1b, above, for full mitigation measure. (Final MMRP, pp. 2-20; see also Final EIR/EIS, Chapter 11, Fish and Aquatic Resources, p. 11-3191 & 11-3365)</p>	and Aquatic Resources, p. 11-3365)	<p>Construction is not expected to increase predation rates relative to Existing Conditions. Construction will result in both temporary and permanent alteration of rearing and migratory habitats used by steelhead. However, these impacts are not expected to be significant because the loss of habitat is not substantial compared to the amount of habitat currently available in combination with the amount of new habitat that will result from restoration. Locally increased predator habitat and predation from the temporary construction structures (cofferdams and barge landing docks) will not have population level effects. (Final EIR/EIS, Chapter 11, Fish and Aquatic Resources, pp. 11-490 – 11-491, 11-1597, & 11-3365)</p>	<p>measures described under Impact AQUA-1 for delta smelt and in Appendix 3B, <i>Environmental Commitments, AMMs, and CMs. These include Environmental Training; Stormwater Pollution Prevention Plan; Erosion and Sediment Control Plan; Hazardous Materials Management Plan; Spill Prevention, Containment, and Countermeasure Plan; Disposal of Spoils, Reusable Tunnel Material, and Dredged Material; Fish Rescue and Salvage Plan; and Barge Operations Plan</i>. These measures are expected to protect steelhead from any adverse water quality effect (turbidity increases or spills of hazardous materials) resulting from project construction. Construction of Alternative 4A involves several elements with the potential to affect steelhead. However, these turbidity and hazardous material spill effects will be effectively avoided and/or minimized through implementation of environmental commitments (see Impact AQUA-1 and Appendix 3B, <i>Environmental Commitments, AMMs, and CMs: Environmental Training; Stormwater Pollution Prevention Plan; Erosion and Sediment Control Plan; Hazardous Materials Management Plan; Spill Prevention, Containment, and Countermeasure Plan; Disposal of Spoils, Reusable Tunnel Material, and Dredged Material; Fish Rescue and Salvage Plan; and Barge Operations Plan</i>).</p> <p>The direct effects of underwater construction noise on steelhead will be a significant impact because of the high likelihood that it will cause injury or death to most impacted fish in the immediate vicinity of the activity. However, implementation of Mitigation Measures AQUA-1a and AQUA-1b will minimize the potential effects from underwater noise and will minimize the severity of impacts to a less-than-significant level.</p> <p>Findings: Changes or alterations have been required in, or incorporated into, the project that avoid the significant environmental effect as identified in the Final EIR/EIS. Impacts will be less than significant with mitigation. (Final EIR/EIS, Chapter 11, Fish and Aquatic</p>

Alternative 4A Potential Impact	Impact Conclusions Before Mitigation- CEQA	Proposed Mitigation	Impact Conclusion After Mitigation- CEQA	CEQA Conclusions	Findings of Fact
					Resources, pp. 11-490 – 11-491, 11-1597, & 11-3365)
AQUA-109: Effects of construction of water conveyance facilities on Sacramento splittail (Final EIR/EIS, Chapter 11, Fish and Aquatic Resources, p. 11-3423 – 11-3424)	Significant (noise associated with pile driving)	<u>AQUA-1a: Minimize the use of impact pile driving to address effects of pile driving and other construction-related underwater noise</u> See Impact AQUA-1a, above, for full mitigation measure. (Final MMRP, pp. 2-19; see also Final EIR/EIS, Chapter 11, Fish and Aquatic Resources, pp. 11-3191 & 11-3424) <u>AQUA-1b: Monitor underwater noise and, if necessary, use an attenuation device to reduce effects of pile driving and other construction-related underwater noise</u> See Impact AQUA-1b, above, for full mitigation measure. (Final MMRP, pp. 2-20; see also Final EIR/EIS, Chapter 11, Fish and Aquatic Resources, p. 11-3191 & 11-3424)	Less than Significant (Final EIR/EIS, Chapter 11, Fish and Aquatic Resources, p. 11-3424)	The impact of the construction of the water conveyance facilities on splittail will not be significant except for construction noise associated with pile driving. (Final EIR/EIS, Chapter 11, Fish and Aquatic Resources, p. 11-537, 11-1676, & 11-3424)	Because they typically inhabit turbid water, Sacramento splittail are unlikely to be affected by temporary increases in turbidity. Potential impacts from turbidity, accidental spills, and resuspension of sediments that may contain toxic contaminants will be limited because exposure will be minimized through the control of turbidity as described for delta smelt Impact AQUA-1 including implementation of the measures described under Impact AQUA-1 for delta smelt and in Appendix 3B, <i>Environmental Commitments, AMMs, and CMs (Environmental Training; Stormwater Pollution Prevention Plan; Erosion and Sediment Control Plan; Hazardous Materials Management Plan; Spill Prevention, Containment, and Countermeasure Plan; Disposal of Spoils, Reusable Tunnel Material, and Dredged Material; Fish Rescue and Salvage Plan; and Barge Operations Plan)</i> , and Sacramento splittail abundance will be low near active in-water construction sites. Consequently, these impacts will be less than significant. Construction of Alternative 4A involves several elements with the potential to affect splittail. However, these turbidity and hazardous material spill effects will be effectively avoided and/or minimized through implementation of environmental commitments (see Impact AQUA-1 and Appendix 3B, <i>Environmental Commitments, AMMs, and CMs: Environmental Training; Stormwater Pollution Prevention Plan; Erosion and Sediment Control Plan; Hazardous Materials Management Plan; Spill Prevention, Containment, and Countermeasure Plan; Disposal of Spoils, Reusable Tunnel Material, and Dredged Material; Fish Rescue and Salvage Plan; and Barge Operations Plan)</i>). Implementation of Mitigation Measures AQUA-1a and AQUA-1b will reduce noise impacts to less-than-significant levels. Findings: Changes or alterations have been required in, or incorporated into, the project that avoid the significant environmental effect as

Alternative 4A Potential Impact	Impact Conclusions Before Mitigation- CEQA	Proposed Mitigation	Impact Conclusion After Mitigation- CEQA	CEQA Conclusions	Findings of Fact
					identified in the Final EIR/EIS. Impacts will be less than significant with mitigation. (Final EIR/EIS, Chapter 11, Fish and Aquatic Resources, p. 11-537, 11-1676, & 11-3424)
AQUA-127: Effects of construction of water conveyance facilities on green sturgeon (Final EIR/EIS, Chapter 11, Fish and Aquatic Resources, p. 11-3444 – 11-3447)	Significant (noise associated with pile driving)	<u>AQUA-1a: Minimize the use of impact pile driving to address effects of pile driving and other construction-related underwater noise</u> See Impact AQUA-1a, above, for full mitigation measure. (Final MMRP, pp. 2-19; see also Final EIR/EIS, Chapter 11, Fish and Aquatic Resources, pp. 11-3191 & 11-3447) <u>AQUA-1b: Monitor underwater noise and, if necessary, use an attenuation device to reduce effects of pile driving and other construction-related underwater noise</u> See Impact AQUA-1b, above, for full mitigation measure. (Final MMRP, pp. 2-20; see also Final EIR/EIS, Chapter 11, Fish and Aquatic Resources, pp. 11-3191 & 11-3447)	Less than Significant (Final EIR/EIS, Chapter 11, Fish and Aquatic Resources, p. 11-3447)	The impact of the construction of the water conveyance facilities on green sturgeon will not be significant except for construction noise associated with pile driving. The limited susceptibility of sturgeon to predation and the locally increased predator habitat and predation from the temporary construction structures (cofferdams and barge landing docks) will not have population level effects. The effect of temporary and permanent rearing and migration habitat loss for green sturgeon will be limited due to the relatively small areas occupied by the construction and barge landing sites, and the low quality of the habitat affected by construction, as well as implementation of the environmental commitment Barge Operations Plan (see Impact AQUA-1 for delta smelt and Appendix 3B). Overall, the potential impacts of construction activities are expected to be less than significant. (Final EIR/EIS, Chapter 11, Fish and Aquatic Resources, p. 11-566, 11-1694, & 11-3447)	In-water construction activities will be scheduled to occur when the least number of green sturgeon will likely be present in or near the construction areas. Implementation of environmental commitments <i>Environmental Training; Stormwater Pollution Prevention Plan; Erosion and Sediment Control Plan; Hazardous Materials Management Plan; Spill Prevention, Containment, and Countermeasure Plan; and Disposal of Spoils, Reusable Tunnel Material, and Dredged Material</i> (see Impact AQUA-1 for delta smelt and Appendix 3B, <i>Environmental Commitments, AMMs, and CMs</i>)—as well as the species’ tolerance to turbidity—will minimize the effects of construction activities on turbidity, accidental spills, onsite and offsite sediment transport to surface waters, and re-suspension and redistribution of potentially contaminated sediments. As a result, these impacts will be less than significant on green sturgeon. Construction of Alternative 4A involves several elements with the potential to affect green sturgeon. However, these turbidity and hazardous material spill effects will be effectively avoided and/or minimized through implementation of environmental commitments (see Impact AQUA-1 and Appendix 3B, <i>Environmental Commitments, AMMs, and CMs: Environmental Training; Stormwater Pollution Prevention Plan; Erosion and Sediment Control Plan; Hazardous Materials Management Plan; Spill Prevention, Containment, and Countermeasure Plan; Disposal of Spoils, Reusable Tunnel Material, and Dredged Material; Fish Rescue and Salvage Plan; and Barge Operations Plan</i>). Although only a limited occurrence of green sturgeon is expected in the construction areas the direct effects of underwater construction noise on them will be a significant impact

Alternative 4A Potential Impact	Impact Conclusions Before Mitigation- CEQA	Proposed Mitigation	Impact Conclusion After Mitigation- CEQA	CEQA Conclusions	Findings of Fact
					<p>because of the high likelihood that it will cause injury or death to most impacted fish in the immediate vicinity of the activity. However, Mitigation Measures AQUA-1a and AQUA-1b will reduce the potential for effects from underwater noise and will reduce the severity of impacts to a less-than-significant level. Implementation of environmental commitments <i>Fish Rescue and Salvage Plan</i> and <i>Barge Operations Plan</i> (as described under Impact AQUA-1 for delta smelt and in Appendix 3B) will also minimize potential impacts of construction activities on green sturgeon.</p> <p>Findings: Changes or alterations have been required in, or incorporated into, the project that avoid the significant environmental effect as identified in the Final EIR/EIS. Impacts will be less than significant with mitigation. (Final EIR/EIS, Chapter 11, Fish and Aquatic Resources, p. 11-566, 11-1694, & 11-3447)</p>
AQUA-145: Effects of construction of water conveyance facilities on white sturgeon (Final EIR/EIS, Chapter 11, Fish and Aquatic Resources, p. 11-3472 – 11-3474)	Significant (noise associated with pile driving)	<p><u>AQUA-1a: Minimize the use of impact pile driving to address effects of pile driving and other construction-related underwater noise</u></p> <p>See Impact AQUA-1a, above, for full mitigation measure. (Final MMRP, pp. 2-19; see also Final EIR/EIS, Chapter 11, Fish and Aquatic Resources, pp. 11-3191 & 11-3474)</p> <p><u>AQUA-1b: Monitor underwater noise and, if necessary, use an attenuation device to reduce effects of pile driving and other construction-related underwater noise</u></p> <p>See Impact AQUA-1b, above, for full mitigation measure. (Final MMRP, pp. 2-20; see also Final EIR/EIS, Chapter 11, Fish and Aquatic Resources, pp. 11-3191 & 11-3474)</p>	<p>Less than Significant</p> <p>(Final EIR/EIS, Chapter 11, Fish and Aquatic Resources, p. 11-3474)</p>	<p>The impact of the construction of the water conveyance facilities on white sturgeon will not be significant except for construction noise associated with pile driving. The potential for exposure of white sturgeon to construction-related activities is expected to be low. Implementation of environmental commitments <i>Environmental Training; Stormwater Pollution Prevention Plan; Erosion and Sediment Control Plan; Hazardous Materials Management Plan; Spill Prevention, Containment, and Countermeasure Plan; and Disposal of Spoils, Reusable Tunnel Material, and Dredged Material</i> (see Impact AQUA-1 for delta smelt and Appendix 3B, <i>Environmental Commitments, AMMs, and CMs</i>) will reduce the amount of turbidity from in-water construction and will guide rapid and effective response in the case of inadvertent spills of hazardous materials. These measures—as well as the species’ tolerance to turbidity—will minimize the effects of construction activities on turbidity, accidental spills, onsite and offsite sediment transport to surface waters, and re-</p>	<p>Construction of Alternative 4A involves several elements with the potential to affect white sturgeon. However, these turbidity and hazardous material spill effects will be effectively avoided and/or minimized through implementation of environmental commitments (see Impact AQUA-1 and Appendix 3B, <i>Environmental Commitments, AMMs, and CMs: Environmental Training; Stormwater Pollution Prevention Plan; Erosion and Sediment Control Plan; Hazardous Materials Management Plan; Spill Prevention, Containment, and Countermeasure Plan; Disposal of Spoils, Reusable Tunnel Material, and Dredged Material; Fish Rescue and Salvage Plan; and Barge Operations Plan</i>).</p> <p>Although only a limited occurrence of white sturgeon is expected in the construction areas the direct effects of underwater construction noise on them will be a significant impact because of the high likelihood that it will cause injury or death to most impacted fish in the immediate vicinity of the activity. However, Mitigation Measures AQUA-1a and AQUA-1b will reduce the potential for effects from underwater</p>

Alternative 4A Potential Impact	Impact Conclusions Before Mitigation- CEQA	Proposed Mitigation	Impact Conclusion After Mitigation- CEQA	CEQA Conclusions	Findings of Fact
				<p>suspension and redistribution of potentially contaminated sediments.</p> <p>The limited susceptibility of sturgeon to predation and only locally increased predator habitat and predation from the temporary construction structures (cofferdams and barge landing docks) will not have population level effects. The effect of temporary and permanent rearing and migration habitat loss for white sturgeon will be limited due to the relatively small areas occupied by the construction and barge landing sites, and the low quality of the habitat affected by construction, as well as implementation of environmental commitment Barge Operations Plan (see Appendix 3B). (Final EIR/EIS, Chapter 11, Fish and Aquatic Resources, p. 11-594 – 11-595, 11-1721, & 11-3474)</p>	<p>noise and will reduce the severity of impacts to a less-than-significant level. Implementation of environmental commitments <i>Fish Rescue and Salvage Plan</i> and <i>Barge Operations Plan</i> (as described under Impact AQUA-1 for delta smelt and in Appendix 3B) will also minimize potential effects of construction activities on white sturgeon.</p> <p>Findings: Changes or alterations have been required in, or incorporated into, the project that avoid the significant environmental effect as identified in the Final EIR/EIS. Impacts will be less than significant with mitigation. (Final EIR/EIS, Chapter 11, Fish and Aquatic Resources, p. 11-594 – 11-595, 11-1721, & 11-3474)</p>
AQUA-163: Effects of construction of water conveyance facilities on Pacific lamprey (Final EIR/EIS, Chapter 11, Fish and Aquatic Resources, p. 11-3494 – 11-3495)	Significant (noise associated with pile driving)	<p><u>AQUA-1a: Minimize the use of impact pile driving to address effects of pile driving and other construction-related underwater noise</u></p> <p>See Impact AQUA-1a, above, for full mitigation measure. (Final MMRP, pp. 2-19; see also Final EIR/EIS, Chapter 11, Fish and Aquatic Resources, pp. 11-3191 & 11-3495)</p> <p><u>AQUA-1b: Monitor underwater noise and, if necessary, use an attenuation device to reduce effects of pile driving and other construction-related underwater noise</u></p> <p>See Impact AQUA-1b, above, for full mitigation measure. (Final MMRP, pp. 2-20; see also Final EIR/EIS, Chapter 11, Fish and Aquatic Resources, pp. 11-3191 & 11-3495)</p>	Less than Significant (Final EIR/EIS, Chapter 11, Fish and Aquatic Resources, p. 11-3495)	<p>The impact of the construction of the water conveyance facilities on Pacific lamprey will not be significant except for construction noise associated with pile driving.</p> <p>The limited susceptibility of lamprey to predation and only locally increased predator habitat and predation from the temporary construction structures (cofferdams and barge landing docks) will not have population level effects. The effect of temporary and permanent rearing and migration habitat loss for Pacific lamprey will be limited due to the relatively small areas occupied by the construction and barge landing sites, and the low quality of the habitat affected by construction, as well as by implementation of the environmental commitment <i>Barge Operations Plan</i> (see Appendix 3B). (Final EIR/EIS, Chapter 11, Fish and Aquatic Resources, p. 11-624 – 11-625, 11-1743, & 11-3495)</p>	<p>Implementation of environmental commitments <i>Environmental Training; Stormwater Pollution Prevention Plan; Erosion and Sediment Control Plan; Hazardous Materials Management Plan; Spill Prevention, Containment, and Countermeasure Plan; and Disposal of Spoils, Reusable Tunnel Material, and Dredged Material</i> (see Impact AQUA-1 for delta smelt and Appendix 3B, <i>Environmental Commitments, AMMs, and CMs</i>) will reduce the amount of turbidity from in-water construction and will guide rapid and effective response in the case of inadvertent spills of hazardous materials. These measures—as well as the species’ tolerance to turbidity—will minimize the effects of construction activities on turbidity, accidental spills, onsite and offsite sediment transport to surface waters, and re-suspension and redistribution of potentially contaminated sediments.</p> <p>Construction of Alternative 4A involves several elements with the potential to affect Pacific lamprey. However, these turbidity and hazardous material spill effects will be effectively avoided and/or minimized through implementation of environmental commitments (see Impact AQUA-</p>

Alternative 4A Potential Impact	Impact Conclusions Before Mitigation- CEQA	Proposed Mitigation	Impact Conclusion After Mitigation- CEQA	CEQA Conclusions	Findings of Fact
					<p>1 and Appendix 3B, <i>Environmental Commitments, AMMs, and CMs: Environmental Training; Stormwater Pollution Prevention Plan; Erosion and Sediment Control Plan; Hazardous Materials Management Plan; Spill Prevention, Containment, and Countermeasure Plan; Disposal of Spoils, Reusable Tunnel Material, and Dredged Material; Fish Rescue and Salvage Plan; and Barge Operations Plan</i>).</p> <p>Pacific lamprey are expected to occur in the construction areas, and will be subject to the direct effects of underwater construction noise, which will be a significant impact because of the high likelihood that it will cause injury or death to fish in the immediate vicinity of the activity. However, Mitigation Measures AQUA-1a and AQUA-1b will reduce the potential for effects from underwater noise and will reduce the severity of impacts to a less-than-significant level. Implementation of environmental commitments <i>Fish Rescue and Salvage Plan</i> and <i>Barge Operations Plan</i> (as described under Impact AQUA-1 and in Appendix 3B) will also minimize potential impacts of construction activities on Pacific lamprey.</p> <p>Findings: Changes or alterations have been required in, or incorporated into, the project that avoid the significant environmental effect as identified in the Final EIR/EIS. Impacts will be less than significant with mitigation. (Final EIR/EIS, Chapter 11, Fish and Aquatic Resources, p. 11-624 – 11-625, 11-1743, & 11-3495)</p>
AQUA-181: Effects of construction of water conveyance facilities on river lamprey (Final EIR/EIS, Chapter 11, Fish and Aquatic Resources, p. 11-3516 – 11-3517)	Significant (noise associated with pile driving)	<p><u>AQUA-1a: Minimize the use of impact pile driving to address effects of pile driving and other construction-related underwater noise</u></p> <p>See Impact AQUA-1a, above, for full mitigation measure. (Final MMRP, pp. 2-19; see also Final EIR/EIS, Chapter 11, Fish and Aquatic Resources, pp. 11-3191 & 11-3517)</p> <p><u>AQUA-1b: Monitor underwater noise and, if necessary, use an attenuation device to reduce effects of pile driving and other construction-related underwater noise</u></p> <p>See Impact AQUA-1b, above, for full mitigation measure. (Final MMRP, pp. 2-20; see also Final EIR/EIS, Chapter 11, Fish and Aquatic Resources, pp. 11-3191 & 11-3517)</p>	Less than Significant (Final EIR/EIS, Chapter 11, Fish and Aquatic Resources, p. 11-3516 – 11-3517)	The impact of the construction of water conveyance facilities on river lamprey will not be significant except for construction noise associated with pile driving. Implementation of the environmental commitments described under Impact AQUA-1 for delta smelt and in Appendix 3B, <i>Environmental Commitments, AMMs, and CMs (Environmental Training; Stormwater Pollution Prevention Plan; Erosion and Sediment Control Plan; Hazardous Materials Management Plan; Spill Prevention,</i>	Construction of Alternative 4A involves several elements with the potential to affect river lamprey. However, these turbidity and hazardous material spill effects will be effectively avoided and/or minimized through implementation of environmental commitments (see Impact AQUA-1 and Appendix 3B, <i>Environmental Commitments, AMMs, and CMs: Environmental Training; Stormwater Pollution Prevention Plan; Erosion and Sediment Control Plan; Hazardous Materials Management Plan; Spill Prevention, Containment, and Countermeasure Plan; Disposal of Spoils,</i>

Alternative 4A Potential Impact	Impact Conclusions Before Mitigation- CEQA	Proposed Mitigation	Impact Conclusion After Mitigation- CEQA	CEQA Conclusions	Findings of Fact
				Containment, and Countermeasure Plan; and Disposal of Spoils, Reusable Tunnel Material, and Dredged Material), will minimize effects of construction activities related to turbidity, accidental spills, onsite and offsite sediment transport to surface waters, and re-suspension and redistribution of potentially contaminated sediments for river lamprey. (Final EIR/EIS, Chapter 11, Fish and Aquatic Resources, p. 11-653, 11-1767, & 11-3516 – 11-3517)	Reusable Tunnel Material, and Dredged Material; Fish Rescue and Salvage Plan; and Barge Operations Plan). Although only a limited occurrence of river lamprey is expected in the construction areas, the direct effects of underwater construction noise on them will be a significant impact because of the high likelihood that it will cause injury or death to some fish in the immediate vicinity of the activity. Implementation of Mitigation Measures AQUA-1a and AQUA-1b will reduce that noise impact to a less-than-significant level. Findings: Changes or alterations have been required in, or incorporated into, the project that avoid the significant environmental effect as identified in the Final EIR/EIS. Impacts will be less than significant with mitigation. (Final EIR/EIS, Chapter 11, Fish and Aquatic Resources, p. 11-653, 11-1767, & 11-3516 – 11-3517)
AQUA-199: Effects of construction of water conveyance facilities on non-covered aquatic species of primary management concern (Final EIR/EIS, Chapter 11, Fish and Aquatic Resources, p. 11-3535 – 11-3536)	Significant	<p><u>AQUA-1a: Minimize the use of impact pile driving to address effects of pile driving and other construction-related underwater noise</u></p> <p>See Impact AQUA-1a, above, for full mitigation measure. (Final MMRP, pp. 2-19; see also Final EIR/EIS, Chapter 11, Fish and Aquatic Resources, pp 11-3191 & 11-3536)</p> <p><u>AQUA-1b: Monitor underwater noise and, if necessary, use an attenuation device to reduce effects of pile driving and other construction-related underwater noise</u></p> <p>See Impact AQUA-1b, above, for full mitigation measure. (Final MMRP, pp. 2-20; see also Final EIR/EIS, Chapter 11, Fish and Aquatic Resources, pp. 11-3191 & 11-3536)</p>	Less than Significant (Final EIR/EIS, Chapter 11, Fish and Aquatic Resources, p. 11-3536)	The impact of the construction of the water conveyance facilities on non-covered aquatic species of primary management concern will not be significant except for construction noise associated with pile driving. (Final EIR/EIS, Chapter 11, Fish and Aquatic Resources, p. 11-3536)	<p>Construction of Alternative 4A involves several elements with the potential to affect these fish species. However, these turbidity and hazardous material spill effects will be effectively avoided and/or minimized through implementation of environmental commitments (see Impact AQUA-1 and Appendix 3B, <i>Environmental Commitments, AMMs, and CMs: Environmental Training; Stormwater Pollution Prevention Plan; Erosion and Sediment Control Plan; Hazardous Materials Management Plan; Spill Prevention, Containment, and Countermeasure Plan; Disposal of Spoils, Reusable Tunnel Material, and Dredged Material; Fish Rescue and Salvage Plan; and Barge Operations Plan</i>).</p> <p>The direct effects of underwater construction noise on non-covered aquatic species of primary management concern will be a significant impact because of the high likelihood that it will cause injury or death to some fish in the immediate vicinity of the activity. Implementation of Mitigation Measures AQUA-1a and AQUA-1b will reduce that noise impact to a less-than-significant level.</p> <p>Findings: Changes or alterations have been</p>

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					required in, or incorporated into, the project that avoid the significant environmental effect as identified in the Final EIR/EIS. Impacts will be less than significant with mitigation. (Final EIR/EIS, Chapter 11, Fish and Aquatic Resources, p. 11-3536)
Terrestrial Biological Resources					
BIO-42: Loss or conversion of habitat for and direct mortality of delta green ground beetle (Final EIR/EIS, Chapter 12, Terrestrial Biological Resources, p. 12-3489 – 12-3491)	Significant	<p>BIO-42: Avoid impacts on delta green ground beetle and its habitat</p> <p>As part of the design and development of management plans for conservation areas in the area of Jepson Prairie, DWR will implement the following measures to avoid effects on delta green ground beetle.</p> <p>If habitat restoration or protection is planned for the lands adjacent to Calhoun Cut and noncultivated lands on the western side of Lindsey Slough, these area will be evaluated by a USFWS approved biologist for potential delta green ground beetle habitat (large playa pools, or other similar aquatic features, with low growing vegetation or bare soils around the perimeter). The biologist will have previous experience with identifying suitable habitat requirements for delta green ground beetle.</p> <p>Any suitable habitat identified by the biologist (with previous experience with delta green ground beetle) within the species current range will be considered potentially occupied and all ground disturbing activities in these areas will be avoided, which for the project area is generally the area west of State Route 113.</p> <p>Any other areas identified as suitable habitat outside of the current range of the species will be surveyed by a biologist with previous experience in surveying for and identifying delta green ground beetle. No ground disturbing activities will be implemented in areas identified as occupied by delta green ground beetle.</p> <p>Based on the results of the habitat evaluations and surveys, site-specific restoration and management plans will be developed consistent with the recovery goals for delta green ground beetle in the USFWS's 2005 <i>Recovery Plan for Vernal Pool Ecosystems of California and Southern Oregon</i> (U.S. Fish and Wildlife Service 2005). Plans will include measures to protect and manage for delta green ground beetle so that they continue to support existing populations or allow for future colonization. (Final MMRP, pp. 2-22; see also Final EIR/EIS, Chapter 12, Terrestrial Biological Resources, pp. 12-3491)</p>	Less than Significant (Final EIR/EIS, Chapter 12, Terrestrial Biological Resources, p. 12-3490 – 12-3491)	<p>The implementation of grassland protection (Environmental Commitment 3), tidal natural communities restoration (Environmental Commitment 4), and vernal pool and alkali seasonal wetland complex restoration (Environmental Commitment 9) could impact delta green ground beetle. Tidal restoration projects around Calhoun Cut and possible Lindsey Slough could affect habitat and result in direct mortality to the species from excavating channels; modifying ditches, cuts, and levees to encourage tidal circulation; and scalping higher elevation areas to create marsh plains. Potential impacts from Environmental Commitment 11 include direct mortality to larvae and adults resulting from grassland management techniques, which may include livestock grazing, prescribed burning, and mowing.</p> <p>Environmental Commitment 11 also includes guidelines and techniques for invasive plant control, which may include manual control (hand-pulling and digging), mechanical control (large equipment), and chemical control, though some of these methods will be restricted in areas where rare plants occur and in critical habitat for vernal pool species. (Final EIR/EIS, Chapter 12, Terrestrial Biological Resources, p. 12-3490 – 12-3491)</p>	<p>Implementation of the Environmental Commitments could result in adverse effects through habitat modification and a possible reduction in the number of the species or restrict its range, and therefore result in significant impacts on delta green ground beetle.</p> <p>Implementation of Mitigation Measure BIO-42, <i>Avoid Impacts on Delta Green Ground Beetle and its Habitat</i>, will reduce these potential impacts to a less-than-significant level.</p> <p>Findings: Changes or alterations have been required in, or incorporated into, the project that avoid the significant environmental effect as identified in the Final EIR/EIS. Impacts will be less than significant with mitigation. (Final EIR/EIS, Chapter 12, Terrestrial Biological Resources, p. 12-3490 – 12-3491)</p>

Alternative 4A Potential Impact	Impact Conclusions Before Mitigation- CEQA	Proposed Mitigation	Impact Conclusion After Mitigation- CEQA	CEQA Conclusions	Findings of Fact
BIO-43: Loss or conversion of habitat for and direct mortality of Callippe silverspot butterfly (Final EIR/EIS, Chapter 12, Terrestrial Biological Resources, p. 12-3492 – 12-3493)	Significant	<p><u>BIO-43: Avoid and minimize loss of Callippe silverspot butterfly habitat</u></p> <p>As part of the development of site-specific management plans on protected grasslands in the Cordelia Hills and/or Potrero Hills, DWR will implement the following measures to avoid and minimize the loss of callippe silverspot habitat.</p> <ul style="list-style-type: none"> Hilltops in Cordelia Hills and Potrero Hills will be surveyed for callippe silverspot larval host plants (Johnny jump-ups) by a biologist familiar with identifying this plant species. These surveys should occur during the plant's blooming period (typically early January through April) If larval host plants are present, then presence/absence surveys for callippe silverspot butterfly larvae will be conducted according to the most recent USFWS approved survey methods by a biologist with previous experience in surveying for and identifying callippe larvae and/or signs of larval presence. These surveys should be conducted prior to the adult flight season, which usually starts in mid-May. If larvae are detected then no further surveys are necessary. If larvae are not detected then surveys for adults will be conducted by a biologist familiar with surveying for and identifying callippe silverspot. Surveys typically start in mid-May and continue weekly for 8 to 10 weeks. If callippe silverspot butterflies are detected, then the site-specific management plans will be written to include measures to protect and manage for larval host plants and nectar sources so that they continue to support existing populations and/or allow for future colonization. Mapping of both larval host plants and nectar sources will be incorporated into the management plans. <p>(Final MMRP, pp. 2-23 – 2-24; see also Final EIR/EIS, Chapter 12, Terrestrial Biological Resources, pp. 12-3493)</p>	Less than Significant (Final EIR/EIS, Chapter 12, Terrestrial Biological Resources, p.12-3493)	If grasslands within the Cordelia Hills and Potrero Hills are protected as part of <i>Environmental Commitment 3 Natural Communities Protection and Restoration</i> then the subsequent management of these grasslands according to <i>Environmental Commitment 11 Natural Communities Enhancement and Management</i> has a potential to affect this species. These actions could result in adverse effects through habitat modification and a possible reduction in the number of the species or restrict its range and could therefore result in significant impact on the species under CEQA. (Final EIR/EIS, Chapter 12, Terrestrial Biological Resources, p. 12-3493)	Callippe silverspot butterfly will benefit from the protection of occupied and potential habitat for the species with the implementation of Mitigation Measure BIO-43, which will avoid and minimize effects from management actions and thus reduce the potential impact to a less-than-significant level under CEQA. Findings: Changes or alterations have been required in, or incorporated into, the project that avoid the significant environmental effect as identified in the Final EIR/EIS. Impacts will be less than significant with mitigation. (Final EIR/EIS, Chapter 12, Terrestrial Biological Resources, p. 12-3493)
BIO-55: Loss or conversion of habitat for and direct mortality of special-status reptiles (Final EIR/EIS, Chapter	Significant	<p><u>BIO-55: Conduct preconstruction surveys for noncovered special-status reptiles and implement applicable AMMs</u></p> <p>DWR will retain a qualified biologist to conduct a habitat assessment in construction and restoration areas that are relatively undisturbed or have a moderate to high potential</p>	Less than Significant (Final EIR/EIS, Chapter 12, Terrestrial	In the absence of other actions to restore and protect habitat, the effects on special-status reptile habitat from Alternative 4A would represent a significant impact as a result of habitat modification and potential direct	With habitat protection, restoration, management, and enhancement guided by Resource Restoration and Performance Principles L1-L3, and by Mitigation Measure BIO-55, which will be in place throughout the

Alternative 4A Potential Impact	Impact Conclusions Before Mitigation- CEQA	Proposed Mitigation	Impact Conclusion After Mitigation- CEQA	CEQA Conclusions	Findings of Fact
12, Terrestrial Biological Resources, p. 12-3518 – 12-3520)		to support noncovered special-status reptiles (Blainville’s horned lizard and San Joaquin coachwhip) in CZ 4, CZ 7, and CZ 8. The qualified biologist will survey for noncovered special-status reptiles in areas of suitable habitat concurrent with the preconstruction surveys for covered species in CZ 4, CZ 7, and CZ 8. If special-status reptiles are found in work areas, the biologist will first attempt to allow these species move out of the work area on their own but if conditions do not allow this, individuals will be captured by the biologist and relocated to the nearest suitable habitat outside of the work area as determined in consultation with CDFW. To the extent feasible, work in areas with suitable habitat for Blainville’s horned lizard and San Joaquin coachwhip should not be conducted during periods of cold and hot temperatures (below 67 degrees F and above 100 degrees F), because both species would be relatively inactive during these periods and could be taking cover in loose soil, in burrows or crevices, or under structures such as rocks or logs (Morey 2000). This would reduce the impact of being crushed by vehicles and equipment. In addition, AMM1 Worker Awareness Training, AMM2 Construction Best Management Practices and Monitoring, AMM6 Disposal and Reuse of Spoils, Reusable Tunnel Material, and Dredged Material, and AMM10 Restoration of Temporarily Affected Natural Communities, will be implemented for all noncovered special-status reptiles adversely affected by the project to avoid, minimize, or compensate for impacts. (Final MMRP, pp. 2-24 – 2-25; see also Final EIR/EIS, Chapter 12, Terrestrial Biological Resources, pp. 12-3520)	Biological Resources, p. 12-3519 – 12-3520)	mortality of a special-status species. (Final EIR/EIS, Chapter 12, Terrestrial Biological Resources, p. 12-3519 – 12-3520)	construction period and operations, the impact of Alternative 4A as a whole on special-status reptiles will be less than significant. Findings: Changes or alterations have been required in, or incorporated into, the project that avoid the significant environmental effect as identified in the Final EIR/EIS. Impacts will be less than significant with mitigation. (Final EIR/EIS, Chapter 12, Terrestrial Biological Resources, p. 12-3519 – 12-3520)
BIO-56: Indirect effects of Plan implementation on special-status reptile species (Final EIR/EIS, Chapter 12, Terrestrial Biological Resources, p. 12-3520 – 12-3521)	Significant	<u>BIO-55: Conduct preconstruction surveys for noncovered special-status reptiles and implement applicable AMMs</u> See Impact BIO-55, above, for full mitigation measure. (Final MMRP, pp. 2-24 – 2-25; see also Final EIR/EIS, Chapter 12, Terrestrial Biological Resources, pp. 12-3520 & 12-3521)	Less than Significant (Final EIR/EIS, Chapter 12, Terrestrial Biological Resources, p. 12-3521)	Indirect effects from project operations and maintenance as well as construction-related noise and visual disturbances could impact special-status reptiles. In addition, construction activities could indirectly affect special-status reptiles if construction resulted in the introduction of invasive weeds that create vegetative cover that is too dense for the species to navigate. Water conveyance facilities operations and maintenance activities, such as vegetation and weed control, and road maintenance, are not expected to remove special-status reptile habitat, but operation of equipment will	With implementation of Mitigation Measure BIO-55, <i>Conduct Preconstruction Surveys for Noncovered Special-Status Reptiles and Implement Applicable AMMs</i> as part of Alternative 4A construction, operation, and maintenance, the project will avoid the potential for significant effects on special-status reptile species, either indirectly or through habitat modifications, and will not result in a substantial reduction in numbers or a restriction in the range of either species. With implementation of Mitigation Measure BIO-55, the indirect effects of Alternative 4A will have a less-than-significant impact on special-status reptiles.

Alternative 4A Potential Impact	Impact Conclusions Before Mitigation- CEQA	Proposed Mitigation	Impact Conclusion After Mitigation- CEQA	CEQA Conclusions	Findings of Fact
				disturb small areas of vegetation around maintained structures and could result in injury or mortality of individual special-status reptiles, if present. These activities will result in a significant impact. (Final EIR/EIS, Chapter 12, Terrestrial Biological Resources, p. 12-3521)	Findings: Changes or alterations have been required in, or incorporated into, the project that avoid the significant environmental effect as identified in the Final EIR/EIS. Impacts will be less than significant with mitigation. (Final EIR/EIS, Chapter 12, Terrestrial Biological Resources, p. 12-3521)
BIO-66: Loss or conversion of habitat for and direct mortality of California least tern (Final EIR/EIS, Chapter 12, Terrestrial Biological Resources, p. 12-3534 – 12-3537)	Significant	<u>BIO-66: California least tern nesting colonies shall be avoided and indirect effects on colonies will be minimized</u> If suitable nesting habitat for California least tern (flat unvegetated areas near aquatic foraging habitat) is identified during planning level surveys, DWR will ensure that a qualified biologist with experience observing the species and its nests conducts at least three preconstruction surveys for this species during the nesting season. DWR will design projects to avoid the loss of California least tern nesting colonies. No construction will take place within 500 feet of California least tern nests during the nesting season (April 15 to August 15 or as determined through surveys). Only inspection, maintenance, research, or monitoring activities may be performed during the least tern breeding season in areas within or adjacent to least tern breeding habitat with USFWS and CDFW approval under the supervision of a qualified biologist. (Final MMRP, pp. 2-25 – 2-26; see also Final EIR/EIS, Chapter 12, Terrestrial Biological Resources, pp. 12-3537)	Less than Significant (Final EIR/EIS, Chapter 12, Terrestrial Biological Resources, p. 12-3537)	The potential effects on California least tern associated with Alternative 4A would represent an adverse effect in the absence of Mitigation Measures and AMMs as a result of potential for take of a special-status species. Although nesting by California least tern is not expected to occur in the study area, restoration sites will attract individuals wherever disturbed or artificial sites mimic habitat conditions sought for nesting (i.e., sandy or gravelly substrates with sparse vegetation). (Final EIR/EIS, Chapter 12, Terrestrial Biological Resources, p. 12-3537)	The potential effects on California least tern associated with Alternative 4A represent an adverse effect in the absence of the Mitigation Measure and AMMs as a result of potential for take of a special-status species. Although nesting by California least tern is not expected to occur in the study area, restoration sites will attract individuals wherever disturbed or artificial sites mimic habitat conditions sought for nesting (i.e., sandy or gravelly substrates with sparse vegetation). Mitigation Measure BIO-66, <i>California Least Tern Nesting Colonies Shall be Avoided and Indirect Effects on Colonies will be Minimized</i> , will avoid the potential for take of California least tern individuals and reduce this effect to a less-than-significant impact. Temporary impacts on tidal perennial aquatic habitat in Clifton Court Forebay associated with dredging will not be expected to impact California least tern, as this region of the study area is outside of their primary range. The restoration of aquatic habitat associated with the expansion of the Clifton Court Forebay (water conveyance facilities), and <i>Environmental Commitment 4 Tidal Natural Communities Restoration</i> will be sufficient to compensate for permanent impacts on California least tern foraging habitat. With these acres of restoration, in addition to the implementation of <i>AMM1 Worker Awareness Training, AMM2 Construction Best Management Practices and Monitoring, AMM3 Stormwater Pollution Prevention Plan, AMM4 Erosion and Sediment Control Plan, AMM5 Spill Prevention, Containment, and Countermeasure Plan, AMM6 Disposal and Reuse of Spoils, and AMM7 Barge Operations Plan</i> , which will be in place during all project activities, the effects of Alternative 4A as a whole on California

Alternative 4A Potential Impact	Impact Conclusions Before Mitigation- CEQA	Proposed Mitigation	Impact Conclusion After Mitigation- CEQA	CEQA Conclusions	Findings of Fact
					<p>least tern will not result in a substantial adverse effect through habitat modifications and will avoid take of individuals. Therefore, the implementation of Alternative 4A will have a less-than-significant impact on California least tern.</p> <p>Findings: Changes or alterations have been required in, or incorporated into, the project that avoid the significant environmental effect as identified in the Final EIR/EIS. Impacts will be less than significant with mitigation. (Final EIR/EIS, Chapter 12, Terrestrial Biological Resources, p. 12-3537)</p>
BIO-67: Indirect effects of Plan implementation on California least tern (Final EIR/EIS, Chapter 12, Terrestrial Biological Resources, p. 12-3537 – 12-3541)	Significant	<p><u>BIO-66: California least tern nesting colonies shall be avoided and indirect effects on colonies will be minimized</u></p> <p>See Impact BIO-66, above, for full mitigation measure. (Final MMRP, pp. 2-25 – 2-26; see also Final EIR/EIS, Chapter 12, Terrestrial Biological Resources, pp. 12-3537 & 12-3541)</p>	Less than Significant (Final EIR/EIS, Chapter 12, Terrestrial Biological Resources, p. 12-3540 – 12-3541)	<p>Noise and visual disturbances within 500 feet of construction-related activities from the Environmental Commitments will not be expected to disturb California least tern foraging habitat adjacent to work sites. If terns were to nest in newly graded restoration sites during construction activities, Mitigation Measure BIO-66, <i>California Least Tern Nesting Colonies Shall Be Avoided and Indirect Effects on Colonies Will Be Minimized</i>, will avoid the potential for disturbance and take of California least tern individuals.</p> <p>AMM1–AMM7, including AMM2 Construction Best Management Practices and Monitoring, will minimize the likelihood of spills from occurring and ensure that measures were in place to prevent runoff from the construction area and to avoid negative effects of dust on the species.</p> <p>Tidal habitat restoration will result in increased exposure of California least tern to selenium. This effect will be addressed through the implementation of AMM27 <i>Selenium Management</i>, which will provide specific tidal habitat restoration design elements to reduce the potential for bioaccumulation of selenium and its bioavailability in tidal habitats.</p> <p>Changes in water operations under water conveyance facilities will not be expected to result in increased mercury bioavailability or</p>	<p>With AMM1–7, AMM12, AMM27, and Environmental Commitment 12 in place, in addition to the implementation of Mitigation Measure BIO-66, the indirect effects of Alternative 4A implementation will not result in take of California least tern individuals, nor will it result in a substantial adverse effect on the species through habitat modification. Therefore, the indirect effects of Alternative 4A implementation will have a less-than-significant impact on California least tern.</p> <p>Findings: Changes or alterations have been required in, or incorporated into, the project that avoid the significant environmental effect as identified in the Final EIR/EIS. Impacts will be less than significant with mitigation. (Final EIR/EIS, Chapter 12, Terrestrial Biological Resources, p. 12-3540 – 12-3541)</p>

Alternative 4A Potential Impact	Impact Conclusions Before Mitigation- CEQA	Proposed Mitigation	Impact Conclusion After Mitigation- CEQA	CEQA Conclusions	Findings of Fact
				<p>exposures to Delta foodwebs. Tidal habitat restoration will result in increased exposure of California least tern to methylmercury. There is potential for increased exposure of the foodwebs to methylmercury in these areas, with the level of exposure dependent on the amounts of mercury available in the soils and the biogeochemical conditions. However, it is unknown what concentrations of methylmercury are harmful to the species, and the potential for increased exposure varies substantially within the study area. Implementation of Environmental Commitment 12 which contains measures to assess the amount of mercury before project development, followed by appropriate design and adaptation management, will minimize the potential for increased methylmercury exposure, and will result in no adverse effect on the species.</p> <p>(Final EIR/EIS, Chapter 12, Terrestrial Biological Resources, p. 12-3540 – 12-3541)</p>	
<p>BIO-75: Loss or conversion of habitat for and direct mortality of least Bell’s vireo and yellow warbler</p> <p>(Final EIR/EIS, Chapter 12, Terrestrial Biological Resources, p. 12-3571 – 12-3575)</p>	Significant	<p><u>BIO-75: Conduct preconstruction nesting bird surveys and avoid disturbance of nesting birds</u></p> <p>To reduce impacts on nesting birds, DWR will implement the measures listed below prior to construction and operations and maintenance activities.</p> <ul style="list-style-type: none"> To the maximum extent feasible, vegetation (trees, shrubs, ruderal areas) removal and trimming will be scheduled during the nonbreeding season of birds (September 1–January 31). If vegetation cannot be removed in accordance with this timeframe, preconstruction/preactivity surveys for nesting birds and additional protective measures will be implemented as described below. A qualified wildlife biologist with knowledge of the relevant species will conduct nesting surveys before the start of construction. A minimum of three separate surveys will be conducted within 30 days prior to construction, with the last survey within 3 days prior to construction. Surveys will include a search of all suitable nesting habitat (trees, shrubs, ruderal areas, field crops) in the construction area. In addition, a 500-foot radius 	Less than Significant (Final EIR/EIS, Chapter 12, Terrestrial Biological Resources, p. 12-3574)	<p>The loss of least Bell’s vireo and yellow warbler habitat from Alternative 4A would represent an adverse effect in the absence of other conservation actions as a result of habitat modification and potential for direct mortality of a special-status species. However, neither species is an established breeder in the study area and impacts will likely be limited to loss of migratory habitat.</p> <p>(Final EIR/EIS, Chapter 12, Terrestrial Biological Resources, p. 12-3574)</p>	<p>Habitat protection and restoration associated with Environmental Commitment 3 and Environmental Commitment 7, guided by Resource Restoration and Performance Principles VFR1-VFR3 and by <i>AMM1 Worker Awareness Training</i>, <i>AMM2 Construction Best Management Practices and Monitoring</i>, <i>AMM3 Stormwater Pollution Prevention Plan</i>, <i>AMM4 Erosion and Sediment Control Plan</i>, <i>AMM5 Spill Prevention, Containment, and Countermeasure Plan</i>, <i>AMM6 Disposal and Reuse of Spoils</i>, <i>AMM7 Barge Operations Plan</i>, and <i>AMM22 Suisun Song Sparrow</i>, <i>Yellow-Breasted Chat</i>, <i>Least Bell’s Vireo</i>, <i>Western Yellow-Billed Cuckoo</i>, will be in place during all project activities. Considering these commitments, in addition to Mitigation Measure BIO-75, Alternative 4A will not result in a substantial adverse effect through habitat modifications and will not substantially reduce the number or restrict the range of least Bell’s vireo or yellow warbler. Therefore, Alternative 4A will have a less-than-significant impact on least Bell’s vireo and yellow warbler under CEQA.</p>

Alternative 4A Potential Impact	Impact Conclusions Before Mitigation- CEQA	Proposed Mitigation	Impact Conclusion After Mitigation- CEQA	CEQA Conclusions	Findings of Fact
		<p>around the construction area, where accessible, will be surveyed for nesting raptors and species of special concern (except the Modesto song sparrow), and an area within 50 feet of construction will be surveyed for other non-special status nesting birds or birds protected by the MBTA. If no active nests are detected during these surveys, no additional measures are required.</p> <ul style="list-style-type: none"> If active nests are found in the survey area, no-disturbance buffers will be established around the nest sites to avoid disturbance or destruction of the nest site until the end of the breeding season (approximately September 1) or until a qualified wildlife biologist determines that the young have fledged and moved out of the project area (this date varies by species). A qualified wildlife biologist will monitor construction activities in the vicinity of the nests to ensure that construction activities do not affect nest success. The extent of the buffers will be determined by DWR biologists after consultation with USFWS and CDFW and will depend on the level of noise or construction disturbance, line-of-sight between the nest and the disturbance, ambient levels of noise and other disturbances, and other topographical or artificial barriers. Suitable buffer distances may vary between species. <p>(Final MMRP, pp. 2-27; see also Final EIR/EIS, Chapter 12, Terrestrial Biological Resources, pp. 12-3574 – 12-3575)</p> 			Findings: Changes or alterations have been required in, or incorporated into, the project that avoid the significant environmental effect as identified in the Final EIR/EIS. Impacts will be less than significant with mitigation. (Final EIR/EIS, Chapter 12, Terrestrial Biological Resources, p. 12-3574)
BIO-78: Indirect effects of Plan implementation on least Bell's vireo and yellow warbler (Final EIR/EIS, Chapter 12, Terrestrial Biological Resources, p. 12-3576 – 12-3579)	Significant	<p><u>BIO-75: Conduct preconstruction nesting bird surveys and avoid disturbance of nesting birds</u></p> <p>See Impact BIO-75, above, for full mitigation measure. (Final MMRP, pp. 2-27; see also Final EIR/EIS, Chapter 12, Terrestrial Biological Resources, pp. 12-3574 – 12-3575, & 12-3579)</p>	Less than Significant (Final EIR/EIS, Chapter 12, Terrestrial Biological Resources, p. 12-3579)	Impacts of noise, the potential for hazardous spills, increased dust and sedimentation, and operations and maintenance of the water conveyance facilities would have an adverse effect on least Bell's vireo and yellow warbler in the absence of Environmental Commitments and AMMs as a result of habitat modification and potential for direct mortality of special-status species. (Final EIR/EIS, Chapter 12, Terrestrial Biological Resources, p. 12-3579)	Impacts of noise, the potential for hazardous spills, increased dust and sedimentation, and operations and maintenance of the water conveyance facilities would have an adverse effect on least Bell's vireo and yellow warbler in the absence of Environmental Commitments and AMMs as a result of habitat modification and potential for direct mortality of special-status species. With the implementation of AMM22 <i>Suisun Song Sparrow, Yellow-Breasted Chat, Least Bell's Vireo, Western Yellow-Billed Cuckoo</i> , Mitigation Measure BIO-75, <i>Conduct Preconstruction Nesting Bird Surveys and Avoid Disturbance of Nesting Birds</i> , and AMM2 <i>Construction Best Management Practices and Monitoring</i> in place, the effect will not be adverse.

Alternative 4A Potential Impact	Impact Conclusions Before Mitigation- CEQA	Proposed Mitigation	Impact Conclusion After Mitigation- CEQA	CEQA Conclusions	Findings of Fact
					<p>Tidal habitat restoration will result in increased exposure of least Bell’s vireo and yellow warbler to selenium; however, the potential exposure to selenium resulting from the restoration will not be expected to adversely affect the species populations. Any effects will be addressed through the implementation of AMM27 <i>Selenium Management</i>, which will provide specific tidal habitat restoration design elements to reduce the potential for bioaccumulation of selenium and its bioavailability in tidal habitats.</p> <p>The implementation of tidal natural communities restoration will result in increased exposure of least Bell’s vireo and yellow warbler to methylmercury. Implementation of Environmental Commitment 12 which contains measures to assess the amount of mercury before project development, followed by appropriate design and adaptation management, will minimize the potential for increased methylmercury exposure, and will result in no adverse effect on the species.</p> <p>With AMM1–AMM7, AMM22, and Environmental Commitment 12 in place, the indirect effects of Alternative 4A implementation will not substantially reduce the number or restrict the range of least Bell’s vireo or yellow warbler. Therefore, the indirect effects of Alternative 4A implementation will have a less-than-significant impact on least Bell’s vireo or yellow warbler.</p> <p>Findings: Changes or alterations have been required in, or incorporated into, the project that avoid the significant environmental effect as identified in the Final EIR/EIS. Impacts will be less than significant with mitigation.</p> <p>(Final EIR/EIS, Chapter 12, Terrestrial Biological Resources, p. 12-3579)</p>
BIO-91: Loss or conversion of habitat for and direct mortality of western burrowing owl (Final EIR/EIS, Chapter 12, Terrestrial Biological Resources, p. 12-3599 – 12-3603)	Significant	<p><u>BIO-75: Conduct preconstruction nesting bird surveys and avoid disturbance of nesting birds</u></p> <p>See Impact BIO-75, above, for full mitigation measure. (Final MMRP, pp. 2-27; see also Final EIR/EIS, Chapter 12, Terrestrial Biological Resources, pp. 12-3574 – 12-3575, & 12-3603)</p>	Less than Significant (Final EIR/EIS, Chapter 12, Terrestrial Biological Resources, p. 12-3602 – 12-3603)	The effects on western burrowing owl habitat from Alternative 4A would represent a significant impact as a result of habitat modification of a special-status species and potential for direct mortality in the absence of Environmental Commitments and AMMs. (Final EIR/EIS, Chapter 12, Terrestrial Biological Resources, p. 12-3602 – 12-3603)	Project proponents have committed to habitat protection, restoration, management, and enhancement associated with Environmental Commitment 3 and Environmental Commitment 11. These conservation activities will be guided by Resource Restoration and Performance Principle SH1, and by AMM1–AMM6 and <i>AMM23 Western Burrowing Owl</i> , which will be in place

Alternative 4A Potential Impact	Impact Conclusions Before Mitigation- CEQA	Proposed Mitigation	Impact Conclusion After Mitigation- CEQA	CEQA Conclusions	Findings of Fact
					during all project activities. Considering these commitments, Alternative 4A will not result in a substantial adverse effect through habitat modifications and will not substantially reduce the number or restrict the range of western burrowing owl. Therefore, with the implementation of Mitigation Measure BIO-75, Alternative 4A will have a less-than-significant impact on western burrowing owl under CEQA. Findings: Changes or alterations have been required in, or incorporated into, the project that avoid the significant environmental effect as identified in the Final EIR/EIS. Impacts will be less than significant with mitigation. (Final EIR/EIS, Chapter 12, Terrestrial Biological Resources, p. 12-3602 – 12-3603)
BIO-109: Loss or conversion of habitat for and direct mortality of Cooper’s hawk and osprey (Final EIR/EIS, Chapter 12, Terrestrial Biological Resources, p. 12-3634 – 12-3638)	Significant	<u>BIO-75: Conduct preconstruction nesting bird surveys and avoid disturbance of nesting birds</u> See Impact BIO-75, above, for full mitigation measure. (Final MMRP, pp. 2-27; see also Final EIR/EIS, Chapter 12, Terrestrial Biological Resources, pp 12-3574 – 12-3575, & 12-3638)	Less than Significant (Final EIR/EIS, Chapter 12, Terrestrial Biological Resources, p. 12-3637)	The effects on Cooper’s hawk and osprey habitat from Alternative 4A would represent a significant impact as a result of habitat modification of a special-status species and potential for direct mortality in the absence of Environmental Commitments and AMMs. (Final EIR/EIS, Chapter 12, Terrestrial Biological Resources, p. 12-3637)	Project proponents have committed to habitat protection, restoration, management and enhancement associated with Environmental Commitment 3, Environmental Commitment 7, and Environmental Commitment 11. These conservation activities will be guided by Resource Restoration and Performance Principle VFR1, and by AMM1–AMM6, AMM10, and <i>AMM18 Swainson’s Hawk</i> , which will be in place during all project activities. In addition, Mitigation Measure BIO-75 will be available to address potential impacts on nesting individuals. Considering these commitments, Alternative 4A will not result in a substantial adverse effect through habitat modifications and will not substantially reduce the number or restrict the range of Cooper’s hawk and osprey. Therefore, with the implementation of Mitigation Measure BIO-75, Alternative 4A will have a less-than-significant impact on Cooper’s hawk and osprey under CEQA. Findings: Changes or alterations have been required in, or incorporated into, the project that avoid the significant environmental effect as identified in the Final EIR/EIS. Impacts will be less than significant with mitigation. (Final EIR/EIS, Chapter 12, Terrestrial Biological Resources, p. 12-3637)
BIO-111: Indirect effects	Significant	<u>BIO-75: Conduct preconstruction nesting bird surveys and</u>	Less than	Noise and visual disturbances from the	Noise, the potential for hazardous spills,

Alternative 4A Potential Impact	Impact Conclusions Before Mitigation- CEQA	Proposed Mitigation	Impact Conclusion After Mitigation- CEQA	CEQA Conclusions	Findings of Fact
of Plan implementation on Cooper’s hawk and osprey (Final EIR/EIS, Chapter 12, Terrestrial Biological Resources, p. 12-3638 – 12-3641)		<u>avoid disturbance of nesting birds</u> See Impact BIO-75, above, for full mitigation measure. (Final MMRP, pp. 2-27; see also Final EIR/EIS, Chapter 12, Terrestrial Biological Resources, pp. 12-3574 – 12-3575, & 12-3641)	Significant (Final EIR/EIS, Chapter 12, Terrestrial Biological Resources, p. 12-3641)	construction of water conveyance facilities will reduce Cooper’s hawk and osprey use of modeled habitat adjacent to work areas. Moreover, operation and maintenance of the water conveyance facilities, including the transmission facilities, will result in ongoing but periodic post-construction disturbances that will affect Cooper’s hawk and osprey use of the surrounding habitat. The implementation of tidal natural communities restoration will result in increased exposure of Cooper’s hawk or osprey to methylmercury, through the ingestion of fish or small mammals in tidally restored areas. Tidal habitat restoration also will result in increased exposure of Cooper’s hawk and osprey to selenium; however, the potential exposure to selenium resulting from these acres of restoration will not be expected to adversely affect species populations. (Final EIR/EIS, Chapter 12, Terrestrial Biological Resources, p. 12-3641)	increased dust and sedimentation, and operations and maintenance of the water conveyance facilities under Alternative 4A will have a less-than-significant impact on Cooper’s hawk and osprey with the implementation of Mitigation Measure BIO-75, <i>Conduct Preconstruction Nesting Bird Surveys and Avoid Disturbance of Nesting Birds</i> , and AMM1–AMM7. The implementation of tidal natural communities restoration will result in increased exposure of Cooper’s hawk or osprey to methylmercury, through the ingestion of fish or small mammals in tidally restored areas. This will be a significant impact. However, it is currently unknown what concentrations of methylmercury are harmful to these species and the potential for increased exposure varies substantially within the study area. Implementation of Environmental Commitment 12 which contains measures to assess the amount of mercury before project development, followed by appropriate design and adaptive management, will minimize the potential for increased methylmercury exposure, and will result in a less than significant impact on Cooper’s hawk and osprey. Tidal habitat restoration also will result in increased exposure of Cooper’s hawk and osprey to selenium; however, the potential exposure to selenium resulting from the restoration is not expected to adversely affect species populations. Any effects will be addressed through the implementation of <i>AMM27 Selenium Management</i> , which will provide specific tidal habitat restoration design elements to reduce the potential for bioaccumulation of selenium and its bioavailability in tidal habitats. With AMM1–AMM7 and Environmental Commitment 12 in place, and with the implementation of Mitigation Measure BIO-75, the indirect effects of Alternative 4A implementation will not substantially reduce the number or restrict the range of Cooper’s hawk or osprey. Therefore, the indirect effects of Alternative 4A implementation will have a less-than-significant impact on Cooper’s hawk or

Alternative 4A Potential Impact	Impact Conclusions Before Mitigation- CEQA	Proposed Mitigation	Impact Conclusion After Mitigation- CEQA	CEQA Conclusions	Findings of Fact
					osprey. Findings: Changes or alterations have been required in, or incorporated into, the project that avoid the significant environmental effect as identified in the Final EIR/EIR. Impacts will be less than significant with mitigation. (Final EIR/EIS, Chapter 12, Terrestrial Biological Resources, p. 12-3641)
BIO-117: Loss or conversion of nesting habitat for and direct mortality of cormorants, herons and egrets (Final EIR/EIS, Chapter 12, Terrestrial Biological Resources, p. 12-3647 – 12-3651)	Significant	<p><u>BIO-75: Conduct preconstruction nesting bird surveys and avoid disturbance of nesting birds</u> See Impact BIO-75, above, for full mitigation measure. (Final MMRP, pp. 2-27; see also Final EIR/EIS, Chapter 12, Terrestrial Biological Resources, pp. 12-3574 – 12-3575, & 12-3651)</p> <p><u>BIO-117: Avoid impacts on rookeries</u> Herons, egrets, and cormorants are highly traditional in their use of nest sites (rookeries); therefore, DWR will avoid direct impacts on rookeries and avoid or minimize indirect impacts on rookeries. (Final MMRP, pp. 2-28; see also Final EIR/EIS, Chapter 12, Terrestrial Biological Resources, p. 12-3651)</p>	Less than Significant (Final EIR/EIS, Chapter 12, Terrestrial Biological Resources, p. 12-3651)	The effects on cormorant, heron, and egret habitat from Alternative 4A would represent a significant impact as a result of habitat modification of a special-status species and potential for direct mortality in the absence of Environmental Commitments and AMMs. (Final EIR/EIS, Chapter 12, Terrestrial Biological Resources, p. 12-3651)	<p>Project proponents have committed to habitat protection, restoration, management, and enhancement associated with Environmental Commitment 3, Environmental Commitment 7, and Environmental Commitment 11. These conservation activities will be guided by Resource Restoration and Performance Principle VFR1, and by AMM1–AMM6, AMM10, and <i>AMM18 Swainson’s Hawk</i>, which will be in place during all project activities. In addition, Mitigation Measure BIO-75 and Mitigation Measure BIO-117 will be available to address potential impacts on nesting individuals. Considering these commitments, Alternative 4A will not result in a substantial adverse effect through habitat modifications and will not substantially reduce the number or restrict the range of cormorants, herons, or egrets. Therefore, with the implementation of Mitigation Measure BIO-75 and Mitigation Measure BIO-117, Alternative 4A will have a less-than-significant impact on cormorants, herons, and egrets under CEQA.</p> <p>Findings: Changes or alterations have been required in, or incorporated into, the project that avoid the significant environmental effect as identified in the Final EIR/EIS. Impacts will be less than significant with mitigation. (Final EIR/EIS, Chapter 12, Terrestrial Biological Resources, p. 12-3651)</p>
BIO-119: Indirect effects of Plan implementation on cormorants, herons and egrets (Final EIR/EIS, Chapter 12, Terrestrial Biological Resources, p. 12-3652 –	Significant	<p><u>BIO-75: Conduct preconstruction nesting bird surveys and avoid disturbance of nesting birds</u> See Impact BIO-75, above, for full mitigation measure. (Final MMRP, pp. 2-27; see also Final EIR/EIS, Chapter 12, Terrestrial Biological Resources, pp. 12-3574 – 12-3575, & 12-3655)</p> <p><u>BIO-117: Avoid impacts on rookeries</u></p>	Less than Significant (Final EIR/EIS, Chapter 12, Terrestrial Biological Resources, p. 12-	The implementation of tidal natural communities restoration will result in increased exposure of cormorants, herons or egrets to methylmercury, through the ingestion of fish in tidally restored areas. This will be a significant impact. However, it is unknown what concentrations of	Impacts of noise, the potential for hazardous spills, increased dust and sedimentation, and operations and maintenance of the water conveyance facilities will be less than significant with the implementation of Mitigation Measure BIO-75, <i>Conduct Preconstruction Nesting Bird Surveys and Avoid Disturbance of Nesting Birds</i> ,

Alternative 4A Potential Impact	Impact Conclusions Before Mitigation- CEQA	Proposed Mitigation	Impact Conclusion After Mitigation- CEQA	CEQA Conclusions	Findings of Fact
12-3655)		See Impact BIO-117, above, for full mitigation measure. (Final MMRP, pp. 2-28; see also Final EIR/EIS, Chapter 12, Terrestrial Biological Resources, pp. 12-3655)	3654)	<p>methylmercury are harmful to these species. Tidal habitat restoration will also result in increased exposure of cormorants, herons, and egrets to selenium. (Final EIR/EIS, Chapter 12, Terrestrial Biological Resources, p. 12-3654)</p>	<p>and Mitigation Measure BIO-117, <i>Avoid Impacts on Rookeries</i>, and AMM1–AMM7. The implementation of tidal natural communities restoration will result in increased exposure of cormorants, herons or egrets to methylmercury, through the ingestion of fish in tidally restored areas. This will be a significant impact. However, it is unknown what concentrations of methylmercury are harmful to these species. Implementation of Environmental Commitment 12, which contains measures to assess the amount of mercury before project development, followed by appropriate design and adaptation management, will minimize the potential for increased methylmercury exposure, and will result in no significant impacts on cormorants, herons, and egrets. Tidal habitat restoration will result in increased exposure of cormorants, herons, and egrets to selenium. This effect will be addressed through the implementation of AMM27 <i>Selenium Management</i>, which will provide specific tidal habitat restoration design elements to reduce the potential for bioaccumulation of selenium and its bioavailability in tidal habitats. With AMM1–AMM7, AMM27, and Environmental Commitment 12 in place, the indirect effects of Alternative 4A implementation will not substantially reduce the number or restrict the range of cormorants, herons, and egrets. Therefore, the indirect effects of Alternative 4A implementation will have a less-than-significant impact on cormorants, herons, and egrets. Findings: Changes or alterations have been required in, or incorporated into, the project that avoid the significant environmental effect as identified in the Final EIR/EIS. Impacts will be less than significant with mitigation. (Final EIR/EIS, Chapter 12, Terrestrial Biological Resources, p. 12-3654)</p>
BIO-121: Loss or conversion of habitat for short-eared owl and northern harrier (Final EIR/EIS, Chapter	Significant	<p><u>BIO-75: Conduct preconstruction nesting bird surveys and avoid disturbance of nesting birds</u></p> <p>See Impact BIO-75, above, for full mitigation measure. (Final MMRP, pp. 2-27; see also Final EIR/EIS, Chapter 12, Terrestrial Biological Resources, pp. 12-3574 – 12-3575, &</p>	Less than Significant (Final EIR/EIS, Chapter 12, Terrestrial	The effects on short-eared owl and northern harrier habitat from Alternative 4A would represent a significant impact as a result of habitat modification of a special-status species and potential for direct mortality in	Project proponents have committed to habitat protection, restoration, management and enhancement associated with Environmental Commitment 3, Environmental Commitment 4, Environmental Commitment 10, and

Alternative 4A Potential Impact	Impact Conclusions Before Mitigation- CEQA	Proposed Mitigation	Impact Conclusion After Mitigation- CEQA	CEQA Conclusions	Findings of Fact
12, Terrestrial Biological Resources, p. 12-3656 – 12-3659)		12-3659)	Biological Resources, p. 12-3659)	the absence of Environmental Commitments and AMMs. (Final EIR/EIS, Chapter 12, Terrestrial Biological Resources, p. 12-3659)	Environmental Commitment 11. These conservation activities will be guided by Resource Restoration and Performance Principles CBR1, SH1, and SH2, and by AMM1–AMM7, which will be in place during all project activities. In addition, Mitigation Measure BIO-75 will be available to address potential impacts on nesting individuals. Considering these commitments, Alternative 4A will not result in a substantial adverse effect through habitat modifications and will not substantially reduce the number or restrict the range of short-eared owl and northern harrier. Therefore, with the implementation of Mitigation Measure BIO-75, Alternative 4A will have a less-than-significant impact on short-eared owl and northern harrier under CEQA. Findings: Changes or alterations have been required in, or incorporated into, the project that avoid the significant environmental effect as identified in the Final EIR/EIS. Impacts will be less than significant with mitigation. (Final EIR/EIS, Chapter 12, Terrestrial Biological Resources, p. 12-3659)
BIO-123: Indirect effects of Plan implementation on short-eared owl and northern harrier (Final EIR/EIS, Chapter 12, Terrestrial Biological Resources, p. 12-3660 – 12-3663)	Significant	<u>BIO-75: Conduct preconstruction nesting bird surveys and avoid disturbance of nesting birds</u> See Impact BIO-75, above, for full mitigation measure. (Final MMRP, pp. 2-27; see also Final EIR/EIS, Chapter 12, Terrestrial Biological Resources, pp. 12-3574 – 12-3575, & 12-3663)	Less than Significant (Final EIR/EIS, Chapter 12, Terrestrial Biological Resources, p. 12-3663)	Indirect effects of noise and visual disturbance, in addition to the potential for hazardous spills or increased dust on short-eared owl and northern harrier and their habitat as a result of Alternative 4A implementation would represent a significant impact in the absence of Environmental Commitments and AMMs. Tidal habitat restoration will result in increased exposure of short-eared owl and northern harrier to selenium. The implementation of tidal natural communities restoration will also result in increased exposure of short-eared owl and northern harrier to methylmercury in restored tidal areas. However, it is unknown what concentrations of methylmercury are harmful to these species and the potential for increased exposure varies substantially within the study area. (Final EIR/EIS, Chapter 12, Terrestrial	Indirect effects of noise and visual disturbance, in addition to the potential for hazardous spills or increased dust on short-eared owl and northern harrier and their habitat as a result of Alternative 4A implementation would represent a significant impact in the absence of Environmental Commitments and AMMs. The incorporation of AMM1–AMM7 into Alternative 4A and the implementation of Mitigation Measure BIO-75, <i>Conduct Preconstruction Nesting Bird Surveys and Avoid Disturbance of Nesting Birds</i> , will reduce this impact to a less-than-significant level. Tidal habitat restoration will result in increased exposure of short-eared owl and northern harrier to selenium. This effect will be addressed through the implementation of AMM27 <i>Selenium Management</i> , which will provide specific tidal habitat restoration design elements to reduce the potential for bioaccumulation of selenium and its bioavailability in tidal habitats. Implementation of Environmental Commitment

Alternative 4A Potential Impact	Impact Conclusions Before Mitigation- CEQA	Proposed Mitigation	Impact Conclusion After Mitigation- CEQA	CEQA Conclusions	Findings of Fact
				Biological Resources, p. 12-3663)	<p>12, which contains measures to assess the amount of mercury before project development, followed by appropriate design and adaptation management, will minimize the potential for increased methylmercury exposure, and will result in no adverse effect on short-eared owl and northern harrier.</p> <p>Indirect effects of Alternative 4A implementation will represent an adverse effect on short-eared owl and northern harrier in the absence of other Environmental Commitments. This will be a significant impact. With AMM1–AMM7 and Environmental Commitment 12 in place, and with the implementation of Mitigation Measure BIO-75, indirect effects of Alternative 4A implementation will not result in a substantial adverse effect through habitat modifications and will not substantially reduce the number or restrict the range of either species. Therefore, the indirect effects of Alternative 4A implementation will have a less-than-significant impact on short-eared owl and northern harrier.</p> <p>Findings: Changes or alterations have been required in, or incorporated into, the project that avoid the significant environmental effect as identified in the Final EIR/EIS. Impacts will be less than significant with mitigation.</p> <p>(Final EIR/EIS, Chapter 12, Terrestrial Biological Resources, p. 12-3663)</p>
BIO-130: Loss or conversion of habitat for and direct mortality of California horned lark and grasshopper sparrow (Final EIR/EIS, Chapter 12, Terrestrial Biological Resources, p. 12-3670 – 12-3673)	Significant	<p><u>BIO-75: Conduct preconstruction nesting bird surveys and avoid disturbance of nesting birds</u></p> <p>See Impact BIO-75, above, for full mitigation measure. (Final MMRP, pp. 2-27; see also Final EIR/EIS, Chapter 12, Terrestrial Biological Resources, pp. 12-3574 – 12-3575, & 12-3673)</p>	Less than Significant (Final EIR/EIS, Chapter 12, Terrestrial Biological Resources, p. 12-3672 – 12-3673)	The effects on California horned lark and grasshopper sparrow habitat from Alternative 4A would represent a significant impact as a result of habitat modification of a special-status species and potential for direct mortality in the absence of Environmental Commitments and AMMs. (Final EIR/EIS, Chapter 12, Terrestrial Biological Resources, p. 12-3672 – 12-3673)	Project proponents have committed to habitat protection, restoration, management, and enhancement associated with Environmental Commitment 3 and Environmental Commitment 11. AMM1–AMM7 will be in place during all project activities. In addition, Mitigation Measure BIO-75 will be available to address potential impacts on nesting individuals. Considering these commitments, Alternative 4A will not result in a substantial adverse effect through habitat modifications and will not substantially reduce the number or restrict the range of California horned lark and grasshopper sparrow. Therefore, with the implementation of Mitigation Measure BIO-75, Alternative 4A will have a less-than-significant impact on California horned lark and

Alternative 4A Potential Impact	Impact Conclusions Before Mitigation- CEQA	Proposed Mitigation	Impact Conclusion After Mitigation- CEQA	CEQA Conclusions	Findings of Fact
					grasshopper sparrow under CEQA. Findings: Changes or alterations have been required in, or incorporated into, the project that avoid the significant environmental effect as identified in the Final EIR/EIS. Impacts will be less than significant with mitigation. (Final EIR/EIS, Chapter 12, Terrestrial Biological Resources, p. 12-3672 – 12-3673)
BIO-132: Indirect effects of Plan implementation on grasshopper sparrow and California horned lark (Final EIR/EIS, Chapter 12, Terrestrial Biological Resources, p. 12-3673 – 12-3674)	Significant	<u>BIO-75: Conduct preconstruction nesting bird surveys and avoid disturbance of nesting birds</u> See Impact BIO-75, above, for full mitigation measure. (Final MMRP, pp. 2-27; see also Final EIR/EIS, Chapter 12, Terrestrial Biological Resources, pp. 12-3574 – 12-3575, & 12-3674)	Less than Significant (Final EIR/EIS, Chapter 12, Terrestrial Biological Resources, p. 12-3673 – 12-3674)	Indirect effects associated with construction include noise, dust, and visual disturbance caused by grading, filling, contouring, and other ground-disturbing operations. Construction-related noise and visual disturbances will disrupt nesting and foraging behaviors, and reduce the functions of suitable habitat which will result in a significant impact on these species. Indirect effects on California horned lark and grasshopper sparrow as a result of Alternative 4A implementation will have a significant impact on these species. (Final EIR/EIS, Chapter 12, Terrestrial Biological Resources, p. 12-3673 – 12-3674)	Indirect effects on California horned lark and grasshopper sparrow as a result of Alternative 4A implementation will have a significant impact on these species. The incorporation of AMM1–AMM7 into Alternative 4A and the implementation of Mitigation Measure BIO-75, <i>Conduct Preconstruction Nesting Bird Surveys and Avoid Disturbance of Nesting Birds</i> , will reduce this impact to a less-than-significant level. Findings: Changes or alterations have been required in, or incorporated into, the project that avoid the significant environmental effect as identified in the Final EIR/EIS. Impacts will be less than significant with mitigation. (Final EIR/EIS, Chapter 12, Terrestrial Biological Resources, p. 12-3673 – 12-3674)
BIO-134: Loss or conversion of habitat for and direct mortality of least bittern and white-faced ibis (Final EIR/EIS, Chapter 12, Terrestrial Biological Resources, p. 12-3675 – 12-3677)	Significant	<u>BIO-75: Conduct preconstruction nesting bird surveys and avoid disturbance of nesting birds</u> See Impact BIO-75, above, for full mitigation measure. (Final MMRP, pp. 2-27; see also Final EIR/EIS, Chapter 12, Terrestrial Biological Resources, pp. 12-3574 – 12-3575, & 12-3677)	Less than Significant (Final EIR/EIS, Chapter 12, Terrestrial Biological Resources, p. 12-3677)	The effects on least bittern and white-faced ibis habitat from Alternative 4A would represent a significant impact as a result of habitat modification of a special-status species and potential for direct mortality in the absence of Environmental Commitments and AMMs. (Final EIR/EIS, Chapter 12, Terrestrial Biological Resources, p. 12-3677)	Project proponents have committed to habitat protection, restoration, management, and enhancement associated with Environmental Commitment 3, Environmental Commitment 4, Environmental Commitment 10, and Environmental Commitment 11. These conservation activities will be guided by Resource Restoration and Performance Principle CBR1 and by AMM1–AMM7, which will be in place during all project activities. In addition, Mitigation Measure BIO-75 will be available to address potential impacts on nesting individuals. Considering these commitments, Alternative 4A will not result in a substantial adverse effect through habitat modifications and will not substantially reduce the number or restrict the range of least bittern and white-faced ibis. Therefore, with the implementation of Mitigation Measure BIO-75, Alternative 4A will have a less-than-significant impact on least bittern and white-faced ibis under CEQA.

Alternative 4A Potential Impact	Impact Conclusions Before Mitigation- CEQA	Proposed Mitigation	Impact Conclusion After Mitigation- CEQA	CEQA Conclusions	Findings of Fact
					Findings: Changes or alterations have been required in, or incorporated into, the project that avoid the significant environmental effect as identified in the Final EIR/EIS. Impacts will be less than significant with mitigation. (Final EIR/EIS, Chapter 12, Terrestrial Biological Resources, p. 12-3677)
BIO-136: Indirect effects of Plan implementation on least bittern and white-faced ibis (Final EIR/EIS, Chapter 12, Terrestrial Biological Resources, p. 12-3678 – 12-3681)	Significant	<u>BIO-75: Conduct preconstruction nesting bird surveys and avoid disturbance of nesting birds</u> See Impact BIO-75, above, for full mitigation measure. (Final MMRP, pp. 2-27; see also Final EIR/EIS, Chapter 12, Terrestrial Biological Resources, pp. 12-3574 – 12-3575, & 12-3681)	Less than Significant (Final EIR/EIS, Chapter 12, Terrestrial Biological Resources, p. 12-3680 – 12-3681)	Indirect effects of noise and visual disturbance, in addition to the potential for hazardous spills or increased dust on least bittern and white-faced ibis and their habitat as a result of Alternative 4A implementation, would represent a substantial adverse effect in the absence of other Environmental Commitments and AMMs. This impact will be significant. Tidal habitat restoration will result in increased exposure of least bittern and white-faced ibis to selenium. The implementation of tidal natural communities restoration will result in increased exposure of least bittern and white-faced ibis to methylmercury in restored tidal areas. However, it is unknown what concentrations of methylmercury are harmful to these species and the potential for increased exposure varies substantially within the study area. (Final EIR/EIS, Chapter 12, Terrestrial Biological Resources, p. 12-3680 – 12-3681)	Indirect effects of noise and visual disturbance, in addition to the potential for hazardous spills or increased dust on least bittern and white-faced ibis and their habitat as a result of Alternative 4A implementation, will represent a significant impacts in the absence of other Environmental Commitments and AMMs. This impact will be significant. The incorporation of AMM1–AMM7 into Alternative 4A and the implementation of Mitigation Measure BIO-75, <i>Conduct Preconstruction Nesting Bird Surveys</i> and Avoid Disturbance of Nesting Birds, will reduce this impact to a less-than-significant level. Tidal habitat restoration will result in increased exposure of least bittern and white-faced ibis to selenium. This effect will be addressed through the implementation of AMM27 <i>Selenium Management</i> , which will provide specific tidal habitat restoration design elements to reduce the potential for bioaccumulation of selenium and its bioavailability in tidal habitats. Implementation of Environmental Commitment 12, which contains measures to assess the amount of mercury before project development, followed by appropriate design and adaptation management, will minimize the potential for increased methylmercury exposure, and will result in no adverse effect on least bittern and white-faced ibis. Indirect effects of Alternative 4A implementation will represent an adverse effect on least bittern and white-faced ibis in the absence of other Environmental Commitments. This will be a significant impact. With AMM1–AMM7, AMM27 <i>Selenium Management</i> , and Environmental Commitment 12 in place, and with the implementation of Mitigation Measure BIO-75, indirect effects of Alternative 4A implementation

Alternative 4A Potential Impact	Impact Conclusions Before Mitigation- CEQA	Proposed Mitigation	Impact Conclusion After Mitigation- CEQA	CEQA Conclusions	Findings of Fact
					<p>will not result in a substantial adverse effect through habitat modification and will not substantially reduce the number or restrict the range of either species. Therefore, the indirect effects of Alternative 4A implementation will have a less-than-significant impact on least bittern and white-faced ibis.</p> <p>Findings: Changes or alterations have been required in, or incorporated into, the project that avoid the significant environmental effect as identified in the Final EIR/EIS. Impacts will be less than significant with mitigation.</p> <p>(Final EIR/EIS, Chapter 12, Terrestrial Biological Resources, p. 12-3680 – 12-3681)</p>
<p>BIO-138: Loss or conversion of modeled habitat for and direct mortality of loggerhead shrike (Final EIR/EIS, Chapter 12, Terrestrial Biological Resources, p. 12-3683 – 12-3687)</p>	Significant	<p><u>BIO-75: Conduct preconstruction nesting bird surveys and avoid disturbance of nesting birds</u></p> <p>See Impact BIO-75, above, for full mitigation measure. (Final MMRP, pp. 2-27; see also Final EIR/EIS, Chapter 12, Terrestrial Biological Resources, pp. 12-3574 – 12-3575, & 12-3687)</p>	<p>Less than Significant (Final EIR/EIS, Chapter 12, Terrestrial Biological Resources, p. 12-3686 – 12-3687)</p>	<p>The effects on loggerhead shrike habitat from Alternative 4A would represent a significant impact as a result of habitat modification of a special-status species and potential for direct mortality in the absence of Environmental Commitments and AMMs. (Final EIR/EIS, Chapter 12, Terrestrial Biological Resources, p. 12-3686 – 12-3687)</p>	<p>Project proponents have committed to habitat protection, restoration, management, and enhancement (including the maintenance of important habitat characteristics such as trees and shrubs) associated with Environmental Commitment 3, Environmental Commitment 7, Environmental Commitment 8, and Environmental Commitment 11. These conservation activities will be guided by Resource Restoration and Performance Principles SH1, SH2, CL1, RBR5, and VFR1, and by AMM1–AMM6, AMM1–AMM6, AMM10 <i>Restoration of Temporarily Affected Natural Communities</i>, and AMM18 <i>Swainson’s Hawk</i>, which will be in place during all project activities. In addition, Mitigation Measure BIO-75 will be available to address potential impacts on nesting individuals. Considering these commitments, Alternative 4A will not result in a substantial adverse effect through habitat modifications and will not substantially reduce the number or restrict the range of loggerhead shrike. Therefore, with the implementation of Mitigation Measure BIO-75, Alternative 4A will have a less-than-significant impact on loggerhead shrike under CEQA.</p> <p>Findings: Changes or alterations have been required in, or incorporated into, the project that avoid the significant environmental effect as identified in the Final EIR/EIS. Impacts will be less than significant with mitigation.</p>

Alternative 4A Potential Impact	Impact Conclusions Before Mitigation- CEQA	Proposed Mitigation	Impact Conclusion After Mitigation- CEQA	CEQA Conclusions	Findings of Fact
					(Final EIR/EIS, Chapter 12, Terrestrial Biological Resources, p. 12-3686 – 12-3687)
BIO-140: Indirect effects of Plan implementation on loggerhead shrike (Final EIR/EIS, Chapter 12, Terrestrial Biological Resources, p. 12-3687 – 12-3688)	Significant	<u>BIO-75: Conduct preconstruction nesting bird surveys and avoid disturbance of nesting birds</u> See Impact BIO-75, above, for full mitigation measure. (Final MMRP, pp. 2-27; see also Final EIR/EIS, Chapter 12, Terrestrial Biological Resources, pp. 12-3574 – 12-3575, & 12-3688)	Less than Significant (Final EIR/EIS, Chapter 12, Terrestrial Biological Resources, p. 12-3688)	Indirect effects on loggerhead shrike as a result of Alternative 4A implementation will have a significant impact on these species. Construction of the new forebay in CZ 8 will have the potential to disrupt nesting loggerhead shrikes in the highly suitable habitat surrounding Clifton Court Forebay and adjacent to work areas. (Final EIR/EIS, Chapter 12, Terrestrial Biological Resources, p. 12-3688)	Indirect effects on loggerhead shrike as a result of Alternative 4A implementation will have a significant impact on these species. Construction of the new forebay in CZ 8 will have the potential to disrupt nesting loggerhead shrikes in the highly suitable habitat surrounding Clifton Court Forebay and adjacent to work areas. The incorporation of AMM1–AMM7 into Alternative 4A and the implementation of Mitigation Measure BIO-75, <i>Conduct Preconstruction Nesting Bird Surveys and Avoid Disturbance of Nesting Birds</i> , will reduce this impact to a less-than-significant level. Findings: Changes or alterations have been required in, or incorporated into, the project that avoid the significant environmental effect as identified in the Final EIR/EIS. Impacts will be less than significant with mitigation. (Final EIR/EIS, Chapter 12, Terrestrial Biological Resources, p. 12-3688)
BIO-142: Loss or conversion of habitat for and direct mortality of Modesto song sparrow (Final EIR/EIS, Chapter 12, Terrestrial Biological Resources, p. 12-3689 – 12-3692)	Significant	<u>BIO-75: Conduct preconstruction nesting bird surveys and avoid disturbance of nesting birds</u> See Impact BIO-75, above, for full mitigation measure. (Final MMRP, pp. 2-27; see also Final EIR/EIS, Chapter 12, Terrestrial Biological Resources, pp. 12-3574 – 12-3575, & 12-3692)	Less than Significant (Final EIR/EIS, Chapter 12, Terrestrial Biological Resources, p. 12-3692)	The effects on Modesto song sparrow habitat from Alternative 4A would represent a significant impact as a result of habitat modification of a special-status species and potential for direct mortality in the absence of other Environmental Commitments and AMMs. (Final EIR/EIS, Chapter 12, Terrestrial Biological Resources, p. 12-3692)	Project proponents have committed to habitat protection, restoration, management, and enhancement associated with Environmental Commitment 3, Environmental Commitment 4, Environmental Commitment 7, Environmental Commitment 10, and Environmental Commitment 11. These conservation activities will be guided by Resource Restoration and Performance Principle CBR1, and by AMM1–AMM6, which will be in place during all project activities. In addition, Mitigation Measure BIO-75 will be available to address potential impacts on nesting individuals. Considering these commitments, Alternative 4A will not result in a substantial adverse effect through habitat modifications and will not substantially reduce the number or restrict the range of Modesto song sparrow. Therefore, with the implementation of Mitigation Measure BIO-75, Alternative 4A will have a less-than-significant impact on Modesto song sparrow under CEQA. Findings: Changes or alterations have been required in, or incorporated into, the project that

Alternative 4A Potential Impact	Impact Conclusions Before Mitigation- CEQA	Proposed Mitigation	Impact Conclusion After Mitigation- CEQA	CEQA Conclusions	Findings of Fact
					avoid the significant environmental effect as identified in the Final EIR/EIS. Impacts will be less than significant with mitigation. (Final EIR/EIS, Chapter 12, Terrestrial Biological Resources, p. 12-3692)
BIO-144: Indirect effects of Plan implementation on Modesto song sparrow (Final EIR/EIS, Chapter 12, Terrestrial Biological Resources, p. 12-3692 – 12-3696)	Significant	<u>BIO-75: Conduct preconstruction nesting bird surveys and avoid disturbance of nesting birds</u> See Impact BIO-75, above, for full mitigation measure. (Final MMRP, pp. 2-27; see also Final EIR/EIS, Chapter 12, Terrestrial Biological Resources, pp. 12-3574 – 12-3575, & 12-3696)	Less than Significant (Final EIR/EIS, Chapter 12, Terrestrial Biological Resources, p. 12-3695 – 12-3696)	Noise and visual disturbances from the construction of water conveyance facilities will reduce Modesto song sparrow use of modeled habitat adjacent to work areas. Moreover, operation and maintenance of the water conveyance facilities, including the transmission facilities, will result in ongoing but periodic post-construction disturbances that will affect Modesto song sparrow use of the surrounding habitat. The implementation of tidal natural communities restoration will result in increased exposure of Modesto song sparrow to methylmercury in tidally restored areas. Tidal habitat restoration will also result in increased exposure of Modesto song sparrow to selenium; however, the potential exposure to selenium resulting from the restoration is not expected to adversely affect the Modesto song sparrow population. (Final EIR/EIS, Chapter 12, Terrestrial Biological Resources, p. 12-3695 – 12-3696)	Noise, the potential for hazardous spills, increased dust and sedimentation, and operations and maintenance of the water conveyance facilities under Alternative 4A will have a less-than-significant impact on Modesto song sparrow with the implementation of Mitigation Measure BIO-75, <i>Conduct Preconstruction Nesting Bird Surveys and Avoid Disturbance of Nesting Birds</i> , and AMM1–AMM7. The implementation of tidal natural communities restoration will result in increased exposure of Modesto song sparrow to methylmercury in tidally restored areas. This will be a significant impact. However, it is currently unknown what concentrations of methylmercury are harmful to these species and the potential for increased exposure varies substantially within the study area. Implementation of Environmental Commitment 12, which contains measures to assess the amount of mercury before project development, followed by appropriate design and adaptation management, will minimize the potential for increased methylmercury exposure, and will result in less than significant impact on Modesto song sparrow. Tidal habitat restoration will also result in increased exposure of Modesto song sparrow to selenium; however, the potential exposure to selenium resulting from the restoration is not expected to adversely affect the Modesto song sparrow population. Any effects will be addressed through the implementation of AMM27 Selenium Management, which will provide specific tidal habitat restoration design elements to reduce the potential for bioaccumulation of selenium and its bioavailability in tidal habitats. With AMM1–AMM7 and Environmental Commitment 12 in place, and with the implementation of Mitigation Measure BIO-75,

Alternative 4A Potential Impact	Impact Conclusions Before Mitigation- CEQA	Proposed Mitigation	Impact Conclusion After Mitigation- CEQA	CEQA Conclusions	Findings of Fact
					<p>the indirect effects of Alternative 4A implementation will not substantially reduce the number or restrict the range of Modesto song sparrow. Therefore, with the implementation of Mitigation Measure BIO-75, the indirect effects of Alternative 4A implementation will have a less-than-significant impact on Modesto song sparrow.</p> <p>Findings: Changes or alterations have been required in, or incorporated into, the project that avoid the significant environmental effect as identified in the Final EIR/EIS. Impacts will be less than significant with mitigation.</p> <p>(Final EIR/EIS, Chapter 12, Terrestrial Biological Resources, p. 12-3695 – 12-3696)</p>
BIO-146: Indirect effects of implementation of conservation components on bank swallow (Final EIR/EIS, Chapter 12, Terrestrial Biological Resources, p. 12-3697 – 12-3698)	Significant	<p><u>BIO-146: Active bank swallow colonies shall be avoided and indirect effects on bank swallow will be minimized</u></p> <p>To the extent practicable, DWR will not conduct restoration activities during the bank swallow nesting season (April 1 through August 31). If restoration cannot be avoided during nesting season, a qualified biologist will conduct preconstruction surveys to determine if active bank swallow nesting colonies are present within 500 feet of work areas. If no active nesting colonies are present, no further mitigation is required. Reusable tunnel material areas are not expected to be colonized by nesting bank swallows, as it is unlikely that the substrate would provide suitable nesting habitat for the species. However, reusable tunnel material sites could become suitable for swallows over time. Surveys of reusable tunnel material areas that have been present for at least 1 year, allowing the substrate to stabilize, will be conducted prior to the removal of reusable tunnel material.</p> <p>If active colonies are detected, DWR will establish a nondisturbance buffer (determined by DWR in consultation with CDFW and the Bank Swallow Technical Advisory Committee) around the colony during the breeding season. In addition, a qualified biologist will monitor any active colony within 500 feet of construction to ensure that construction activities do not affect nest success.</p> <p>(Final MMRP, pp. 2-29 – 2-30; see also Final EIR/EIS, Chapter 12, Terrestrial Biological Resources, pp. 12-3697 – 12-3698)</p>	Less than Significant (Final EIR/EIS, Chapter 12, Terrestrial Biological Resources, p. 12-3697)	Construction activities associated with habitat restoration will represent an adverse effect on bank swallow colonies as a result of modification of habitat and potential mortality of special status species in the absence of other measures. This impact will be significant. (Final EIR/EIS, Chapter 12, Terrestrial Biological Resources, p. 12-3697)	<p>Noise and visual disturbances will result in significant impacts on bank swallows if active colonies were present within 500 feet of work areas. Implementation of Mitigation Measure BIO-146, <i>Active Bank Swallow Colonies Shall Be Avoided and Indirect Effects on Bank Swallow Will Be Minimized</i>, will reduce this impact to a less-than-significant level.</p> <p>Findings: Changes or alterations have been required in, or incorporated into, the project that avoid the significant environmental effect as identified in the Final EIR/EIS. Impacts will be less than significant with mitigation.</p> <p>(Final EIR/EIS, Chapter 12, Terrestrial Biological Resources, p. 12-3697)</p>
BIO-147: Effects of	Significant	<u>BIO-147: Monitor bank swallow colonies and evaluate</u>	Less than	High spring flows on the Sacramento and	There are many variables that dictate suitable

Alternative 4A Potential Impact	Impact Conclusions Before Mitigation- CEQA	Proposed Mitigation	Impact Conclusion After Mitigation- CEQA	CEQA Conclusions	Findings of Fact
upstream reservoir and water conveyance facility operations on bank swallow (Final EIR/EIS, Chapter 12, Terrestrial Biological Resources, p. 12-3698 – 12-3699)		<u>winter and spring flows upstream of the study area</u> To address the uncertainty of the impact of upstream spring flows on existing bank swallow habitat, DWR will continue to support annual monitoring efforts ⁴ of existing colonies upstream of the study area. DWR will collect data to be used for quantifying the magnitude of flows that would result in loss of active nest sites or degradation of available nesting habitat, and the extent to which changes in SWP operations attributable solely to the California WaterFix are the cause of such impacts. If DWR determines that changes in SWP operations attributable solely to the California WaterFix have caused loss of active nest sites or degradation of available nesting habitat, replacement habitat will be established at a minimum of 2:1 for the length of bank habitat affected. Replacement habitat will consist of removing bank revetment to create habitat for bank swallow at a location subject to CDFW approval (Bank Swallow Technical Advisory Committee 2013). (Final MMRP, pp. 2-30 – 2-31; see also Final EIR/EIS, Chapter 12, Terrestrial Biological Resources, p. 12-3699)	Significant (Final EIR/EIS, Chapter 12, Terrestrial Biological Resources, p.12-3699)	Feather Rivers may already be impacting bank swallow colonies during the breeding season, and predicted flows under Alternative 4A will not differ substantially from those under Existing Conditions. However, because of the complexity of variables that dictate suitable habitat for the species, there is uncertainty regarding the potential for and magnitude of impacts on bank swallow from changes in upstream operations. (Final EIR/EIS, Chapter 12, Terrestrial Biological Resources, p. 12-3699)	habitat for the species that cannot be clearly quantified, and seasonal changes in flow will increase or decrease suitable habitat for bank swallow depending on soil type and location of current colonies. Implementation of Mitigation Measure BIO-147, <i>Monitor Bank Swallow Colonies and Evaluate Winter and Spring Flows Upstream of the Study Area</i> , will address this potential significant impact and further determine if additional mitigation is required for bank swallow. Findings: Changes or alterations have been required in, or incorporated into, the project that avoid the significant environmental effect as identified in the Final EIR/EIS. Impacts will be less than significant with mitigation. (Final EIR/EIS, Chapter 12, Terrestrial Biological Resources, p. 12-3699)
BIO-148: Loss of habitat for and direct mortality of yellow-headed blackbird (Final EIR/EIS, Chapter 12, Terrestrial Biological Resources, p. 12-3701 – 12-3703)	Significant	<u>BIO-75: Conduct preconstruction nesting bird surveys and avoid disturbance of nesting birds</u> See Impact BIO-75, above, for full mitigation measure. (Final MMRP, pp. 2-27; see also Final EIR/EIS, Chapter 12, Terrestrial Biological Resources, pp. 12-3574 – 12-3575, & 12-3703)	Less than Significant (Final EIR/EIS, Chapter 12, Terrestrial Biological Resources, pp.12-3700 – 12-3702)	The effects on yellow-headed blackbird habitat from Alternative 4A will represent a significant impact as a result of habitat modification of a special-status species and potential for direct mortality in the absence of Environmental Commitments and AMMs. (Final EIR/EIS, Chapter 12, Terrestrial Biological Resources, p. 12-3703)	Project proponents have committed to habitat protection, restoration, management, and enhancement associated with Environmental Commitment 3, Environmental Commitment 4, Environmental Commitment 10, and Environmental Commitment 11. These conservation activities will be guided by Resource Restoration and Performance Principle CBR1, and by AMM1–AMM7, which will be in place during all project activities. In addition, Mitigation Measure BIO-75 will be available to address potential impacts on nesting individuals. Considering these commitments, Alternative 4A will not result in a substantial adverse effect through habitat modifications and will not substantially reduce the number or restrict the range of yellow-headed blackbird. Therefore, with the implementation of Mitigation Measure BIO-75, Alternative 4A will have a less-than-significant impact on yellow-headed blackbird under CEQA. Findings: Changes or alterations have been

⁴ Bank swallow colonies have historically been and are currently monitored by DWR, USFWS, and CDFW in association with the Bank Swallow Technical Advisory Committee, which is a diverse coalition of state and federal agency and non-governmental organization personnel, created in response to the continued decline of banks swallow populations on the Sacramento River.

Alternative 4A Potential Impact	Impact Conclusions Before Mitigation- CEQA	Proposed Mitigation	Impact Conclusion After Mitigation- CEQA	CEQA Conclusions	Findings of Fact
					required in, or incorporated into, the project that avoid the significant environmental effect as identified in the Final EIR/EIS. Impacts will be less than significant with mitigation. (Final EIR/EIS, Chapter 12, Terrestrial Biological Resources, p. 12-3703)
BIO-150: Indirect effects of Plan implementation on yellow-headed blackbird (Final EIR/EIS, Chapter 12, Terrestrial Biological Resources, p. 12-3704 – 12-3708)	Significant	<u>BIO-75: Conduct preconstruction nesting bird surveys and avoid disturbance of nesting birds</u> See Impact BIO-75, above, for full mitigation measure. (Final MMRP, pp. 2-27; see also Final EIR/EIS, Chapter 12, Terrestrial Biological Resources, pp. 12-3574 – 12-3575, & 12-3708)	Less than Significant (Final EIR/EIS, Chapter 12, Terrestrial Biological Resources, p. 12-3707 – 12-3708)	In the absence of AMMs, noise and visual disturbance, the potential for hazardous spills, increased dust and sedimentation, and operations and maintenance of the water conveyance facilities under Alternative 4A will represent an adverse effect. The implementation of tidal natural communities restoration will result in increased exposure of yellow-headed blackbird to methylmercury in restored tidal areas. However, it is unknown what concentrations of methylmercury are harmful to these species and the potential for increased exposure varies substantially within the study area. Tidal habitat restoration will result in increased exposure of yellow-headed blackbird to selenium; however, the amount of tidal restoration will total up to 22 acres, and potential exposure to selenium resulting from these acres of restoration will not be expected to adversely affect the yellow-headed blackbird population. (Final EIR/EIS, Chapter 12, Terrestrial Biological Resources, p. 12-3707 – 12-3708)	In the absence of AMMs, noise and visual disturbance, the potential for hazardous spills, increased dust and sedimentation, and operations and maintenance of the water conveyance facilities under Alternative 4A will represent an adverse effect. This impact will be significant. The implementation of Mitigation Measure BIO-75, <i>Conduct Preconstruction Nesting Bird Surveys and Avoid Disturbance of Nesting Birds</i> , and AMM1–AMM7, will reduce this impact to a less-than-significant level. Implementation of Environmental Commitment 12, which contains measures to assess the amount of mercury before project development, followed by appropriate design and adaptation management, will minimize the potential for increased methylmercury exposure, and will result in no adverse effect on yellow-headed blackbird. Tidal habitat restoration will result in increased exposure of yellow-headed blackbird to selenium; however, the amount of tidal restoration will total up to 22 acres, and potential exposure to selenium resulting from these acres of restoration will not be expected to adversely affect the yellow-headed blackbird population. Any effects will be addressed through the implementation of AMM27 <i>Selenium Management</i> , which will provide specific tidal habitat restoration design elements to reduce the potential for bioaccumulation of selenium and its bioavailability in tidal habitats. Indirect effects of Alternative 4A implementation will represent an adverse effect on yellow-headed blackbird in the absence of other Environmental Commitments. This will be a significant impact. With AMM1–AMM7 and Environmental Commitment 12 in place, and with the implementation of Mitigation Measure

Alternative 4A Potential Impact	Impact Conclusions Before Mitigation- CEQA	Proposed Mitigation	Impact Conclusion After Mitigation- CEQA	CEQA Conclusions	Findings of Fact
					BIO-75, indirect effects of Alternative 4A implementation will not result in a substantial adverse effect through habitat modifications and will not substantially reduce the number or restrict the range of the species. Therefore, indirect effects of Alternative 4A implementation will have a less-than-significant impact on yellow-headed blackbird. Findings: Changes or alterations have been required in, or incorporated into, the project that avoid the significant environmental effect as identified in the Final EIR. Impacts will be less than significant with mitigation. (Final EIR/EIS, Chapter 12, Terrestrial Biological Resources, p. 12-3707 – 12-3708)
BIO-162: Loss or conversion of habitat for and direct mortality of San Joaquin kit fox and American badger (Final EIR/EIS, Chapter 12, Terrestrial Biological Resources, p. 12-3717 – 12-3720)	Significant	<u>BIO-162: Conduct preconstruction survey for American badger</u> A qualified biologist provided by DWR will survey for American badger concurrent with the preconstruction survey for San Joaquin kit fox (AMM24) and burrowing owl (AMM23). If badgers are detected, the biologist will passively relocate badgers out of the work area prior to construction if feasible. If an active den is detected within the work area, DWR will establish a suitable buffer distance and avoid the den until the qualified biologist determines the den is no longer active. Dens that are determined to be inactive by the qualified biologist will be collapsed by hand to prevent occupation of the den between the time of the survey and construction activities. In addition, ground disturbance within project related conservation areas within 50 feet of active American badger dens would be prohibited. Existing trails would be closed within 250 feet of active natal/pupping dens until young have vacated, and within 50 feet of other active dens. No dogs would be allowed on conservation areas with active American badger populations. Rodent control would be prohibited on areas with American badger populations to ensure rodent prey availability. Mitigation Measure BIO-162 is applicable to all ground disturbing activities related to construction, restoration, and operations and maintenance. (Final MMRP, pp. 2-31 – 2-32; see also Final EIR/EIS, Chapter 12, Terrestrial Biological Resources, p. 12-3720)	Less than Significant (Final EIR/EIS, Chapter 12, Terrestrial Biological Resources, p. 12-3719)	In the absence of the proposed Environmental Commitments, the effects on San Joaquin kit fox and American badger habitat from Alternative 4A would represent a significant impact as a result of habitat modification and potential direct mortality of a special-status species. (Final EIR/EIS, Chapter 12, Terrestrial Biological Resources, p. 12-3719)	With habitat protection, restoration, management, and enhancement guided by Resource Restoration and Performance Principles L2, VP/AW1, VP/AW6, VP/AW7, and G10, and guided by AMM1–AMM6, AMM10, and AMM24, which will be in place throughout the time period of construction and operations, and with implementation of Mitigation Measure BIO-162, the impact of Alternative 4A as a whole on San Joaquin kit fox and American badger will be less than significant. Findings: Changes or alterations have been required in, or incorporated into, the project that avoid the significant environmental effect as identified in the Final EIR/EIS. Impacts will be less than significant with mitigation. (Final EIR/EIS, Chapter 12, Terrestrial Biological Resources, p. 12-3719)
BIO-163: Indirect effects of Plan implementation on	Significant	<u>BIO-162: Conduct preconstruction survey for American badger</u>	Less than Significant	Indirect effects from Environmental Commitment operations and maintenance as	With implementation of AMM1–AMM6, AMM10, and AMM24 as part of Alternative 4A

Alternative 4A Potential Impact	Impact Conclusions Before Mitigation- CEQA	Proposed Mitigation	Impact Conclusion After Mitigation- CEQA	CEQA Conclusions	Findings of Fact
San Joaquin kit fox and American badger (Final EIR/EIS, Chapter 12, Terrestrial Biological Resources, p. 12-3720 – 12-3721)		See Impact BIO-162, above, for full mitigation measure. (Final MMRP, pp. 2-31 – 2-32; see also Final EIR/EIS, Chapter 12, Terrestrial Biological Resources, pp. 12-3720 & 12-3721)	(Final EIR/EIS, Chapter 12, Terrestrial Biological Resources, p. 12-3720 – 12-3721)	well as construction-related noise and visual disturbances will impact San Joaquin kit fox and American badger. (Final EIR/EIS, Chapter 12, Terrestrial Biological Resources, p. 12-3720 – 12-3721)	construction, operation, and maintenance, the project will avoid the potential for significant adverse effects on either species, either indirectly or through habitat modifications, and will not result in a substantial reduction in numbers or a restriction in the range of either species. In addition, Mitigation Measure BIO-162 as described above, will further reduce of the potential for indirect effects of Alternative 4A on American badger to a less-than-significant level. Findings: Changes or alterations have been required in, or incorporated into, the project that avoid the significant environmental effect as identified in the Final EIR/EIS. Impacts will be less than significant with mitigation. (Final EIR/EIS, Chapter 12, Terrestrial Biological Resources, p. 12-3720 – 12-3721)
BIO-166: Loss or conversion of habitat for and direct mortality of special-status bats (Final EIR/EIS, Chapter 12, Terrestrial Biological Resources, p. 12-3726 – 12-3733)	Significant	<p><u>BIO-166: Conduct preconstruction surveys for roosting bats and implement protective measures</u></p> <p>The following measure was designed to avoid and minimize adverse direct and indirect effects on special-status bats. However, baseline data are not available or are limited on how bats use the study area, and on individual numbers of bats and how they vary seasonally. Therefore, it is difficult to determine if there would be a substantial reduction in species numbers. Bat species with potential to occur in the study area employ varied roost strategies, from solitary roosting in foliage of trees to colonial roosting in trees and artificial structures, such as buildings and bridges. Daily and seasonal variations in habitat use are common. To obtain the highest likelihood of detection, preconstruction bat surveys will be conducted by DWR and will include these components.</p> <ul style="list-style-type: none"> • Identification of potential roosting habitat within project footprint. • Daytime search for bats and bat sign in and around identified habitat. • Evening emergence surveys at potential day-roost sites, using night-vision goggles and/or active full-spectrum acoustic monitoring where species identification is sought. • Passive full-spectrum acoustic monitoring and analysis to detect bat use of the area from dusk to dawn over multiple nights. 	Less than Significant (Final EIR/EIS, Chapter 12, Terrestrial Biological Resources, p. 12-3729)	The permanent loss of roosting habitat from Alternative 4A would represent a significant impact. The permanent loss of roosting habitat from Alternative 4A will be mitigated through implementation of Mitigation Measure BIO-166, which will ensure there is no significant impact under CEQA on roosting special-status bats, either directly or through habitat modifications and no substantial reduction in numbers or a restriction in the range of special-status bats. (Final EIR/EIS, Chapter 12, Terrestrial Biological Resources, p. 12-3729)	The permanent loss of roosting habitat from Alternative 4A will be mitigated through implementation of Mitigation Measure BIO-166, which will ensure there is no significant impact under CEQA on roosting special-status bats, either directly or through habitat modifications and no substantial reduction in numbers or a restriction in the range of special-status bats. The project also contains commitments to implement habitat protection and restoration associated with the Environmental Commitments and Resource Restoration and Performance Principles, and AMM1–6 and AMM10, which will offset the loss of foraging habitat. These AMMs include elements that avoid or minimize the risk of project activities affecting habitat and species adjacent to work areas and storage sites. The AMMs are provided in Appendix 3B, <i>Environmental Commitments, AMMs, and CMs</i> , of the Final EIR/EIS. Findings: Changes or alterations have been required in, or incorporated into, the project that avoid the significant environmental effect as identified in the Final EIR/EIS. Impacts will be less than significant with mitigation. (Final EIR/EIS, Chapter 12, Terrestrial Biological Resources, p. 12-3729)

Alternative 4A Potential Impact	Impact Conclusions Before Mitigation- CEQA	Proposed Mitigation	Impact Conclusion After Mitigation- CEQA	CEQA Conclusions	Findings of Fact
		<ul style="list-style-type: none">• Additional on-site night surveys as needed following passive acoustic detection of special status bats to determine nature of bat use of the structure in question (e.g., use of structure as night roost between foraging bouts).• Qualified biologists will have knowledge of the natural history of the species that could occur in the study area and experience using full-spectrum acoustic equipment. During surveys, biologists will avoid unnecessary disturbance of occupied roosts. <p><i>Preconstruction Bridges and Other Structure Surveys</i> Before work begins on the bridge/structure, qualified biologists will conduct a daytime search for bat sign and evening emergence surveys to determine if the bridge/structure is being used as a roost. Biologists conducting daytime surveys would listen for audible bat calls and would use naked eye, binoculars, and a high-powered spotlight to inspect expansion joints, weep holes, and other bridge features that could house bats. Bridge surfaces and the ground around the bridge/structure would be surveyed for bat sign, such as guano, staining, and prey remains. Evening emergence surveys will consist of at least one biologist stationed on each side of the bridge/structure watching for emerging bats from a half hour before sunset to 1–2 hours after sunset for a minimum of two nights within the season that construction would be taking place. Night-vision goggles and/or full-spectrum acoustic detectors will be used during emergence surveys to assist in species identification. All emergence surveys would be conducted during favorable weather conditions (calm nights with temperatures conducive to bat activity and no precipitation predicted). Additionally, passive monitoring with full-spectrum bat detectors will be used to assist in determining species present. A minimum of four nights of acoustic monitoring surveys will be conducted within the season that the construction would be taking place. If site security allows, detectors should be set to record bat calls for the duration of each night. To the extent possible, all monitoring will be conducted during favorable weather conditions (calm nights with temperatures conducive to bat activity and no precipitation predicted). The biologists will analyze the bat call data using appropriate software and prepare a report</p>			

Alternative 4A Potential Impact	Impact Conclusions Before Mitigation- CEQA	Proposed Mitigation	Impact Conclusion After Mitigation- CEQA	CEQA Conclusions	Findings of Fact
		<p>with the results of the surveys. If acoustic data suggest that bats may be using the bridge/structure as a night roost, biologists will conduct a night survey from 1–2 hours past sunset up to 6 hours past sunset to determine if the bridge is serving as a colonial night roost.</p> <p>If suitable roost structures would be removed, additional surveys may be required to determine how the structure is used by bats, whether it is as a night roost, maternity roosts, migration stopover, or for hibernation.</p> <p>Preconstruction Tree Surveys</p> <p>If tree removal or trimming is necessary, qualified biologists will examine trees to be removed or trimmed for suitable bat roosting habitat. High-value habitat features (large tree cavities, basal hollows, loose or peeling bark, larger snags, palm trees with intact thatch, etc.) will be identified and the area around these features searched for bats and bat sign (guano, culled insect parts, staining, etc.). Riparian woodland, orchards, and stands of mature broadleaf trees should be considered potential habitat for solitary foliage roosting bat species.</p> <p>If bat sign is detected, biologists will conduct evening visual emergence survey of the source habitat feature, from a half hour before sunset to 1–2 hours after sunset for a minimum of two nights within the season that construction would be taking place. Methodology should follow that described above for the bridge emergence survey.</p> <p>Additionally, if suitable tree roosting habitat is present, acoustic monitoring with a bat detector will be used to assist in determining species present. These surveys would be conducted in coordination with the acoustic monitoring conducted for the bridge/structure.</p> <p>Protective Measures for Bats using Bridges/Structures and Trees</p> <p>Avoidance and minimization measures shall be necessary if it is determined that bats are using the bridge/structure or trees as roost sites and/or sensitive bats species are detected during acoustic monitoring. Appropriate measures will be determined by DWR in consultation with CDFW and shall include, as applicable, the measures listed below.</p> <ul style="list-style-type: none">• Ensure that bats are protected from noise, vibrations, and light that result from construction activities associated with water conveyance facilities, conservation components			

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		<p>and ongoing habitat enhancement, as well as operations and maintenance of above-ground water conveyance facilities, including the transmission facilities. This would be accomplished by either directing noise barriers and lights inward from the disturbance or ensuring that the disturbances do not extend more than 300 feet from the point source.</p> <ul style="list-style-type: none">• Disturbance of the bridge will be avoided between March 1 and October 31 (the maternity period) to avoid impacts on reproductively active females and dependent young.• Installation of exclusion devices from March 1 through October 31 to preclude bats from occupying the bridge during construction. Exclusionary devices will only be installed by or under the supervision of an experienced bat biologist.• Tree removal will be avoided between April 15 and September 15 (the maternity period for bat species that use trees) to avoid impacts on pregnant females and active maternity roosts (whether colonial or solitary).• Tree removal will be conducted between September 15 and October 31 to the maximum extent feasible, which corresponds to a time period when bats would not likely have entered winter hibernation and would not be caring for flightless young. If weather conditions remain conducive to regular bat activity beyond October 31st, later tree removal may be considered in consultation with CDFW.• Trees will be removed in pieces, rather than felling the entire tree.• If a maternity roost is located, whether solitary or colonial, that roost will remain undisturbed with a buffer as determined in consultation with CDFW until September 15 or until a qualified biologist has determined the roost is no longer active.• If a non-maternity roost is found, that roost will be avoided to the maximum extent feasible and an appropriate buffer established in			

Alternative 4A Potential Impact	Impact Conclusions Before Mitigation- CEQA	Proposed Mitigation	Impact Conclusion After Mitigation- CEQA	CEQA Conclusions	Findings of Fact
		<p>consultation with CDFW. Every effort would be made to avoid the roost to the maximum extent possible, as methods to evict bats from trees are largely untested. However, if the roost cannot be avoided, eviction would be attempted and procedures designed in consultation with CDFW to reduce the likelihood of mortality of evicted bats. In all cases:</p> <ul style="list-style-type: none">• Eviction will not occur before September 15th and will match the timeframe for tree removal approved by CDFW.• Qualified biologists will carry out or oversee the eviction tasks and monitor the tree trimming/removal.• Eviction will take place late in the day or in the evening to reduce the likelihood of evicted bats falling prey to diurnal predators.• Eviction will take place during weather and temperature conditions conducive to bat activity.• Special-status bat roosts would not be disturbed. <p>Eviction procedures shall include but are not limited to:</p> <ul style="list-style-type: none">• Pre-eviction surveys to obtain data to inform the eviction approach and subsequent mitigation requirements. Relevant data may include the species, sex, reproductive status and/or number of bats using the roost, and roost conditions themselves such as temperature and dimensions. Surveys may include visual emergence, night vision, acoustic, and/or capture.• Structural changes may be made to the roost, performed without harming bats, such that the conditions in the roost are undesirable to roosting bats and the bats leave on their own (e.g., open additional portals so that temperature, wind, light and precipitation regime in the roost change).• Noninjurious harassment at the roost site to encourage bats to leave on their own, such as ultrasound deterrents or other sensory irritants.			

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		<ul style="list-style-type: none">• Prior to removal/trimming, after other eviction efforts have been attempted, any confirmed roost tree would be shaken, repeatedly struck with a heavy implement such as an axe and several minutes should pass before felling trees or trimming limbs to allow bats time to arouse and leave the tree. The biologists should search downed vegetation for dead and injured bats. The presence of dead or injured bats would be reported to CDFW. <p>Compensatory mitigation at a 1:1 ratio for the loss of roosting habitat would be accomplished by the restoration of 251 acres and protection of 103 acres of valley/foothill riparian habitat. Compensation may include the construction and installation of suitable replacement roosting habitat onsite as described below. Depending on the species and type of roost lost, various roost replacement habitats have met with some success (e.g., bat houses, “bat bark,” planting cottonwood trees, leaving palm thatch in place rather than trimming). The creation of natural habitat onsite is generally preferable to artificial. Artificial roosts are often unsuccessful, and care must be taken to determine as closely as possible the conditions in the natural roost to be replaced. Even with such care, artificial habitat may fail. Several artificial roosts have been highly successful in replacing bridge roost habitat when incorporated into new bridge designs. “Bat bark” has been successfully used by Arizona Department of Game and Fish to create artificial crevice-roosting bat habitat mounted on pine trees (Mering and Chambers 2012: 765). Bat houses have at best an inconsistent track record but information is mounting on how to create successful houses. There is no single protocol or recipe for bat-house success. Careful study of the roost requirements of the species in question; the particular conditions at the lost roost site including temperature, orientation of the openings, airflow, internal dimensions and structures (cavity vs. crevice, etc.) should increase the chances of designing a successful replacement. Restoring riparian woodland with plantings shows signs of success in Colorado. Western red bat activity has been positively correlated with increased vegetation and tree growth, canopy complexity and restoration acreage at cottonwood-willow restoration sites along the Lower Colorado River (Broderick 2012: 39). These complex woodland areas would ultimately provide a wider range of</p>			

Alternative 4A Potential Impact	Impact Conclusions Before Mitigation- CEQA	Proposed Mitigation	Impact Conclusion After Mitigation- CEQA	CEQA Conclusions	Findings of Fact
		bat species with preferred roost types, including both foliage-roosting and crevice-/cavity-roosting bats. (Final MMRP, pp, 2-32 – 2-36; see also Final EIR/EIS, Chapter 12, Terrestrial Biological Resources, pp. 12-3729 – 12-3733)			
BIO-167: Indirect effects of Plan implementation on special-status bats (Final EIR/EIS, Chapter 12, Terrestrial Biological Resources, p. 12-3733 – 12-3734)	Significant	<u>BIO-166: Conduct preconstruction surveys for roosting bats and implement protective measures</u> See Impact BIO-166, above, for full mitigation measure. (Final MMRP, pp. 2-32 – 2-36; see also Final EIR/EIS, Chapter 12, Terrestrial Biological Resources, pp. 12-3729 – 12-3733, & 12-3734)	Less than Significant (Final EIR/EIS, Chapter 12, Terrestrial Biological Resources, p. 12-3733)	Indirect effects from Environmental Commitments, operations and maintenance as well as construction-related noise and visual disturbances will have a significant impact on special-status bat species, either indirectly or through habitat modifications. (Final EIR/EIS, Chapter 12, Terrestrial Biological Resources, p. 12-3733)	Indirect effects from Environmental Commitments, operations and maintenance as well as construction-related noise and visual disturbances will have a significant impact on special-status bat species, either indirectly or through habitat modifications. Mitigation Measure BIO-166, Conduct Preconstruction Surveys for Roosting Bats and Implement Protective Measures, and Environmental Commitment 12 Methylmercury Management will reduce this impact to a less-than-significant level by reducing the likelihood for impacts to occur to roosting bats and will ensure Alternative 4A will not result in a substantial reduction in numbers or a restriction in the range of species. Findings: Changes or alterations have been required in, or incorporated into, the project that avoid the significant environmental effect as identified in the Final EIR/EIS. Impacts will be less than significant with mitigation. (Final EIR/EIS, Chapter 12, Terrestrial Biological Resources, p. 12-3733)
BIO-170: Effects on habitat and populations of alkali seasonal wetland plants (Final EIR/EIS, Chapter 12, Terrestrial Biological Resources, p. 12-3741 – 12-3745)	Significant	<u>BIO-170: Avoid, minimize, or compensate for impacts on noncovered special-status plant species</u> DWR will evaluate all projects for their impacts on special-status plant species, avoid or minimize impacts on species that occur on project sites, and compensate for impacts on species. All impacts on diamond-petaled California poppy and caper-fruited tropidocarpum shall be avoided. Impacts on other special-status plant species will be avoided to the extent feasible, and any unavoidable impacts will be compensated for. <ul style="list-style-type: none"> DWR will conduct surveys for special-status plant species within and adjacent to all project sites. Special-status plant surveys required for project-specific permit compliance will be conducted during the planning phase to allow design of the individual restoration projects to avoid adverse modification of habitat for 	Less than Significant (Final EIR/EIS, Chapter 12, Terrestrial Biological Resources, p. 12-3743)	Because loss of modeled habitat for alkali seasonal wetland plant species will be offset through restoration, and because impacts on occurrences of special-status alkali seasonal wetland species will be avoided, impacts on alkali seasonal wetlands as a result of implementing Alternative 4A will not result in substantially reducing the number or restricting the range of seven special-status alkali seasonal wetland plant species. However, Environmental Commitments that benefit or protect listed species do not apply to nonlisted species, and loss of the crownscale population at Clifton Court Forebay will be a significant impact. (Final EIR/EIS, Chapter 12, Terrestrial Biological Resources, p. 12-3743)	Environmental Commitments that benefit or protect listed species do not apply to nonlisted species, and loss of the crownscale population at Clifton Court Forebay will be a significant impact. Implementation of Mitigation Measure BIO-170 will reduce this impact to a less-than-significant level. Findings: Changes or alterations have been required in, or incorporated into, the project that avoid the significant environmental effect as identified in the Final EIR/EIR. Impacts will be less than significant with mitigation. (Final EIR/EIS, Chapter 12, Terrestrial Biological Resources, p. 12-3743)

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		<p>specified plant species if practicable. The purpose of these surveys will be to verify that the locations of special-status species identified in previous record searches or surveys are extant, identify any new special-status plant species occurrences, and cover any portions of the project area not previously surveyed. The extent of mitigation of direct loss of or indirect effects on special-status plant species will be based on these survey results.</p> <ul style="list-style-type: none">• All surveys will be conducted by qualified biologists using the Guidelines for Conducting and Reporting Botanical Inventories for Federally Listed, Proposed and Candidate Plants (U.S. Fish and Wildlife Service 1996) and Protocols for Surveying and Evaluating Impacts to Special Status Native Plant Populations and Natural Communities (California Department of Fish and Game 2009) during the season that special-status plant species would be evident and identifiable, i.e., during their blooming season. Locations of special-status plant species in proposed construction areas will be recorded using a GPS unit and flagged.• The construction monitoring plan for the protection of special-status fish, wildlife, and plant species, prepared by DWR before implementing an approved project, will provide for construction activity monitoring in areas identified during the planning stages and species/habitat surveys as having special-status plant species.• Where surveys determine that a special-status plant species is present in or adjacent to a project site, direct and indirect impacts of the project on the species will be avoided if feasible through the establishment of 250-foot activity exclusion zones surrounding the periphery of the occurrences, within which no			

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		<p>ground-disturbing activities will take place, including construction of new facilities, construction staging, or other temporary work areas. Activity exclusion zones for special-status plant species will be according to a 250-foot buffer surrounding the periphery of each special-status plant species occurrence, the boundaries of which will be clearly marked with standard orange plastic construction exclusion fencing or its equivalent. The establishment of activity exclusion zones will not be required if no construction-related disturbances will occur within 250 feet of the occupied habitat site occurrence periphery. The size of activity exclusion zones may be reduced through consultation with a qualified biologist and with concurrence from USFWS or CDFW based on project site-specific conditions.</p> <ul style="list-style-type: none"> Where avoidance of impacts on a special-status plant species is infeasible, DWR will compensate for loss of individuals or occupied habitat of a special-status plant species through the acquisition, protection, and subsequent management in perpetuity of other existing occurrences at a 2:1 (preservation:impact) ratio. DWR will provide detailed information to USFWS and CDFW on the location of the preserved occurrences, quality of the preserved habitat, feasibility of protecting and managing the areas in-perpetuity, responsible parties, and other pertinent information. If suitable occurrences of a special-status plant species are not available for preservation, then the project will be redesigned to remove features that would result in impacts on that species. <p>(Final MMRP, pp. 2-37 – 2-38; see also Final EIR/EIS, Chapter 12, Terrestrial Biological Resources, pp. 12-3744 – 12-3745)</p>			
BIO-175: Effects on habitat and populations of nontidal wetland plants	Significant	<p><u>BIO-170: Avoid, minimize, or compensate for impacts on noncovered special-status plant species</u> See Impact BIO-170, above, for full mitigation measure.</p>	Less than Significant (Final EIR/EIS,	Under Alternative 4A, construction of the water conveyance facilities will result in a reduction in the range and numbers of	Under Alternative 4A, construction of the water conveyance facilities will result in a reduction in the range and numbers of watershield, bristly

Alternative 4A Potential Impact	Impact Conclusions Before Mitigation- CEQA	Proposed Mitigation	Impact Conclusion After Mitigation- CEQA	CEQA Conclusions	Findings of Fact
(Final EIR/EIS, Chapter 12, Terrestrial Biological Resources, p. 12-3755 – 12-3757)		(Final MMRP, pp. 2-37 – 2-38; see also Final EIR/EIS, Chapter 12, Terrestrial Biological Resources, pp. 12-3744 – 12-3745, & 12-3757)	Chapter 12, Terrestrial Biological Resources, p. 12-3757)	watershield, bristly sedge, woolly rose-mallow, and Sanford’s arrowhead. (Final EIR/EIS, Chapter 12, Terrestrial Biological Resources, p. 12-3757)	sedge, woolly rose-mallow, and Sanford’s arrowhead. These impacts will be significant. Implementation of Mitigation Measure BIO-170 will reduce these impacts to a less-than-significant level. Findings: Changes or alterations have been required in, or incorporated into, the project that avoid the significant environmental effect as identified in the Final EIR/EIS. Impacts will be less than significant with mitigation. (Final EIR/EIS, Chapter 12, Terrestrial Biological Resources, p. 12-3757)
BIO-176: Effects of constructing water conveyance facilities on wetlands and other waters of the United States (Final EIR/EIS, Chapter 12, Terrestrial Biological Resources, p. 12-3757 – 12-3764)	Significant	<u>BIO-176: Compensatory Mitigation for Fill of Waters of the U.S.</u> All mitigation proposed as compensatory mitigation would be subject to specific success criteria, success monitoring, long-term preservation, and long-term maintenance and monitoring pursuant to the requirements of the Mitigation Rule. All compensatory mitigation will fully replace lost function through the mechanisms discussed below which will result in restoration and/or creation of habitat with at least as much function and value as those of the impacted habitat. In some cases, the mitigation habitat will afford significantly higher function and value than that of impacted habitat. Compensation ratios are driven by type, condition, and location of replacement habitat as compared to type, condition and location of impacted habitat. Compensatory mitigation usually includes restoration, creation, or rehabilitation of aquatic habitat. The USACE does not typically accept preservation as the only form of mitigation; use of preservation as mitigation typically requires a very high ratio of replacement to impact. It is anticipated that ratios will be a minimum of 1:1, depending on the factors listed above. Compensatory mitigation will consist of restoration, creation, and/or rehabilitation of aquatic habitat. Typically, impacted habitat will be replaced in-kind, although impacts on some habitat types such as agricultural ditches, conveyance channels, and Clifton Court Forebay, will be mitigated out-of-kind with higher functioning habitat types such as riparian wetland, marsh, and/or seasonal wetland. Compensatory mitigation will be accomplished by one, or a combination of the following methods: <ul style="list-style-type: none"> Purchase credits for 	Less than Significant (Final EIR/EIS, Chapter 12, Terrestrial Biological Resources, p. 12-3760 – 12-3762)	The permanent and temporary loss of wetlands and waters of the United States as a result of constructing Alternative 4A water conveyance facilities will be a significant impact. Specific mitigation will be required to ensure that Alternative 4A does not result in a loss of functions and values of waters of the United States. (Final EIR/EIS, Chapter 12, Terrestrial Biological Resources, p. 12-3760 – 12-3762)	Mitigation Measure BIO-176, Compensatory Mitigation for Fill of Waters of the United States, will reduce the impact to a less-than-significant level. Additionally, Alternative 4A will restore up to 2,710 acres of wetlands as part of the proposed project, which will include up to 1,830 acres of tidal marsh restoration (Environmental Commitment 4), 7 acres of vernal pool/alkali seasonal wetlands (Environmental Commitment 9) 48 acres of vernal pool complex assuming a wetland density of 15%), and 832 acres of nontidal marsh restoration (Environmental Commitment 10). In addition, Alternative 4A will restore up to 271 acres of riparian habitat (Environmental Commitment 7), some portion of which may also qualify as forested or scrub-shrub wetland. In addition, 4.6 miles of levees will have channel margin enhancement conducted on them (Environmental Commitment 6), which will include improving channel geometry and restoring riparian, marsh, and mudflat habitats on the water side of levees. The success in implementing these Environmental Commitments will be assured through effectiveness monitoring, which includes success criteria, and adaptive management as outlined in the <i>Adaptive Management and Monitoring</i> sections of the BDCP for tidal marsh restoration (BDCP Chapter 3, <i>Conservation Strategy</i> , Section 3.4.4.4), channel margin enhancement (BDCP Section 3.4.6.4), valley/foothill riparian restoration (BDCP Section 3.4.7.4), vernal pool and alkali seasonal

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		<p>restored/created/rehabilitated habitat at an approved wetland mitigation bank;</p> <ul style="list-style-type: none">• On-site (adjacent to the project footprint) restoration or rehabilitation of wetlands converted to uplands due to past land use activities (such as agriculture) or functionally degraded by such activities;• On-site (adjacent to the project footprint) creation of aquatic habitat;• Off-site (within the Delta) restoration or rehabilitation of wetlands converted to uplands due to past land use activities (such as agriculture) or functionally degraded by such activities;• Off-site (within the Delta) creation of aquatic habitat; and/or• Payment into the Corps' Fee-in-Lieu program. <p><i>Purchase of Credits or Payment into Fee-in-Lieu Program</i></p> <p>It is envisioned that purchase of bank credits and/or payment into a fee-in-lieu program will be utilized for habitat types that would be difficult to restore or create within the Delta. Examples are vernal pool habitat, which requires an intact hardpan or other impervious layer and very specific soil types, and alkali seasonal wetland, which requires a specific set of chemical soil parameters. It is anticipated that only a small amount of compensatory mitigation will fall into these categories.</p> <p><i>On-Site Restoration, Rehabilitation and/or Creation</i></p> <p>Much of the Delta consists of degraded or converted habitat that is more or less functioning as upland. Opportunities will be sought where on-site restoration, rehabilitation, and/or creation could occur immediately adjacent to the project footprint. It is anticipated that some of the compensatory mitigation will fall into this category.</p> <p><i>Off-Site Restoration, Rehabilitation and/or Creation</i></p> <p>There exists, within the immediate vicinity of the project area, Delta land which has been subject to agricultural practices or other land uses which have degraded or even converted wetlands that existed historically. Sites within the Delta will be evaluated for their restoration, rehabilitation, and/or creation potential. It is anticipated that most of the compensatory mitigation will fall into this</p>			<p>wetland complex restoration (BDCP Section 3.4.9.4), and nontidal marsh restoration (BDCP Section 3.4.10.3). All restored areas will be secured in fee-title or through conservation easements.</p> <p>Alternative 4A will also protect and manage the following natural communities that contain wetlands: 103 acres of valley/foothill riparian, 188 acres of vernal pool/alkali seasonal wetland complex, and 119 of nontidal marsh. In addition, 2,092 acres of grasslands and 11,870 acres of cultivated lands will be protected and managed, which will likely include areas of seasonal wetlands, ponds, and agricultural ditches. Alternative 4A also includes the following Resource Restoration and Performance Principles (see Table 3-12 in Final EIR/EIS, Chapter 3, <i>Description of Alternatives</i>) to further guide the Environmental Commitments that will also contribute to establishing and maintaining the functions and values of restored and protected waters of the United States.</p> <ul style="list-style-type: none">• Restore or create vernal pool and alkali seasonal wetland complex to achieve no net loss of wetted acres (Resource Restoration and Performance Principle VP/AW2).• Provide appropriate seasonal flooding characteristics for supporting and sustaining vernal pool and alkali seasonal wetland complex species (Resource Restoration and Performance Principle VP/AW4).• In grasslands surrounding protected and created vernal pools and alkali seasonal wetlands complex, increase the extent, distribution, and density of native perennial grasses intermingled with other native species, including annual grasses, geophytes, and other forbs (Resource Restoration and Performance Principle VP/AW6).• Increase the size and connectivity of protected vernal pool and alkali seasonal wetland complex in the greater Byron Hill

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		<p>category.</p> <p>Compensatory mitigation will result in no net loss of acreage of Waters of the U.S. and will accomplish full functional replacement of impacted wetlands. All impacted wetlands will be replaced with fully functioning wetland habitat demonstrating high levels of habitat, water quality, and hydrologic/hydraulic function. Since many impacted wetlands are likely to function at significantly less than high levels, the compensatory mitigation will result in a significant net increase in wetland function.</p> <p>(Final MMRP pp. 2-38 – 2-40; see also Final EIR/EIS, Chapter 12, Terrestrial Biological Resources, pp. 12-3762 – 12-3764)</p>			<p>area (Resource Restoration and Performance Principle VP/AW3).</p> <ul style="list-style-type: none">• Protect up to six acres of stock ponds and other aquatic features within protected grasslands to provide aquatic breeding habitat for native amphibians and aquatic reptiles (Resource Restoration and Performance Principle G2).• Maintain and enhance aquatic features in grasslands to provide suitable inundation depth and duration and suitable composition of vegetative cover to support breeding for amphibian and aquatic reptile species (Resource Restoration and Performance Principle G7).• Maintain and protect the small patches of important wildlife habitats associated with cultivated lands that occur in cultivated lands within the conservation area, including isolated valley oak trees, trees and shrubs along field borders and roadsides, remnant groves, riparian corridors, water conveyance channels, grasslands, ponds, and wetlands (Resource Restoration and Performance Principle CL1).• Create and protect nontidal marsh consisting of a mosaic of nontidal perennial aquatic and nontidal freshwater emergent wetland natural communities, which will include suitable habitat characteristics for western pond turtle (Resource Restoration and Performance Principle WPT1).• Create aquatic habitat for the giant garter snake will be connected to the protected rice land or equivalent-value habitat (Resource Restoration and Performance Principle GGS1).• Protect, restore, and/or create rice land or equivalent-value habitat (e.g., perennial wetland) for the giant garter snake in Conservation Zones 4 and/or 5 (Resource Restoration and Performance

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					<p>Principle GGS3).</p> <ul style="list-style-type: none">• Create at least 320 acres of managed wetlands (part of the nontidal wetland restoration acreage) in minimum patch sizes of 40 acres within the Greater Sandhill Crane Winter Use Area in CZs 3, 4, 5, or 6, with consideration of sea level rise and local seasonal flood events. The wetlands will be located within 2 miles of existing permanent roost sites and protected in association with other protected natural community types (excluding nonhabitat cultivated lands) at a ratio of 2:1 upland to wetland to provide buffers around the wetlands (Resource Restoration and Performance Principle GSC2). <p>Create at least two 90-acre wetland complexes within the Stone Lakes NWR project boundary. The complexes will be no more than 2 miles apart and will help provide connectivity between the Stone Lakes and Cosumnes River Preserve greater sandhill crane populations. Each complex will consist of at least three wetlands totaling at least 90 acres of greater sandhill crane roosting habitat, and will be protected in association with other protected natural community types (excluding nonhabitat cultivated lands) at a ratio of at least 2:1 uplands to wetlands (i.e., two sites with at least 90 acres of wetlands each). One of the 90-acre wetland complexes may be replaced by 180 acres of cultivated lands (e.g., cornfields) that are flooded following harvest to support roosting cranes and provide highest-value foraging habitat, provided such substitution is consistent with the long-term conservation goals of Stone Lakes NWR for greater sandhill crane (Resource Restoration and Performance Principle GSC3).</p> <p>DWR will also implement AMM1–AMM7, AMM10, AMM12, AMM30, AMM34, and AMM36, which will avoid and minimize fill of wetlands and waters and any indirect effects to wetlands and waters. As stated above, specific mitigation will be required to ensure that Alternative 4A does</p>

Alternative 4A Potential Impact	Impact Conclusions Before Mitigation- CEQA	Proposed Mitigation	Impact Conclusion After Mitigation- CEQA	CEQA Conclusions	Findings of Fact
					not result in a loss of functions and values of waters of the United States. Mitigation Measure BIO-176, <i>Compensatory Mitigation for Fill of Waters of the United States</i> , will reduce the impact to a less-than-significant level. Findings: Changes or alterations have been required in, or incorporated into, the project that avoid the significant environmental effect as identified in the Final EIR/EIS. Impacts will be less than significant with mitigation. (Final EIR/EIS, Chapter 12, Terrestrial Biological Resources, p. 12-3760 – 12-3762)
BIO-177: Effects of implementing environmental commitments (Environmental Commitment 4–Environmental Commitment 10) on wetlands and other waters of the United States (Final EIR/EIS, Chapter 12, Terrestrial Biological Resources, p. 12-3764 – 12-3765)	Significant	<u>BIO-176: Compensatory Mitigation for Fill of Waters of the U.S.</u> See Impact BIO-176, above, for full mitigation measure. (Final MMRP, pp. 2-38 – 2-40; see also Final EIR/EIS, Chapter 12, Terrestrial Biological Resources, pp. 12-3762 – 12-3764, & 3765)	Less than Significant (Final EIR/EIS, Chapter 12, Terrestrial Biological Resources, p. 12-3765)	The implementation of Environmental Commitment 4–Environmental Commitment 10 for Alternative 4A will potentially result in the conversion of wetlands and waters in cultivated lands and along the margins of Delta channels. These wetlands and waters will likely be converted to tidal and nontidal wetlands, including some open water, and possibly grasslands through implementation of Environmental Commitment 4, Environmental Commitment 8, and Environmental Commitment 10. (Final EIR/EIS, Chapter 12, Terrestrial Biological Resources, p. 12-3765)	Although, the increase in wetland acreage and wetland functions from these Environmental Commitments will offset the effects on waters of the United States occurring in these areas, implementation of Mitigation Measure BIO-176, <i>Compensatory Mitigation for Fill of Waters of the United States</i> , will be required to ensure that the impacts are reduced to a less-than-significant level. Findings: Changes or alterations have been required in, or incorporated into, the project that avoid the significant environmental effect as identified in the Final EIR/EIS. Impacts will be less than significant with mitigation. (Final EIR/EIS, Chapter 12, Terrestrial Biological Resources, p. 12-3765)
BIO-178: Loss or conversion of habitat for waterfowl and shorebirds as a result of water conveyance facilities construction (Final EIR/EIS, Chapter 12, Terrestrial Biological Resources, p. 12-3765 – 12-3766)	Significant	<u>BIO-75: Conduct preconstruction nesting bird surveys and avoid disturbance of nesting birds</u> See Impact BIO-75, above, for full mitigation measure. (Final MMRP, pp. 2-27; see also Final EIR/EIS, Chapter 12, Terrestrial Biological Resources, pp. 12-3574 – 12-3575, & 3766)	Less than Significant (Final EIR/EIS, Chapter 12, Terrestrial Biological Resources, p. 12-3766)	Habitat loss from construction of the Alternative 4A water conveyance facilities will have a less-than-significant impact on shorebirds and waterfowl because of the acres of natural communities and cultivated lands that will be restored and protected. If waterfowl were present in or adjacent to work areas, construction activities will result in destruction of nests or disturbance of nesting and foraging behaviors, which will be a significant impact. (Final EIR/EIS, Chapter 12, Terrestrial Biological Resources, p. 12-3766)	Implementation of Mitigation Measure BIO-75, <i>Conduct Preconstruction Nesting Bird Surveys and Avoid Disturbance of Nesting Birds</i> , which will identify birds prior to disturbance and will allow for avoidance measures, will reduce this impact on nesting birds to a less-than-significant level. Findings: Changes or alterations have been required in, or incorporated into, the project that avoid the significant environmental effect as identified in the Final EIR/EIS. Impacts will be less than significant with mitigation. (Final EIR/EIS, Chapter 12, Terrestrial Biological Resources, p. 12-3766)
BIO-183: Indirect effects of Plan implementation on shorebirds and waterfowl (Final EIR/EIS, Chapter	Significant	<u>BIO-75: Conduct preconstruction nesting bird surveys and avoid disturbance of nesting birds</u> See Impact BIO-75, above, for full mitigation measure. (Final MMRP, pp. 2-27; see also Final EIR/EIS, Chapter 12,	Less than Significant (Final EIR/EIS, Chapter 12,	Indirect effects that include noise and visual disturbance, potential hazardous spills, increased dust and sedimentation, and increased methylmercury and selenium	AMM1–AMM7, and implementation of Mitigation Measure BIO-75, <i>Conduct Preconstruction Nesting Bird Surveys and Avoid Disturbance of Nesting Birds</i> , will reduce potential adverse effects of

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12, Terrestrial Biological Resources, p. 12-3772 – 12-3776)		Terrestrial Biological Resources, pp. 12-3574 – 12-3575, & 3776)	Terrestrial Biological Resources, p. 12-3775 – 12-3776)	exposure as a result of Alternative 4A water conveyance facilities construction and operation and maintenance will represent an adverse effect as a result of habitat modification and potential for direct mortality of shorebirds and waterfowl in the absence of the environmental commitments and AMMs. This will be a significant impact. Tidal habitat restoration will result in increased exposure of shorebirds and waterfowl to selenium. Changes in water operations under water conveyance facilities will not be expected to result in increased mercury bioavailability or exposures to Delta foodwebs. Tidal habitat restoration will result in increased exposure of California least tern to methylmercury. There is potential for increased exposure of the foodwebs to methylmercury in these areas, with the level of exposure dependent on the amounts of mercury available in the soils and the biogeochemical conditions. This will result in a significant impact. However, the concentrations of methylmercury that are harmful varies by species, and the potential for increased exposure varies substantially within the study area. (Final EIR/EIS, Chapter 12, Terrestrial Biological Resources, p. 12-3775 – 12-3776)	noise, visual disturbance and potential for spills, dust, and sedimentation. Tidal habitat restoration will result in increased exposure of shorebirds and waterfowl to selenium. This effect will be addressed through the implementation of AMM27 <i>Selenium Management</i> , which will provide specific tidal habitat restoration design elements to reduce the potential for bioaccumulation of selenium and its bioavailability in tidal habitats. Implementation of Environmental Commitment 12 which contains measures to assess the amount of mercury before project development, followed by appropriate design and adaptation management, will minimize the potential for increased methylmercury exposure, and will result in no adverse effect on shorebirds and waterfowl. Therefore, with AMM1–AMM7, AMM27, and Environmental Commitment 12 in place, in addition to the implementation of Mitigation Measure BIO-75, the indirect effects of Alternative 4A implementation will not result in a substantial adverse effect through habitat modification or potential mortality. Therefore, the indirect effects of Alternative 4A implementation will have a less-than-significant impact on shorebirds and waterfowl. Findings: Changes or alterations have been required in, or incorporated into, the project that avoid the significant environmental effect as identified in the Final EIR/EIS. Impacts will be less than significant with mitigation. (Final EIR/EIS, Chapter 12, Terrestrial Biological Resources, p. 12-3775 – 12-3776)
Recreation					
REC-2: Result in long-term reduction of recreation opportunities and experiences as a result of constructing the proposed water conveyance facilities (Final EIR/EIS, Chapter 15, Recreation, p. 15-468	Significant	<u>REC-2: Provide alternative bank fishing access sites</u> Construction-related impacts on informal fishing access sites near the proposed water conveyance facilities, such as along the east bank of the Sacramento River, in the vicinity of the proposed intakes, and in the vicinity of the expanded Clifton Court Forebay, would be considered significant because construction would alter the river bank and/or restrict access, making these sites unusable. To compensate for the loss of these informal sites during	Less than Significant (for impacts related to construction of the intakes) (Final EIR/EIS, Chapter 15, Recreation, p. 15-469)	Construction of the Alternative 4A intakes and related water conveyance facilities will result in permanent and long-term (i.e., lasting over 2 years) impacts on well-established recreational opportunities and experiences in the study area because of access, noise, and visual setting disruptions that will result in loss of public use. These impacts will occur year-round.	The mitigation measures, in combination with environmental commitments, will reduce some construction-related impacts by compensating for effects on wildlife habitat and species; minimizing the extent of changes to the visual setting, including nighttime light sources; manage construction-related traffic; and implementing noise reduction and complaint tracking measures. However, the level of impact

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- 15-471)		<p>construction, DWR will enhance nearby formal fishing access sites, including partnering with Yolo County to enhance the Clarksburg Fishing Access site on the west bank of the Sacramento River, and with the Sacramento County Department of Regional Parks to enhance the Cliffhouse Fishing Access site on the east bank of the Sacramento River and the Georgiana Slough Fishing Access site east of the Sacramento River, and with Contra Costa County to enhance fishing sites near Clifton Court Forebay, as well as other nearby sites. Prior to construction of the proposed water conveyance facilities, DWR will ensure adequate signage will be placed at the informal sites that would be directly affected by construction of the intakes, directing anglers to the formal sites. Upgrading the existing fishing access sites will be completed prior to beginning construction of the intakes.</p> <p>Where intake locations would remove existing public access to the Sacramento River for recreational purposes as part of design of the intakes, DWR will ensure that public access to the Sacramento River, including fishing access, will be incorporated into the design of the intakes. The access sites will be placed a reasonable distance from the intake to ensure the safety of recreationists and to compensate for the loss that would occur as a result of constructing the intakes.</p> <p>(Final MMRP, pp. 2-50 – 2-51; see also Final EIR/EIS, Chapter 15, Recreation, pp. 15-267 – 15-268, & 15-469)</p> <p><u>BIO-75: Conduct preconstruction nesting bird surveys and avoid disturbance of nesting birds</u></p> <p>See Impact BIO-75, above, for full mitigation measure. (Final MMRP, pp. 2-27; see also Final EIR/EIS, Chapter 12, Terrestrial Biological Resources, pp. 12-3574 – 12-3575, & Chapter 15, Recreation, p. 15-469)</p> <p><u>AES-1a: Locate new transmission lines and access routes to minimize the removal of trees and shrubs and pruning needed to accommodate new transmission lines and underground transmission lines where feasible</u></p> <p>DWR will make site-specific design decisions to locate new permanent transmission lines and access routes to minimize effects on vegetation where feasible. Design considerations will include the following actions.</p> <ul style="list-style-type: none"> Working with the design engineer, site-specific location adjustments will be identified to avoid adversely affecting mature tree and shrub groupings to the 		(Final EIR/EIS, Chapter 15, Recreation, p. 15-267 & 15-469)	<p>will not be reduced to a less-than-significant level because it is not certain the mitigation will reduce the level of these impacts to less than significant in all the instances occurring within the entire study area. Therefore, these impacts are considered significant and unavoidable. However, the impacts related to construction of the intakes will be less than significant.</p> <p>Findings: Changes or alterations have been required in, or incorporated into, the project that avoid the significant environmental effect as identified in the Final EIR. Impacts will be less than significant with mitigation.</p> <p>(Final EIR/EIS, Chapter 15, Recreation, p. 15-267 & 15-469)</p>

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		<p>extent feasible and to avoid creating large, linear swaths of vegetation clearing through the construction of new transmission lines and access routes.</p> <ul style="list-style-type: none">• Where new transmission lines are located near trees along designated scenic route portions of SR 160 and River Road, the construction contractor will be required to utilize selective pruning techniques to avoid hard pruning of tree canopies that would negatively affect those scenic resources and views along those routes.• Existing transmission corridors will be evaluated for placement of the new transmission lines to avoid creating new transmission corridors to the extent feasible.• Undergrounding transmission lines. <p>Implementation of this measure will minimize the effects on existing visual quality and character that would result from removal and pruning of mature vegetation within proposed new transmission lines and access road routes. This measure will provide for a reduction in the number of trees and shrubs removed from installation of transmission lines and development of access roads. (Final MMRP pp. 2-53; see also Final EIR/EIS, Chapter 17, Aesthetics and Visual Resources, p. 17-197 & Chapter 15, Recreation, p. 15-470)</p> <p><u>AES-1b: Install visual barriers between construction work areas and sensitive receptors</u></p> <p>To reduce the impact on sensitive receptors from the change in existing visual quality, DWR will install temporary visual barriers at the construction work areas with direct line-of-sight from sensitive receptors. Barriers will be placed to obscure views of work areas where construction activity and equipment would be disruptive and lower the existing visual quality. These efforts will include the following actions and performance standards.</p> <ul style="list-style-type: none">• Visual barriers will be installed to minimize sensitive receptors' (i.e., residents and recreational areas) views of construction work areas.• The visual barriers will be placed to protect residents and recreational areas that are			

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		<p>located within 0.25 mile of a project construction site and where views to the work areas represent a significant visual impact.</p> <ul style="list-style-type: none">• The visual barrier may include chain link fencing with privacy slats, fencing with windscreen material, cofferdam, silt fence, wood or concrete barrier/soundwall, strategically placed landscaping, or other similar barrier.• The visual barrier will be a minimum of 6 feet high to help to maintain the privacy of residents and block long-term ground-level views toward construction activities. <p>While the visual barriers would introduce a visual intrusion, they would greatly reduce the visual effects associated with visible construction activities and screening construction activities and protecting privacy is deemed desirable. The visual barriers are an effective means of reducing the visibility of active construction work areas, thereby minimizing the impact on existing localized visual quality. (Final MMRP, pp. 2-54 – 2-55; see also Final EIR/EIS, Chapter 17, Aesthetics and Visual Resources, pp. 17-197 – 17-198, & Chapter 15, Recreation, p. 15-470) <u>AES-1c: Develop and implement a spoil/borrow and reusable tunnel material area management plan</u> DWR will develop and implement a spoil/borrow and RTM area management plan consistent with the “Disposal and Reuse of Spoils, RTM, and Dredged Material,” in Appendix 3B, <i>Environmental Commitments, AMMs, and CMs</i>, to reduce the extent of negative visual alteration of existing visual quality or character of spoil and borrow sites from construction through remediation of terrain, revegetation, and other practices as described below. The purpose of this measure is to prevent flattened, highly regular, or engineered slopes which create visual discordance and incongruence from native topography and to re-establish natural looking vegetative communities that are indigenous to the project environment. The exception to grading flattened, regular sites is if the intended use of the site is agriculture. This mitigation measure will complement and is related to activities described under Mitigation Measure SOILS-2b, Chapter 10, <i>Soils</i>, Impact SOILS-2.</p>			

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		<p>Prior to construction mobilization, DWR will develop a management plan that identifies site-specific measures to remediate exposed soil and terrain to make it suitable for planned development, agriculture, or reuse as natural habitat and to mitigate visual effects. Existing information, such as topographical maps, vegetative surveys or records, and historical and existing photographs, that show preexisting, site-specific (or reference site) conditions prior to the conversion to agriculture will be evaluated and used as tools for restoring disturbed sites. Where appropriate, the management plan will consider recreational or mixed uses. In general, however, the majority of the sites will be evaluated for restoration to native habitat due to the amount of terrain alteration and vegetation and habitat loss resulting from construction of the water conveyance facilities. At a minimum, the management plan will meet the following performance standards.</p> <ul style="list-style-type: none">• Plantings will be native and indigenous to the area, and no invasive plant species will be used under any conditions. If indigenous plantings are not available, DWR will coordinate with CDFW to use a mutually acceptable plant mix palette.• In areas to be used for agriculture, the management grading plan will mimic the preexisting landform pattern to the greatest degree possible, given geotechnical or environmental constraints.• In areas of habitat restoration, the terrain will be designed and graded to be undulating, avoiding large, flat-sloped areas.• In areas of proposed development, a combination of terrains may be implemented to encourage visual variety.• Terrain will be designed and graded to be rounded, avoiding sharp angles and steep or abrupt grade breaks except for areas involved with agriculture.• Special attention will be paid to transitions between undisturbed and disturbed terrains to ensure that the transition appears as natural as possible and to blend			

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		<p>the lines between the two for a natural, organic appearance.</p> <ul style="list-style-type: none">• The site will be visually surveyed prior to any vegetation removal for the presence of rock outcroppings, downed trees, or similar features.• Any restoration with trees will be placed to mimic natural patterns during management to provide visual congruity once revegetation plantings mature and to restore the habitat values they provide. <p>Implementation of this measure would be expected to result in successful management of borrow/spoils and RTM areas, thereby reducing the overall impact on the visual quality in the study area. (Final MMRP, pp. 2-55 – 2-56; see also Final EIR/EIS, Chapter 17, Aesthetics and Visual Resources, pp. 17-198 – 17-199, & Chapter 15, Recreation, p. 470)</p> <p><u>AES-1d: Restore barge unloading facility sites once decommissioned</u></p> <p>DWR will restore barge unloading facility sites once the facilities are decommissioned and removed to minimize the impact on visual quality and character at these sites. Restoration of the decommissioned sites will meet the following performance standards.</p> <ul style="list-style-type: none">• Grading or re-contouring disturbed terrain.• Replacement plantings will be installed in areas where vegetation was removed.<ul style="list-style-type: none">○ Replacement plantings will be native and indigenous to the area. If indigenous plantings are not available, DWR will coordinate with CDFW to use a mutually acceptable plant mix palette.○ No invasive plant species will be used under any conditions. <p>Implementation of this measure will result in restoration of the barge unloading facility sites. (Final MMRP, p. 2-57; see also Final EIR/EIS, Chapter 17, Aesthetics and Visual Resources, p. 17-199, & Chapter 15, Recreation, p. 15-470)</p> <p><u>AES-1e: Apply aesthetic design treatments to all structures to the extent feasible</u></p> <p>DWR will use aesthetic design treatments, where and to the extent feasible, to minimize the impact on existing</p>			

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		<p>visual quality and character in the study area associated with the introduction of water conveyance structures. DWR will evaluate similar, local well-designed water conveyance structures, including those with historic value and use these features as design precedent to develop designs for the intake facilities, pumping plants, control structures, fish screens, operable barriers, and bridges, so that the resultant design will complement the natural landscape, be aesthetically pleasing, and minimize the effects of visual intrusion of the project facilities on the landscape, to the extent feasible.</p> <p>Where no local design precedent exists, DWR will research structure designs outside the local area. For example, the Freeport Regional Water Project intake facility design incorporates aesthetic design treatments that create a landmark feature in the landscape. The DWR will consider design details to ensure that all intake structures are complementary of one another so that these facilities do not create further visual discordance in the landscape.</p> <p>The following minimum performance standards will apply.</p> <ul style="list-style-type: none">• The height of new structures will be minimized as feasible. In addition, the visual intrusion of ancillary features (e.g., antennas or other equipment) will be minimized through proper siting.• New structures will be painted with a shade that is two to three shades darker than the general surrounding area, unless aesthetic design treatments indicate another color selection with the intent to specifically improve aesthetics. Otherwise, colors will be chosen from the Bureau of Land Management (BLM) Standard Environmental Colors Chart CC-001: June 2008. Because color selection will vary by location, DWR, working with the facility designers, will employ the use of color panels evaluated from key observation points during common lighting conditions (front versus backlighting) to aid in the appropriate color selection. DWR will select colors for the coloring of the most prevalent season. Panels will be a minimum of 3 by 2 feet in dimension and will be evaluated from various distances, but within 1,000 feet, to ensure the best possible color selection. Refer to http://www.blm.gov/bmp for more information on this technique and other best			

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		<p>management practices and techniques for visual screening.</p> <ul style="list-style-type: none">○ All paints used for the color panels and structures will be color matched directly from the physical color chart, rather than from any digital or color-reproduced versions of the color chart.○ Paints will be of a dull, flat, or satin finish only. Appropriate paint type will be selected for the finished structures to ensure long-term durability of the painted surfaces.○ DWR will maintain the paint color over time. <ul style="list-style-type: none">• In the design of permanent transmission poles and chain link fencing, DWR will consult with utility providers on incorporating the following design measures.<ul style="list-style-type: none">○ Transmission poles and towers will be painted or powder coated with colors selected using the BLM selection techniques to make the structures recede into the visual landscape.○ Chain link fences will be plastic or vinyl coated with colors selected using the BLM selection techniques to make chain link fences to appear more see-through than non-treated, light grey fencing that acts as a visual barrier to a degree.○ Finishes will be selected for their ability to achieve the correct color selection, durability, and environmental safety.• DWR will implement aesthetic design features at concrete or shotcrete structures that are highly visible to the public. These features may include mimicking natural material (e.g., stone or rock surfacing) and integral color, in the same theme, to reduce visibility and to better blend with the landscape.• DWR will evaluate bridge crossing designs using lattice steel, consistent with other bridges in the Delta. Such a structure would be less visually confining than concrete structures, provide better visual access to points beyond, allow light to travel			

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		<p>through the structure, and may appear less like a visual barrier within the landscape.</p> <ul style="list-style-type: none">• DWR will ensure that visible pipelines, guardrails, and signs will be of a material or color that helps surfaces to blend better with the surroundings. These elements will be constructed with low-sheen and non-reflective surface materials to reduce potential for glare, and the use of glossy paints or surfaces would be avoided. <p>Implementation of this measure and application of the aesthetic design treatments for alternative structure would help minimize the impact on visual quality from the development of the water conveyance structures in the study area, using techniques that serve to make the structures blend into the surrounding environment, to the extent possible. However, the overall change in visual character would still be substantial because physical structures of this scale do not presently exist. (Final MMRP, pp. 2-58 – 2-59; see also Final EIR/EIS, Chapter 17, Aesthetics and Visual Resources, pp. 17-199 – 17-201, & Chapter 15, Recreation, p. 15-470)</p> <p><u>AES-1f: Locate concrete batch plants and fuel stations away from sensitive visual resources and receptors and restore sites upon removal of facilities</u></p> <p>DWR will locate concrete batch plants and fuel stations in construction work areas away from sensitive visual resources (i.e., state scenic highways) and receptors to minimize the impact on visual quality. In addition, these sites will be restored after construction to minimize the long-term impact on localized visual character. The relocation approach for the individual facilities is described below. DWR will incorporate these facility location changes into the design plans prior to construction.</p> <ul style="list-style-type: none">• Locate the concrete batch plants and fuel stations that are proposed to be adjacent to SR 160, near the intakes so that these operations are set back from the state scenic highway as far as site conditions allow. These features will be located toward the east side of the intake, in closer proximity to the shaft site.• Structures associated with the concrete batch plants and fuel stations will be designed, to the extent feasible to be low-profile to reduce their			

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		<p>apparent scale and visual prominence within the viewshed.</p> <ul style="list-style-type: none">• In addition, the structures and storage piles associated with the concrete batch plants and fuel stations for the canal alignment just south of Snodgrass Slough and on Webb Tract north of False River will be set as far west from the waterways, as possible.• Structures and storage piles associated with the concrete batch plants and fuel stations east of Byron Highway will be set back off of the highway as much as possible and toward the northern edge of the proposed sites. The same principles will be applied to the concrete batch plant and fuel station along Willow Point Road, for the western canal alignment.• Locate the concrete batch plant and fuel station proposed between Intakes W3 and W4 to an arrangement opposite each other along the agricultural access road, instead of adjacent to one another. They will be placed in closer proximity to the existing development at this location so that they appear to be more of a continuation of existing development.• All disturbed terrain will be restored.• Replacement plantings will be installed in areas where vegetation was removed.<ul style="list-style-type: none">○ Replacement plantings will be native and indigenous to the area or will match surrounding agricultural plantings.○ No invasive plant species will be used under any conditions. <p>Implementation of this measure will minimize the impact on visual quality from the construction and use of the concrete batch plant and fuel station facilities. In addition, this measure will help restore the concrete batch plant and fuel station locations to a preconstruction condition. (Final MMRP, pp. 2-60; see also Final EIR/EIS, Chapter 17, Aesthetics and Visual Resources, pp. 17-201 – 17-202, & Chapter 15, Recreation, p. 15-470)</p> <p><u>AES-1g: Implement best management practices to implement project landscaping plan</u></p> <p>DWR will apply additional landscape treatments and use best management practices as part of implementing the</p>			

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		<p>project landscaping plan (as set forth by DWR’s WREM No. 30a requirements) to restore and maintain local character, improve aesthetics, and reduce the visual scale of the proposed water conveyance elements in the study area. In addition to the guidance set forth in DWR’s WREM No. 30a, <i>Architectural Motif, State Water Project</i>, in those aesthetic areas significantly impacted by the project, DWR will utilize landscaping to minimize such impacts by relying on one or more of the following: street trees, welcome signs, decorative lighting, and other streetscape design techniques. In addition, trees, shrubs, and grasslands native to the study area will be planted to preserve the visual integrity of the landscape, provide habitat conditions suitable for native vegetation and wildlife, and ensure that a maximum number and variety of well-adapted plants are maintained.</p> <p>The following practices will be adhered to in implementing the project landscaping plan.</p> <ul style="list-style-type: none">• Design and implement low impact development (LID) measures that disperse and reduce runoff by using such features as vegetated buffer strips between paved areas that catch and infiltrate runoff, bioswales, cisterns, and detention basins. In addition, DWR will evaluate the potential use of pervious paving to improve infiltration and to reduce the amount of surface runoff from entering waterways and the stormwater system. However, LID measures will not be used where infiltration could result in adverse environmental effects.• Vegetative accents and screening will be used to aid in a perceived reduction in the scale and mass of the built features, while accentuating the design treatments that will be applied to built features. Plant selection will be based on its ability to screen built features and provide aesthetic accents.• Realignments of SR 160 and South River Road will be landscaped in a manner that visually ties the new alignment in to the old alignment by implementing roadside landscaping that helps achieve a continuation of the existing roadside vegetation while screening built features.• Landscape berms, combined with tree and shrub plantings will be used to help screen built features from existing viewpoints by allowing for additional			

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		<p>height. The landscape berms will be constructed in a manner that has a more natural form, as opposed to one that is highly regular and levee-like. The berms will be seeded with a native meadow erosion control seed mix and be planted to comply with directions set forth below.</p> <ul style="list-style-type: none"> ○ Plantings will be native and indigenous to the area, and no invasive plant species will be used under any conditions. If indigenous plantings are not available, BDCP proponents will coordinate with CDFW to use a mutually acceptable plant mix palette. ○ The species list will include trees, shrubs, and an herbaceous understory of varying heights, as well as both evergreen and deciduous types. Plant variety will increase the effectiveness of revegetated areas by providing multiple layers, seasonality, diverse habitat, and reduced susceptibility to disease. • The use of native grass and wildflower seed in erosion control measures will be required where such a measure would improve aesthetics. <ul style="list-style-type: none"> ○ Wildflowers will provide seasonal interest to areas where trees and shrubs are removed or grading has occurred. ○ Species will be chosen that are native and indigenous to the study area and for their appropriateness to the surrounding habitat. For example, upland grass and wildflower species will be chosen for drier, upland areas and wetter grass species will be chosen for wetland areas. ○ If not appropriate to the surrounding habitat, wildflowers will not be included in the seed mix. ○ Under no circumstances will invasive plant species be used in any erosion control measures. • Vegetation will be planted within 2 years following project completion. • Design of the landscaping plan will maximize the use of planting zones that do not need irrigation, such as seeding with a native grassland and 			

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		<p>wildflower meadow mix, which reduces or eliminates the need for a permanent irrigation system.</p> <ul style="list-style-type: none"> • If an irrigation system is required, an irrigation and maintenance program will be implemented during the plant establishment period and carried on, as needed, to ensure plant survival. Areas that are irrigated will use a smart watering system that evaluates the existing site conditions and plant material against weather conditions to avoid overwatering of such areas. To avoid undue water flows, the irrigation system will be managed in such a manner that any broken spray heads, pipes, or other components are fixed within 1–2 days, or the zone or system will be shut down until it can be repaired. • All measures prescribed above to screen facilities will not act to degrade or eliminate scenic vistas or be designed in a manner that negatively affects views from scenic roadways. • These measures will not be implemented where implementation would constitute an adverse effect on sensitive habitats or sensitive species. <p>Implementation of this measure will reduce the effects on local visual quality from introduction of the water conveyance facilities. (Final MMRP, pp. 2-61 – 2-63; see also Final EIR/EIS, Chapter 17, Aesthetics and Visual Resources, pp. 17-202 – 17-203, & Chapter 15, Recreation, p. 15-470) <u>AES-4a: Limit construction to daylight hours within 0.25 mile of residents</u> To the extent feasible and within safety standards, DWR will minimize the effect of nighttime construction light and glare on residences within 0.25 miles of the intake construction sites by limiting non-tunnel related surface construction past daylight hours (which varies according to season), minimizing the use of high-wattage lighting sources to operate in the dark, and minimizing introduction of new nighttime light and glare sources in these areas. DWR will establish a construction hotline which will enable residents to report any construction violation including construction activities outside of daylight hours. (Final MMRP, p. 2-64; see also Final EIR/EIS, Chapter 17,</p>			

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		<p>Aesthetics and Visual Resources, p. 17-214, & Chapter 15, Recreation, p. 15-470)</p> <p><u>AES-4b: Minimize fugitive light from portable sources used for construction</u></p> <p>DWR will minimize fugitive light from portable lighting sources used during construction by adhering to the following practices, at a minimum.</p> <ul style="list-style-type: none">• Project -related light and glare will be minimized to the maximum extent feasible, given safety considerations.• Color-corrected halide lights will be used.• Portable lights will be operated at the lowest feasible wattage and height.• All lights will be screened and directed down toward work activities and away from the night sky and nearby residents to the maximum extent safely possible.• The number of nighttime lights used will be minimized to the greatest extent possible. <p>Implementation of this measure will reduce—to the extent feasible as governed by site-specific safety requirements—the overall amount of new daytime and nighttime light and glare introduced to the project vicinity during construction.</p> <p>(Final MMRP, pp. 2-64—2-65; see also Final EIR/EIS, Chapter 17, Aesthetics and Visual Resources, p. 17-215)</p> <p><u>AES-4c: Install visual barriers along access routes, where necessary, to prevent light spill from truck headlights toward residences</u></p> <p>DWR will minimize fugitive light from portable lighting sources used during construction by adhering to the following practices, at a minimum.</p> <ul style="list-style-type: none">• Project -related light and glare will be minimized to the maximum extent feasible, given safety considerations.• Color-corrected halide lights will be used.			

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		<ul style="list-style-type: none"> • Portable lights will be operated at the lowest feasible wattage and height. • All lights will be screened and directed down toward work activities and away from the night sky and nearby residents to the maximum extent safely possible. • The number of nighttime lights used will be minimized to the greatest extent possible. <p>Implementation of this measure will reduce—to the extent feasible as governed by site-specific safety requirements—the overall amount of new daytime and nighttime light and glare introduced to the project vicinity during construction.</p> <p>(Final MMRP, pp. 2-64 – 2-65; see also Final EIR/EIS, Chapter 17, Aesthetics and Visual Resources, p. 17-215, & Chapter 15, Recreation, p. 15-471)</p> <p><u>TRANS-1a: Implement site-specific construction traffic management plan</u></p> <p>Prior to construction, DWR will be responsible for project management and shall contract with one or more construction management firms to assist in ensuring that construction contractors’ crews and schedules are coordinated and that the plans and specifications are being followed. DWR will also ensure development of site-specific construction traffic management plans (TMPs) that address the specific steps to be taken before, during, and after construction to minimize traffic impacts, including the mitigation measures and environmental commitments identified in this EIR/EIS. This will include potential expansion of the study area identified in this EIR/EIS to capture all potentially significantly affected roadway segments.</p> <p>DWR will be responsible for developing the TMPs in coordination with the applicable jurisdictions, including the following.</p> <ul style="list-style-type: none"> • Caltrans for state and federal facilities; • local agencies for local roads, including emergency responders; • transit providers; • rail operators; • the U.S. Coast Guard; • city and county parks departments; and • the California Department of Parks and Recreation (DPR) 			

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		<p>DWR will also ensure that the TMPs are implemented prior to beginning construction at a site, including in-water construction sites. If necessary to minimize unexpected operational impacts or delays experienced during real-time construction, DWR will also be responsible for modifying the traffic management plan to reduce these effects. With the goal of minimizing construction traffic related effects on wildlife and in light of local community traffic interests, DWR will facilitate discussions in the development of the TMP to address methods for minimizing truck traffic impacts in ways that do not create local traffic hazards. Each TMP will address the following, as needed and appropriate after coordination with the entities listed above. Implementation of this measure will ensure operational traffic impacts and delays experienced during construction will be minimized to the greatest extent feasible.</p> <ul style="list-style-type: none">• Signage warning of roadway surface conditions such as loose gravel, steel plates or similar conditions that could be hazardous to road cycling activity on roadways open to bicycle traffic.• Signage and barricades to be used around the work sites.• In-water work areas will be indicated by buoys, signage, or other effective means to warn boaters of their presence and restrict access. Warning devices and signage (e.g., “boats keep out” or “no wake zone” labeled buoys) will be in compliance with the U.S. Coast Guard Private Aid to Navigation requirements (U.S. Coast Guard 2012) and effective during non-daylight hours and periods of dense fog.• Use of flag people or temporary traffic signals/signage as necessary to slow or detour traffic.• Notifications for the public, emergency providers, cycling organizations, bike shops, and schools, the U.S. Coast Guard, boating organizations, marinas, city and county parks departments, and DPR, where applicable, describing construction activities that could affect transportation and water navigation.• Outreach (via public meetings and/or flyers			

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		<ul style="list-style-type: none">and other advertisements)• Procedures for construction area evacuation in the case of an emergency declared by county or other local authorities.• Alternate access routes via detours and bridges to maintain continual circulation for local travelers in and around construction zones, including bicycle riders, pedestrians, and boaters, where applicable.• Description of construction staging areas, material delivery routes, and specification of construction vehicle travel hour limits.• Notifications to commercial and leisure boating community of proposed barge operations in the waterways, including posting notices at Delta marinas and public launch ramps. This information will provide details regarding construction site location(s), construction schedules, and identification of no-wake zone, speed restricted zones, and/or detours, where applicable.• No-wake zone and speed-restrictions will be established as part of development of the site-specific plans and will be determined to protect the safety of construction workers and recreationists.• Designation of areas where nighttime construction will occur.• To the extent feasible, position construction lighting to reduce glare to nighttime drivers.• Plans to relocate school bus drop-off and pick-up locations if they will be affected during construction.• Scheduling for oversized material deliveries to the work site and haul routes.• Provisions that direct haulers are to pull over in the event of an emergency. If an emergency vehicle is approaching on a narrow two-way roadway, specify measures to ensure that appropriate maneuvers will be conducted by the construction vehicles to allow continual access for the emergency vehicles at the time of an emergency.• Control for any temporary road closure, detour,			

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		<p>or other disruption to traffic circulation, including any temporary partial water channel closures.</p> <ul style="list-style-type: none">• Designated offsite vehicle staging and parking areas.• Posted information for contact in case of emergency or complaint.• Daily construction time windows during which construction is restricted or rail operations would need to be suspended for any activity within railroad rights of way.• Coordination with rail providers (BNSF Railway, Amtrak, and UPRR) to develop alternative interim transportation modes (e.g., trucks or buses) that could be used to provide freight and/or passenger service during any longer term railroad closures.• Coordination with transit providers (SCT, Tri-Delta, Rio Vista, and Greyhound Bus Lines) to develop daily construction time windows during which transit operations would not be either detoured or significantly slowed.• Routinely post information to the 511.org website regarding construction delays and detours.• Other actions to be identified and developed as may be needed by the construction manager/ resident engineer to ensure that temporary impacts on transportation facilities are minimized.• For construction-related traffic implement maximum 45 mph speed limit on Hood Franklin Road west of Interstate 5. Include signage: "Caution: entering sensitive wildlife area."• Further reduce speed limit in both directions to 35 mph for construction-related vehicles from ½ mile west of Interstate 5 to 1 mile west of Interstate 5. Add sign at Visitor Center entrance stating that facilities are for SLNWR visitors only.• Add a right hand turn lane on Hood Franklin Road at the entrance of the Stone Lakes Visitor Center.			

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		<ul style="list-style-type: none">• For construction-related traffic, reduce speed limit to 35 mph on Lambert Road from 1 ½ miles west of Interstate 5 to 2 ¼ miles west of Interstate 5. Include signage: “Caution: entering sensitive wildlife area.”• In consultation with Caltrans and local transportation agencies, schedule construction traffic to minimize impacts to local community events (e.g., Pear Fair, holidays).• Schedule construction traffic to minimize impacts to agricultural transportation operations between agricultural areas and processing or marketing facilities during harvest season. <p>As additional mitigation to minimize delays to transit vehicles due to projected traffic congestion and to encourage use of alternative modes of travel, including transit, DWR is required to develop a Transportation Demand Management (TDM) program for construction contractor’s crews to reduce the number of project trips. The program shall include and implement any combination of measures that would reduce the project’s trips and associated parking demand. The measures include:</p> <ul style="list-style-type: none">• Promote ride sharing programs by methods that may include designating a certain percentage of parking spaces for ride sharing vehicles, designating adequate passenger loading and unloading and waiting areas for ride sharing vehicles.• Provide public transit incentives such as fully-subsidized or low-cost monthly transit passes.• Provide shuttle service and/or funding for a shuttle for residents that are outside of walking distance from a transit line.• Offering a parking cash out program.• The plan also includes more passive measures to further reduce trips:• Addition of pedestrian and bicycle facilities;• Provision of carpool/vanpool/ride-matching services;• Provision of transportation information for contractors;• Provision of a transportation information center. <p>(Final MMRP, pp. 2-87 – 2-90; see also Final EIR/EIS, Chapter 19, Transportation, pp. 19-218 – 19-221, &</p>			

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		<p>Chapter 15, Recreation, p. 15-471) <u>TRANS-1b: Limit hours or amount of construction activity on congested roadway segments</u> Where feasible, DWR would limit construction activity to fit within available reserve capacity or shift construction activity to hours with more reserve capacity so as to achieve acceptable LOS conditions based on roadway location (Chapter 19, <i>Transportation</i>, Table 19-9, of the FINAL EIR/EIS). Feasibility will be based on factors like reserve capacity on roadways, timing of deliveries and staging of construction. Potential mitigation measure would be to minimize construction traffic activity during typical morning and evening commute time periods This can be accomplished through a combination of scheduling and routing requirements. DWR will include in the bid specifications a requirement that the contractor submit a proposal for a process for determining when the hours of construction can feasibly be limited to avoid operational deficiencies on identified roadway segments as specified in Table 19-9 of the FINAL EIR/EIS. DWR will ensure that this process is adhered to throughout the project construction period. (Final MMRP, pp. 2-90 – 2-91; see also Final EIR/EIS, Chapter 19, <i>Transportation</i>, p. 19-221 & Chapter 15, Recreation, p. 15-471) <u>TRANS-1c: Make good faith efforts to enter into mitigation agreements to enhance capacity of congested roadway segments</u></p> <p>Prior to commencement of construction activities substantially affecting transportation facilities, DWR will make a good faith effort to enter into mitigation agreements with affected state, regional, or local agencies (“affected agencies”) to verify the location, extent, timing, and fair share cost to be paid for reducing congestion to the identified roadway segments specified in Table 19-9 of the FINAL EIR/EIS. Implementation of this measure is intended to provide funding from DWR sufficient to provide its fair share of the cost of reducing congestion so that traffic operating conditions (i.e., LOS) on study area roadways do not operate at a level of service or delay that is worse than the pre-project conditions (to the extent feasible in light of costs, logistics, and other factors). DWR will include in the</p>			

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		<p>bid specifications requirements that the contractor(s) ensure that all enhancements are conducted in compliance with applicable standards of affected agencies and with any applicable mitigation agreements, as described below. In attempting in good faith to enter into mitigation agreements with affected agencies, DWR will be guided by the following principles. DWR will be responsible for their fair share costs of all feasible temporary congestion reducing programs and improvements jointly determined by DWR and the affected agencies to be necessary, feasible, and available to reduce the severity of the project's temporary significant construction-related transportation impacts. Fair share calculations will account not only for traffic levels as they existed at the time of the public release of the Draft EIR/EIS, but also for "background growth" between that time frame and the commencement of construction activities, as well as any probable future projects in the affected agency or neighboring agencies that will likely contribute to the need for, and directly benefit from, temporary congestion reduction. The DWR's contribution toward such improvements shall take any, or some combination, of the following forms:</p> <ol style="list-style-type: none">1. Construction of improvements, which may be subject to fee credits and/or reimbursement, coordinated by the affected agency, from other fee-paying development projects if available with respect to improvements that would also benefit such fee-paying development projects;2. The payment of impact fees to the affected agency in amounts that constitute DWR's fair share contributions to the construction of the required improvements, consistent with the affected agency's Capital Improvement Program ("CIP") or other funding program that meets the definition of a "reasonable plan for mitigation" under CEQA case law (i.e., a plan that ensures that (i) the fees collected from DWR will be used for their intended purposes, and (ii) the improvements will actually be built within a reasonable period of time);3. The payment of adopted regional impact fees that would provide funding for transportation facilities that are affected by multiple agencies, except where DWR's payments of other fees or construction of improvements within the affected agency will create credit against the payment of			

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		<p>regional impact fees;</p> <p>4. The payment of impact fees to the affected agency in amounts that constitute DWR's fair share contributions to the construction of improvements within other agencies and not the affected agency, which payments to the affected agency and transmittal of fees to other agency would occur through one or more enforceable agreements, provided that for each required improvement there is a reasonable plan for mitigation that ensures that (i) the fees collected from DWR will be used for their intended purposes, and (ii) the improvements will actually be built within a reasonable period of time; and/or</p> <p>5. The payment of impact fees to the Caltrans in amounts that constitute DWR's fair share contributions to the construction of improvements on federal or state highways or freeways needed in part because of the project, to be made available to Caltrans if and when Caltrans, DWR, and any other the affected agency enter into an enforceable agreement consistent with state law, provided that, for each required improvement, Caltrans has a reasonable mitigation plan that ensures that (i) the fees collected from DWR will be used for their intended purposes, and (ii) the improvements will actually be built within a reasonable period of time.</p> <p>In order to obtain the most fair, accurate, and up-to-date calculations of DWR's fair share of the costs of required improvements, the agreement(s) reached between DWR and the affected agency or agencies will also provide for the following: (i) that the traffic models to be used be mutually acceptable to both DWR and the affected agency or agencies; and (ii) that the calculations account for (A) newly approved projects cumulatively that contribute to transportation-related impacts and that therefore should contribute to the funding of necessary improvements, and (B) up-to-date cost calculations for the construction of needed improvements based on recent changes in the costs of materials, labor, and other inputs. (Final MMRP, pp. 2-91 – 2-93; see also Final EIR/EIS, Chapter 19, Transportation, pp. 19-221 – 19-223, & Chapter 15, Recreation, p. 15-471)</p> <p><u>NOI-1a: Employ noise-reducing construction practices during construction</u></p>			

Alternative 4A Potential Impact	Impact Conclusions Before Mitigation- CEQA	Proposed Mitigation	Impact Conclusion After Mitigation- CEQA	CEQA Conclusions	Findings of Fact
		<p>See Impact NOI-1a, above, for full mitigation measure. (Final MMRP, pp. 2-127 – 2-128; see also Final EIR/EIS, Chapter 23, Noise, p. 23-49 & Chapter 15, Recreation, p. 15-471)</p> <p><u>NOI-1b: Prior to construction, initiate a complaint/response tracking program</u></p> <p>See Impact NOI-1b, above, for full mitigation measure. (Final MMRP, p. 2-128; see also Final EIR/EIS, Chapter 23, Noise, p. 23-49 & Chapter 15, Recreation, p. 15-471)</p>			
<p>REC-4: Result in long-term reduction of recreational fishing opportunities as a result of constructing the proposed water conveyance facilities (Final EIR/EIS, Chapter 15, Recreation, p. 15-472 – 15-474)</p>	Significant	<p><u>REC-2: Provide alternative bank fishing access sites</u></p> <p>See Impact REC-2, above, for full mitigation measure. (Final MMRP, pp. 2-50 – 2-51; see also Final EIR/EIS, Chapter 15, Recreation, pp. 15-267 – 15-268, & 15-473)</p> <p><u>AQUA-1a: Minimize the use of impact pile driving to address effects of pile driving and other construction-related underwater noise</u></p> <p>See Impact AQUA-1a, above, for full mitigation measure. (Final MMRP, p. 2-19; see also Final EIR/EIS, Chapter 11, Fish and Aquatic Resources, p. 11-3191 & Chapter 15, Recreation, p. 15-473)</p> <p><u>NOI-1a: Employ noise-reducing construction practices during construction</u></p> <p>See Impact NOI-1a, above, for full mitigation measure. (Final MMRP, pp. 2-127 – 2-128; see also Final EIR/EIS, Chapter 23, Noise, p. 23-49 & Chapter 15, Recreation, p. 15-473)</p> <p><u>NOI-1b: Prior to construction, initiate a complaint/response tracking program</u></p> <p>See Impact NOI-1b, above, for full mitigation measure. (Final MMRP, pp. 2-128 – 2-129; see also Final EIR/EIS, Chapter 23, Noise, p. 23-49 & Chapter 15, Recreation, p. 15-473)</p> <p><u>AES-1a: Locate new transmission lines and access routes to minimize the removal of trees and shrubs and pruning needed to accommodate new transmission lines and underground transmission lines where feasible</u></p> <p>See Impact AES-1a, above, for full mitigation measure. (Final MMRP, p. 2-53; see also Final EIR/EIS, Chapter 17, Aesthetics and Visual Resources, p. 17-197 & Chapter 15, Recreation, p. 15-473)</p> <p><u>AES-1b: Install visual barriers between construction work areas and sensitive receptors</u></p> <p>See Impact AES-1b, above, for full mitigation measure. (Final MMRP, pp. 2-54 – 2-55; see also Final EIR/EIS,</p>	<p>Less than Significant (Final EIR/EIS, Chapter 15, Recreation, p. 15-472 – 15-473)</p>	<p>Significant impacts will occur if construction of the water conveyance facilities resulted in a long-term reduction of recreational fishing opportunities. Construction of the water intakes, siphons, and operable barrier, and placement and use of barge unloading facilities during tunnel/pipeline construction will result in temporary water quality effects, elevated underwater noise conditions, fish exposure to stranding and direct physical injury, and temporary exclusion or degradation of spawning and rearing habitats.</p> <p>(Final EIR/EIS, Chapter 15, Recreation, p. 15-277 & 15-472 – 15-473)</p>	<p>DWR has made a commitment to prevent water quality effects through environmental training; implement stormwater pollution prevention plans, erosion and sediment control plans, hazardous materials management plans, and spill prevention, containment, and countermeasure plans; dispose of spoils, RTM, and dredged material (RTM will be removed from RTM storage areas and reused, as appropriate, as bulking material for levee maintenance, as fill material for habitat restoration projects, or other beneficial means of reuse identified for the material); implement a noise abatement plan; and implement a barge operations plan (Appendix 3B, <i>Environmental Commitments, AMMs, and CMs</i>). Due to the magnitude of the Plan Area and the duration of time construction is expected to last, this impact will be significant. However, Mitigation Measures AQUA-1a and AQUA-1b will avoid and minimize adverse effects on sport fish populations from impact pile driving (Mitigation Measures AQUA-1a, NOI-1a, NOI-1b) and ensure continued access for bank fishing at established locations as well as enhance fishing sites near the proposed water conveyance facilities, including near Clifton Court Forebay; and provide adequate signage directing anglers to the formal sites (Mitigation Measure REC-2). Mitigation measures will also be available to address construction-related visual effects on sensitive receptors from vegetation removal for transmission lines and access routes (AES-1a), provision of visual barriers between construction work areas and sensitive receptors (AES-1b), and locating concrete batch plants and</p>

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		<p>Chapter 17, Aesthetics and Visual Resources, pp. 17-197 – 17-198 & Chapter 15, Recreation, p. 15-473) <u>AES-1c: Develop and implement a spoil/borrow and reusable tunnel material area management plan</u> See Impact AES-1c, above, for full mitigation measure. (Final MMRP, pp. 2-55 – 2-56; see also Final EIR/EIS, Chapter 17, Aesthetics and Visual Resources, pp. 17-198 – 17-199 & Chapter 15, Recreation, p. 15-473) <u>AES-1d: Restore barge unloading facility sites once decommissioned</u> See Impact AES-1d, above, for full mitigation measure. (Final MMRP, p. 2-57; see also Final EIR/EIS, Chapter 17, Aesthetics and Visual Resources, p. 17-199 & Chapter 15, Recreation, p. 15-473) <u>AES-1e: Apply aesthetic design treatments to all structures to the extent feasible</u> See Impact AES-1e, above, for full mitigation measure. (Final MMRP pp. 2-57 – 2-59; see also Final EIR/EIS, Chapter 17, Aesthetics and Visual Resources, pp. 17-199 – 17-201 & Chapter 15, Recreation, p. 15-473) <u>AES-1f: Locate concrete batch plants and fuel stations away from sensitive visual resources and receptors and restore sites upon removal of facilities</u> See Impact AES-1f, above, for full mitigation measure. (Final MMRP, p. 2-60; see also Final EIR/EIS, Chapter 17, Aesthetics and Visual Resources, pp. 17-201 – 17-202 & Chapter 15, Recreation, p. 15-474) <u>AES-1g: Implement best management practices to implement project landscaping plan</u> See Impact AES-1g, above, for full mitigation measure. (Final MMRP, pp. 2-61 – 2-63; see also Final EIR/EIS, Chapter 17, Aesthetics and Visual Resources, pp. 17-202 – 17-203 & Chapter 15, Recreation, p. 15-474)</p>			<p>fuel stations away from sensitive resources and receptors (AES-1f). In addition, the chapter identifies measures to address longer term visual effects associated with changes to the landscape/visual setting from construction and the presence of new water conveyance features. These include developing and implementing a spoil/borrow and RTM area management plan (AES-1c), restoring barge loading facility sites once they are decommissioned (AES-1d), applying aesthetic design treatments to all structures to the extent feasible (AES-1e), restoring concrete batch plants and fuel stations upon removal of facilities (AES-1f), and implementing best management practices to implement a project landscaping plan (AES-1g). With implementation of these mitigation measures, this impact will be less than significant. Findings: Changes or alterations have been required in, or incorporated into, the project that avoid the significant environmental effect as identified in the Final EIR/EIS. Impacts will be less than significant with mitigation. (Final EIR/EIS, Chapter 15, Recreation, p. 15-277 & 15-472 – 15-473)</p>
REC-6: Cause a change in reservoir or lake elevations resulting in substantial reductions in water-based recreation opportunities and experiences at north- and south-of-Delta reservoirs (Final EIR/EIS, Chapter 15, Recreation, p. 15-474 – 15-477)	Significant (for Scenarios H2 and H4 for San Luis Reservoir)	<p><u>REC-6: Provide a temporary alternative boat launch to ensure access to San Luis Reservoir</u> Consistent with applicable recreation management plans, DWR and Reclamation will work with DPR to establish a boat ramp extension at or near the Basalt boat launch or other alternative boat ramp site at San Luis Reservoir to maintain reservoir access in years when access becomes unavailable. (Final MMRP, pp. 2-51 – 2-52; see also Final EIR/EIS, Chapter 15, Recreation, p. 15-477)</p>	Less than Significant (Final EIR/EIS, Chapter 15, Recreation, p. 15-476 – 15-477)	This impact on water-dependent and water-enhanced recreation opportunities at north- and south-of-Delta reservoirs will be less than significant because, with the exception of San Luis Reservoir, the CALSIM II modeling results indicate that reservoir levels attributable to Alternative 4A operations will either slightly decrease (Folsom Reservoir) or will fall below the individual reservoir thresholds less frequently than under No Action Alternative (ELT). These changes in reservoir and lake elevations will result in a	At Trinity, Shasta, Oroville, Folsom, New Melones, and San Luis Reservoirs, there will be more years in which the reservoir or lake levels fall below the recreation threshold at Late Long Term relative to Existing Conditions. However, as discussed in Final EIR/EIS, Chapter 15, Recreation, Section 15.3.1, Methods for Analysis, these changes in SWP/CVP reservoir elevations are primarily attributable to change in demand and other external factors such as sea level rise and climate change. It is not possible to specifically define the exact extent of the changes

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				less-than-significant impact on recreation opportunities and experiences at Trinity, Shasta, Oroville, Folsom, and New Melones Reservoirs. At Trinity, Shasta, Oroville, and Folsom Reservoirs, because there will be fewer years in which the reservoir or lake levels fall below the recreation threshold relative to No Action Alternative (ELT) conditions, these effects will be considered beneficial to recreation opportunities and experiences. (Final EIR/EIS, Chapter 15, Recreation, p. 15-476 – 15-477)	due to implementation of the action alternative using these model simulation results. Operation of Alternative 4A will not substantially affect water-dependent or water-enhanced recreation at these reservoirs. At San Luis Reservoir, the reduction in reservoir access by boaters will be significant because it is a greater than 10% change and will result in a significant impact on recreation. Mitigation Measure REC-6 will reduce this impact to a less-than-significant level. Findings: Changes or alterations have been required in, or incorporated into, the project that avoid the significant environmental effect as identified in the Final EIR/EIS. Impacts will be less than significant with mitigation. (Final EIR/EIS, Chapter 15, Recreation, p. 15-476 – 15-477)
Transportation					
TRANS-5: Disruption of rail traffic during construction (Final EIR/EIS, Chapter 19, Transportation, p. 19-361)	Significant	<u>TRANS-1a: Implement site-specific construction traffic management plan</u> See Impact TRANS-1a, above, for full mitigation measure. (Final MMRP, pp. 2-87 – 2-90; see also Final EIR/EIS, Chapter 19, Transportation, pp. 19-218 – 19-221 & 19-361)	Less than Significant (Final EIR/EIS, Chapter 19, Transportation, p.19-361)	Construction of Alternative 4A will not physically cross or require modification to an active railroad. However, if the UPRR Tracy Subdivision branch line is reopened, construction activities at the Clifton Court Forebay may affect new service. This is a potentially significant impact. (Final EIR/EIS, Chapter 19, Transportation, p. 19-361)	Construction of Alternative 4A will not physically cross or require modification to an active railroad. However, if the UPRR Tracy Subdivision branch line is reopened, construction activities at the Clifton Court Forebay may affect new service. This is a potentially significant impact. Mitigation Measure TRANS-1a, which includes stipulations to coordinate with rail providers to develop alternative transportation modes (e.g., trucks or buses) will reduce this impact to less than significant. Findings: Changes or alterations have been required in, or incorporated into, the project that avoid the significant environmental effect as identified in the Final EIR/EIS. Impacts will be less than significant with mitigation. (Final EIR/EIS, Chapter 19, Transportation, p. 19-361)
TRANS-7: Interference with bicycle routes during construction. (Final EIR/EIS, Chapter 19, Transportation, .p 19-362)	Significant	<u>TRANS-1a: Implement site-specific construction traffic management plan</u> See Impact TRANS-1a, above, for full mitigation measure. (Final MMRP, pp. 2-87 – 2-90; see also Final EIR/EIS, Chapter 19, Transportation, pp. 19-218 – 19-221 & 19-362)	Less than Significant (Final EIR/EIS, Chapter 19, Transportation, p. 19-362)	Increased traffic and vehicle delays during construction will temporarily disrupt bicycle routes on SR 160/River Road and potentially on SR 12, resulting in a significant impact. (Final EIR/EIS, Chapter 19, Transportation, p. 19-362)	Increased traffic and vehicle delays during construction will temporarily disrupt bicycle routes on SR 160/River Road and potentially on SR 12, resulting in a significant impact. However, Mitigation Measure TRANS-1a will reduce the severity of this impact to less-than-significant levels because project proponents will provide alternate access routes via detours or bridges to maintain continual circulation for local travelers

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					in and around construction zones, including bicycle riders. Findings: Changes or alterations have been required in, or incorporated into, the project that avoid the significant environmental effect as identified in the Final EIR/EIS. Impacts will be less than significant with mitigation. (Final EIR/EIS, Chapter 19, Transportation, p. 19-362)
Air Quality and Greenhouse Gases					
AQ-1: Generation of criteria pollutants in excess of the SMAQMD regional thresholds during construction of the proposed water conveyance facility. (Final EIR/EIS, Chapter 22, Air Quality and Greenhouse Gases, p. 22-505 – 22-506)	Significant (NO _x)	<u>AQ-1a: Mitigate and Offset Construction-Generated Criteria Pollutant Emissions within the SFNA to Net Zero (0) for Emissions in Excess of General Conformity <i>De Minimis</i> Thresholds (Where Applicable) and to Quantities below Applicable CEQA Thresholds for Other Pollutants</u> DWR will reduce criteria pollutant emissions generated by the construction of the water conveyance facilities associated with the project within the Sacramento Federal Nonattainment Area (SFNA) through the creation of offsetting reductions of emissions. The preferred means of undertaking such offsite mitigation will be through a partnership with the Sacramento Metropolitan Air Quality Management District (SMAQMD) involving the payment of offsite mitigation fees. Criteria pollutants in excess of the federal <i>de minimis</i> thresholds will be reduced to net zero (0) (see Table 22-9 in Chapter 22, <i>Air Quality and Greenhouse Gases</i>). Criteria pollutants not in excess of the <i>de minimis</i> thresholds, but above any applicable air pollution control or air quality management district CEQA thresholds ⁵ will be reduced to quantities below the numeric thresholds (see Table 22-8 in Chapter 22, <i>Air Quality and Greenhouse Gases</i>). ⁶ DWR will undertake in good faith an effort to enter into a development mitigation contract with SMAQMD in order to reduce criteria pollutant emissions generated by the construction of the water conveyance facilities associated with project. The preferred source of emissions reductions for NOX, PM, and ROG will be through contributions to SMAQMD’s Heavy-Duty Low-Emission Vehicle Incentive Program (HDLEVIP). The HDLEVIP is designed to reduce NOX, PM, and ROG from on- and offroad sources. The	Less than Significant (NO _x) (Final EIR/EIS, Chapter 22, Air Quality and Greenhouse Gases, p. 22-505)	NO _x emissions generated during construction of Alternative 4A will exceed SMAQMD regional threshold of significance. Since NO _x is a precursor to ozone and PM, violations of SMAQMD’s daily NO _x threshold will affect both regional ozone and PM formation. (Final EIR/EIS, Chapter 22, Air Quality and Greenhouse Gases, p. 22-505)	The impact of generating NO _x emissions in excess of local air district thresholds will violate applicable air quality standards in the study area and will contribute to or worsen existing air quality conditions. This will be a significant impact. Mitigation Measures AQ-1a and AQ-1b will be available to reduce NO _x emissions to a less-than-significant level by offsetting emissions to quantities below SMAQMD CEQA thresholds (see also Developments after Publication of the Proposed Final Environmental Impact Report, Section 5.1.1. Project Updates for discussion on additional Environmental Commitment 4 acreage impacts to air quality). Findings: Changes or alterations have been required in, or incorporated into, the project that avoid the significant environmental effect as identified in the Final EIR/EIS. Impacts will be less than significant with mitigation. (Final EIR/EIS, Chapter 22, Air Quality and Greenhouse Gases, p. 22-505)

⁵ For example, NOx emissions in a certain year may exceed BAAQMD’s 54 pound per day CEQA threshold, but not the 100 ton annual *de minimis* threshold. According to Appendix G of the State CEQA Guidelines, the significance criteria established by the applicable air quality management or air pollution control district may be relied upon to make determinations regarding the significance of an impact.

⁶ For example, emissions of NO_x generated by Alternative 1A both exceed the federal *de minimis* threshold for the SVAB and the SMAQMD’s CEQA threshold. NO_x emissions must therefore be reduced to net zero (0).

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		<p>program is managed and implemented by SMAQMD on behalf of all air districts within the SFNA, including the Yolo Solano Air Quality Management District (YSAQMD). SMAQMD’s incentive programs are a means of funding projects and programs capable of achieving emissions reductions. The payment fee is based on the average cost to achieve one ton per day (tpd) of reductions based on the average cost for reductions over the previous year. Onroad reductions averaged (nominally) \$44 million (NOX only) and off-road reductions averaged \$36 million (NOX only) over the previous year, thus working out to approximately \$40 million per one tpd of reductions. This rate roughly correlates to the average cost effectiveness of the Carl Moyer Incentive Program.</p> <p>If DWR is successful in reaching what it regards as a satisfactory agreement with SMAQMD, DWR will enter into mitigation contracts with SMAQMD to reduce NOX, PM, or ROG (as appropriate) emissions to the required levels. Such reductions may occur within the SMAQMD and/or within another air district within the SFNA. The required levels are:</p> <ul style="list-style-type: none">• For emissions in excess of the federal <i>de minimis</i> threshold: net zero (0) (see Table 22-9).• For emissions not in excess of <i>de minimis</i> thresholds but above the appropriate SMAQMD standards: below the appropriate CEQA threshold levels (see Table 22-8.) <p>Implementation of this mitigation would require DWR to adopt the following specific responsibilities.</p> <ul style="list-style-type: none">• Consult with the SMAQMD in good faith with the intention of entering into a mitigation contract with SMAQMD for the HDLEVIP. For state implementation plan (SIP) purposes, the necessary reductions must be achieved (contracted and delivered) by the applicable year in question (i.e., emissions generated in year 2016 would need to be reduced offsite in 2016). Funding would need to be received prior to contracting with participants and should allow sufficient time to receive and process applications to ensure offsite reduction projects are funded and implemented prior to commencement of project activities being reduced. This would roughly equate to the equivalent of two			

Alternative 4A Potential Impact	Impact Conclusions Before Mitigation- CEQA	Proposed Mitigation	Impact Conclusion After Mitigation- CEQA	CEQA Conclusions	Findings of Fact
		<p>years prior to the required mitigation; additional lead time may be necessary depending on the level of offsite emission reductions required for a specific year. In negotiating the terms of the mitigation contract, DWR and SMAQMD should seek clarification and agreement on SMAQMD responsibilities, including the following.</p> <ul style="list-style-type: none">○ Identification of appropriate offsite mitigation fees required for the project○ Timing required for obtaining necessary offsite emission credits.○ Processing of mitigation fees paid by DWR.○ Verification of emissions inventories submitted by DWR.○ Verification that offsite fees are applied to appropriate mitigation programs within the SFNA. <ul style="list-style-type: none">• Quantify mitigation fees required to satisfy the appropriate reductions. As noted above, the payment fees may vary by year and are sensitive to the number of projects requiring reductions within the SFNA. The schedule in which payments are provided to SMAQMD also influences overall cost. For example, a higher rate on a per-tonnage basis will be required for project elements that need accelerated equipment turn-over to achieve near-term reductions, whereas project elements that are established to contract to achieve far-term reductions will likely pay a lower rate on a per-tonnage basis.• Develop a compliance program to calculate emissions and collect fees from the construction contractors for payment to SMAQMD. The program will require, as a standard or specification of their construction contracts with DWR, that construction contractors identify construction emissions and their share of required offsite fees, if applicable. Based on the emissions estimates, DWR will collect fees from the individual construction contractors (as applicable) for payment to SMAQMD. Construction contractors will have the discretion to reduce their construction emissions to the lowest possible level through additional onsite mitigation, as the greater the emissions reductions that can be achieved by onsite mitigation, the lower the			

Alternative 4A Potential Impact	Impact Conclusions Before Mitigation- CEQA	Proposed Mitigation	Impact Conclusion After Mitigation- CEQA	CEQA Conclusions	Findings of Fact
		<p>required offsite fee. Acceptable options for reducing emissions may include use of late-model engines, low-emission diesel products, additional electrification or alternative fuels, engine-retrofit technology, and/or after-treatment products. All control strategies must be verified by SMAQMD.</p> <ul style="list-style-type: none">• Conduct daily and annual emissions monitoring to ensure onsite emissions reductions are achieved and no additional mitigation payments are required. Excess offsite funds can be carried from previous to subsequent years in the event that additional reductions are achieved by onsite mitigation. At the end of the project, if it is determined that excess offset funds remain (outstanding contracts and administration over the final years of the contracts will be taken into consideration), SMAQMD and DWR will determine the disposition of final funds (e.g., additional emission reduction projects to offset underperforming contracts, return of funds to DWR, etc.). <p>If a sufficient number of emissions reduction projects are not identified to meet the required performance standard, DWR will coordinate with SMAQMD to ensure the performance standards of achieving net zero (0) for emissions in excess of General Conformity <i>de minimis</i> thresholds (where applicable) and of achieving quantities below applicable CEQA thresholds for other pollutants not in excess of the <i>de minimis</i> thresholds but above CEQA thresholds are met.</p> <p>(Final MMRP, pp. 2-102 – 2-104; see also Final EIR/EIS, Chapter 22, Air Quality and Greenhouse Gases, pp. 22-289 – 22-291, & 22-506)</p> <p><u>AQ-1b: Develop an Alternative or Complementary Offsite Mitigation Program to Mitigate and Offset Construction-Generated Criteria Pollutant Emissions within the SFNA to Net Zero (0) for Emissions in Excess of General Conformity <i>De Minimis</i> Thresholds (Where Applicable) and to Quantities below Applicable CEQA Thresholds for Other Pollutants</u></p> <p>Should DWR be unable to enter into what they regard as a satisfactory agreement with SMAQMD as contemplated by Mitigation Measure AQ-1a, or should DWR enter into an agreement with SMAQMD but find themselves unable to meet the performance standards set forth in Mitigation</p>			

Alternative 4A Potential Impact	Impact Conclusions Before Mitigation- CEQA	Proposed Mitigation	Impact Conclusion After Mitigation- CEQA	CEQA Conclusions	Findings of Fact
		<p>Measure AQ-1a, DWR will develop an alternative or complementary offsite mitigation program to reduce criteria pollutant emissions generated by the construction of the water conveyance facilities associated with the project. The offsite mitigation program will offset criteria pollutant emissions to the required levels identified in Mitigation Measure AQ-1a. Accordingly, the program will ensure that the project does not contribute to or worsen existing air quality exceedances. Whether this program will address emissions beyond NO_x, PM, or ROG, will turn on whether DWR has achieved sufficient reductions of those pollutants pursuant to Mitigation Measure AQ-1a. The offsite mitigation program will establish a program to fund emission reduction projects through grants and similar mechanisms. All projects must provide contemporaneous (occur in the same calendar year as the emission increases) and localized (i.e., within the SFNA) emissions benefit to the area of effect. DWR may identify emissions reduction projects through consultation with SMAQMD, other air districts within the SFNA, and Air Resources Board (ARB), as needed. Potential projects could include, but are not limited to the following.</p> <ul style="list-style-type: none">• Alternative fuel, low-emission school buses, transit buses, and other vehicles.• Diesel engine retrofits and repowers.• Locomotive retrofits and repowers.• Electric vehicle or lawn equipment rebates.• Electric vehicle charging stations and plug-ins.• Video-teleconferencing systems for local businesses.• Telecommuting start-up costs for local businesses. <p>As part of its alternative or complementary offsite mitigation program, DWR will develop pollutant-specific formulas to monetize, calculate, and achieve emissions reductions in a cost-effective manner. Construction contractors, as a standard specification of their construction contracts with DWR, will identify construction emissions and their share of required offset fees. DWR will verify the emissions estimates submitted by the construction contractors and calculate the required fees. Construction contractors (as applicable) will be required to surrender required fees to DWR prior to the</p>			

Alternative 4A Potential Impact	Impact Conclusions Before Mitigation- CEQA	Proposed Mitigation	Impact Conclusion After Mitigation- CEQA	CEQA Conclusions	Findings of Fact
		<p>start of construction. Construction contractors will have the discretion to reduce their construction emissions to the lowest possible level through additional onsite mitigation, as the greater the emissions reductions that can be achieved by onsite mitigation, the lower the required offset fee. Acceptable options for reducing emissions may include, but are not limited to, the use of late-model engines, low-emission diesel products, additional electrification or alternative fuels, engine-retrofit technology, and/or after-treatment products. All control strategies must be verified by SMAQMD, the air resources board (ARB), any relevant air pollution control or air quality management district within the SFNA, or by a qualified air quality expert employed by or retained by DWR.</p> <p>The offsite fee, grant, or other mechanism will be calculated or formulated based on the actual cost of pollutant reductions. No collected offset fees will be used to cover administrative costs; offset fees or other payments are strictly limited to procurement of offsite emission reductions. Fees or other payments collected by DWR will be allocated to emissions reductions projects in a grant-like manner. DWR will document the fee schedule basis, such as consistency with the ARB's Carl Moyer Program cost-effectiveness limits and capital recovery factors.</p> <p>DWR will conduct annual reporting to verify and document that emissions reductions projects achieve a 1:1 reduction with construction emissions to ensure claimed offsets meet the required performance standard. All offsite reductions must be quantifiable, verifiable, enforceable, and satisfy the basic criterion of additionally (i.e., the reductions would not happen without the financial support of purchased offset credits). Annual reports will include, at a minimum the following components.</p> <ul style="list-style-type: none">• Total amount of offset fees received.• Total fees distributed to offsite projects.• Total fees remaining.• Projects funded and associated pollutant reductions realized.• Total emission reductions realized.• Total emissions reductions remaining to satisfy the requirements of Mitigation Measure AQ-1b.			

Alternative 4A Potential Impact	Impact Conclusions Before Mitigation- CEQA	Proposed Mitigation	Impact Conclusion After Mitigation- CEQA	CEQA Conclusions	Findings of Fact
		<ul style="list-style-type: none"> Overall cost-effectiveness of the projects funded. <p>If a sufficient number of emissions reduction projects are not identified to meet the required performance standard, DWR will consult with SMAQMD, the ARB, any relevant air pollution control or air quality management district within the SFNA, or a qualified air quality expert employed by or retained by DWR to ensure conformity is met through some other means of achieving the performance standards of achieving net zero (0) for emissions in excess of General Conformity <i>de minimis</i> thresholds (where applicable) and of achieving quantities below applicable CEQA thresholds for other pollutants. (Final MMRP, pp. 2-105 – 2-107; see also Final EIR/EIS, Chapter 22, Air Quality and Greenhouse Gases, pp. 22-291 – 22-293, & 22-506)</p>			
AQ-3: Generation of criteria pollutants in excess of the BAAQMD regional thresholds during construction of the proposed water conveyance facility. (Final EIR/EIS, Chapter 22, Air Quality and Greenhouse Gases, p. 22-506 – 22-507)	Significant (ROG, NO _x)	<p><u>AQ-3a: Mitigate and Offset Construction-Generated Criteria Pollutant Emissions within BAAQMD/SFBAAB to Net Zero (0) for Emissions in Excess of General Conformity De Minimis Thresholds (Where Applicable) and to Quantities below Applicable BAAQMD CEQA Thresholds for Other Pollutants</u></p> <p>DWR will reduce criteria pollutant emissions generated by the construction of the water conveyance facilities associated with Alternative 4A within the Bay Area Air Quality Management District (BAAQMD) through the creation of offsetting reductions of emissions occurring within the SFBAAB. The preferred means of undertaking such offsite mitigation will be through a partnership with the BAAQMD involving the payment of offsite mitigation fees. Criteria pollutants in excess of the federal <i>de minimis</i> thresholds will be reduced to net zero (0) (see Table 22-9 of Chapter 22, <i>Air Quality and Greenhouse Gas</i>). Criteria pollutants not in excess of the <i>de minimis</i> thresholds, but above any applicable air pollution control or air quality management district CEQA thresholds⁷ will be reduced to quantities below the numeric thresholds (see Table 22-8 of Chapter 22, <i>Air Quality and Greenhouse Gas</i>). DWR will undertake in good faith an effort to enter into a development mitigation contract with BAAQMD in order to reduce criteria pollutant emissions generated by the construction of the water conveyance facilities associated</p>	Less than Significant (ROG, NO _x) (Final EIR/EIS, Chapter 22, Air Quality and Greenhouse Gases, p. 22-507)	Emissions of ROG and NO _x generated during construction will exceed BAAQMD regional thresholds of significance. Since ROG and NO _x are precursors to ozone and NO _x is a precursor to PM, violations of BAAQMD's ROG and NO _x thresholds will affect both regional ozone and PM formation. (Final EIR/EIS, Chapter 22, Air Quality and Greenhouse Gases, p. 22-507)	The impact of generating ROG and NO _x emissions in excess of BAAQMD's regional thresholds will therefore violate applicable air quality standards in the Study area and will contribute to or worsen an existing air quality conditions. This will be a significant impact. Mitigation Measures AQ-3a and AQ-3b will be available to reduce ROG and NO _x emissions to a less-than-significant level by offsetting emissions to quantities below BAAQMD CEQA thresholds. Findings: Changes or alterations have been required in, or incorporated into, the project that avoid the significant environmental effect as identified in the Final EIR/EIS. Impacts will be less than significant with mitigation. (Final EIR/EIS, Chapter 22, Air Quality and Greenhouse Gases, p. 22-507)

⁷ For example, NO_x emissions in a certain year may exceed BAAQMD's 54 pound per day CEQA threshold, but not the 100 ton annual *de minimis* threshold. According to Appendix G of the State CEQA Guidelines, the significance criteria established by the applicable air quality management or air pollution control district may be relied upon to make determinations regarding the significance of an impact.

Alternative 4A Potential Impact	Impact Conclusions Before Mitigation- CEQA	Proposed Mitigation	Impact Conclusion After Mitigation- CEQA	CEQA Conclusions	Findings of Fact
		<p>with the project within the BAAQMD. The preferred source of emissions reductions for NO_x, ROG, and PM will be through contributions to BAAQMD's Carl Moyer Program and/or other BAAQMD incentive programs (e.g., TFCA). If DWR is successful in reaching what it regards as a satisfactory agreement with BAAQMD, DWR will enter into mitigation contracts with BAAQMD to reduce NO_x, PM, or ROG (as appropriate) emissions to the required levels. Such reductions may occur within the SFBAAB. The required levels are:</p> <ul style="list-style-type: none">• For emissions in excess of the federal <i>de minimis</i> threshold: net zero (0) (see Table 22-9).• For emissions not in excess of <i>de minimis</i> thresholds but above the appropriate BAAQMD standards: below the appropriate CEQA threshold levels (see Table 22-8).• Implementation of this mitigation would require DWR adopt the following specific responsibilities.• Consult with the BAAQMD in good faith with the intention of entering into a mitigation contract with BAAQMD for the Carl Moyer Program and/or other BAAQMD emission reduction incentive program. For SIP purposes, the necessary reductions must be achieved (contracted and delivered) by the applicable year in question (i.e., emissions generated in year 2016 would need to be reduced offsite in 2016). Funding would need to be received prior to contracting with participants and should allow sufficient time to receive and process applications to ensure offsite reduction projects are funded and implemented prior to commencement of project activities being reduced. In negotiating the terms of the mitigation contract, DWR and BAAQMD should seek clarification and agreement on BAAQMD responsibilities, including the following.<ul style="list-style-type: none">○ Identification of appropriate offsite mitigation fees required for the project.○ Timing required for obtaining necessary offsite emission credits.○ Processing of mitigation fees paid by DWR.○ Verification of emissions inventories submitted by DWR.○ Verification that offsite fees are applied to			

Alternative 4A Potential Impact	Impact Conclusions Before Mitigation- CEQA	Proposed Mitigation	Impact Conclusion After Mitigation- CEQA	CEQA Conclusions	Findings of Fact
		<p>appropriate mitigation programs within the SFBAAB.</p> <ul style="list-style-type: none">Quantify mitigation fees required to satisfy the appropriate reductions. Funding for the emission reduction projects will be provided in an amount up to the emission reduction project cost-effectiveness limit set by for the Carl Moyer Program during the year that the emissions from construction are emitted. (The current emissions limit is \$17,720 / weighted ton of criteria pollutants [NO_x + ROG + (20*PM)]). An administrative fee of 5% would be paid by DWR to the BAAQMD to implement the program. The funding would be used to fund projects eligible for funding under the Carl Moyer Program guidelines or other BAAQMD emission reduction incentive program meeting the same cost-effectiveness threshold that are real, surplus, quantifiable, and enforceable.Develop a compliance program to calculate emissions and collect fees from the construction contractors for payment to BAAQMD. The program will require, as a standard or specification of their construction contracts with DWR, that construction contractors identify construction emissions and their share of required offsite fees, if applicable. Based on the emissions estimates, DWR will collect fees from the individual construction contractors (as applicable) for payment to BAAQMD. Construction contractors will have the discretion to reduce their construction emissions to the lowest possible level through additional onsite mitigation, as the greater the emissions reductions that can be achieved by onsite mitigation, the lower the required offsite fee. Acceptable options for reducing emissions may include use of late-model engines, low-emission diesel products, additional electrification or alternative fuels, engine-retrofit technology, and/or after-treatment products. All control strategies must be verified by BAAQMD.Conduct daily and annual emissions monitoring to ensure onsite emissions reductions are achieved and no additional mitigation payments are required. Excess offsite funds can be carried from			

Alternative 4A Potential Impact	Impact Conclusions Before Mitigation- CEQA	Proposed Mitigation	Impact Conclusion After Mitigation- CEQA	CEQA Conclusions	Findings of Fact
		<p>previous to subsequent years in the event that additional reductions are achieved by onsite mitigation. At the end of the project, if it is determined that excess offset funds remain (outstanding contracts and administration over the final years of the contracts will be taken into consideration), BAAQMD and DWR will determine the disposition of final funds (e.g., additional emission reduction projects to offset underperforming contracts, return of funds to DWR, etc.).</p> <p>If a sufficient number of emissions reduction projects are not identified to meet the required performance standard, the DWR will coordinate with BAAQMD to ensure the performance standards of achieving net zero (0) for emissions in excess of General Conformity <i>de minimis</i> thresholds (where applicable) and of achieving quantities below applicable BAAQMD CEQA thresholds for other pollutants not in excess of the <i>de minimis</i> thresholds but above BAAQMD CEQA thresholds are met.</p> <p>(Final MMRP, pp. 2-108 – 2-110; see also Final EIR/EIS, Chapter 22, Air Quality and Greenhouse Gases, pp. 22-294 – 22-296, & 22-507)</p> <p><u>AQ-3b: Develop an Alternative or Complementary Offsite Mitigation Program to Mitigate and Offset Construction-Generated Criteria Pollutant Emissions within the BAAQMD/SFBAAB to Net Zero (0) for Emissions in Excess of General Conformity <i>De Minimis</i> Thresholds (Where Applicable) and to Quantities below Applicable BAAQMD CEQA Thresholds for Other Pollutants</u></p> <p>Should DWR be unable to enter into what they regard as a satisfactory agreement with BAAQMD as contemplated by Mitigation Measure AQ-3a, or should DWR enter into an agreement with BAAQMD but find themselves unable to meet the performance standards set forth in Mitigation Measure AQ-3a, DWR will develop an alternative or complementary offsite mitigation program to reduce criteria pollutant emissions generated by the construction of the water conveyance facilities associated with Alternative 4A. The offsite mitigation program will offset criteria pollutant emissions to the required levels identified in Mitigation Measure AQ-3a. Accordingly, the program will ensure that the project does not contribute to or worsen existing air quality exceedances. Whether this program will address emissions beyond NO_x, PM, or ROG,</p>			

Alternative 4A Potential Impact	Impact Conclusions Before Mitigation- CEQA	Proposed Mitigation	Impact Conclusion After Mitigation- CEQA	CEQA Conclusions	Findings of Fact
		<p>will turn on whether DWR has achieved sufficient reductions of those pollutants pursuant to Mitigation Measure AQ-3a.</p> <p>The offsite mitigation program will establish a program to fund emission reduction projects through grants and similar mechanisms. All projects must provide contemporaneous (occur in the same calendar year as the emission increases) and localized (i.e., within the SFBAAB) emissions benefit to the area of effect. DWR may identify emissions reduction projects through consultation with BAAQMD and ARB, as needed. Potential projects could include, but are not limited to the following.</p> <ul style="list-style-type: none">• Alternative fuel, low-emission school buses, transit buses, and other vehicles.• Diesel engine retrofits and repowers.• Locomotive retrofits and repowers.• Electric vehicle or lawn equipment rebates.• Electric vehicle charging stations and plug-ins.• Video-teleconferencing systems for local businesses.• Telecommuting start-up costs for local businesses. <p>As part of its alternative or complementary offsite mitigation program, DWR will develop pollutant-specific formulas to monetize, calculate, and achieve emissions reductions in a cost-effective manner. Construction contractors, as a standard specification of their construction contracts with DWR, will identify construction emissions and their share of required offset fees. DWR will verify the emissions estimates submitted by the construction contractors and calculate the required fees. Construction contractors (as applicable) will be required to surrender required fees to DWR prior to the start of construction. Construction contractors will have the discretion to reduce their construction emissions to the lowest possible level through additional onsite mitigation, as the greater the emissions reductions that can be achieved by onsite mitigation, the lower the required offset fee. Acceptable options for reducing emissions may include, but are not limited to, the use of late-model engines, low-emission diesel products, additional electrification or alternative fuels, engine-retrofit technology, and/or after-treatment products. All control</p>			

Alternative 4A Potential Impact	Impact Conclusions Before Mitigation- CEQA	Proposed Mitigation	Impact Conclusion After Mitigation- CEQA	CEQA Conclusions	Findings of Fact
		<p>strategies must be verified by BAAQMD, the ARB, or by a qualified air quality expert employed by or retained by DWR.</p> <p>The offsite fee, grant, or other mechanism will be calculated or formulated based on the actual cost of pollutant reductions. No collected offset fees will be used to cover administrative costs; offset fees or other payments are strictly limited to procurement of offsite emission reductions. Fees or other payments collected by DWR will be allocated to emissions reductions projects in a grant-like manner. DWR will document the fee schedule basis, such as consistency with the ARB's Carl Moyer Program cost-effectiveness limits and capital recovery factors.</p> <p>DWR will conduct annual reporting to verify and document that emissions reductions projects achieve a 1:1 reduction with construction emissions to ensure claimed offsets meet the required performance standard. All offsite reductions must be quantifiable, verifiable, enforceable, and satisfy the basic criterion of additionally (i.e., the reductions would not happen without the financial support of purchased offset credits). Annual reports will include, at a minimum the following components.</p> <ul style="list-style-type: none">• Total amount of offset fees received.• Total fees distributed to offsite projects.• Total fees remaining.• Projects funded and associated pollutant reductions realized.• Total emission reductions realized.• Total emissions reductions remaining to satisfy the requirements of Mitigation Measure AQ-3b.• Overall cost-effectiveness of the projects funded. <p>If a sufficient number of emissions reduction projects are not identified to meet the required performance standard, DWR will consult with BAAQMD, the ARB, or a qualified air quality expert employed by or retained by DWR to ensure conformity is met through some other means of achieving the performance standards of achieving net zero (0) for emissions in excess of General Conformity <i>de minimis</i> thresholds (where applicable) and of achieving quantities below applicable BAAQMD CEQA thresholds for other pollutants.</p>			

Alternative 4A Potential Impact	Impact Conclusions Before Mitigation- CEQA	Proposed Mitigation	Impact Conclusion After Mitigation- CEQA	CEQA Conclusions	Findings of Fact
		(Final MMRP, pp. 2-110 – 2-112; see also Final EIR/EIS, Chapter 22, Air Quality and Greenhouse Gases, p. 22-296 – 22-298, & 22-507)			
AQ-4: Generation of criteria pollutants in excess of the SJVAPCD regional thresholds during construction of the proposed water conveyance facility. (Final EIR/EIS, Chapter 22, Air Quality and Greenhouse Gases, p. 22-507 – 22-508)	Significant (ROG, NO _x , PM10)	<p><u>AQ-4a: Mitigate and Offset Construction-Generated Criteria Pollutant Emissions within SJVAPCD/SJVAB to Net Zero (0) for Emissions in Excess of General Conformity <i>De Minimis</i> Thresholds (Where Applicable) and to Quantities below Applicable SJVAPCD CEQA Thresholds for Other Pollutants</u></p> <p>DWR will reduce criteria pollutant emissions generated by the construction of the water conveyance facilities associated with Alternative 4A within the San Joaquin Valley Air Pollution Control District (SJVAPCD) through the creation of offsetting reductions of emissions occurring within the SJVAB. The preferred means of undertaking such offsite mitigation will be through a partnership with the SJVAPCD involving the payment of offsite mitigation fees. Criteria pollutants in excess of the federal <i>de minimis</i> thresholds will be reduced to net zero (0) (see Table 22-9). Criteria pollutants not in excess of the <i>de minimis</i> thresholds, but above any applicable air pollution control or air quality management district CEQA thresholds⁸ will be reduced to quantities below the numeric thresholds (see Table 22-8).⁹</p> <p>DWR will undertake in good faith an effort to enter into a development mitigation contract with SJVAPCD in order to reduce criteria pollutant emissions generated by the construction of the water conveyance facilities associated with the project within the SJVAPCD. The preferred source of emissions reductions for NOX, PM, and ROG will be through contributions to SJVAPCD's VERA. The VERA is implemented through the District Incentive Programs and is a measure to reduce project impacts under CEQA. The current VERA payment fee for construction emissions is \$9,350 per ton of NOX and \$9,011 per ton of PM10. This is an estimated cost and may change in the future (e.g., future year payment fees for NOX could be in excess of the current price of \$9,350) and are sensitive to the number and type of projects requiring emission reductions within the same air basin (Siong pers. comm. 2012).</p> <p>If DWR is successful in reaching what it regards as a satisfactory agreement with SJVAPCD, DWR will enter into</p>	Less than Significant (ROG, NO _x , PM10) (Final EIR/EIS, Chapter 22, Air Quality and Greenhouse Gases, p. 22-508)	Emissions of ROG, NO _x , and PM10 generated during construction will exceed SJVAPCD's regional thresholds of significance. Since ROG and NO _x are precursors to ozone and NO _x is a precursor to PM, violations of SJVAPCD's ROG and NO _x thresholds will affect both regional ozone and PM formation, which will worsen regional air quality and air basin attainment of the NAAQS and CAAQS. Similarly, exceedances of SJVAPCD's PM10 threshold will impede attainment of the NAAQS and CAAQS for PM10. (Final EIR/EIS, Chapter 22, Air Quality and Greenhouse Gases, p. 22-508)	<p>The impact of generating ROG, NO_x, and PM10 emissions in excess of SJVAPCD's regional thresholds will therefore violate applicable air quality standards in the study area and will contribute to or worsen an existing air quality condition. This will be a significant impact. Mitigation Measures AQ-4a and AQ-4b will be available to reduce ROG, NO_x, and PM10 emissions to a less-than-significant level by offsetting emissions to quantities below SJVAPCD CEQA thresholds.</p> <p>Findings: Changes or alterations have been required in, or incorporated into, the project that avoid the significant environmental effect as identified in the Final EIR/EIS. Impacts will be less than significant with mitigation. (Final EIR/EIS, Chapter 22, Air Quality and Greenhouse Gases, p. 22-508)</p>

⁸ For example, PM10 emissions in a certain year may exceed SJVAPCD's 15 ton annual CEQA threshold, but not the 100 ton annual *de minimis* threshold. According to Appendix G of the State CEQA Guidelines, the significance criteria established by the applicable air quality management or air pollution control district may be relied upon to make determinations regarding the significance of an impact.

⁹ For example, emissions of NO_x generated by Alternative 1A both exceed the federal *de minimis* threshold for the SJVAB and the SJVAPCD's CEQA threshold. NO_x emissions must therefore be reduced to net zero (0).

Alternative 4A Potential Impact	Impact Conclusions Before Mitigation- CEQA	Proposed Mitigation	Impact Conclusion After Mitigation- CEQA	CEQA Conclusions	Findings of Fact
		<p>mitigation contracts with SJVAPCD to reduce NOX, PM, or ROG (as appropriate) emissions to the required levels. Such reductions must occur within the SJVAB. The required levels are:</p> <ul style="list-style-type: none">• For emissions in excess of the federal <i>de minimis</i> threshold: net zero (0).• For emissions not in excess of <i>de minimis</i> thresholds but above the SJVAPCD's standards: below the appropriate CEQA threshold levels.• Implementation of this measure would require DWR to adopt the following specific responsibilities.• Consult with the SJVAPCD in good faith with the intention of entering into a mitigation contract with SJVAPCD for the VERA. For SIP purposes, the necessary reductions must be achieved (contracted and delivered) by the applicable year in question (i.e., emissions generated in year 2016 would need to be reduced offsite in 2016). Funding would need to be received prior to contracting with participants and should allow sufficient time to receive and process applications to ensure offsite reduction projects are funded and implemented prior to commencement of project activities being reduced. This would roughly equate to the equivalent of two months (2) prior to groundbreaking; additional lead time may be necessary depending on the level of offsite emission reductions required for a specific year. In negotiating the terms of the mitigation contract, DWR and SJVAPCD should seek clarification and agreement on SJVAPCD responsibilities, including the following.<ul style="list-style-type: none">○ Identification of appropriate offsite mitigation fees required for the project.○ Processing of mitigation fees paid by DWR.○ Verification of emissions inventories submitted by DWR○ Verification that offsite fees are applied to appropriate mitigation programs within the SJVAB.• Quantify mitigation fees required to satisfy the appropriate reductions. An administrative fee of 4% would be paid by DWR to the SJVAPCD to			

Alternative 4A Potential Impact	Impact Conclusions Before Mitigation- CEQA	Proposed Mitigation	Impact Conclusion After Mitigation- CEQA	CEQA Conclusions	Findings of Fact
		<p>implement the program. As noted above, the payment fees may vary by year and are sensitive to the number of projects requiring reductions within the SJVAB.</p> <ul style="list-style-type: none">• Develop a compliance program to calculate emissions and collect fees from the construction contractors for payment to SJVAPCD. The program will require, as a standard or specification of their construction contracts with DWR, that construction contractors identify construction emissions and their share of required offsite fees, if applicable. Based on the emissions estimates, DWR will collect fees from the individual construction contractors (as applicable) for payment to SJVAPCD. Construction contractors will have the discretion to reduce their construction emissions to the lowest possible level through additional onsite mitigation, as the greater the emissions reductions that can be achieved by onsite mitigation, the lower the required offsite fee. Acceptable options for reducing emissions may include use of late-model engines, low-emission diesel products, additional electrification or alternative fuels, engine-retrofit technology, and/or after-treatment products. All control strategies must be verified by SJVAPCD.• Conduct daily and annual emissions monitoring to ensure onsite emissions reductions are achieved and no additional mitigation payments are required. Excess offsite funds can be carried from previous to subsequent years in the event that additional reductions are achieved by onsite mitigation. At the end of the project, if it is determined that excess offset funds remain (outstanding contracts and administration over the final years of the contracts will be taken into consideration), SJVAPCD and DWR will determine the disposition of final funds (e.g., additional emission reduction projects to offset underperforming contracts, return of funds to DWR, etc.). <p>If a sufficient number of emissions reduction projects are not identified to meet the required performance standard, DWR will coordinate with SJVAPCD to ensure the performance standards of achieving net zero (0) for emissions in excess of General Conformity <i>de minimis</i></p>			

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		<p>thresholds (where applicable) and of achieving quantities below applicable SJVAPCD CEQA thresholds for other pollutants not in excess of the <i>de minimis</i> thresholds but above SJVAPCD CEQA thresholds are met. (Final MMRP, pp. 2-113 – 2-115; see also Final EIR/EIS, Chapter 22, Air Quality and Greenhouse Gases, pp. 22-229 – 22-300, & 22-508)</p> <p><u>AQ-4b: Develop an Alternative or Complementary Offsite Mitigation Program to Mitigate and Offset Construction-Generated Criteria Pollutant Emissions within the SJVAPCD/SJVAB to Net Zero (0) for Emissions in Excess of General Conformity <i>De Minimis</i> Thresholds (Where Applicable) and to Quantities below Applicable SJVAPCD CEQA Thresholds for Other Pollutants</u></p> <p>Should DWR be unable to enter into what they regard as a satisfactory agreement with SJVAPCD as contemplated by Mitigation Measure AQ-4a, or should DWR enter into an agreement with SJVAPCD but find themselves unable to meet the performance standards set forth in Mitigation Measure AQ-4a, DWR will develop an alternative or complementary offsite mitigation program to reduce criteria pollutant emissions generated by the construction of the water conveyance facilities associated with Alternative 4A. The offsite mitigation program will offset criteria pollutant emissions to the required levels identified in Mitigation Measure AQ-4a. Accordingly, the program will ensure that the project does not contribute to or worsen existing air quality exceedances. Whether this program will address emissions beyond NO_x, PM, or ROG, will turn on whether DWR has achieved sufficient reductions of those pollutants pursuant to Mitigation Measure AQ-4a.</p> <p>The offsite mitigation program will establish a program to fund emission reduction projects through grants and similar mechanisms. All projects must provide contemporaneous (occur in the same calendar year as the emission increases) and localized (i.e., within the SJVAB) emissions benefit to the area of effect. DWR may identify emissions reduction projects through consultation with SJVAPCD and ARB, as needed. Potential projects could include, but are not limited to the following.</p> <ul style="list-style-type: none">• Alternative fuel, low-emission school buses, transit buses, and other vehicles.• Diesel engine retrofits and repowers.			

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		<ul style="list-style-type: none">• Locomotive retrofits and repowers.• Electric vehicle or lawn equipment rebates.• Electric vehicle charging stations and plug-ins.• Video-teleconferencing systems for local businesses.• Telecommuting start-up costs for local businesses. <p>As part of its alternative or complementary offsite mitigation program, DWR will develop pollutant-specific formulas to monetize, calculate, and achieve emissions reductions in a cost-effective manner. Construction contractors, as a standard specification of their construction contracts with DWR, will identify construction emissions and their share of required offset fees. DWR will verify the emissions estimates submitted by the construction contractors and calculate the required fees. Construction contractors (as applicable) will be required to surrender required fees to DWR prior to the start of construction. Construction contractors will have the discretion to reduce their construction emissions to the lowest possible level through additional onsite mitigation, as the greater the emissions reductions that can be achieved by onsite mitigation, the lower the required offset fee. Acceptable options for reducing emissions may include, but are not limited to, the use of late-model engines, low-emission diesel products, additional electrification or alternative fuels, engine-retrofit technology, and/or after-treatment products. All control strategies must be verified by SJVAPCD, the ARB, or by a qualified air quality expert employed by or retained by DWR.</p> <p>The offsite fee, grant, or other mechanism will be calculated or formulated based on the actual cost of pollutant reductions. No collected offset fees will be used to cover administrative costs; offset fees or other payments are strictly limited to procurement of offsite emission reductions. Fees or other payments collected by DWR will be allocated to emissions reductions projects in a grant-like manner. DWR will document the fee schedule basis, such as consistency with the ARB's Carl Moyer Program cost-effectiveness limits and capital recovery factors.</p> <p>DWR will conduct annual reporting to verify and document</p>			

Alternative 4A Potential Impact	Impact Conclusions Before Mitigation- CEQA	Proposed Mitigation	Impact Conclusion After Mitigation- CEQA	CEQA Conclusions	Findings of Fact
		<p>that emissions reductions projects achieve a 1:1 reduction with construction emissions to ensure claimed offsets meet the required performance standard. All offsite reductions must be quantifiable, verifiable, enforceable, and satisfy the basic criterion of additionally (i.e., the reductions would not happen without the financial support of purchased offset credits). Annual reports will include, at a minimum the following components.</p> <ul style="list-style-type: none"> • Total amount of offset fees received. • Total fees distributed to offsite projects. • Total fees remaining. • Projects funded and associated pollutant reductions realized. • Total emission reductions realized. • Total emissions reductions remaining to satisfy the requirements of Mitigation Measure AQ-4b. • Overall cost-effectiveness of the projects funded. <p>If a sufficient number of emissions reduction projects are not identified to meet the required performance standard, DWR will consult with SJVAPCD, the ARB, or a qualified air quality expert employed by or retained by DWR to ensure conformity is met through some other means of achieving the performance standards of achieving net zero (0) for emissions in excess of General Conformity <i>de minimis</i> thresholds (where applicable) and of achieving quantities below applicable SJVAPCD CEQA thresholds for other pollutants. (Final MMRP, pp. 2-116 – 2-117; see also Final EIR/EIS, Chapter 22, Air Quality and Greenhouse Gases, pp. 22-300 – 22-302, & 22-508)</p>			
AQ-9: Exposure of sensitive receptors to health hazards from localized particulate matter in excess of SMAQMD's health-based concentration thresholds (Final EIR/EIS, Chapter 22, Air Quality and Greenhouse Gases, p. 22-510)	Significant (PM10)	<p><u>AQ-9: Implement Measures to Reduce Re-Entrained Road Dust and Receptor Exposure to PM2.5 and PM10</u></p> <p>The project sponsor (DWR) shall employ a tiered approach to reduce re-entrained road dust and receptor exposure to Particulate Matter (PM) 2.5 and PM10. The approach shall be taken in the following way:</p> <ul style="list-style-type: none"> • PM10 that could exceed the threshold at sensitive receptors will be further reduced by applying dust suppressants (Pennzsuppress); • If additional dust suppressants eliminate the issue at all receptors, no further 	Less than Significant (PM10) (Final EIR/EIS, Chapter 22, Air Quality and Greenhouse Gases, p. 22-510)	Construction of Alternative 4A will exceed SMAQMD's 24-hour PM10 threshold at 10 receptor locations. The exceedances will be temporary and occur intermittently due to soil disturbance (primarily entrained road dust). (Final EIR/EIS, Chapter 22, Air Quality and Greenhouse Gases, p. 22-510)	Construction of Alternative 4A will exceed SMAQMD's 24-hour PM10 threshold at 10 receptor locations. The exceedances will be temporary and occur intermittently due to soil disturbance (primarily entrained road dust). Mitigation Measure AQ-9 is available to reduce impacts to less than significant (see Final EIR/EIS, Chapter 22, Table 22-102). Findings: Changes or alterations have been required in, or incorporated into, the project that avoid the significant environmental effect as identified in the Final EIR/EIS. Impacts will be

Alternative 4A Potential Impact	Impact Conclusions Before Mitigation- CEQA	Proposed Mitigation	Impact Conclusion After Mitigation- CEQA	CEQA Conclusions	Findings of Fact
		<p>mitigation is needed; if not, DWR will offer temporary relocation of the affected residents; if that is accepted no additional mitigation is required; if relocation is not accepted then;</p> <ul style="list-style-type: none"> DWR will pave portions of the work sites until all exceedances are eliminated and impacts are determined to be less than significant. <p>(Final MMRP, p. 2-118; see also Final EIR/EIS, Chapter 22, Air Quality and Greenhouse Gases, p. 22-305 – 22-306, & 22-510)</p>			less than significant with mitigation. (Final EIR/EIS, Chapter 22, Air Quality and Greenhouse Gases, p. 22-510)
AQ-20: Generation of criteria pollutants in the excess of federal <i>de minimis</i> thresholds from construction and operation and maintenance of the proposed water conveyance facility (Final EIR/EIS, Chapter 22, Air Quality and Greenhouse Gases, p. 22-514 – 22-517)	Significant – SFNA (NO _x) SFBAAB (NO _x) (ROG, NO _x)	<p><u>AQ-1a: Mitigate and Offset Construction-Generated Criteria Pollutant Emissions within the SFNA to Net Zero (0) for Emissions in Excess of General Conformity <i>De Minimis</i> Thresholds (Where Applicable) and to Quantities below Applicable CEQA Thresholds for Other Pollutants</u></p> <p>See Impact AQ-1a, above, for full mitigation measure. (Final MMRP, pp. 2-102 – 2-104; see also Final EIR/EIS, Chapter 22, Air Quality and Greenhouse Gases, pp. 22-289 – 22-291, & 22-516)</p> <p><u>AQ-1b: Develop an Alternative or Complementary Offsite Mitigation Program to Mitigate and Offset Construction-Generated Criteria Pollutant Emissions within the SFNA to Net Zero (0) for Emissions in Excess of General Conformity <i>De Minimis</i> Thresholds (Where Applicable) and to Quantities below Applicable CEQA Thresholds for Other Pollutants</u></p> <p>See Impact AQ-1b, above, for full mitigation measure. (Final MMRP, pp. 2-105 – 2-107; see also Final EIR/EIS, Chapter 22, Air Quality and Greenhouse Gases, pp. 22-291 – 22-293, & 22-516)</p> <p><u>AQ-3a: Mitigate and Offset Construction-Generated Criteria Pollutant Emissions within BAAQMD/SFBAAB to Net Zero (0) for Emissions in Excess of General Conformity <i>De Minimis</i> Thresholds (Where Applicable) and to Quantities below Applicable BAAQMD CEQA Thresholds for Other Pollutants</u></p> <p>See Impact AQ-3a, above, for full mitigation measure. (Final MMRP, pp. 2-108 – 2-110; see also Final EIR/EIS, Chapter 22, Air Quality and Greenhouse Gases, pp. 22-294 – 22-296, & 22-516)</p> <p><u>AQ-3b: Develop an Alternative or Complementary Offsite Mitigation Program to Mitigate and Offset Construction-Generated Criteria Pollutant Emissions within the</u></p>	<p>Less than Significant - SFNA (NO_x) SFBAAB(NO_x) SJVAB (ROG, NO_x)</p> <p>(Final EIR/EIS, Chapter 22, Air Quality and Greenhouse Gases, p. 22-515 – 22-516)</p>	<p>SFNA, SJVAB, and SFBAAB are classified as nonattainment areas with regard to the ozone NAAQS and the impact of increases in criteria pollutant emissions above the air basin <i>de minimis</i> thresholds will conflict with or obstruct implementation of the applicable air quality plans. Since construction emissions in the SFNA, SJVAB, and SFBAAB will exceed the <i>de minimis</i> thresholds for ROG (SJVAB only) and NO_x, this impact will be significant. (Final EIR/EIS, Chapter 22, Air Quality and Greenhouse Gases, p. 22-515 – 22-516)</p>	<p>Mitigation Measures AQ-1a, AQ-1b, AQ-3a, AQ-3b, AQ-4a, and AQ-4b will ensure project emissions will not result in an increase in regional ROG (SJVAB only) or NO_x emissions. These measures will therefore ensure total direct and indirect ROG (SJVAB only) and NO_x emissions generated by the project will conform to the appropriate air basin SIPs by offsetting the action's emissions in the same or nearby area to net zero. This impact will be less than significant with mitigation. Findings: Changes or alterations have been required in, or incorporated into, the project that avoid the significant environmental effect as identified in the Final EIR/EIS. Impacts will be less than significant with mitigation. (Final EIR/EIS, Chapter 22, Air Quality and Greenhouse Gases, p. 22-515 – 22-516)</p>

Alternative 4A Potential Impact	Impact Conclusions Before Mitigation- CEQA	Proposed Mitigation	Impact Conclusion After Mitigation- CEQA	CEQA Conclusions	Findings of Fact
		<p><u>BAAQMD/SFBAAB to Net Zero (0) for Emissions in Excess of General Conformity <i>De Minimis</i> Thresholds (Where Applicable) and to Quantities below Applicable BAAQMD CEQA Thresholds for Other Pollutants</u></p> <p>See Impact AQ-3b, above, for full mitigation measure. (Final MMRP, pp. 2-110 – 2-112; see also Final EIR/EIS, Chapter 22, Air Quality and Greenhouse Gases, pp. 22-296 – 22-298, & 22-516)</p> <p><u>AQ-4a: Mitigate and Offset Construction-Generated Criteria Pollutant Emissions within SJVAPCD/SJVAB to Net Zero (0) for Emissions in Excess of General Conformity <i>De Minimis</i> Thresholds (Where Applicable) and to Quantities below Applicable SJVAPCD CEQA Thresholds for Other Pollutants</u></p> <p>See Impact AQ-4a, above, for full mitigation measure. (Final MMRP, pp. 2-113 – 2-115; see also Final EIR/EIS, Chapter 22, Air Quality and Greenhouse Gases, pp. 22-299 – 22-300, & 22-517)</p> <p><u>AQ-4b: Develop an Alternative or Complementary Offsite Mitigation Program to Mitigate and Offset Construction-Generated Criteria Pollutant Emissions within the SJVAPCD/SJVAB to Net Zero (0) for Emissions in Excess of General Conformity <i>De Minimis</i> Thresholds (Where Applicable) and to Quantities below Applicable SJVAPCD CEQA Thresholds for Other Pollutants</u></p> <p>See Impact AQ-4b, above, for full mitigation measure. (Final MMRP, pp. 2-116 – 2-117; see also Final EIR/EIS, Chapter 22, Air Quality and Greenhouse Gases, pp. 22-300 – 22-302, & 22-517)</p>			
AQ-21: Generation of cumulative greenhouse gas emissions during construction of the proposed water conveyance facility (Final EIR/EIS, Chapter 22, Air Quality and Greenhouse Gases, p. 22-517)	Significant	<p><u>AQ-21: Develop and Implement a GHG Mitigation Program to Reduce Construction Related GHG Emissions to Net Zero (0)</u></p> <p>DWR will develop a GHG Mitigation Program prior to the commencement of any construction or other physical activities associated with construction of the water conveyance facilities that would generate GHG emissions. The GHG Mitigation Program will consist of feasible options that, taken together, will reduce construction-related GHG emissions to net zero (0) (i.e., emissions will be reduced to the maximum extent feasible and any remaining emissions from the project will be offset elsewhere by emissions reductions of equal amount). DWR will determine the nature and form of the components of the GHG Mitigation Program after consultation with the</p>	Less than Significant (Final EIR/EIS, Chapter 22, Air Quality and Greenhouse Gases, p. 22-517)	Construction of Alternative 4A will generate a total of 3.0 million metric tons of GHG emissions. Any increase in emissions above net zero associated with construction of the project water conveyance features will be significant. (Final EIR/EIS, Chapter 22, Air Quality and Greenhouse Gases, p. 22-517)	Mitigation Measure AQ-21 will develop a GHG Mitigation Program to reduce construction-related GHG emissions to net zero. Accordingly, this impact will be less-than-significant with implementation of Mitigation Measure AQ-21. Findings: Changes or alterations have been required in, or incorporated into, the project that avoid the significant environmental effect as identified in the Final EIR/EIS. Impacts will be less than significant with mitigation. (Final EIR/EIS, Chapter 22, Air Quality and Greenhouse Gases, p. 22-517)

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		<p>following agencies, as applicable: (i) Study area air districts (Bay Area Air Quality Management District (BAAQMD), Sacramento Municipal Air Quality Management District (SMAQMD), San Joaquin Valley Air Pollution Control District (SJVAPCD), and Yolo Solano Air Quality Management District (YSAQMD)), (ii) California Air Resources Board, (iii) U.S. Environmental Protection Agency, and (iv) California Energy Commission. Specific strategies that could be used in formulating the GHG Mitigation Program are summarized below. The identified strategies will produce GHG reductions across a broad range of emissions sectors throughout the state. The strategies are divided into seven categories based on their application. Potential GHG emissions reductions that could be achieved by each measure are identified. It is theoretically possible that many of the strategies discussed below could independently achieve a net-zero GHG footprint for the project construction activities. Various combinations of measure strategies could also be pursued to optimize total costs or community co-benefits. DWR will be responsible for determining the overall mix of strategies necessary to ensure the performance standard to mitigate the adverse GHG construction impacts is met. DWR will develop a mechanism for quantifying, funding, implementing, and verifying emissions reductions associated with the selected strategies. DWR will also conduct annual reporting to verify and document that selected strategies achieve sufficient emissions reductions to offset construction-related emissions to net zero. All selected strategies must be quantifiable, verifiable, enforceable, and satisfy the basic criterion of additionality (i.e., the reductions would not happen without the financial support of purchased offset credits or other mitigation strategies). Annual reports will include, at a minimum, the following components.</p> <p>Calculated or measured emissions from construction activities over the reporting year.</p> <p>Projects selected for funding during the reporting year.</p> <p>Total funds distributed to selected projects during the reporting year.</p> <p>Cumulative funds distributed since program inception.</p> <p>Emissions reductions achieved during the reporting year.</p> <p>Cumulative reductions since program inception.</p> <p>Total emissions reductions remaining to satisfy the requirements of Mitigation Measure</p>			

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		<p>AQ-21.</p> <p><i>GHG Emissions Reduction Strategies to Consider in Formulating a GHG Mitigation Program</i></p> <p>This section summarizes GHG reduction strategies that will be considered in formulating a GHG mitigation program. Quantitative information on the potential capacity of each strategy is provided in Appendix 22A, <i>Air Quality Analysis Methods</i>. These estimates are based on general construction activity information, the size and trading volume of existing carbon offset markets, and available alternative energy resources (e.g., biomass, renewable energy) available to the project as potential mitigation strategies. Emissions reductions quantified for each strategy should be seen as high-level screening values that illustrate a rough order of magnitude for the expected level of emissions reductions or offsets. Moreover, the mitigation strategies should be viewed not as individual strategies, but rather as a suite of strategies. If one strategy, when investigated in greater detail prior to implementation, cannot deliver as high a level of emissions reduction or offset as initially estimated, other strategies will be implemented to ensure achievement of the performance standard of zero net GHG emissions from the project.</p> <p>Renewable Energy Purchase Agreement</p> <p>Strategy-1: Renewable Energy Purchase Agreement: Enter into a power purchase agreement, where feasible, with utilities which provide electricity service within the Study area to purchase construction electricity from renewable sources. Renewable sources must be zero emissions energy sources (e.g., wind, solar, hydro) and may not be accounted to utility RPS goals.</p> <p>Additional Onsite Mitigation</p> <p>Strategy-2: Engine Electrification: DWR has identified all feasible electrification requirements as environmental commitments. It is anticipated that additional technology will be available by the time construction starts that will enable further electrification. This strategy would take advantage of new technologies as they become available and will engage the maximum level of engine electrification feasible for onsite heavy-duty equipment.</p> <p>Strategy-3: Low Carbon Concrete: Require concrete components to be constructed out of concrete with up to 70% replacement of cement with supplementary cementitious materials (SCM) with lower embodied energy</p>			

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		<p>and associated GHG emissions.¹⁰ Implementation of this strategy would require structural testing to ensure the concrete meet required strategy strength, durability, workability, and rigidity standards. If new materials with lower embodied energy or superior workability are developed between the writing of this measure and project commencement, DWR will investigate use of those materials in place of SCM.</p> <p>Strategy-4: Renewable Diesel and/or Bio-diesel: Require use of renewable diesel sometimes also called “green diesel” and or bio-diesel fuels for operation of all diesel equipment. If new technologies or fuels with lower emissions rates are developed between the writing of this measure and project commencement, those advanced technologies or fuels could be incorporated into this measure.</p> <p>Energy Efficiency Retrofits and Rooftop Renewable Energy</p> <p>Strategy-5: Residential Energy Efficiency Improvements: Develop a residential energy retrofit package in conjunction with local utility providers to achieve reductions in natural gas and electricity usage. The retrofit package should include, at a minimum, the following improvements.</p> <ul style="list-style-type: none">• Replacement of interior high use incandescent lamps with compact florescent lamps (CFLs) or Light Emitting Diodes (LED).• Installation of programmable thermostats.• Replacement of windows with double-pane or triple-pane solar-control low-E argon gas filled wood frame windows.• Identification and sealing of dust and air leaks.• Replacement of electric clothes dryers with natural gas dryers.• Replacement of natural gas furnaces with Energy Star labeled models.• Installation of insulation.• This measure is inherently scalable (i.e., the total number of houses retrofit is likely limited by funds rather than the availability of housing stock). <p>Strategy-6: Commercial Energy Efficiency</p>			

¹⁰ SCM are often incorporated in concrete mix to reduce cement contents, improve workability, increase strength, and enhance durability. Although SCM can improve the strength of resulting structures, proper testing is required ensure the cement meets technical specifications for strength and rigidity.

Alternative 4A Potential Impact	Impact Conclusions Before Mitigation- CEQA	Proposed Mitigation	Impact Conclusion After Mitigation- CEQA	CEQA Conclusions	Findings of Fact
		<p>Improvements: Develop a commercial energy retrocommissioning package in conjunction with local utility providers to improve building-wide energy efficiency by at least 15%, relative to current energy consumption levels. This measure is inherently scalable.</p> <p>Strategy-7: Residential Rooftop Solar: Develop a residential rooftop solar installation program in conjunction with local utility providers. The installation program will allow homeowners to install solar photovoltaic systems at zero or minimal up-front cost. All projects installed under this measure must be designed for high performance (e.g., optimal full-sun location, solar orientation) and additive to utility RPS goals. This measure is inherently scalable.</p> <p>Strategy-8: Commercial Rooftop Solar: Develop a commercial rooftop solar installation program in conjunction with local utility providers. The installation program will allow business owners to install solar photovoltaic systems at zero or minimal up-front cost. All projects installed under this measure must be designed for high performance (e.g., optimal full-sun location, solar orientation) and additive to utility RPS goals. This measure is inherently scalable.</p> <p>Carbon Offsets</p> <p>Strategy-9: Purchase Carbon Offsets: In partnership with offset providers, purchase carbon offsets. Offset protocols and validation could tier off existing standards (e.g., Climate Registry Programs) or could be developed independently, provided such protocols satisfy basic criterion of additionally (i.e., the reductions would not happen without the financial support of purchased offset credits). ARB has established a Cap and Trade registry that identifies qualified providers and AB 32 projects. It is estimated that between 2012 and 2020, 2.5 billion allowances will be made available within the state (Legislative Analyst’s Office 2012). The national and international carbon markets are likely greater. Potential offset programs could include the following.</p> <ul style="list-style-type: none">• AB 32 U.S. Forest and Urban Forest Project Resources• AB 32 Livestock Projects• AB 32 Ozone Depleting Substances Projects• AB 32 Urban Forest Projects• Other-California Based Offsets			

Alternative 4A Potential Impact	Impact Conclusions Before Mitigation- CEQA	Proposed Mitigation	Impact Conclusion After Mitigation- CEQA	CEQA Conclusions	Findings of Fact
		<ul style="list-style-type: none">• United States Based Offsets• International Offsets (e.g., clean development mechanisms)<ul style="list-style-type: none">• This measure is inherently scalable based on the volume of offsets purchased. <p>Biomass Digestion and Conversion Strategy-10: Development of Biomass Waste Digestion and Conversion Facilities: Provide financing for facility development either through long term power purchase agreements or up front project financing. Projects will be awarded based on competitive bidding process and chosen for GHG sequestration and other environmental benefits to project area. Projects will provide a range of final products: electricity generation, Compressed Natural Gas for transportation fuels, and pipeline quality biomethane. Strategy-11: Agriculture Waste Conversion Development: Fund the re-commissioning of thermal chemical conversion facilities to process collected agricultural biomass residues. Project funding will include better resource modeling and provide incentives to farmers in the project area to deliver agricultural wastes to existing facilities. Increase Renewable Energy Purchases to Operate the State Water Project Strategy-12: Temporarily Increase Renewable Energy Purchases for Operations: Temporarily increase renewable energy purchases under the Renewable Energy Procurement Plan to offset project construction emissions. DWR as part of its CAP is implementing a Renewable Energy Procurement Plan. This plan identifies the quantity of additional renewable electricity resources that DWR will purchase in each year between 2010 and 2050 to achieve the GHG emissions reduction goals laid out in the CAP. Land Use Change and Sequestration Strategy-13: Tidal Wetland Inundation: Expand the number of subsidence reversal and/or carbon sequestration projects currently being undertaken by DWR on Sherman and Twitchell Islands. Existing research at the Twitchell Wetlands Research Facility demonstrates that wetland restoration can sequester 25 tons of carbon per acre per year. Measure funding could be used to finance permanent wetlands for waterfowl or rice cultivation, creating co-benefits for wildlife and local farmers. (Final MMRP, pp. 2-119 – 2-123; see also Final EIR/EIS, Chapter 22, Air Quality and Greenhouse Gases, pp. 22-322</p>			

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		– 22-326, & 22-517)			
AQ-25: Exposure of sensitive receptors to health threats from localized particulate matter, carbon monoxide, and diesel particulate matter from implementation of Environmental Commitments 3, 4, 6–11 (Final EIR/EIS, Chapter 22, Air Quality and Greenhouse Gases, p. 22-521)	Significant	<p><u>AQ-24: Develop an Air Quality Mitigation Plan (AQMP) to Ensure Air District Regulations and Recommended Mitigation are Incorporated into Future Environmental Commitments and Associated Project Activities</u></p> <p>DWR will develop an Air Quality Mitigation Plan (AQMP) prior to the commencement of any construction, operational, or other physical activities associated with Environmental Commitments 3, 4, and 6-11 that would involve adverse effects to air quality. The AQMP will be incorporated into the project design for all project activities. DWR will ensure that the following measures are implemented to reduce local and regional air quality impacts. Not all measures listed below may be feasible or applicable to each Environmental Commitment. Rather, these measures serve as an overlying mitigation framework to be used for specific conservation measures. The applicability of measures listed below may also vary based on the lead agency, location, timing, available technology, and nature of each conservation measure.</p> <ul style="list-style-type: none"> • Implement basic and enhanced dust control measures recommended by local air districts in the project-area. Applicable control measures may include, but are not limited to, watering exposed surfaces, suspended project activities during high winds, and planting vegetation cover in disturbed areas. • Require construction equipment be kept in proper working condition according to manufacturer’s specifications. • Ensure emissions from all off-road diesel-powered equipment used to construct the project do not exceed applicable air district rules and regulations (e.g., nuisance rules, opacity restrictions). • Reduce idling time by either shutting equipment off when not in use or limiting the time of idling to less than required by the current statewide idling restriction. • Reduce criteria pollutant exhaust emissions by requiring the latest emissions control technologies. Applicable control measures 	Less than Significant (Final EIR/EIS, Chapter 22, Air Quality and Greenhouse Gases, p. 22-521)	Construction and operational emissions associated with the restoration and enhancement actions under Alternative 4A will result in a significant impact if PM, CO, or DPM (cancer and non-cancer-risk) concentrations at receptor locations exceed the applicable local air district thresholds. (Final EIR/EIS, Chapter 22, Air Quality and Greenhouse Gases, p. 22-521)	Construction and operational emissions associated with the restoration and enhancement actions under Alternative 4A will result in a significant impact if PM, CO, or DPM (cancer and non-cancer-risk) concentrations at receptor locations exceed the applicable local air district thresholds. Mitigation Measures AQ-24 and AQ-25 will ensure localized concentrations at receptor locations will be below applicable air quality management district thresholds (see Final EIR/EIS, Chapter 22, Table 22-8). Consequently, this impact will be less than significant. Findings: Changes or alterations have been required in, or incorporated into, the project that avoid the significant environmental effect as identified in the Final EIR/EIS. Impacts will be less than significant with mitigation. (Final EIR/EIS, Chapter 22, Air Quality and Greenhouse Gases, p. 22-521)

Alternative 4A Potential Impact	Impact Conclusions Before Mitigation- CEQA	Proposed Mitigation	Impact Conclusion After Mitigation- CEQA	CEQA Conclusions	Findings of Fact
		<p>may include, but are not limited to, engine retrofits, alternative fuels, electrification, and add-on technologies (e.g., DPF).</p> <ul style="list-style-type: none">• Undertake in good faith an effort to enter into a development mitigation contract with the local air district to offset criteria pollutant emissions below applicable air district thresholds through the payment of mitigation fees. <p>Implementation of this measure will reduce criteria pollutant emissions generated by construction, operational, or other physical activities associated with Environmental Commitments 3, 4, and 6-11. The applicability of measures listed above may vary based on the lead agency, location, timing, available technology, and nature of each conservation measure. If the above measures do not contribute to emissions reductions, guidelines will be developed to ensure that criteria pollutants generated during construction and project operations are reduced to the maximum extent practicable.</p> <p>(Final MMRP, pp. 2-124 – 2-125; see also Final EIR/EIS, Chapter 22, Air Quality and Greenhouse Gases, pp. 22-332 – 22-333, & 22-521)</p> <p><u>AQ-25: Prepare a Project-Level Health Risk Assessment to Reduce Potential Health Risks from Exposure to Localized DPM and PM Concentrations</u></p> <p>The design process for all Environmental Commitments will perform a detailed health risk assessment (HRA) if sensitive receptors are located within 0.50 mile of project activities. The half-mile buffer represents the furthest distance at which Plan Area air districts recommend performing a HRA as pollutant concentrations dissipate as a function of distance from the emissions source. The site-specific HRA will evaluate potential health risks to nearby sensitive receptors from exposure to DPM and PM (as recommended by the local air district’s CEQA Guidelines) and ensure that impacts are below applicable air district health risk thresholds. If the HRA identifies health risks in excess of applicable air district health risk thresholds, additional measures and/or site design changes will be incorporated into the site-specific environmental review to ensure health risks are reduced below applicable air district health risk thresholds. Examples of potential</p>			

Alternative 4A Potential Impact	Impact Conclusions Before Mitigation- CEQA	Proposed Mitigation	Impact Conclusion After Mitigation- CEQA	CEQA Conclusions	Findings of Fact
		<p>additional measures include, but are not limited to, use aftermarket equipment controls (e.g., diesel particulate filters), alternative fuels, and advanced engine technologies (e.g., Tier 4 engines), as well as construction of vegetative buffers and receptor relocation.</p> <p>(Final MMRP, p. 2-125; see also Final EIR/EIS, Chapter 22, Air Quality and Greenhouse Gases, pp. 22-334 & 22-521)</p>			
Noise					
NOI-3: Exposure of noise-sensitive land uses to noise from operation of water conveyance facilities (Final EIR/EIS, Chapter 23, Noise, p. 23-197 – 23-198)	Significant	<p><u>NOI-3: Design and construct intake facilities and other pump facilities such that operational noise does not exceed 50 dBA (one-hour L_{eq}) during daytime hours (7:00 a.m. to 10:00 p.m.) or 45 dBA (one-hour L_{eq}) during nighttime hours (10:00 p.m. to 7:00 a.m.) or the applicable local noise standard (whichever is less) at nearby noise sensitive land uses</u></p> <p>DWR will retain a qualified acoustical consultant to design acoustical treatments for the intake facilities and other pumping plant facilities. Implementation of this measure will ensure that operational noise levels, as applicable, do not exceed 50 dBA (one-hour L_{eq}) during daytime hours (7:00 a.m. to 10:00 p.m.) or 45 dBA (one-hour L_{eq}) during nighttime hours (10:00 p.m. to 7:00 a.m.) or the applicable local noise standard (whichever is less) at nearby noise-sensitive land uses. Measures that can be implemented to achieve this include but are not limited to:</p> <ul style="list-style-type: none">• enclosing all pumps, motors, and other noise-generating equipment in solid wall structures;• limiting openings in the enclosing structure and installing acoustic ventilation louvers where ventilation openings are required,• installing acoustic access doors and wall panels,• using low-noise motors (if available and feasible),• using low noise transformers (if available and feasible),• placing sound barriers (earth berms or constructed barriers) around noise sources <p>Verification noise monitoring will be conducted at each operational intake or the pumping plant location to confirm that acoustical treatments reduce operational noise to comply with the applicable noise standard. If noise</p>	Less than Significant (Final EIR/EIS, Chapter 23, Noise, p. 23-198)	The impact of exposing noise-sensitive land uses during pumping plant operations to noise levels above the daytime (50 dBA L_{eq}) or nighttime (45 dBA L_{eq}) noise thresholds will be considered significant. (Final EIR/EIS, Chapter 23, Noise, p. 23-198)	Based on reasonable worst-case modeling, 4 agricultural parcels will be affected by daytime noise levels in excess of the operational threshold. The nighttime threshold will be exceeded at 8 agricultural parcels (see Table 23-70). Mitigation Measure NOI-3 will reduce operational noise levels below applicable thresholds, thus resulting in a less-than-significant level. Findings: Changes or alterations have been required in, or incorporated into, the project that avoid the significant environmental effect as identified in the Final EIR/EIS. Impacts will be less than significant with mitigation. (Final EIR/EIS, Chapter 23, Noise, p. 23-198)

Alternative 4A Potential Impact	Impact Conclusions Before Mitigation- CEQA	Proposed Mitigation	Impact Conclusion After Mitigation- CEQA	CEQA Conclusions	Findings of Fact
		is not in compliance with the applicable standard, DWR will implement additional necessary treatments until compliance is achieved. (Final MMRP, pp. 2-131 – 2-132; see also Final EIR/EIS, Chapter 23, Noise, p. 23-139 & 22-198)			
Hazards and Hazardous Materials					
HAZ-1: Create a substantial hazard to the public or the environment through the release of hazardous materials or by other means during construction of the water conveyance facilities (Final EIR/EIS, Chapter 24, Hazards and Hazardous Materials, p. 24-244 – 24-245)	Significant	<p><u>HAZ-1a: Perform preconstruction surveys, including soil and groundwater testing, at known or suspected contaminated areas within the construction footprint, and remediate and/or contain contamination</u></p> <p>DWR will identify potential areas of hazardous materials and remediate and/or contain contamination in order to reduce the likelihood of hazardous materials being released into the environment. DWR will perform preconstruction hazardous waste investigations at properties to be acquired for construction associated with the project. Areas to be excavated as part of construction of (e.g., for water conveyance facilities, shaft locations, concrete batch plants, intake locations, RTM storage areas, staging areas, forebays, borrow and spoil sites, barge unloading, restoration activities, and other appurtenant facilities) where historical contamination has been identified (e.g., SOC's) or where contamination is suspected (e.g., as evidenced by soil discoloration, odors, differences in soil properties, abandoned USTs) will undergo soil and/or groundwater testing at a certified laboratory provided that existing data is not available to characterize the nature and concentration of the contamination. Where concentrations of hazardous constituents, such as fuel, solvents, or pesticides in soil or groundwater, exceed applicable federal or state thresholds, contaminated areas will be avoided or soil and/or groundwater removed from the contaminated area will be remediated and contained in compliance with applicable state and federal laws and regulations. If hazardous materials are encountered, consultation with the regional DTSC office will be required to establish which permit and subsequent action will be required to appropriately handle those hazardous materials. Groundwater removed with the dewatering system would be treated, as necessary, and discharged to surface waters under an NPDES permit (see Chapter 8, <i>Water Quality</i>).</p> <p>Implementation of this mitigation measure will result in the avoidance, successful remediation or containment of all</p>	Less than Significant (Final EIR/EIS, Chapter 24, Hazards and Hazardous Materials, p. 24-244)	During construction of the water conveyance facilities, there is potential for direct impacts on construction personnel, the public and/or the environment associated with a variety of hazardous physical or chemical conditions . Such conditions may arise as a result of the intensity and duration of construction activities at the north Delta intakes, forebays, and conveyance pipelines and tunnels, and the hazardous materials that will be needed in these areas during construction. Potential hazards include the routine use of hazardous materials (as defined by Title 22 CCR Division 4.5); natural gas accumulation in water conveyance tunnels; the inadvertent release of existing contaminants in soil, sediment, and groundwater, or release of hazardous materials from existing infrastructure; disturbance of electrical transmission lines; and hazardous constituents present in RTM. Many of these physical and chemical hazardous conditions will occur in close proximity to the towns of Hood and Courtland during construction of the north Delta intakes. Additionally, the potential will exist for the construction of the water conveyance facilities to indirectly result in the release of hazardous materials through the disruption of existing road, rail, or river hazardous materials transport routes because construction will occur in the vicinity of three hazardous material transport routes, three railroad corridors, and waterways with barge traffic. (Final EIR/EIS, Chapter 24, Hazards and Hazardous Materials, p. 24-244)	These impacts are considered significant because the potential exists for substantial hazard to the public or environment to occur related to conveyance facility construction. However, implementation of Mitigation Measures HAZ-1a and HAZ-1b, UT-6a, and UT-6c (described in Chapter 20, <i>Public Services and Utilities</i>), and TRANS-1a (described in Chapter 19, <i>Transportation</i>), along with environmental commitments to prepare and implement SWPPPs, HMMPs, SPCCPs, SAPs, and a Barge Operations Plan (described in Appendix 3B, <i>Environmental Commitments, AMMs, and CMs</i>) will reduce these impacts to a less-than-significant level by identifying and describing potential sources of hazardous materials so that releases can be avoided and materials can be properly handled; detailing practices to monitor pollutants and control erosion so that appropriate measures are taken; implementing onsite features to minimize the potential for hazardous materials to be released to the environment; minimizing risk associated with the relocation of utility infrastructure; and coordinating the transport of hazardous materials to reduce the risk of spills. Findings: Changes or alterations have been required in, or incorporated into, the project that avoid the significant environmental effect as identified in the Final EIR/EIS. Impacts will be less than significant with mitigation. (Final EIR/EIS, Chapter 24, Hazards and Hazardous Materials, p. 24-244)

Alternative 4A Potential Impact	Impact Conclusions Before Mitigation- CEQA	Proposed Mitigation	Impact Conclusion After Mitigation- CEQA	CEQA Conclusions	Findings of Fact
		<p>known or suspected contaminated areas, as applicable, within the construction footprint, which would prevent the release of hazardous materials from these areas into the environment. (Final MMRP, pp. 2-133 – 2-134; see also Final EIR/EIS, Chapter 24, Hazards and Hazardous Materials, pp. 24-158 & 24-245) <u>HAZ-1b: Perform pre-demolition surveys for structures to be demolished within the construction footprint, characterize hazardous materials and dispose of them in accordance with applicable regulations</u> DWR will perform surveys and characterize and dispose of hazardous materials in order to reduce the likelihood that hazardous materials are released into the environment. Where demolition of existing structures is necessary, measures will be implemented to ensure hazards are avoided or minimized and that the release of hazardous materials, such as residual fuel in underground fuel storage tanks, or lead-based paint or asbestos-containing materials in buildings, is avoided. These measures will include the following practices.</p> <ul style="list-style-type: none">• Perform pre-demolition surveys to identify all potentially hazardous materials, including asbestos-containing material and lead-based paint.• Coordinate with owners of property to be acquired by DWR to help identify potentially hazardous infrastructure and/or infrastructure containing potentially hazardous materials.• Characterize and separate hazardous materials from structures before demolition and ensure that such materials are disposed of at an approved disposal site according to applicable regulations.• Remove underground fuel storage tanks and contents to a licensed disposal site where the tanks will be scraped and the contents disposed of in accordance with applicable regulations.• Disposal of materials containing PCBs will comply with all applicable regulations, codes, and ordinances. Disposal of large quantities of PCB waste will occur at			

Alternative 4A Potential Impact	Impact Conclusions Before Mitigation- CEQA	Proposed Mitigation	Impact Conclusion After Mitigation- CEQA	CEQA Conclusions	Findings of Fact
		<p>incinerators approved for burning of PCB-containing waste.</p> <ul style="list-style-type: none">• Implement proper handling and disposal procedures for potentially hazardous materials, such as solvents and household or industrial-strength maintenance chemicals and cleaners in buildings to be demolished.• As applicable, a Cal-OSHA-certified asbestos and lead-based paint contractor will prepare a site-specific asbestos and/or lead hazard control plan with recommendations for the containment of asbestos and/or lead-based paint materials during demolition activities, for appropriate disposal methods and locations, and for protective clothing and gear for abatement personnel. Site-specific asbestos abatement work would meet the requirements of both the federal Clean Air Act and Cal-OSHA (CCR Title 8, Subchapter 4, Article 4, Section 1529). If asbestos-containing materials are found, contractors licensed to conduct asbestos abatement work will be retained and will direct the abatement. In addition, the applicable Air Quality Management District(s) will be notified 10 days prior to initiation of demolition activities of asbestos-containing materials.• Containers suspected of, or confirmed as, containing lead-based paint will be separated from other building materials during the demolition process. Separated paint will be classified as a hazardous waste if the lead content exceeds 1,000 parts per million and will be disposed of in accordance with applicable regulations.• Sewer lines will be plugged with concrete to prevent soil and/or groundwater contamination, and the end of the lines will be flagged above ground for future location and identification.			

Alternative 4A Potential Impact	Impact Conclusions Before Mitigation- CEQA	Proposed Mitigation	Impact Conclusion After Mitigation- CEQA	CEQA Conclusions	Findings of Fact
		<ul style="list-style-type: none">Gas lines will be plugged or capped and the end of the lines will be flagged above ground for future location and identification.The use of explosives for demolition will not be allowed for any structures that contain asbestos, lead-based paint, or any other hazardous materials in concentrations that would create a substantial hazard to the public or the environment should they become airborne as a result of blasting.Hazardous waste, including contaminated soil, generated at demolition sites will be handled, hauled, and disposed of at an appropriately licensed disposal facility under appropriate manifest by a licensed hazardous waste hauler. <p>Implementation of this measure will ensure that hazardous materials present in or associated with structures being demolished will not be released into the environment. (Final MMRP, pp. 2-134 – 2-135; see also Final EIR/EIS, Chapter 24, Hazards and Hazardous Materials, pp. 24-159 – 24-160, & 24-245)</p> <p><u>UT-6a: Verify locations of utility infrastructure</u></p> <p>Before beginning construction, DWR will confirm utility/infrastructure locations through consultation with utility service providers, preconstruction field surveys, and services such as Underground Service Alert. The DWR will find the exact location of underground utilities by safe and acceptable means, including use of hand and modern techniques as well as customary types of equipment. Information regarding the size, color, and location of existing utilities must be confirmed before construction activities begin. DWR will confirm the specific location of all high priority utilities (i.e., pipelines carrying petroleum products, oxygen, chlorine, toxic or flammable gases; natural gas in pipelines greater than 6 inches in diameter, or with normal operating measures, greater than 60 pounds per square inch gauge; and underground electric supply lines, conductors, or cables that have a potential to ground more than 300 volts that do not have effectively grounded sheaths) and such locations will be highlighted on all construction drawings.</p>			

Alternative 4A Potential Impact	Impact Conclusions Before Mitigation- CEQA	Proposed Mitigation	Impact Conclusion After Mitigation- CEQA	CEQA Conclusions	Findings of Fact
		<p>The contract specifications will require that the contractor provide weekly updates on planned excavation for the upcoming week and identify when construction will occur near a high priority utility. On days when this work will occur, construction managers will attend tailgate meetings with contractor staff to review all measures—those identified in the Mitigation Monitoring and Reporting Program and in the construction specifications—regarding such excavations. The contractor’s designated health and safety officer will specify a safe distance to work near high-pressure gas lines, and excavation closer to the pipeline will not be authorized until the designated health and safety officer confirms and documents in the construction records that: (1) the line was appropriately located in the field by the utility owner using as-built drawings and a pipeline-locating device, and (2) the location was verified by hand by the construction contractor. The designated health and safety officer will provide written confirmation to DWR that the line has been adequately located, and excavation will not start until this confirmation has been received by DWR.</p> <p>(Final MMRP, pp. 2-98 – 2-99; see also Final EIR/EIS, Chapter 20, Public Services and Utilities, p. 20-130 & Chapter 24, Hazards and Hazardous Materials, p. 24-245)</p> <p><u>UT-6c: Relocate utility infrastructure in a way that avoids or minimizes any effect on worker and public health and safety</u></p> <p>While any excavation is open, DWR will protect, support, or remove underground utilities as necessary to safeguard employees. DWR and/or construction contractors will notify local fire departments if a gas utility is damaged causing a leak or suspected leak, or if damage to a utility results in a threat to public safety.</p> <p>(Final MMRP, p. 2-101; see also Final EIR/EIS, Chapter 20, Public Services and Utilities, p. 20-131 & Chapter 24, Hazards and Hazardous Materials, p. 24-245)</p> <p><u>TRANS-1a: Implement site-specific construction traffic management plan</u></p> <p>See Impact TRANS-1a, above, for full mitigation measure.</p> <p>(Final MMRP, pp. 2-87 – 2-91; see also Final EIR/EIS, Chapter 19, Transportation, pp. 19-218 – 19-221 & Chapter 24, Hazards and Hazardous Materials, p. 24-245)</p>			
HAZ-6: Create a substantial hazard to the	Significant	<u>HAZ-6: Test dewatered solids from solids lagoons prior to reuse and/or disposal</u>	Less than Significant	The accidental release of hazardous materials (including contaminated solids and	Implementation of the BMPs and other activities required by SWPPPs, HMMPs, SAPs, SPCCPs, as

Alternative 4A Potential Impact	Impact Conclusions Before Mitigation- CEQA	Proposed Mitigation	Impact Conclusion After Mitigation- CEQA	CEQA Conclusions	Findings of Fact
public or the environment through the release of hazardous materials or by other means during operation and maintenance of the water conveyance facilities (Final EIR/EIS, Chapter 24, Hazards and Hazardous Materials, p. 24-247 – 24-248)		DWR will ensure that dewatered solids from the solids lagoons are sampled and tested/characterized at a certified laboratory prior to reuse and/or to evaluate disposal options. At minimum, the solids would be tested for hazardous characteristics (i.e., toxicity, corrosivity, ignitability, and reactivity) consistent with federal standards for identifying hazardous waste (40 CFR Part 261). All dewatered solids would be disposed of in accordance with applicable federal, state, and local regulations at a solid waste disposal facility approved for disposal of such material. Implementation of this measure will ensure that dewatered solids do not reintroduce hazardous constituents to the environment if they are reused, and that they are disposed of properly if they do contain hazardous levels of contaminants such as persistent pesticides and mercury. (Final MMRP p. 2-136; see also Final EIR/EIS, Chapter 24, Hazards and Hazardous Materials, p. 24-169 & 24-248)	(Final EIR/EIS, Chapter 24, Hazards and Hazardous Materials, p. 24-248)	sediment) to the environment during operation and maintenance of the water conveyance facilities and the potential interference with air safety through the use of high-profile equipment for maintenance of proposed transmission lines will result in significant impacts on the public and environment because of the large scale of construction and the potential for accidental release of hazardous materials during construction. (Final EIR/EIS, Chapter 24, Hazards and Hazardous Materials, p. 24-248)	well as adherence to all applicable FAA regulations (14 CFR Part 77) and, as part of an environmental commitment pursuant to the State Aeronautics Act, coordination/compliance with Caltrans’ Division of Aeronautics when performing work with high-profile equipment within 2 miles of an airport will ensure that impacts are reduced to a less-than-significant level. Contaminated solids will pose a hazard to the environment if improperly disposed of, and will be considered a significant impact because of the large volume of sediment/solids that will be handled and the potential for improper disposal. However, implementation of Mitigation Measure HAZ-6 will reduce this impact to a less-than-significant level by requiring sampling and characterizing solids from the solids lagoons to evaluate options to dispose of material at an appropriate, licensed facility. Findings: Changes or alterations have been required in, or incorporated into, the project that avoid the significant environmental effect as identified in the Final EIR/EIS. Impacts will be less than significant with mitigation. (Final EIR/EIS, Chapter 24, Hazards and Hazardous Materials, p. 24-248)
HAZ-7: Create a substantial hazard to the public or the environment through the release of hazardous materials or by other means as a result of implementing Environmental Commitments 3, 4, 6–11, and 16 (Final EIR/EIS, Chapter 24, Hazards and Hazardous Materials, p. 24-248 – 24-250)	Significant	<u>HAZ-1a: Perform preconstruction surveys, including soil and groundwater testing, at known or suspected contaminated areas within the construction footprint, and remediate and/or contain contamination</u> See Impact HAZ-1a, above, for full mitigation measure. (Final MMRP, p. 2-133; see also Final EIR/EIS, Chapter 24, Hazards and Hazardous Materials, p. 24-158 & 24-249) <u>HAZ-1b: Perform pre-demolition surveys for structures to be demolished within the construction footprint, characterize hazardous materials and dispose of them in accordance with applicable federal, state and local regulations</u> See Impact HAZ-1b, above, for full mitigation measure. (Final MMRP, pp. 2-134 – 2-135; see also Final EIR/EIS, Chapter 24, Hazards and Hazardous Materials, pp. 24-159 – 24-160 & 24-249) <u>UT-6a: Verify locations of utility infrastructure</u> See Impact UT-6a, above, for full mitigation measure. (Final MMRP, pp. 2-98 – 2-99; see also Final EIR/EIS,	Less than Significant (Final EIR/EIS, Chapter 24, Hazards and Hazardous Materials, p. 24-249)	Chemicals may be inadvertently released, exposing construction workers or the public to hazards. Construction of restoration projects on or near existing agricultural and industrial land and/or SOCs may also result in a conflict with or exposure to known hazardous materials, and the use of high-profile equipment (i.e., 200 feet or higher) in close proximity to airport runways will result in safety hazards to air traffic. (Final EIR/EIS, Chapter 24, Hazards and Hazardous Materials, p. 24-249)	The potential for impacts related to the release and exposure of workers and the public to hazardous substances or conditions during construction, operation, and maintenance of Environmental Commitments 3, 4, and 6–11, and 16, is considered significant because implementation of these Environmental Commitments will involve extensive use of heavy equipment during construction and transporting hazardous chemicals during operations and maintenance (e.g., herbicides for nonnative vegetation control). (See also Developments after Publication of the Proposed Final Environmental Impact Report, Section 5.1.1. Project Updates for discussion on additional Environmental Commitment 4 acreage impacts to potential risk of hazards.) However in addition to implementation of SWPPPs, HMMPs, SPCCPs, SAPs, and fire

Alternative 4A Potential Impact	Impact Conclusions Before Mitigation- CEQA	Proposed Mitigation	Impact Conclusion After Mitigation- CEQA	CEQA Conclusions	Findings of Fact
		<p>Chapter 20, Public Services and Utilities, p. 20-130 and Chapter 24, Hazards and Hazardous Materials, p. 24-249) <u>UT-6c: Relocate utility infrastructure in a way that avoids or minimizes any effect on worker and public health and safety</u> See Impact UT-6c, above, for full mitigation measure. (Final MMRP, p. 2-101; see also Final EIR/EIS, Chapter 20, Public Services and Utilities, p. 20-131 and Chapter 24, Hazards and Hazardous Materials, p. 24-250) <u>TRANS-1a: Implement site-specific construction traffic management plan</u> See Impact TRANS-1a, above, for full mitigation measure. (Final MMRP, pp. 2-87 – 2-91; see also Final EIR/EIS, Chapter 19, Transportation, pp. 19-218 – 19-221 and Chapter 24, Hazards and Hazardous Materials, p. 24-250)</p>			<p>prevention and fire control BMPs as part of an FPCP (described in Appendix 3B, <i>Environmental Commitments, AMMs, and CMs</i>), Mitigation Measures HAZ-1a, HAZ-1b, UT-6a, UT-6c, and TRANS-1a will be implemented to ensure no substantial hazards to the public or the environment will occur from implementation of these Environmental Commitments and that impacts will be reduced to a less-than-significant level. Findings: Changes or alterations have been required in, or incorporated into, the project that avoid the significant environmental effect as identified in the Final EIR/EIS. Impacts will be less than significant with mitigation. (Final EIR/EIS, Chapter 24, Hazards and Hazardous Materials, p. 24-249)</p>
Mineral Resources					
MIN-11: Loss of availability of locally important aggregate resource sites (mines and MRZs) as a result of implementing Environmental Commitments 3, 4, 6–12, 15, and 16 (Final EIR/EIS, Chapter 26, Mineral Resources, p. 26-133 – 26-134)	Significant	<p><u>MIN-11: Purchase affected aggregate materials for use in BDCP construction</u> Depending on the location and extent of inundation to locally important aggregate material sites in restoration efforts, DWR shall consider various mitigation strategies to mitigate significant impacts. Such strategies may include avoiding the affected sites and choosing areas that will not impact such mines, directly or indirectly, or downsizing the area to be restored and thereby reducing impacts to the affected mines to less than significant. DWR may also choose to purchase the permitted aggregate volume from mines affected by restoration for construction use to ensure available aggregate will not be lost due to construction of restoration sites. The resulting mined site(s) may then be considered for integration into the restoration design of any environmental commitment that affects the site(s). For example, the mined site(s) could be reshaped to provide aquatic or intertidal habitat of varying depths and configurations. For this latter strategy, coordination would be initiated with the affected local county overseeing SMARA regulation. Additionally, further CEQA review may be required prior to implementing the integration of mined sites into the restoration design. (Final MMRP, p. 2-140; see also Final EIR/EIS, Chapter 26, Mineral Resources, pp. 26-133 – 26-134)</p>	Less than Significant (Final EIR/EIS, Chapter 26, Mineral Resources, p. 26-133)	An active mine on Decker Island may fall within the inundation footprints associated with implementing restoration actions associated with tidal natural communities and nontidal marsh. The restoration actions may result in inundation of aggregate resources. (Final EIR/EIS, Chapter 26, Mineral Resources, p. 26-133)	The potential loss of availability of locally important aggregate resource sites is considered a significant impact because it would eliminate the potential to recover aggregate resources. Mitigation Measure MIN-11 will reduce the impact to a less-than-significant level. Findings: Changes or alterations have been required in, or incorporated into, the project that avoid the significant environmental effect as identified in the Final EIR/EIS. Impacts will be less than significant with mitigation. (Final EIR/EIS, Chapter 26, Mineral Resources, p. 26-133)
Paleontological Resources					

Alternative 4A Potential Impact	Impact Conclusions Before Mitigation- CEQA	Proposed Mitigation	Impact Conclusion After Mitigation- CEQA	CEQA Conclusions	Findings of Fact
PALEO-2: Destruction of unique or significant paleontological resources associated with the implementation of Environmental Commitments 3, 4, 6–12, 15, and 16 (Final EIR/EIS, Chapter 27, Paleontological Resources, p. 27-95 – 27-96)	Significant	<p><u>PALEO-1a: Prepare a monitoring and mitigation plan for paleontological resources</u></p> <p>Before ground-breaking construction begins, DWR will retain a qualified paleontologist or geologist (as defined by the Society of Vertebrate Paleontology [SVP] Standard Procedures [Society of Vertebrate Paleontology 2010]) to develop a comprehensive Paleontological Resources Monitoring and Mitigation Plan (PRMMP) for the project, to help avoid directly or indirectly destroying a unique or significant paleontological resource.</p> <p>The PRMMP will be consistent with the SVP Standard Procedures (Society of Vertebrate Paleontology 2010) and the SVP Conditions of Receivership (Society of Vertebrate Paleontology 1996) and will require the following.</p> <ul style="list-style-type: none">• A paleontological resources specialist (PRS) will be designated or retained for construction activities. The PRS will have paleontological resources management qualifications consistent with the description of a qualified paleontologist in the SVP Standard Procedures (Society of Vertebrate Paleontology 2010). The PRS will be responsible for implementing all aspects of the PRMMP, managing any additional paleontological monitors needed for construction activities, and serving as a qualified resource in the event of unanticipated paleontological finds. The PRS may, but need not necessarily, be the same individual who prepared the PRMMP. The PRS will be retained or designated prior to the start of ground-breaking construction. A qualified PRS is defined as a person with a M.S. or Ph.D. in paleontology, paleobiology, or geology, with strong working knowledge of local paleontology and geology, and professional expertise with paleontological procedures and techniques. The PRS may designate a paleontological monitor to be present during earth-moving activities. A paleontological monitor is defined as a person with a BS/BA in geology or paleontology and a minimum of 1 year of monitoring experience in local sedimentary	Less than Significant (Final EIR/EIS, Chapter 27, Paleontological Resources, p. 27-96)	Ground-disturbing activities associated with implementing the conservation and stressor reduction components under Alternative 4A may affect paleontological resources. If fossils are present in the Plan Area, they may be damaged during excavation associated with these Environmental Commitments. (Final EIR/EIS, Chapter 27, Paleontological Resources, p. 27-96)	<p>The greater the extent of excavation, the greater the potential impact, although even localized excavation will damage or destroy paleontological resources. Direct or indirect destruction of significant paleontological resources as defined by the SVP (2010) would constitute a significant impact. (See also Developments after Publication of the Proposed Final Environmental Impact Report, Section 5.1.1. Project Updates for discussion on additional Environmental Commitment 4 acreage risks to paleontological resources.)</p> <p>Implementation of Mitigation Measures PALEO-1b and PALEO-1d for all shallow ground-disturbing Environmental Commitments and Mitigation Measures PALEO-1a through PALEO-1d for all deeper ground-disturbing Environmental Commitments ensure that unique or significant paleontological resources in the alternative footprint are systematically identified, documented, avoided or protected from damage where feasible, or recovered and curated so they remain available for scientific study and will reduce these impacts to a less-than-significant level.</p> <p>Findings: Changes or alterations have been required in, or incorporated into, the project that avoid the significant environmental effect as identified in the Final EIR/EIS. Impacts will be less than significant with mitigation. (Final EIR/EIS, Chapter 27, Paleontological Resources, p. 27-96)</p>

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		<p>rocks. Experience may be substituted for academic training on approval from the contracting agency. The PRS and paleontological monitor(s) will be notified by the Lead Agency or Resident Engineer in advance of the start of construction activity. The PRS and paleontological monitor(s) will attend any required safety training programs.</p> <ul style="list-style-type: none">• Preconstruction surveys (with salvage and/or protection in place, as appropriate) will be conducted in areas where construction activities would result in surface disturbance of geologic units identified as highly sensitive for paleontological resources.• Preconstruction and construction-period coordination procedures and communications protocols will be established, including procedures to alert all construction personnel involved with earthmoving activities about the possibility of encountering fossils as set forth in Mitigation Measure PALEO-1c and communications regarding the <i>stop work, evaluate and treat appropriately response</i> in the event of a paleontological discovery, as discussed in Mitigation Measure PALEO-1d.• All ground-disturbing activities involving highly sensitive units will be monitored by qualified monitors. Monitoring will initially be conducted full time for grading and excavation, but the PRMMP may provide for monitoring frequency in any given location to be reduced once 50% of the ground-disturbing activity in that location has been completed, if the reduction is appropriate based on the implementing PRS's professional judgment in consideration of actual site conditions. Monitoring will also be conducted throughout drilling operations. The monitoring program for tunneling operations will be developed in conjunction			

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		<p>with the facility design and geotechnical teams, in consideration of the tunneling method selected.</p> <ul style="list-style-type: none">• Sampling and data recovery procedures that are consistent with the SVP Standard Procedures (Society of Vertebrate Paleontology 2010) and the SVP Conditions of Receivership (Society of Vertebrate Paleontology 1996) will be established.• A repository plan will be developed that provides for appropriate curation of recovered materials, if necessary.• Mitigation monitoring report preparation guidelines will be established that are consistent with the SVP Standard Procedures guidelines (Society of Vertebrate Paleontology 2010). The report will include, at a minimum, discussions of effects, regulatory requirements, purpose of mitigation, regional geologic context, Plan Area stratigraphy, stratigraphic and geographic distribution of paleontological resources, field and laboratory methods and procedures, fossil recovery, and paleontological significance. The report will also include geological cross sections and stratigraphic sections depicting fossil discovery localities and excavated rock units; maps showing the activity location and vicinity, as well as geology and location of discovered fossil localities; appropriate illustrations depicting monitoring conditions, field context of collecting localities, quarry maps, and laboratory activities; and appendices including an itemized listing of catalogued fossil specimens, complete descriptions of all fossil collecting localities, an explanation of report acronyms and terms, and a signed curation agreement with an approved paleontological repository.• Procedures for preparing, identifying, and analyzing fossil specimens and data recovered will be established, consistent			

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		<p>with the SVP Conditions of Receivership (Society of Vertebrate Paleontology 1996 and 2010) and any specific requirements of the designated repository institution.</p> <p>Implementation of this measure will ensure that unique or scientifically significant paleontological resources in the alternative footprint are systematically identified, documented, avoided or protected from damage where feasible, or recovered and curated so they remain available for scientific study.</p> <p>(Final MMRP, pp. 2-141 – 2-143; see also Final EIR/EIS, Chapter 27, Paleontological Resources, pp. 27-63 – 27-65, & 27-96)</p> <p><u>PALEO-1b: Review 90% design submittal and develop specific language identifying how the mitigation measures will be implemented along the alignment</u></p> <p>To help avoid directly or indirectly destroying a unique or significant paleontological resource, DWR will have a qualified individual review the 90% design submittal to finalize the identification of construction activities involving geologic units considered highly sensitive for paleontological resources. Evaluation will consider the anticipated depth of disturbance, the selected construction technique, and the geology of the alignment. This work may be carried out in conjunction with or as part of the development of the PRMMP (Mitigation Measure PALEO-1a). The evaluation may be carried out by the PRS or an individual meeting the SVP's requirements for a qualified vertebrate paleontologist (per Society of Vertebrate Paleontology 2010) and will be conducted in collaboration with the design and geotechnical teams. If the evaluation is performed by a paleontologist, it will be reviewed and verified by a California-licensed professional geologist. The purpose of this evaluation will be to develop specific language identifying how the mitigation measures will be applied to the various phases of construction along the alignment (e.g., which areas would require monitors). This language will be included in the construction documents for implementation by DWR. The language will be based on the following framework.</p> <ul style="list-style-type: none">• One onsite paleontological monitor will likely be sufficient to handle observation of most ground-disturbing activities. <p>However, if additional paleontological monitors are needed, the PRS will</p>			

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		<p>coordinate with the Resident Engineer. This communication is imperative and fundamental to the success of this PRMMP and to compliance with CEQA and NEPA.</p> <ul style="list-style-type: none">• Whenever possible, sedimentary rocks exposed during trenching and other deep excavation work will be inspected. Ideally, this monitoring will involve inspection of fresh bedrock exposures. However, observation of some work may not be possible for safety reasons and inspection from these operations will be restricted to spoils. In this case, the monitor will inspect spoils as they are stockpiled and remove any matrix blocks containing paleontological resources. Construction personnel, namely the Resident Engineer/Lead, must communicate depths of excavated materials and their approximate location to the field monitor.• Recording of stratigraphic data will be an ongoing aspect of excavation monitoring, to provide context for any eventual fossil discoveries. Outcrops exposed in active cuts and finished slopes will be examined and geologic features recorded on grading plans and in field notes. The goal of this work is to delimit the nature of fossiliferous unconsolidated sedimentary deposits within the Plan Area, determine their areal distribution and depositional contacts, and record any evidence of structural deformation. Standard geologic and stratigraphic data collected include lithologic descriptions (e.g., color, sorting, texture, structures, and grain size), stratigraphic relationships (e.g., bedding type, thickness, and contacts), and topographic position. Stratigraphic sections will be routinely measured, areas containing exposures of fossiliferous sedimentary rocks will be documented, and fossil localities will be recorded on measured stratigraphic sections.			

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		<ul style="list-style-type: none">• If fossils are discovered, the following procedures will be followed. The monitor or PRS will inform the Resident Engineer who will determine the appropriate course of action. For all excavations except those relating to the tunnels, mitigation will consist of one of the following: diverting, directing, or temporarily halting ground-disturbing activities in the area of discovery to allow for preliminary evaluation of potentially significant paleontological resources and to determine whether additional mitigation (i.e., collection, curation or other preservation) is required. Where excavations relate to construction of the tunnels, such measures will be infeasible because the fossils will most likely have been destroyed by the tunnel boring machines before they could have been identified. <p>The significance of the discovered resources will be determined by the PRS in consultation with appropriate contractor representatives. Because of the infrequency of fossil preservation, fossils are considered to be nonrenewable resources. Because of their rarity, and because of the scientific information they provide, fossils can be highly significant records of ancient life. Given this, fossils can be considered to be of significant scientific interest if one or more of the following criteria apply.</p> <ul style="list-style-type: none">• Provide data on the evolutionary relationships and developmental trends among organisms, both living and extinct.• Provide data useful in determining the age(s) of the rock unit or sedimentary stratum, including data important in determining the depositional history of the region and the timing of geologic events therein.• Provide data regarding the development of biological communities or interaction between paleobotanical and paleozoological biotas.• Demonstrate unusual or spectacular circumstances in the history of life.			

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		<ul style="list-style-type: none">• Are in short supply and/or in danger of being depleted or destroyed by the elements, vandalism, or commercial exploitation, and are not found in other geographic locations. <p>They can include fossil remains of large to very small aquatic and terrestrial vertebrates (including animal trackways), remains of plants and animals previously not represented in certain portions of the stratigraphy, and fossils that might aid stratigraphic correlations, particularly those offering data for the interpretation of tectonic events, geomorphologic evolution, paleoclimatology, and the relationships of aquatic and terrestrial species.</p> <ul style="list-style-type: none">• Recovery methods will vary to some degree depending on the types of fossils discovered (e.g., invertebrate macrofossils, invertebrate microfossils, vertebrate macrofossils, vertebrate microfossils, or plant fossils). Many fossil specimens discovered during excavation monitoring are readily visible to the naked eye and large enough to be easily recognized and removed. Upon discovery of such macrofossils, the paleontological monitor will temporarily flag the discovery site for avoidance and evaluation, as described above. Actual recovery of unearthed macrofossils can involve several techniques, including immediate collection, hand quarrying, plaster-jacketing, and/or large-scale quarrying. The PRS and the contracting agency representative will evaluate the discovery and take action to protect or remove the resource within the shortest period of time possible.• Many significant vertebrate fossils (e.g., small mammal, bird, reptile, amphibian, or fish remains) often are too small to be readily visible in the field, but are nonetheless significant and worthy of attention. The potential discovery of microvertebrate sites is anticipated and can include sites that produce remains of large			

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		<p>vertebrate fossils from fine-grained deposits, sites with an obvious concentration of small vertebrate fossil remains, and sites that based on lithology alone (e.g., paleosols) appear to have a potential for producing small vertebrate fossil remains. Microvertebrate sites will be sampled by collecting bulk quantities of sedimentary matrix. An adequate sample comprises approximately 12 cubic meters (6,000 lbs or 2,500 kg) of matrix for each formation, or as determined by the PRS (Society of Vertebrate Paleontology 2010). The uniqueness of the recovered fossils may dictate salvage of larger amounts. However, conditions in the field may make it impossible to recover such large samples. To avoid construction delays, bulk matrix samples will be transported to an offsite location for processing.</p> <ul style="list-style-type: none">• The discovery of fossil plants is possible in the Plan Area. Paleobotanical specimens typically occur in fine-grained, laminated strata (e.g., shale) and will require special recovery techniques. Large blocks (>2 feet) of sedimentary rock are hand quarried from the temporary outcrop and then split along bedding planes to reveal compressed fossil plant material (e.g., leaves, stems, and flowers). Individual slabs are then wrapped in newsprint to minimize destructive desiccation of the fossils. Specimens that are delaminating or flaking badly may need to be coated with special consolidants.• Oriented matrix samples may be collected for paleomagnetic analysis. Such sampling will likely only be necessary in instances where long, continuous sections of stratified rocks are producing fossils from several different stratigraphic horizons or where vertebrate fossils are being collected in stratigraphic sections lacking in biochronologically useful microfossils. Likewise, it may be necessary to collect stratigraphically positioned samples of fine			

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		<p>matrices pollen analysis or aid in addressing questions of geologic age, depositional environment, or paleoecology.</p> <ul style="list-style-type: none">• All fossil discoveries will include the collection of stratigraphic data to delimit the nature of the fossil-bearing sedimentary rock unit, determine its areal distribution and depositional contacts, record any evidence of structural deformation, generate lithologic descriptions of fossil-bearing strata, determine stratigraphic relationships (bedding type, thickness, and contacts), and topographic position, measure stratigraphic sections, and describe taphonomic details. <p>Implementation of this measure will ensure that mitigation procedures are followed so that unique or scientifically significant paleontological resources in the alternative footprint are systematically identified, documented, avoided or protected from damage where feasible, or recovered and curated so they remain available for scientific study.</p> <p>(Final MMRP, pp. 2-144 – 2-146; see also Final EIR/EIS, Chapter 27, Paleontological Resources, pp. 27-65 – 27-67, & 27-96)</p> <p><u>PALEO-1c: Educate construction personnel in recognizing fossil material</u></p> <p>In order to reduce the likelihood of directly or indirectly destroying a unique or significant paleontological resource, DWR will require that all construction personnel receive training provided by a qualified paleontologist experienced in teaching non-specialists, to ensure that they can recognize fossil materials in the event any are discovered during construction. Training will include information on the possibility of encountering fossils during construction, the types of fossils likely to be seen and how to recognize them, and proper procedures in the event fossils are encountered. All field management and supervisory personnel and construction workers involved with ground-disturbing activities will be required to take this training prior to beginning work. Training materials will include an informational brochure that provides contacts and summarizes procedures in the event paleontological resources are encountered.</p>			

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		<p>Implementation of this measure will ensure that unique or scientifically significant paleontological resources have a high likelihood of being identified during construction so they can be avoided or treated appropriately. (Final MMRP, p. 2-147; see also Final EIR/EIS, Chapter 27, Paleontological Resources, pp. 27-68, & 27-96)</p> <p><u>PALEO-1d: Collect and preserve substantial potentially unique or significant fossil remains when encountered</u></p> <p>To help avoid directly or indirectly destroying a unique or significant paleontological resource, DWR will ensure that if substantial potentially unique or significant fossil remains (particularly vertebrate remains) are discovered during ground-disturbing activities, the construction crew will be directed to immediately cease work in the vicinity of the find and notify the PRS, consistent with the PRMMP described under Mitigation Measure PALEO-1a. A newly discovered resource may need to be fenced off to protect it from inadvertent intrusions by machinery or protect the location from vandalism. If extensive recovery and jacketing is needed, the area will be fenced off with temporary fencing and a 3- to 5-meter (10- to 15-foot) buffer will be included in the fenced area around the locality. If specific construction activities preclude placement of a buffer of this width, the monitor will stake a mutually agreeable buffer prior to fencing. The PRS will evaluate the resource and prepare a mitigation plan in accordance with SVP guidelines (2010). The mitigation plan may include a field survey, construction monitoring, sampling and data recovery procedures, museum storage coordination for any specimen recovered, and a report of findings. Recommendations determined by DWR to be necessary and feasible will be implemented before construction can resume at the site where the paleontological resources were discovered.</p> <p>Except for the fossils destroyed by tunnel boring machines, implementation of this measure will ensure that unique or scientifically significant paleontological resources identified during construction are protected from damage or treated and documented appropriately to preserve their scientific value. (Final MMRP, pp. 2-147 – 2-148; see also Final EIR/EIS, Chapter 27, Paleontological Resources, pp. 27-68, & 27-96)</p>			

