Chapter 5
Water Supply

5.3 Environmental Consequences

5.3.1 Methods for Analysis

The water supply analysis addresses changes to water supply to SWP and CVP water users in the Delta region, upstream of the Delta Region, and Export Service Areas due to implementation of BDCP conveyance facilities (CM1) and other conservation measures, specifically tidal marsh habitat restoration (CM4). Consistent with previous modeling analyses conducted by DWR and Reclamation, including the 2008 Biological Assessment on the Continued Long-Term Operations of the Central Valley Project and State Water Project, the modeling analyses presented in this section assumed that the SWP and CVP were solely responsible for providing any needed water for BDCP implementation. The alternatives would not modify water deliveries to non-SWP and non-CVP water rights holders, including in-Delta water rights holders~~modify the operations of the SWP and CVP facilities but would not modify the operations of water resources facilities owned and/or operated by other water rights holders~~. Therefore, the water supply analysis addresses impacts to DWR, Reclamation, and SWP water users and CVP water service contractors, as opposed to other water rights holders, as the BDCP does not include any ~~regulatory~~ actions that would affect water availability to any such water rights holders. ~~Consistent with previous modeling analyses conducted by DWR and Reclamation, including the 2008 Biological Assessment on the Continued Long-Term Operations of the Central Valley Project and State Water Project, the modeling analyses presented in this section assumed that the SWP and CVP were solely responsible for providing any needed water for BDCP implementation.~~ However, water quality of the available water, particularly for in-Delta water rights holders, could vary with different alternatives; and therefore, affect beneficial use of the water rights, as described in Chapter 8, Water Quality.

The water supply analysis was conducted using the CALSIM II model. A brief overview of the modeling tools and outputs is provided in Section 4.3, Overview of Tools, Analytical Methods, and Applications, and a full description of the tools is included in Appendix 5A, BDCP EIR/S Modeling.

CALSIM II is a reservoir-river basin planning model developed by DWR and Reclamation to simulate the operation of the SWP and CVP over a range of different hydrologic conditions. CALSIM II allows for specification and achievement of user-specified allocation targets, or goals. CALSIM II is the best available planning model for the SWP and CVP system operations and has been used in previous system-wide evaluations of SWP and CVP operations (U.S. Bureau of Reclamation, 2004, 2008a). Inputs to CALSIM II include water diversion requirements (demands), stream accretions and depletions, reservoir inflows, irrigation efficiencies, and parameters to calculate return flows, non-recoverable losses and groundwater operations. Sacramento Valley and tributary rim basin hydrologies use an adjusted historical sequence of monthly stream flows over an 82-year period (1922 to 2003) to represent a sequence of flows at a future level of development. Adjustments to historic water supplies are imposed based on future land use conditions and historical meteorological and hydrologic conditions. The resulting hydrology represents the water supply available from Central Valley streams to the CVP and SWP at a future level of development. CALSIM

II produces outputs for river flows and diversions, reservoir storage, Delta flows and exports, Delta inflow and outflow, Deliveries to project and non-project users, and controls on project operations. Water rights deliveries to non-SWP and non-CVP water rights holders are not modified in the CALSIM II simulations of the Alternatives.

The results of Alternatives simulations are compared to CEQA Existing Conditions simulation and to the NEPA No Action Alternative simulation to assess potential effects on the SWP and CVP water supply availability.

Under extreme hydrologic and operational conditions where there is not enough water supply to meet all requirements, CALSIM II utilizes a series of operating rules to reach a solution to allow for the continuation of the simulation. It is recognized that these operating rules are a simplified version of the very complex decision processes that SWP and CVP operators would use in actual extreme conditions. Therefore, model results and potential changes under these extreme conditions should be evaluated on a comparative basis between alternatives and are an approximation of extreme operational conditions.

As an example, CALSIM II model results show simulated occurrences of extremely low storage conditions at CVP and SWP reservoirs during critical drought periods when storage is at dead pool levels at or below the elevation of the lowest level outlet. Simulated occurrences of reservoir storage conditions at dead pool levels may occur coincidentally with simulated impacts that are determined to be potentially significant. When reservoir storage is at dead pool levels, there may be instances in which flow conditions fall short of minimum flow criteria, salinity conditions may exceed salinity standards, diversion conditions fall short of allocated diversion amounts, and operating agreements are not met.

5.3.1.1 Quantitative Analysis of SWP and CVP Water Supply Impacts

Delta Outflow

Criteria for Delta outflow into San Francisco Bay included in Water Rights Decision 1641 and USFWS and NMFS BiOps, and required by specific requirements of each alternative affect water supply availability for SWP and CVP water users located north and south of the Delta. Water required for Delta outflow must flow into San Francisco Bay to improve water quality and conditions for aquatic resources, as described in Chapter 8, *Water Quality*, and Chapter 11, *Fish and Aquatic Resources*. Because the water must flow into San Francisco Bay to meet the seasonal flow and volume requirements, water allocated for Delta outflow is not available for SWP and CVP water users in the Export Service Areas and may result in limited availability for SWP and CVP water users in the Delta and upstream of the Delta.

Delta outflow requirements also are considered in the determination of the ability to divert water at the SWP and CVP south Delta intakes to minimize reverse flow conditions. Reverse flow conditions in Old and Middle Rivers occur when exports exceed the amount of inflow from the San Joaquin River. Limiting reverse flows in Old and Middle Rivers reduces fish exposure and entrainment at the south Delta intakes.

The alternatives include criteria to maintain freshwater in the western Delta in the spring to meet SWRCB requirements for X2. Some of the alternatives include criteria to maintain Fall X2 at the compliance points specified in the 2008 FWS BiOp in wet and above normal years. Some alternatives include possible locations of tidal marsh restoration areas in the Delta which could alter

hydrodynamic conditions in adjacent Delta channels, including changes in tidal exchange of saline water from San Francisco Bay which could increase salinity in the western Delta, as described in Chapter 8, *Water Quality*. This analysis assumes no changes in the maximum allowable salinity standards (and the related extent of freshwater in the western Delta). Therefore, if operations under the alternatives increase salinity in the western Delta, more water would need to be released from the SWP and CVP reservoirs to avoid exceeding Delta maximum allowable salinity standards. These actions would reduce water in storage at the end of September in the CVP and SWP reservoirs, and less water would be available for SWP and CVP water supplies both upstream and downstream of the Delta.

5.3.1.2 Project- and Program-Level Components

For this analysis, changes in SWP and CVP water supply are evaluated at a project level of detail. It should be noted that SWP/CVP water supply operations are affected both by specific operations criteria identified for each alternative, which are addressed on a project level basis in this EIR/EIS, and by assumptions regarding the location and extent of tidal marsh restoration for each alternative, which are identified only at a programmatic level in this document. Therefore, long-term results of SWP/CVP operations may be different than described due to changes in location and extent of tidal marsh restoration. The analysis assumed that evaporation at the tidal marsh restoration sites would be similar to the water demands of the existing irrigated and non-irrigated vegetation, freshwater marsh and wetlands, or other land uses currently located at the future tidal marsh restoration areas.

5.3.3 Effects and Mitigation Approaches

5.3.3.1 No-Action Alternative

Change in SWP and CVP Reservoir Storage

The exceedance plots in Figures 5-6 through 5-16 show No Action Alternative reservoir end-of–month storage values compared to Existing Conditions. Results for changes in SWP and CVP reservoir storage are presented in more detail in Appendix 5A, *BDCP EIR/S Modeling*. The shift in runoff patterns due to climate change would result in less storage in upstream reservoirs in May and September, as shown in Figures 5-6 through 5-16 and Tables 5-4 through 5-6. Storage reductions in May and September are caused by a combination of higher runoff in January and February that cannot be captured due to flood storage limitations, higher releases to meet Fall X2, and lower carryover storage from previous years due to higher releases for Fall X2 in wet and above normal years, and increased system demands by water rights holders, especially in El Dorado, Placer and Sacramento counties.

In comparison to Existing Conditions, there would be a decrease in carryover storage at the end of September for Lake Oroville, Trinity Lake, Shasta Lake, and Folsom Lake in all years. Lake Oroville storage would decrease by 646 TAF (31%) in September average end of month storage. Trinity, Shasta, and Folsom lakes September carryover would decrease by 230 TAF (17%), 481 TAF (18%), and 146 TAF (28%), respectively under No Action Alternative as compared to Existing Conditions. The frequency of Trinity, Shasta, and Folsom Lakes dropping to dead pool storage would increase by about 10% under the No Action Alternative as compared to Existing Conditions. Changes in San Luis Reservoir storage at the end of September would decrease by 190 TAF (28%) as compared to Existing Conditions. These changes in storage would reduce the ability of the CVP and SWP to meet

system water demands and environmental water needs. Adaption measures would need to be implemented on upstream operations to manage coldwater pool storage levels under future sea level rise and climate change conditions. As described in the methods section, model results when storages are at or near dead pool may not be representative of actual future conditions because changes in assumed operations may be implemented to avoid these conditions.

5.3.3.2 Alternative 1A—Dual Conveyance with Pipeline/Tunnel and Intakes 1–5 (15,000 cfs; Operational Scenario A)

Change in SWP and CVP Reservoir Storage

San Luis Reservoir

Average annual end of September San Luis Reservoir storage would increase by 133 TAF (27%) compared to the No Action Alternative and exhibit an increase in all years, as shown in Tables 5-7 through 5-9 and Appendix 5A-C, *CALSIM II and DSM2 Modeling Results.*

Average annual end of September San Luis Reservoir storage would decrease by 57 TAF (8%) compared to Existing Conditions and exhibit a decrease in about 90% of the years, as shown in Tables 5-4 through 5-6 and Appendix 5A-C, *CALSIM II and DSM2 Modeling Results.* This decrease primarily would occur due to sea level rise, climate change, and increased north of Delta demands.

A comparison with storages under the No Action Alternative provides an indication of the potential change due to Alternative 1A and the results show that average annual end of September San Luis Reservoir storage would increase under Alternative 1A as compared to the conditions without the project.

5.3.3.5 Alternative 2A—Dual Conveyance with Pipeline/Tunnel and Five Intakes (15,000 cfs; Operational Scenario B)

Change in SWP and CVP Reservoir Storage

San Luis Reservoir

Average annual end of September San Luis Reservoir storage would decrease by 17 TAF (3%) compared to the No Action Alternative and exhibit a decrease in 90 % of the years, as shown in Tables 5-7 through 5-9 and Appendix 5A-C, *CALSIM II and DSM2 Modeling Results.*

Average annual end of September San Luis Reservoir storage would decrease by 207 TAF (30%) compared to Existing Conditions and exhibit a decrease in about 90% of the years, as shown in Tables 5-4 through 5-6 and Appendix 5A-C, *CALSIM II and DSM2 Modeling Results.* This decrease primarily would occur due to Alternative 2A and due to sea level rise, climate change, and increased north of Delta demands.

A comparison with storages under the No Action Alternative provides an indication of the potential change due to Alternative 2A and the results show that average annual end of September San Luis Reservoir storage would increase under Alternative 2A as compared to the conditions without the project.

5.3.3.8 Alternative 3—Dual Conveyance with Pipeline/Tunnel and Intakes 1 and 2 (6,000 cfs; Operational Scenario A)

Change in SWP and CVP Reservoir Storage

San Luis Reservoir

Average annual end of September San Luis Reservoir storage would increase by 131 TAF (26%) compared to the No Action Alternative and exhibit a decrease in 30 % of the years, as shown in Tables 5-7 through 5-9 and Appendix 5A-C, *CALSIM II and DSM2 Modeling Results.*

Average annual end of September San Luis Reservoir storage would decrease by -59 TAF (9%) compared to Existing Conditions and exhibit a decrease in about 90% of the years, as shown in Tables 5-4 through 5-6 and Appendix 5A-C, *CALSIM II and DSM2 Modeling Results.* This decrease primarily would occur due to Alternative 3 and due to sea level rise, climate change, and increased north of Delta demands.

A comparison with storages under the No Action Alternative provides an indication of the potential change due to Alternative 3 and the results show that average annual end of September San Luis Reservoir storage would increase under Alternative 3 as compared to the conditions without the project.

5.3.3.9 Alternative 4—Dual Conveyance with Modified Pipeline/Tunnel and Intakes 2, 3, and 5 (9,000 cfs; Operational Scenario H)

Facilities construction under Alternative 4 would ~~be similar to those described for Alternative 2A with only~~follow the modified pipeline/tunnel alignment with three intakes, a series of tunnels, an intermediate forebay, and two pumping plants located adjacent to an expanded and divided Clifton Court Forebay. Alternative 4 water conveyance operations would follow the similar operational criteria as Alternative 2A with the exception of evaluating a range of possible operations for the spring and fall Delta outflow requirements that are considered to be equally likely. This range of operations are encompassed by four separate scenarios as described in detail in Section 3.6.4.2 in Chapter 3, Description of Alternatives, and in Appendix 5A, BDCP EIR/S Modeling. These four scenarios vary depending on assumptions for Delta outflow requirements in spring and fall.

Alternative 4 Operational Scenario H1 (Alternative 4 H1) does not include enhanced spring outflow requirements or Fall X2 requirements,

Alternative 4 Operational Scenario H2 (Alternative 4 H2) includes enhanced spring outflow requirements but not Fall X2 requirements,

Alternative 4 Operational Scenario H3 (Alternative 4 H3) does not include enhanced spring outflow requirements but includes Fall X2 requirements (similar to Alternative 2A), and

Alternative 4 Operational Scenario H4 (Alternative 4 H4) includes both enhanced spring outflow requirements and Fall X2 requirements.

A description of the changes in Delta outflow, reservoir storage, Delta exports, and SWP and CVP deliveries is provided below for each scenario. The results for Alternative 4 scenarios include sea level rise and climate change that would occur at late long-term [LLT] around Year 2060. As described in Section 5.3.1 Methods of Analysis, sea level rise and climate change affect SWP and CVP

operations and require additional water to be released from SWP and CVP reservoirs to meet Delta water quality requirements.

Model simulation results for Alternative 4 (all scenarios) are summarized in Tables 5-7 through 5-9.

Summary of Water Supply Operations under Alternative 4

Change in Delta Outflow

Changes in average annual Delta outflow under Alternative 4 (all scenarios) as compared to the No Action Alternative and Existing Conditions are shown in Figures 5-3 through 5-5 and Tables 5-7 through 5-9.

Late-fall and winter outflows remain similar or show minor reductions in all four Alternative 4 scenarios compared to No Action Alternative. In the spring months, outflow would decrease under scenarios H1 and H3 as compared to No Action Alternative, while the enhanced spring outflow requirement under scenarios H2 and H4 would result in increased or similar outflow compared to No Action Alternative. SWP and CVP exports in summer months would increase and result in lower outflow under all four scenarios compared to No Action Alternative. In the fall months, outflow would be decreased under Alternative 4 H1 and H2 compared to No Action Alternative, while it would be increasing or remaining similar under scenarios H3 and H4 because of the Fall X2 requirement, in wet and above-normal years. All four scenarios would show increased or similar outflow in September and October months of all year types because of OMR flow requirements and export reductions.

Long-term average and wet year peak outflows would increase in winter months with a corresponding decrease in spring months because of the shift in system inflows caused by climate change and increased Delta exports as compared to Existing Conditions. In other year types, scenarios H1 and H3 would result in lower or similar outflow in the spring months, while scenarios H2 and H4 would result in higher or similar outflow, because of the enhanced spring outflow requirements. In summer and fall months, all four scenarios would result in similar or higher outflow because of changes in export patterns and OMR flow requirements and export reductions in fall months, and also because of the Fall X2 requirements in scenarios H3 and H4 in wet and above normal years. The incremental changes in Delta outflow between Alternative 4 (all scenarios) and Existing Conditions would be a function of both the facility and operations assumptions of Alternative 4 scenarios (including north Delta intakes capacity of 9,000 cfs, less negative OMR flow requirements, enhanced spring outflow and/or Fall X2 requirements) and the reduction in water supply availability due to increased north of Delta urban demands, sea level rise and climate change.

Based on results from all four possible outcomes of the Alternative 4, Delta outflow under Alternative 4 (all scenarios) would likely decrease or remain similar compared to the conditions without the project.

Results for changes in Delta Outflow are presented in more detail in Appendix 5A, BDCP EIR/S Modeling.

Change in SWP and CVP Reservoir Storage

Changes in May and September reservoir storage under Alternative 4 (all scenarios) as compared to the No Action Alternative and Existing Conditions are shown in Figures 5-6 through 5-12 and Tables

5-7 through 5-9 for Trinity Lake, Shasta Lake, Lake Oroville, and Folsom Lake. SWP and CVP San Luis Reservoir storages are presented in figures 5-13 through 5-16 for completeness. Results for changes in SWP and CVP reservoir storages are presented in more detail in Appendix 5A, BDCP EIR/S Modeling.

Trinity Lake

Under Alternative 4 scenarios, average annual end of September Trinity Lake storage as compared to No Action Alternative would range from a decrease of 24 TAF (2%) in about 70% of the years under H3 scenario to an increase of 23 TAF (2%) in about 75% of the years under H2 scenario, as shown in Figure 5-6.

Under Alternative 4 scenarios, average annual end of September Trinity Lake storage as compared to Existing Conditions would range from a decrease of 255 TAF (18%) in almost all of the years under H3 scenario to a decrease of 207 TAF (15%) in almost all of the years under H2 scenario, as shown in Figure 5-6. This decrease primarily would occur due to sea level rise, climate change, and increased north of Delta demands.

A comparison with storages under the No Action Alternative provides an indication of the potential change due to Alternative 4 and the results show that average annual end of September Trinity Lake storage could decrease or increase under Alternative 4 as compared to the conditions without the project.

Shasta Lake

Under Alternative 4 scenarios, average annual end of September Shasta Lake storage as compared to No Action Alternative would range from a decrease of 60 TAF (3%) in about 75% of the years under H3 scenario to an increase of 142 TAF (6%) in about 90% of the years under H2 scenario, as shown in Figure 5-8.

Under Alternative 4 scenarios, average annual end of September Shasta Lake storage as compared to Existing Conditions would range from a decrease of 541 TAF (20%) about 95% of the years under H3 scenario to a decrease of 339 TAF (12%) in about 95% of the years under H2 scenario, as shown in Figure 5-8. This decrease primarily would occur due to sea level rise, climate change, and increased north of Delta demands.

A comparison with storages under the No Action Alternative provides an indication of the potential change due to Alternative 4 and the results show that average annual end of September Shasta Lake storage could decrease or increase under Alternative 4 as compared to the conditions without the project.

Lake Oroville

Under Alternative 4 scenarios, average annual end of September Lake Oroville storage as compared to No Action Alternative would range from an increase of 66 TAF (5%) in about 90% of the years under H3 scenario to an increase of 305 TAF (22%) in almost all of the years under H2 scenario, as shown in Figure 5-10.

Under Alternative 4 scenarios, average annual end of September Lake Oroville storage as compared to Existing Conditions would range from a decrease of 580 TAF (28%) in almost all of the years under H3 scenario to a decrease of 341 TAF (17%) in about 95% of the years under H2 scenario, as

shown in Figure 5-10. This decrease primarily would occur due to sea level rise, climate change, and increased north of Delta demands.

A comparison with storages under the No Action Alternative provides an indication of the potential change due to Alternative 4 and the results show that average annual end of September Lake Oroville storage would increase under Alternative 4 as compared to the conditions without the project.

Folsom Lake

Under Alternative 4 scenarios, average annual end of September Folsom Lake storage as compared to No Action Alternative would range from a decrease of 8 TAF (2%) in about 55% of the years under H3 scenario to an increase of 43 TAF (11%) in about 90% of the years under H2 scenario, as shown in Figure 5-12.

Under Alternative 4 scenarios, average annual end of September Folsom Lake storage as compared to Existing Conditions would range from a decrease of 154 TAF (29%) about 95% of the years under H3 scenario to a decrease of 103 TAF (20%) in about 90% of the years under H2 scenario, as shown in Figure 5-12. This decrease primarily would occur due to sea level rise, climate change, and increased north of Delta demands.

A comparison with storages under the No Action Alternative provides an indication of the potential change due to Alternative 4 and the results show that average annual end of September Folsom Lake storage could decrease or increase under Alternative 4 as compared to the conditions without the project.

San Luis Reservoir

Under Alternative 4 scenarios, average annual end of September San Luis Reservoir storage as compared to No Action Alternative would range from a decrease of 198 TAF (40%) and a decrease in all of the years under H4 scenario to an increase of 71 TAF (14%) and a decrease in storage in about 60% of the years under H1 scenario, as shown in Tables 5-7 through 5-9 and Appendix 5A-C, CALSIM II and DSM2 Modeling Results.

Under Alternative 4 scenarios, average annual end of September San Luis Reservoir storage as compared to Existing Conditions would range from a decrease of 388 TAF (29%) and a decrease in all of the years under H4 scenario to a decrease of 119 TAF (17%) and a decrease in about 90% of the years under H1 scenario, as shown in Tables 5-4 through 5-6 and Appendix 5A-C, CALSIM II and DSM2 Modeling Results. This decrease primarily would occur due to sea level rise, climate change, and increased north of Delta demands.

A comparison with storages under the No Action Alternative provides an indication of the potential change due to Alternative 4 and the results show that average annual end of September San Luis Reservoir storage would increase under Alternative 4 as compared to the conditions without the project.

Change in Delta Exports

Changes in average annual Delta exports under Alternative 4 scenarios as compared to the No Action Alternative and Existing Conditions are shown in Figures 5-17 through 5-20 and Tables 5-7 through 5-9.

The addition of the north Delta intakes and changes to Delta regulatory requirements under Alternative 4 scenarios change SWP and CVP Delta exports as compared to Delta exports under Existing Conditions and the No Action Alternative.

Delta exports would either remain similar or increase under Alternative 4 scenarios as compared to exports under No Action Alternative depending on the implementation of Fall X2 and/or enhanced spring outflow requirement. The increase in exports is mainly because of the additional capability to divert water at the north Delta intakes during winter and spring months.

Total long-term average annual Delta exports under Alternative 4 scenarios would decrease as compared to exports under Existing Conditions reflecting changes in operations due to less negative OMR flows, implementation of Fall X2 and/or enhanced spring outflow under Alternative 4 scenarios, and sea level rise and climate change.

The incremental change in Delta exports under Alternative 4 scenarios as compared to No Action Alternative would be caused by the facility and operations assumptions of Alternative 4 scenarios (such as north Delta intakes capacity of 9,000 cfs, Head of Old River Barrier operations and less negative OMR flows, enhanced spring outflow and Fall X2) only. Delta exports would either remain similar or increase under Alternative 4 scenarios as compared to the conditions without the project.

Change in SWP and CVP Deliveries

Impact WS-1: Changes in SWP/CVP Water Deliveries during Construction

NEPA Effects: During construction of water conveyance facilities associated with Alternative 4, operation of existing SWP and CVP water conveyance would continue. Construction would not affect the timing or amount of water exported from the Delta through SWP and CVP facilities.

CEQA Conclusion: Constructing Alternative 4 water conveyance facilities would not impact operation of existing SWP or CVP facilities.

Impact WS-2: Change in SWP and CVP Deliveries

The addition of the north Delta intakes and changes to Delta regulatory requirements under all four Alternative 4 scenarios provide operational flexibility compared to deliveries under Existing Conditions and the No Action Alternative.

Results for SWP and CVP deliveries are presented in more detail in Appendix 5A, BDCP EIR/S Modeling.

Total CVP Deliveries

Under Alternative 4 scenarios, the change in average annual total CVP deliveries as compared to No Action Alternative, would range from an increase of 83 TAF (2%) under H4 scenario to 251 TAF (6%) under H1 scenario. Under the four Alternative 4 scenarios, the change in average annual total south of Delta CVP deliveries as compared to No Action Alternative, would range from an increase of 73 TAF (4%) under H4 scenario to 221 TAF (11%) under H1 scenario.

Under Alternative 4 scenarios, the change in average annual total CVP deliveries as compared to Existing Conditions, would range from a decrease of 90 TAF (2%) under H4 scenario to an increase of 79 TAF (2%) under H1 scenario. Under Alternative 4 scenarios, the change in average annual total

south of Delta CVP deliveries as compared to Existing Conditions, would range from a decrease of 59 TAF (3%) under H1 scenario to 207 TAF (9%) under H4 scenario.

Deliveries compared to No Action Alternative are an indication of the potential change due to Alternative 4 scenarios in the absence of the effects of increased north of delta demands and sea level rise and climate change and the results show that under Alternative 4 scenarios average annual total CVP deliveries would increase by up to 251 TAF (6%) and average annual total south of Delta CVP deliveries would increase by up to 221 TAF (11%) as compared to No Action Alternative. Therefore, average annual total CVP deliveries and average annual total CVP south of Delta deliveries would increase under Alternative 4 scenarios as compared to the conditions without the project.

CVP North of Delta Agricultural Deliveries

Under Alternative 4 scenarios, the change in average annual CVP north of Delta agricultural deliveries as compared to No Action Alternative, would range from an increase of 1 TAF (1%) under H4 scenario to 19 TAF (12%) under H1 scenario. Compared to No Action Alternative, the scenarios H1 and H2 would exhibit similar or increased CVP north of Delta agricultural deliveries in most years, including about 10% of dry years, while scenarios H3 and H4 would exhibit in similar deliveries in most years, as shown in Figure 5-30.

Under Alternative 4 scenarios, the change in average annual CVP north of Delta agricultural deliveries as compared to Existing Conditions, would range from a decrease of 54 TAF (23%) under H1 scenario to 72 TAF (31%) under H4 scenario. Compared to Existing Conditions, all four Alternative 4 scenarios exhibit lower CVP north of Delta agricultural deliveries in about 80% years, as shown in Figure 5-30. However, this decrease primarily would occur due to sea level rise and climate change, and increased north of Delta demands.

Deliveries compared to No Action Alternative are an indication of the potential change due to Alternative 4 scenarios in the absence of the effects of increased north of delta demands and sea level rise and climate change and the results show that average annual CVP north of Delta agricultural deliveries as compared to No Action Alternative would increase by up to 19 TAF (12%) under Alternative 4 scenarios. Therefore, average annual CVP north of Delta agricultural deliveries would increase under Alternative 4 scenarios as compared to the conditions without the project.

CVP South of Delta Agricultural Deliveries

Under Alternative 4 scenarios, the change in average annual CVP south of Delta agricultural deliveries as compared to No Action Alternative, would range from an increase of 69 TAF (9%) under H4 scenario to 213 TAF (29%) under H1 scenario. Compared to No Action Alternative, the Scenarios H1 and H2 would exhibit increased CVP south of Delta agricultural deliveries in most years, while scenarios H3 and H4 would exhibit increased deliveries in about 50% years and similar deliveries in remaining years, as shown in Figure 5-31.

Under Alternative 4 scenarios, the change in average annual CVP south of Delta agricultural deliveries as compared to Existing Conditions, would range from a decrease of 27 TAF (3%) under H1 scenario to 171 TAF (18%) under H4 scenario. Compared to Existing Conditions, the scenarios H1 and H2 would exhibit increased CVP south of Delta agricultural deliveries in about 50% years, while lower deliveries in the remaining years. The scenarios H3 and H4 exhibit similar deliveries in about 30% years, and lower deliveries in the remaining years, as shown in Figure 5-31. However,

this decrease primarily would occur due to sea level rise and climate change, and increased north of Delta demands.

Deliveries compared to No Action Alternative are an indication of the potential change due to Alternative 4 scenarios in the absence of the effects of increased north of delta demands and sea level rise and climate change and the results show that average annual CVP south of Delta agricultural deliveries as compared to No Action Alternative would increase by up to 213 TAF (29%) under Alternative 4 scenarios. Therefore, average annual CVP south of Delta agricultural deliveries would increase under Alternative 4 scenarios as compared to the conditions without the project.

CVP Settlement and Exchange Contract Deliveries

There would be negligible change to CVP Settlement Contract deliveries during dry and critical years under all four Alternative 4 scenarios as compared to deliveries under the No Action Alternative, with scenarios H1 and H3 showing no change (or less than 1% change) and with scenarios H2 and H4 showing about 23 TAF (1%) increase.

Under Alternative 4 scenarios, the change in CVP Settlement Contract deliveries during dry and critical years as compared to Existing Conditions, would range from a decrease of 29 TAF (2%) under H4 scenario to 59 TAF (3%) under H3 scenario. This is due to Shasta Lake storage declining to dead pool more frequently, as described previously, under increased north-of Delta demands and climate change and sea level rise conditions. As described in the methods section, model results and potential changes under these extreme reservoir storage conditions may not be representative of actual future conditions because changes in assumed operations may be implemented to avoid these conditions.

There would be no changes in deliveries to CVP Exchange Contractors under Alternative 4 scenarios.

Deliveries compared to No Action Alternative are an indication of the potential change due to Alternative 4 scenarios in the absence of the effects of increased north of delta demands and sea level rise and climate change and the results show that CVP Settlement Contract and CVP Exchange Contractors deliveries during dry and critical years would remain similar (or less than 1% change) or increase by up to 23 TAF (1%) under Alternative 4 scenarios as compared to the deliveries under the No Action Alternative. Therefore, CVP Settlement Contract and CVP Exchange Contractors deliveries during dry and critical years under Alternative 4 scenarios would be similar to the deliveries under the conditions without the project.

CVP North of Delta Municipal and Industrial Deliveries

Under Alternative 4 scenarios, the change in average CVP north of Delta M&I deliveries as compared to No Action Alternative, would range from an increase of 1 TAF (or less than 1% change) under H3 and H4 scenarios to 7 TAF (2%) under H1 scenario. Compared to No Action Alternative, the scenarios H1, H2, H3 and H4 would exhibit similar deliveries in all years, as shown in Figure 5-32.

Under Alternative 4 scenarios, the change in average annual CVP north of Delta M&I deliveries as compared to Existing Conditions, would range from an increase of 172 TAF (82%) under H3 ad H4 scenarios to 178 TAF (85%) under H1 scenario. Compared to Existing Conditions, the 4 scenarios H1, H2, H3 and H4 would exhibit higher deliveries in all years, as shown in Figure 5-32. However, this increase primarily would occur because there would be an increase in north of Delta M&I water rights demands under Alternative 4 scenarios and No Action Alternative as compared to demands under Existing Conditions.

Deliveries compared to No Action Alternative are an indication of the potential change due to Alternative 4 scenarios in the absence of the effects of increased north of delta demands and sea level rise and climate change and the results show that average annual CVP north of Delta M&I deliveries would remain similar or increase by up to 7 TAF (2%) under Alternative 4 scenarios as compared to the deliveries under the No Action Alternative. Therefore, average annual CVP north of Delta M&I deliveries would increase under Alternative 4 scenarios as compared to the conditions without the project.

CVP South of Delta Municipal and Industrial Deliveries

Under Alternative 4 scenarios, the change in average CVP south of Delta M&I deliveries as compared to No Action Alternative, would range from an increase of 4 TAF (4%) under H3 and H4 scenarios to 9 TAF (9%) under H1 and H2 scenarios. Compared to No Action Alternative, the Scenarios H1 and H2 exhibit increased deliveries in about 60% of the years, while scenarios H3 and H4 would exhibit increased deliveries in about 20% of the wetter years, and all scenarios exhibit similar deliveries in the remaining years, as shown in Figure 5-33.

Under Alternative 4 scenarios, the change in average annual CVP south of Delta M&I deliveries as compared to Existing Conditions, would range from a decrease of 4 TAF (3%) under H1 and H2 scenarios to 9 TAF (7%) under H4 scenario. Compared to Existing Conditions, the scenarios H1, H2, H3 and H4 would exhibit higher or similar deliveries in about 60% of the years and lower deliveries in the remaining, as shown in Figure 5-33. However, this decrease primarily would occur due to sea level rise and climate change, and increased north of Delta demands.

Deliveries compared to No Action Alternative are an indication of the potential change due to Alternative 4 scenarios in the absence of the effects of increased north of delta demands and sea level rise and climate change and the results show that average annual CVP south of Delta M&I deliveries would remain similar or increase by up to 9 TAF (9%) under Alternative 4 scenarios as compared to the deliveries under the No Action Alternative. Therefore, average annual CVP south of Delta M&I deliveries would increase under Alternative 4 scenarios as compared to the conditions without the project.

Total SWP Deliveries

Under Alternative 4 scenarios, the change in average annual total SWP deliveries as compared to No Action Alternative, would range from a decrease of 91 TAF (3%) under H4 scenario to an increase of 582 TAF (17%) under H1 scenario. Under Alternative 4 scenarios, the change in average annual total south of the Delta SWP deliveries, including Table A (including Article 56) plus Article 21 deliveries, as compared to No Action Alternative, would range from a decrease of 94 TAF (4%) under H4 scenario to an increase of 566 TAF (24%) under H1 scenario. Compared to No Action Alternative, the scenarios H1 and H3 exhibit increased deliveries in about 70% of the years and similar deliveries in remaining years, while scenarios H2 and H4 would exhibit increased deliveries in about 30% of the wetter years. Scenario H2 exhibits similar deliveries and scenario H4 exhibits lower deliveries in the remaining years, as shown in Figure 5-34.

Under Alternative 4 scenarios, the change in average annual total SWP deliveries as compared to Existing Conditions, would range from a decrease of 485 TAF (13%) under H4 scenario to an increase of 187 TAF (5%) under H1 scenario. Under Alternative 4 scenarios, the change in average annual total south of the Delta SWP deliveries, including Table A (including Article 56) plus Article 21 deliveries, as compared to Existing Conditions, would range from a decrease of 464 TAF (17%)

under H4 scenario to an increase of 196 TAF (7%) under H1 scenario. Compared to Existing Conditions, the Scenarios H1 and H3 exhibit increased deliveries in about 60% of the years and lower deliveries in remaining years, while scenarios H2 and H4 would exhibit increased deliveries in about 20% of the wetter years and lower deliveries in the remaining years, as shown in Figure 5-34.

Deliveries compared to No Action Alternative are an indication of the potential change due to Alternative 4 scenarios without the effects of sea level rise and climate change and the results show that under Alternative 4 scenarios average annual total SWP deliveries would decrease by up to 91 TAF (3%) or increase by up to 582 TAF (17%) and average annual total south of Delta SWP deliveries would decrease by up to 94 TAF (4%) or increase by up to 566 TAF (24%) as compared to No Action Alternative. Therefore, average annual total SWP deliveries and average annual total SWP south of Delta deliveries under Alternative 4 scenarios would show a small decrease or an increase as compared to the conditions without the project.

SWP Table A Deliveries

Under Alternative 4 scenarios, the change in average annual total SWP Table A deliveries with Article 56 (without Article 21) as compared to No Action Alternative, would range from a decrease of 175 TAF (7%) under H4 scenario to an increase of 489 TAF (21%) under H1 scenario. Under Alternative 4 scenarios, the change in average annual total south of the Delta SWP Table A deliveries with Article 56 (without Article 21), as compared to No Action Alternative, would range from a decrease of 171 TAF (7%) under H4 scenario to an increase of 475 TAF (21%) under H1 scenario. Compared to No Action Alternative, the Scenarios H1 and H3 exhibit increased deliveries in about 70% of the years and similar deliveries in remaining years, while scenarios H2 and H4 would exhibit increased deliveries in about 20% of the wetter years. In the remaining years, scenario H3 exhibits similar deliveries and scenario H4 exhibits lower deliveries, as shown in Figure 5-35.

Under Alternative 4 scenarios, the change in average annual total SWP Table A deliveries with Article 56 (without Article 21) as compared to Existing Conditions, would range from a decrease of 438 TAF (17%) under H4 scenario to an increase of 226 TAF (9%) under H1 scenario. Under Alternative 4 scenarios, the change in average annual total south of the Delta SWP Table A deliveries with Article 56 (without Article 21), as compared to Existing Conditions, would range from a decrease of 446 TAF (17%) under H4 scenario to an increase of 201 TAF (8%) under H1 scenario. Compared to Existing Conditions, the Scenarios H1 and H3 exhibit increased deliveries in about 60% of the years and lower deliveries in remaining years, while scenarios H2 and H4 would exhibit increased deliveries in about 20% of the wetter years and lower deliveries in the remaining years, as shown in Figure 5-35.

Deliveries under the No Action Alternative are an indication of the potential change due to Alternative 4 scenarios in the absence of the effects of increased north of delta demands and sea level rise and climate change and the results show that under Alternative 4 scenarios average annual total SWP Table A deliveries with Article 56 (without Article 21) would decrease by up to 175 TAF (7%) or increase by up to 489 TAF (21%) and average annual total south of Delta SWP Table A deliveries with Article 56 (without Article 21) would decrease by up to 171 TAF (7%) or increase by up to 475 TAF (21%) as compared to No Action Alternative. Therefore, average annual total SWP Table A deliveries with Article 56 (without Article 21) and average annual total SWP south of Delta Table A deliveries with Article 56 (without Article 21) would show a small decrease or an increase under Alternative 4 scenarios as compared to the conditions without the project.

SWP Article 21 Deliveries

Under Alternative 4 scenarios, the change in average annual total SWP Article 21 deliveries as compared to No Action Alternative, would range from an increase of 60 TAF (126%) under H3 scenario to 91 TAF (192%) under H1 and H2 scenarios. Compared to No Action Alternative, the Scenarios H1, H2 H3 and H4 exhibit increased deliveries in about same number of years as in No Action Alternative, although increased SWP Article 21 deliveries are observed in about all 40% of the years where Article 21 deliveries are made (Figure 5-36).

Under Alternative 4 scenarios, the change in average annual total SWP Article 21 deliveries as compared to Existing Conditions, would range from a decrease of 20 TAF (13%) under H1 and H2 scenarios to 51 TAF (32%) under H3 scenario. Compared to Existing Conditions, the Scenarios H1, H2, H3, and H4 exhibit similar or decreased deliveries in about same number of years as in Existing Conditions, as shown in Figure 5-36.

Deliveries compared to No Action Alternative are an indication of the potential change due to Alternative 4 scenarios in the absence of the effects of increased north of delta demands and sea level rise and climate change and the results show that average annual Article 21 deliveries would increase by up to 91 TAF (192%) under Alternative 4 scenarios as compared to the deliveries under the No Action Alternative. Therefore, average annual Article 21 deliveries would increase under Alternative 4 scenarios as compared to the conditions without the project.

SWP Feather River Service Area

Under Alternative 4 scenarios, the change in average annual total SWP Feather River Service Area deliveries during dry and critical years as compared to No Action Alternative, would range from an increase of 5 TAF (1%) under H1 and H3 scenarios to 17 TAF (2%) under H4 scenario.

Under Alternative 4 scenarios, the change in average annual total SWP Feather River Service Area deliveries during dry and critical years as compared to Existing Conditions, would range from a decrease of 38 TAF (4%) under H4 scenario to 50 TAF (6%) under H1 and H3 scenarios. The primary cause of this reduction would be change in SWP operations due to sea level rise and climate change.

Deliveries compared to No Action Alternative are an indication of the potential change due to Alternative 4 scenarios in the absence of the effects of increased north of delta demands and sea level rise and climate change and the results show that average annual SWP Feather River Service Area deliveries would increase by up to 17 TAF (2%) under Alternative 4 scenarios as compared to the deliveries under No Action Alternative. Therefore, average annual SWP Feather River Service Area deliveries would increase under Alternative 4 scenarios as compared to the conditions without the project.

NEPA Effects: SWP and CVP deliveries under Alternative 4 as compared to deliveries under No Action Alternative would increase. Indirect effects of changes in water deliveries in addition to potential effects on urban areas caused by changes in SWP and CVP water supply deliveries, are addressed in Chapter 30, Growth Inducement and Other Indirect Effects, and other chapters addressing specific resources.

CEQA Conclusion: SWP and CVP deliveries under Alternative 4 would decline as compared to deliveries under Existing Conditions. The primary cause of the reduction is increased north of Delta water demands that would occur under No Action Alternative and Alternative 4 and changes in SWP

and CVP operations due to sea level rise and climate change. As shown above in the NEPA analysis, SWP and CVP deliveries would generally increase under Alternative 4 as compared to deliveries under conditions in 2060 without Alternative 4 if sea level rise and climate change conditions are considered the same under both scenarios. SWP and CVP deliveries under Alternative 4 would generally increase as compared to deliveries under Existing Conditions without the effects of increased north of Delta water demands, sea level rise, and climate change. Some reductions in the SWP south of Delta deliveries could occur under the Alternative 4 scenarios with enhanced spring outflow. Indirect effects of changes in water deliveries in addition to potential effects on urban areas caused by changes in SWP and CVP water supply deliveries are addressed in Chapter 30, Growth Inducement and Other Indirect Effects, and other chapters addressing specific resources.

Impact WS-3: Effects of Water Transfers on Water Supply

Alternative 4 increases project water supply allocations as compared to the No Action Alternative, and consequently will decrease cross-Delta water transfer demand compared to that alternative. The four scenarios under Alternative 4 would change the combined SWP Table A and CVP south-of-Delta agricultural water supply allocations as compared to existing conditions, and the frequency of years in which cross-Delta transfers are assumed to be triggered would change as well, assuming an estimated cross-Delta transfer supply of 600,000 acre-feet in any one year.

For Scenario H1 compared to existing conditions, the frequency of years in which cross-Delta transfers would decrease from 52% to 49%, and the average annual volume of those transfers would increase from 146,000 acre-feet to 187,000 acre-feet. For Scenario H1 compared to the No Action Alternative, the frequency of years in which cross-Delta transfers would decrease from 68% to 49%, the average annual volume of those transfers would decrease from 280,000 acre-feet to 187,000 acre-feet.

For Scenario H2 compared to existing conditions, the frequency of years in which cross-Delta transfers would increase from 52% to 55%, and the average annual volume of those transfers would increase from 146,000 acre-feet to 212,000 acre-feet. For Scenario H2 compared to the No Action Alternative, the frequency of years in which cross-Delta transfers would decrease from 68% to 55%, the average annual volume of those transfers would decrease from 280,000 acre-feet to 212,000 acre-feet.

For Scenario H3 compared to existing conditions, the frequency of years in which cross-Delta transfers would increase from 52% to 57%, and the average annual volume of those transfers would increase from 146,000 acre-feet to 227,000 acre-feet. For Scenario H3 compared to the No Action Alternative, the frequency of years in which cross-Delta transfers would decrease from 68% to 57%, the average annual volume of those transfers would decrease from 280,000 acre-feet to 227,000 acre-feet.

For Scenario H4 compared to existing conditions, the frequency of years in which cross-Delta transfers would increase from 52% to 66%, and the average annual volume of those transfers would increase from 146,000 acre-feet to 279,000 acre-feet. For Scenario H4 compared to the No Action Alternative, the frequency of years in which cross-Delta transfers would decrease from 68% to 66%, the average annual volume of those transfers would decrease from 280,000 acre-feet to 279,000 acre-feet.

Alternative 4 provides a separate cross-Delta facility with additional capacity to move transfer water from areas upstream of the Delta to export service areas and provides a longer transfer window

than allowed under current regulatory constraints. In addition, the facility provides conveyance that would not be restricted by Delta reverse flow concerns or south Delta water level concerns. As a result of avoiding those restrictions, transfer water could be moved at any time of the year that capacity exists in the combined cross-Delta channels, the new cross-Delta facility, and the export pumps, depending on operational and regulatory constraints, including BDCP permit terms as discussed in Alternative 1A.

NEPA Effects: Alternative 4 would decrease water transfer demand compared to existing conditions. Alternative 4 would ~~de~~increase conveyance capacity, enabling additional cross-Delta water transfers that could lead to increases in Delta exports when compared to No Action Alternative. Prior to approval, each transfer must go through NEPA review and be evaluated by the export facility agency, and may also be subject to CEQA review and/or SWRCB process. Indirect effects of changes in Delta exports or water deliveries are addressed in Chapter 30, Growth Inducement, and other chapters addressing specific resources.

CEQA Conclusion: Alternative 4 would increase water transfer demand compared to existing conditions. Alternative 4 would increase conveyance capacity, enabling additional cross-Delta water transfers that could lead to increases in Delta exports when compared to existing conditions. Prior to approval, each transfer must go through the CEQA and/or SWRCB process and be evaluated by the export facility agency, and may also be subject to NEPA review. Indirect effects of changes in Delta exports or water deliveries are addressed in Chapter 30, Growth Inducement, and other chapters addressing specific resources.

5.3.3.10 Alternative 5—Dual Conveyance with Pipeline/Tunnel and Intake 1 (3,000 cfs; Operational Scenario C)

Change in SWP and CVP Reservoir Storage

San Luis Reservoir

Average annual end of September San Luis Reservoir storage would decrease by 23 TAF (5%) compared to the No Action Alternative and exhibit a decrease in 90 % of the years, as shown in Tables 5-7 through 5-9 and Appendix 5A-C, *CALSIM II and DSM2 Modeling Results.*

Average annual end of September San Luis Reservoir storage would decrease by 213 TAF (31%) compared to Existing Conditions and exhibit a decrease in all of the years, as shown in Tables 5-4 through 5-6 and Appendix 5A-C, *CALSIM II and DSM2 Modeling Results.* This decrease primarily would occur due to Alternative 5 and due to sea level rise, climate change, and increased north of Delta demands.

A comparison with storages under the No Action Alternative provides an indication of the potential change due to Alternative 5 and the results show that average annual end of September San Luis Reservoir storage would ~~in~~decrease under Alternative 5 as compared to the conditions without the project.

5.3.3.11 Alternative 6A—Isolated Conveyance with Pipeline/Tunnel and Intakes 1–5 (15,000 cfs; Operational Scenario D)

Change in SWP and CVP Reservoir Storage

San Luis Reservoir

Average annual end of September San Luis Reservoir storage would decrease by 193 TAF (39%) compared to the No Action Alternative and exhibit a decrease in all of the years, as shown in Tables 5-7 through 5-9 and Appendix 5A-C, *CALSIM II and DSM2 Modeling Results*.

Average annual end of September San Luis Reservoir storage would decrease by 383 TAF (56%) compared to Existing Conditions and exhibit a decrease in all of the years, as shown in Tables 5-4 through 5-6 and Appendix 5A-C, *CALSIM II and DSM2 Modeling Results*. This decrease primarily would occur due to Alternative 6A and due to sea level rise, climate change, and increased north of Delta demands.

A comparison with storages under the No Action Alternative provides an indication of the potential change due to Alternative 6A and the results show that average annual end of September San Luis Reservoir storage would ~~in~~decrease under Alternative 6A as compared to the conditions without the project.

5.3.3.14 Alternative 7—Dual Conveyance with Pipeline/Tunnel, Intakes 2, 3, and 5, and Enhanced Aquatic Conservation (9,000 cfs; Operational Scenario E)

Change in SWP and CVP Reservoir Storage

San Luis Reservoir

Average annual end of September San Luis Reservoir storage would decrease by 179 TAF (36%) compared to the No Action Alternative and exhibit a decrease in all of the years, as shown in Tables 5-7 through 5-9 and Appendix 5A-C, *CALSIM II and DSM2 Modeling Results*.

Average annual end of September San Luis Reservoir storage would decrease by 369 TAF (54%) compared to Existing Conditions and exhibit a decrease in all of the years, as shown in Tables 5-4 through 5-6 and Appendix 5A-C, *CALSIM II and DSM2 Modeling Results*. This decrease primarily would occur due to Alternative 7 and due to sea level rise, climate change, and increased north of Delta demands.

A comparison with storages under the No Action Alternative provides an indication of the potential change due to Alternative 7 and the results show that average annual end of September San Luis Reservoir storage would ~~in~~decrease under Alternative 7 as compared to the conditions without the project.

5.3.3.15 Alternative 8—Dual Conveyance with Pipeline/Tunnel, Intakes 2, 3, and 5, and Increased Delta Outflow (9,000 cfs; Operational Scenario F)

Change in SWP and CVP Reservoir Storage

San Luis Reservoir

Average annual end of September San Luis Reservoir storage would decrease by 329 TAF (66%) compared to the No Action Alternative and exhibit a decrease in all of the years, as shown in Tables 5-7 through 5-9 and Appendix 5A-C, *CALSIM II and DSM2 Modeling Results*.

Average annual end of September San Luis Reservoir storage would decrease by 519 TAF (76%) compared to Existing Conditions and exhibit a decrease in all of the years, as shown in Tables 5-4 through 5-6 and Appendix 5A-C, *CALSIM II and DSM2 Modeling Results*. This decrease primarily would occur due to Alternative 8 and due to sea level rise, climate change, and increased north of Delta demands.

A comparison with storages under the No Action Alternative provides an indication of the potential change due to Alternative 8 and the results show that average annual end of September San Luis Reservoir storage would ~~in~~decrease under Alternative 8 as compared to the conditions without the project.

5.3.3.16 Alternative 9—Through Delta/Separate Corridors (15,000 cfs; Operational Scenario G)

Change in SWP and CVP Reservoir Storage

San Luis Reservoir

Average annual end of September San Luis Reservoir storage would decrease by 51 TAF (10%) compared to the No Action Alternative and exhibit a decrease in 90 % of the years, as shown in Tables 5-7 through 5-9 and Appendix 5A-C, *CALSIM II and DSM2 Modeling Results*.

Average annual end of September San Luis Reservoir storage would decrease by 241 TAF (35%) compared to Existing Conditions and exhibit a decrease in all of the years, as shown in Tables 5-4 through 5-6 and Appendix 5A-C, *CALSIM II and DSM2 Modeling Results*. This decrease primarily would occur due to sea level rise, climate change, and increased north of Delta demands.

A comparison with storages under the No Action Alternative provides an indication of the potential change due to Alternative 9 and the results show that average annual end of September San Luis Reservoir storage would ~~in~~decrease under Alternative 9 as compared to the conditions without the project.

1 **Table 5-4. Water Supply Summary Table**

Location	Parameter	Units	Existing Condition	No Action Alternative (LLT)	Alternative 1A, 1B, 1C (LLT)	Alternative 2A, 2B, 2C (LLT)	Alternative 3 (LLT)	Alternative 5 (LLT)	Alternative 6A, 6B, 6C (LLT)	Alternative 7 (LLT)	Alternative 8 (LLT)	Alternative 9 (LLT)
Trinity Lake	End of Sep Storage	TAF	1,393	1,163	1,125	1,132	1,130	1,143	1,184	1,160	1,183	1,165
Shasta Lake	End of Sep Storage	TAF	2,723	2,242	2,284	2,180	2,284	2,189	2,314	2,211	2,284	2,235
Lake Oroville	End of Sep Storage	TAF	2,054	1,408	1,762	1,486	1,756	1,537	1,640	1,642	1,537	1,405
Folsom Lake	End of Sep Storage	TAF	525	379	400	371	397	363	399	369	373	390
San Luis Reservoir	End of Sep Storage	TAF	587	497	630	480	628	474	304	318	168	446
CVP North-of-Delta AG Deliveries	Annual (Mar–Feb)	TAF	234	161	179	164	178	162	142	136	132	141
CVP South-of-Delta AG Deliveries	Annual (Mar–Feb)	TAF	967	727	956	830	951	823	573	577	486	705
CVP North-of-Delta M&I Deliveries	Annual (Mar–Feb)	TAF	210	381	384	382	384	380	385	380	373	376
CVP South-of-Delta M&I Deliveries	Annual (Mar–Feb)	TAF	118	105	114	109	115	109	90	90	61	105
CVP Settlement Contractors Deliveries	Dry And Critical Annual (Mar–Feb)	TAF	1,823	1,770	1,767	1,763	1,766	1,768	1,788	1,759	1,730	1,769
CVP Exchange Contractors Deliveries	Dry And Critical Annual (Mar–Feb)	TAF	814	814	814	814	814	814	806	804	805	814
CVP Level 2 Refuge Deliveries	Dry And Critical Annual (Mar–Feb)	TAF	397	376	372	366	378	373	329	326	290	381
Total CVP South-of-Delta Deliveries (Including AG, M&I, Exchange & Refuge)	Annual (Mar–Feb)	TAF	2,233	1,953	2,190	2,058	2,188	2,053	1,764	1,766	1,631	1,934
Total CVP Deliveries (Including AG, M&I, Settlement, Exchange & Refuge)	Annual (Mar–Feb)	TAF	4,649	4,477	4,740	4,585	4,735	4,577	4,275	4,256	4,094	4,433
Total SWP Contractors Deliveries (Including FRSA, Table A, A56 And A21)	Annual (Jan–Dec)	TAF	3,736	3,342	4,112	3,854	4,027	3,596	2,904	2,920	2,352	3,311
SWP South-of-Delta Contractors Deliveries (Including Table A, A56 And A21)	Annual (Jan–Dec)	TAF	2,707	2,337	3,088	2,834	3,005	2,583	1,902	1,918	1,430	2,302
Total SWP Contractors Table A Deliveries (Including A56)	Annual (Jan–Dec)	TAF	2,629	2,365	2,931	2,764	2,885	2,587	1,887	1,951	1,430	2,349
SWP Contractors South-of-Delta Table A Deliveries (Including A56)	Annual (Jan–Dec)	TAF	2,576	2,301	2,851	2,687	2,806	2,516	1,833	1,895	1,391	2,281
SWP Contractors A21 Deliveries	Annual (Jan–Dec)	TAF	158	47	248	157	210	79	81	35	48	33
SWP FRSA Deliveries	Dry And Critical Annual (Jan–Dec)	TAF	899	845	856	857	856	848	862	856	729	847
Delta Outflow	Annual (Oct–Sep)	TAF	15,533	16,282	15,210	15,638	15,305	15,933	16,916	16,965	17,727	16,339
Delta Exports	Annual (Oct–Sep)	TAF	5,144	4,441	5,456	5,068	5,371	4,786	3,758	3,754	3,098	4,377
Exports At North Delta Diversion Intakes	Annual (Oct–Sep)	%	0	0	50	58	35	25	100	62	70	0
Exports At South Delta Intakes	Annual (Oct–Sep)	%	100	100	50	42	65	75	0	38	30	100

Note: "LLT" (Late Long-Term) Indicates Alternatives That are Simulated with 2060 Climate Change and Sea Level Rise.

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Table 5-5. Water Supply Summary Table

Location	Parameter	Units	No Action Alternative (LLT)	Alternative 1A, 1B, 1C (LLT)	Alternative 2A, 2B, 2C (LLT)	Alternative 3 (LLT)	Alternative 5 (LLT)	Alternative 6A, 6B, 6C (LLT)	Alternative 7 (LLT)	Alternative 8 (LLT)	Alternative 9 (LLT)
Differences from Existing Conditions											
Trinity Lake	End of Sep Storage	TAF	-230	-269	-261	-263	-250	-210	-234	-211	-228
Shasta Lake	End of Sep Storage	TAF	-481	-438	-542	-439	-534	-409	-511	-438	-488
Lake Oroville	End of Sep Storage	TAF	-646	-292	-568	-298	-517	-414	-412	-517	-649
Folsom Lake	End of Sep Storage	TAF	-146	-125	-154	-128	-162	-126	-157	-152	-135
San Luis Reservoir	End of Sep Storage	TAF	-190	-57	-207	-59	-213	-383	-369	-519	-241
CVP North-of-Delta AG Deliveries	Annual (Mar–Feb)	TAF	-73	-55	-70	-56	-72	-92	-97	-102	-92
CVP South-of-Delta AG Deliveries	Annual (Mar–Feb)	TAF	-240	-11	-137	-17	-144	-395	-390	-481	-262
CVP North-of-Delta M&I Deliveries	Annual (Mar–Feb)	TAF	171	174	172	174	170	174	170	163	166
CVP South-of-Delta M&I Deliveries	Annual (Mar–Feb)	TAF	-13	-3	-8	-3	-9	-27	-28	-57	-12
CVP Settlement Contractors Deliveries	Dry and Critical Annual (Mar–Feb)	TAF	-52	-55	-60	-57	-54	-35	-64	-92	-54
CVP Exchange Contractors Deliveries	Dry and Critical Annual (Mar–Feb)	TAF	0	0	0	0	0	-9	-10	-9	0
CVP Level 2 Refuge Deliveries	Dry and Critical Annual (Mar–Feb)	TAF	-21	-25	-31	-20	-24	-68	-71	-107	-16
Total CVP South-of-Delta Deliveries (including AG, M&I, Exchange & Refuge)	Annual (Mar–Feb)	TAF	-280	-43	-175	-46	-180	-469	-467	-602	-300
Total CVP Deliveries (including AG, M&I, Settlement, Exchange & Refuge)	Annual (Mar–Feb)	TAF	-172	90	-64	86	-72	-374	-393	-556	-216
Total SWP Contractors Deliveries (including FRSA, Table A, A56 and A21)	Annual (Jan–Dec)	TAF	-394	376	118	292	-139	-832	-816	-1,384	-424
SWP South-of-Delta Contractors Deliveries (including Table A, A56 and A21)	Annual (Jan–Dec)	TAF	-370	381	127	298	-124	-806	-789	-1,277	-405
Total SWP Contractors Table A Deliveries (including A56)	Annual (Jan–Dec)	TAF	-264	302	135	256	-41	-742	-677	-1,199	-280
SWP Contractors South-of-Delta Table A Deliveries (including A56)	Annual (Jan–Dec)	TAF	-275	275	111	230	-59	-743	-681	-1,185	-295
SWP Contractors A21 Deliveries	Annual (Jan–Dec)	TAF	-111	89	-2	51	-80	-77	-123	-111	-125
SWP FRSA Deliveries	Dry and Critical Annual (Jan–Dec)	TAF	-55	-44	-43	-43	-51	-37	-43	-171	-52
Delta Outflow	Annual (Oct–Sep)	TAF	750	-323	105	-227	401	1,383	1,433	2,195	807
Delta Exports	Annual (Oct–Sep)	TAF	-703	312	-76	227	-358	-1,386	-1,389	-2,046	-766
Exports at North Delta Diversion Intakes	Annual (Oct–Sep)	%	0	50	58	35	25	100	62	70	0
Exports at South Delta Intakes	Annual (Oct–Sep)	%	0	-50	-58	-35	-25	-100	-62	-70	0
Percent Differences from Existing Conditions											
Trinity Lake	End of Sep Storage	%	-17	-19	-19	-19	-18	-15	-17	-15	-16
Shasta Lake	End of Sep Storage	%	-18	-16	-20	-16	-20	-15	-19	-16	-18
Lake Oroville	End of Sep Storage	%	-31	-14	-28	-14	-25	-20	-20	-25	-32
Folsom Lake	End of Sep Storage	%	-28	-24	-29	-24	-31	-24	-30	-29	-26
San Luis Reservoir	End of Sep Storage	%	-28	-0.08	-0.30	-0.09	-0.31	-0.56	-0.54	-0.76	-0.35
CVP North-of-Delta AG Deliveries	Annual (Mar–Feb)	%	-31	-23	-30	-24	-31	-39	-42	-44	-40
CVP South-of-Delta AG Deliveries	Annual (Mar–Feb)	%	-25	-1	-14	-2	-15	-41	-40	-50	-27
CVP North-of-Delta M&I Deliveries	Annual (Mar–Feb)	%	81	83	82	83	81	83	81	77	79
CVP South-of-Delta M&I Deliveries	Annual (Mar–Feb)	%	-11	-3	-7	-2	-7	-23	-23	-49	-10
CVP Settlement Contractors Deliveries	Dry and Critical Annual (Mar–Feb)	%	-3	-3	-3	-3	-3	-2	-4	-5	-3
CVP Exchange Contractors Deliveries	Dry and Critical Annual (Mar–Feb)	%	0	0	0	0	0	-1	-1	-1	0
CVP Level 2 Refuge Deliveries	Dry and Critical Annual (Mar–Feb)	%	-5	-6	-8	-5	-6	-17	-18	-27	-4
Total CVP South-of-Delta Deliveries (including AG, M&I, Exchange & Refuge)	Annual (Mar–Feb)	%	-13	-2	-8	-2	-8	-21	-21	-27	-13
Total CVP Deliveries (including AG, M&I, Settlement, Exchange & Refuge)	Annual (Mar–Feb)	%	-4	2	-1	2	-2	-8	-8	-12	-5
Total SWP Contractors Deliveries (including FRSA, Table A, A56 and A21)	Annual (Jan–Dec)	%	-11	10	3	8	-4	-22	-22	-37	-11
SWP South-of-Delta Contractors Deliveries (including Table A, A56 and A21)	Annual (Jan–Dec)	%	-14	14	5	11	-5	-30	-29	-47	-15
Total SWP Contractors Table A Deliveries (including A56)	Annual (Jan–Dec)	%	-10	12	5	10	-2	-28	-26	-46	-11
SWP Contractors South-of-Delta Table A Deliveries (including A56)	Annual (Jan–Dec)	%	-11	11	4	9	-2	-29	-26	-46	-11
SWP Contractors A21 Deliveries	Annual (Jan–Dec)	%	-70	56	-1	32	-50	-49	-78	-70	-79
SWP FRSA Deliveries	Dry and Critical Annual (Jan–Dec)	%	-6	-5	-5	-5	-6	-4	-5	-19	-6
Delta Outflow	Annual (Oct–Sep)	%	5	-2	1	-1	3	9	9	14	5
Delta Exports	Annual (Oct–Sep)	%	-14	6	-1	4	-7	-27	-27	-40	-15
Exports at North Delta Diversion Intakes	Annual (Oct–Sep)	%	-	-	-	-	-	-	-	-	-
Exports at South Delta Intakes	Annual (Oct–Sep)	%	0	-50	-58	-35	-25	-100	-62	-70	0

Note: "LLT" (Late Long-Term) indicates Alternatives that are simulated with 2060 climate change and sea level rise.

Table 5-6. Water Supply Summary Table

Location	Parameter	Units	Alternative 1A,1B,1C (LLT)	Alternative 2A, 2B, 2C (LLT)	Alternative 3 (LLT)	Alternative 5 (LLT)	Alternative 6A, 6B, 6C (LLT)	Alternative 7 (LLT)	Alternative 8 (LLT)	Alternative 9 (LLT)
Differences from No Action Alternative (LLT)										
Trinity Lake	End of Sep Storage	TAF	-38	-31	-33	-20	21	-3	20	2
Shasta Lake	End of Sep Storage	TAF	43	-61	42	-53	72	-30	43	-7
Lake Oroville	End of Sep Storage	TAF	354	78	349	130	232	234	130	-3
Folsom Lake	End of Sep Storage	TAF	21	-8	18	-16	20	-11	-6	10
San Luis Reservoir	End of Sep Storage	TAF	133	-17	131	-23	-193	-179	-329	-51
CVP North-of-Delta AG Deliveries	Annual (Mar–Feb)	TAF	18	3	17	1	-19	-25	-29	-20
CVP South-of-Delta AG Deliveries	Annual (Mar–Feb)	TAF	229	103	223	96	-155	-150	-241	-22
CVP North-of-Delta M&I Deliveries	Annual (Mar–Feb)	TAF	3	1	3	-1	3	-1	-9	-5
CVP South-of-Delta M&I Deliveries	Annual (Mar–Feb)	TAF	10	5	10	4	-15	-15	-44	1
CVP Settlement Contractors Deliveries	Dry and Critical Annual (Mar–Feb)	TAF	-3	-8	-5	-2	17	-12	-40	-2
CVP Exchange Contractors Deliveries	Dry and Critical Annual (Mar–Feb)	TAF	0	0	0	0	-8	-10	-9	0
CVP Level 2 Refuge Deliveries	Dry and Critical Annual (Mar–Feb)	TAF	-4	-10	2	-3	-47	-50	-86	5
Total CVP South-of-Delta Deliveries (including AG, M&I, Exchange & Refuge)	Annual (Mar–Feb)	TAF	237	105	234	100	-189	-187	-323	-20
Total CVP Deliveries (including AG, M&I, Settlement, Exchange & Refuge)	Annual (Mar–Feb)	TAF	263	108	258	100	-202	-221	-383	-44
Total SWP Contractors Deliveries (including FRSA, Table A, A56 and A21)	Annual (Jan–Dec)	TAF	770	512	686	255	-438	-422	-990	-30
SWP South-of-Delta Contractors Deliveries (including Table A, A56 and A21)	Annual (Jan–Dec)	TAF	751	497	668	246	-436	-419	-907	-35
Total SWP Contractors Table A Deliveries (including A56)	Annual (Jan–Dec)	TAF	566	399	519	222	-478	-414	-935	-17
SWP Contractors South-of-Delta Table A Deliveries (including A56)	Annual (Jan–Dec)	TAF	550	386	505	215	-468	-406	-910	-20
SWP Contractors A21 Deliveries	Annual (Jan–Dec)	TAF	200	110	162	31	34	-12	0	-14
SWP FRSA Deliveries	Dry and Critical Annual (Jan–Dec)	TAF	11	12	12	4	18	12	-116	3
Delta Outflow	Annual (Oct–Sep)	TAF	-1,072	-645	-977	-349	633	683	1,445	57
Delta Exports	Annual (Oct–Sep)	TAF	1,016	628	930	346	-682	-686	-1,342	-63
Exports at North Delta Diversion Intakes	Annual (Oct–Sep)	%	50	58	35	25	100	62	70	0
Exports at South Delta Intakes	Annual (Oct–Sep)	%	-50	-58	-35	-25	-100	-62	-70	0
Percent Differences from No Action Alternative (LLT)										
Trinity Lake	End of Sep Storage	%	-3	-3	-3	-2	2	0	2	0
Shasta Lake	End of Sep Storage	%	2	-3	2	-2	3	-1	2	0
Lake Oroville	End of Sep Storage	%	25	6	25	9	16	17	9	0
Folsom Lake	End of Sep Storage	%	5	-2	5	-4	5	-3	-2	3
San Luis Reservoir	End of Sep Storage	%	0.27	-0.03	0.26	-0.05	-0.39	-0.36	-0.66	-0.10
CVP North-of-Delta AG Deliveries	Annual (Mar–Feb)	%	11	2	11	1	-12	-15	-18	-12
CVP South-of-Delta AG Deliveries	Annual (Mar–Feb)	%	31	14	31	13	-21	-21	-33	-3
CVP North-of-Delta M&I Deliveries	Annual (Mar–Feb)	%	1	0	1	0	1	0	-2	-1
CVP South-of-Delta M&I Deliveries	Annual (Mar–Feb)	%	9	4	10	4	-14	-14	-42	1
CVP Settlement Contractors Deliveries	Dry and Critical Annual (Mar–Feb)	%	0	0	0	0	1	-1	-2	0
CVP Exchange Contractors Deliveries	Dry and Critical Annual (Mar–Feb)	%	0	0	0	0	-1	-1	-1	0
CVP Level 2 Refuge Deliveries	Dry and Critical Annual (Mar–Feb)	%	-1	-3	0	-1	-12	-13	-23	1
Total CVP South-of-Delta Deliveries (including AG, M&I, Exchange & Refuge)	Annual (Mar–Feb)	%	12	5	12	5	-10	-10	-17	-1
Total CVP Deliveries (including AG, M&I, Settlement, Exchange & Refuge)	Annual (Mar–Feb)	%	6	2	6	2	-5	-5	-9	-1
Total SWP Contractors Deliveries (including FRSA, Table A, A56 and A21)	Annual (Jan–Dec)	%	23	15	21	8	-13	-13	-30	-1
SWP South-of-Delta Contractors Deliveries (including Table A, A56 and A21)	Annual (Jan–Dec)	%	32	21	29	11	-19	-18	-39	-1
Total SWP Contractors Table A Deliveries (including A56)	Annual (Jan–Dec)	%	24	17	22	9	-20	-17	-40	-1
SWP Contractors South-of-Delta Table A Deliveries (including A56)	Annual (Jan–Dec)	%	24	17	22	9	-20	-18	-40	-1
SWP Contractors A21 Deliveries	Annual (Jan–Dec)	%	423	231	343	66	72	-26	0	-30
SWP FRSA Deliveries	Dry and Critical Annual (Jan–Dec)	%	1	1	1	0	2	1	-14	0
Delta Outflow	Annual (Oct–Sep)	%	-7	-4	-6	-2	4	4	9	0
Delta Exports	Annual (Oct–Sep)	%	23	14	21	8	-15	-15	-30	-1
Exports at North Delta Diversion Intakes	Annual (Oct–Sep)	%	-	-	-	-	-	-	-	-
Exports at South Delta Intakes	Annual (Oct–Sep)	%	-50	-58	-35	-25	-100	-62	-70	0

Note: "LLT" (Late Long-Term) indicates Alternatives that are simulated with 2060 climate change and sea level rise.

Table 5-7. Water Supply Summary Table

Location	Parameter	Units	Existing Condition	No Action Alternative	Alternative 4 H1 (LLT)	Alternative 4 H2 (LLT)	Alternative 4 H3 (LLT)	Alternative 4 H4 (LLT)
Trinity Lake	End of Sep Storage	TAF	1,393	1,163	1,165	1,186	1,139	1,160
Shasta Lake	End of Sep Storage	TAF	2,723	2,242	2,327	2,384	2,181	2,229
Lake Oroville	End of Sep Storage	TAF	2,054	1,408	1,658	1,713	1,474	1,551
Folsom Lake	End of Sep Storage	TAF	525	379	394	422	371	380
San Luis Reservoir	End of Sep Storage	TAF	687	497	568	386	440	299
CVP North-of-Delta AG Deliveries	Annual (Mar–Feb)	TAF	234	161	180	178	165	162
CVP South-of-Delta AG Deliveries	Annual (Mar–Feb)	TAF	967	727	940	915	821	796
CVP North-of-Delta M&I Deliveries	Annual (Mar–Feb)	TAF	210	381	388	387	382	382
CVP South-of-Delta M&I Deliveries	Annual (Mar–Feb)	TAF	118	105	114	114	109	109
CVP Settlement Contractors Deliveries	Dry and Critical Annual (Mar–Feb)	TAF	1,823	1,770	1,765	1,792	1,763	1,794
CVP Exchange Contractors Deliveries	Dry and Critical Annual (Mar–Feb)	TAF	814	814	814	814	814	814
CVP Level 2 Refuge Deliveries	Dry and Critical Annual (Mar–Feb)	TAF	397	376	374	377	369	375
Total CVP South-of-Delta Deliveries (including AG, M&I, Exchange & Refuge)	Annual (Mar–Feb)	TAF	2,233	1,953	2,175	2,150	2,050	2,026
Total CVP Deliveries (including AG, M&I, Settlement, Exchange & Refuge)	Annual (Mar–Feb)	TAF	4,649	4,477	4,728	4,706	4,579	4,560
Total SWP Contractors Deliveries (including FRSA, Table A, A56 and A21)	Annual (Jan–Dec)	TAF	3,736	3,342	3,923	3,422	3,742	3,251
SWP South-of-Delta Contractors Deliveries (including Table A, A56 and A21)	Annual (Jan–Dec)	TAF	2,707	2,337	2,903	2,414	2,726	2,243
Total SWP Contractors Table A Deliveries (including A56)	Annual (Jan–Dec)	TAF	2,629	2,365	2,855	2,351	2,704	2,191
SWP Contractors South-of-Delta Table A Deliveries (including A56)	Annual (Jan–Dec)	TAF	2,576	2,301	2,776	2,287	2,629	2,130
SWP Contractors A21 Deliveries	Annual (Jan–Dec)	TAF	158	47	138	139	107	126
SWP FRSA Deliveries	Dry and Critical Annual (Jan–Dec)	TAF	899	845	849	855	850	861
Delta Outflow	Annual (Oct–Sep)	TAF	15,533	16,282	15,418	15,937	15,767	16,277
Delta Exports	Annual (Oct–Sep)	TAF	5,144	4,441	5,255	4,710	4,945	4,414
Exports at North Delta Diversion Intakes	Annual (Oct–Sep)	%	0	0	47	46	49	49
Exports at South Delta Intakes	Annual (Oct–Sep)	%	100	100	53	54	51	51

Note: "LLT" (Late Long-Term) indicates Alternatives that are simulated with 2060 climate change and sea level rise.

Table 5-8. Water Supply Summary Table

Location	Parameter	Units	No Action Alternative	Alternative 4 H1 (LLT)	Alternative 4 H2 (LLT)	Alternative 4 H3 (LLT)	Alternative 4 H4 (LLT)
Differences from Existing Conditions							
Trinity Lake	End of Sep Storage	TAF	-230	-228	-207	-255	-233
Shasta Lake	End of Sep Storage	TAF	-481	-396	-339	-541	-493
Lake Oroville	End of Sep Storage	TAF	-646	-396	-341	-580	-503
Folsom Lake	End of Sep Storage	TAF	-146	-131	-103	-154	-145
San Luis Reservoir	End of Sep Storage	TAF	-190	-119	-301	-247	-388
CVP North-of-Delta AG Deliveries	Annual (Mar–Feb)	TAF	-73	-54	-56	-69	-72
CVP South-of-Delta AG Deliveries	Annual (Mar–Feb)	TAF	-240	-27	-52	-146	-171
CVP North-of-Delta M&I Deliveries	Annual (Mar–Feb)	TAF	171	178	177	172	172
CVP South-of-Delta M&I Deliveries	Annual (Mar–Feb)	TAF	-13	-4	-4	-8	-9
CVP Settlement Contractors Deliveries	Dry and Critical Annual (Mar–Feb)	TAF	-52	-57	-31	-59	-29
CVP Exchange Contractors Deliveries	Dry and Critical Annual (Mar–Feb)	TAF	0	0	0	0	0
CVP Level 2 Refuge Deliveries	Dry and Critical Annual (Mar–Feb)	TAF	-21	-23	-20	-28	-22
Total CVP South-of-Delta Deliveries (including AG, M&I, Exchange & Refuge)	Annual (Mar–Feb)	TAF	-280	-59	-83	-183	-207
Total CVP Deliveries (including AG, M&I, Settlement, Exchange & Refuge)	Annual (Mar–Feb)	TAF	-172	79	57	-71	-90
Total SWP Contractors Deliveries (including FRSA, Table A, A56 and A21)	Annual (Jan–Dec)	TAF	-394	187	-314	6	-485
SWP South-of-Delta Contractors Deliveries (including Table A, A56 and A21)	Annual (Jan–Dec)	TAF	-370	196	-294	19	-464
Total SWP Contractors Table A Deliveries (including A56)	Annual (Jan–Dec)	TAF	-264	226	-277	75	-438
SWP Contractors South-of-Delta Table A Deliveries (including A56)	Annual (Jan–Dec)	TAF	-275	201	-288	53	-446
SWP Contractors A21 Deliveries	Annual (Jan–Dec)	TAF	-111	-20	-20	-51	-33
SWP FRSA Deliveries	Dry and Critical Annual (Jan–Dec)	TAF	-55	-50	-44	-50	-38
Delta Outflow	Annual (Oct–Sep)	TAF	750	-114	405	234	744
Delta Exports	Annual (Oct–Sep)	TAF	-703	112	-434	-199	-730
Exports at North Delta Diversion Intakes	Annual (Oct–Sep)	%	0	47	46	49	49
Exports at South Delta Intakes	Annual (Oct–Sep)	%	0	-47	-46	-49	-49
Percent Differences from Existing Conditions							
Trinity Lake	End of Sep Storage	%	-17	-16	-15	-18	-17
Shasta Lake	End of Sep Storage	%	-18	-15	-12	-20	-18
Lake Oroville	End of Sep Storage	%	-31	-19	-17	-28	-24
Folsom Lake	End of Sep Storage	%	-28	-25	-20	-29	-28
San Luis Reservoir	End of Sep Storage	%	-0.28	-0.17	-0.44	-0.36	-0.56
CVP North-of-Delta AG Deliveries	Annual (Mar–Feb)	%	-31	-23	-24	-29	-31
CVP South-of-Delta AG Deliveries	Annual (Mar–Feb)	%	-25	-3	-5	-15	-18
CVP North-of-Delta M&I Deliveries	Annual (Mar–Feb)	%	81	85	84	82	82
CVP South-of-Delta M&I Deliveries	Annual (Mar–Feb)	%	-11	-3	-3	-7	-7
CVP Settlement Contractors Deliveries	Dry and Critical Annual (Mar–Feb)	%	-3	-3	-2	-3	-2
CVP Exchange Contractors Deliveries	Dry and Critical Annual (Mar–Feb)	%	0	0	0	0	0
CVP Level 2 Refuge Deliveries	Dry and Critical Annual (Mar–Feb)	%	-5	-6	-5	-7	-6
Total CVP South-of-Delta Deliveries (including AG, M&I, Exchange & Refuge)	Annual (Mar–Feb)	%	-13	-3	-4	-8	-9
Total CVP Deliveries (including AG, M&I, Settlement, Exchange & Refuge)	Annual (Mar–Feb)	%	-4	2	1	-2	-2
Total SWP Contractors Deliveries (including FRSA, Table A, A56 and A21)	Annual (Jan–Dec)	%	-11	5	-8	0	-13
SWP South-of-Delta Contractors Deliveries (including Table A, A56 and A21)	Annual (Jan–Dec)	%	-14	7	-11	1	-17
Total SWP Contractors Table A Deliveries (including A56)	Annual (Jan–Dec)	%	-10	9	-11	3	-17
SWP Contractors South-of-Delta Table A Deliveries (including A56)	Annual (Jan–Dec)	%	-11	8	-11	2	-17
SWP Contractors A21 Deliveries	Annual (Jan–Dec)	%	-70	-13	-13	-32	-21
SWP FRSA Deliveries	Dry and Critical Annual (Jan–Dec)	%	-6	-6	-5	-6	-4
Delta Outflow	Annual (Oct–Sep)	%	5	-1	3	2	5
Delta Exports	Annual (Oct–Sep)	%	-14	2	-8	-4	-14
Exports at North Delta Diversion Intakes	Annual (Oct–Sep)	%	-	-	-	-	-
Exports at South Delta Intakes	Annual (Oct–Sep)	%	0	-47	-46	-49	-49

Note: "LLT" (Late Long-Term) indicates Alternatives that are simulated with 2060 climate change and sea level rise.

Table 5-9. Water Supply Summary Table

Location	Parameter	Units	Alternative 4 H1 (LLT)	Alternative 4 H2 (LLT)	Alternative 4 H3 (LLT)	Alternative 4 H4 (LLT)
Differences from No Action Alternative (LLT)						
Trinity Lake	End of Sep Storage	TAF	2	23	-24	-3
Shasta Lake	End of Sep Storage	TAF	85	142	-60	-12
Lake Oroville	End of Sep Storage	TAF	250	305	66	144
Folsom Lake	End of Sep Storage	TAF	15	43	-8	1
San Luis Reservoir	End of Sep Storage	TAF	71	-111	-57	-198
CVP North-of-Delta AG Deliveries	Annual (Mar–Feb)	TAF	19	17	4	1
CVP South-of-Delta AG Deliveries	Annual (Mar–Feb)	TAF	213	188	94	69
CVP North-of-Delta M&I Deliveries	Annual (Mar–Feb)	TAF	7	6	1	1
CVP South-of-Delta M&I Deliveries	Annual (Mar–Feb)	TAF	9	9	4	4
CVP Settlement Contractors Deliveries	Dry and Critical Annual (Mar–Feb)	TAF	-5	22	-7	23
CVP Exchange Contractors Deliveries	Dry and Critical Annual (Mar–Feb)	TAF	0	0	0	0
CVP Level 2 Refuge Deliveries	Dry and Critical Annual (Mar–Feb)	TAF	-2	1	-6	-1
Total CVP South-of-Delta Deliveries (including AG, M&I, Exchange & Refuge)	Annual (Mar–Feb)	TAF	221	197	97	73
Total CVP Deliveries (including AG, M&I, Settlement, Exchange & Refuge)	Annual (Mar–Feb)	TAF	251	229	102	83
Total SWP Contractors Deliveries (including FRSA, Table A, A56 and A21)	Annual (Jan–Dec)	TAF	582	80	400	-91
SWP South-of-Delta Contractors Deliveries (including Table A, A56 and A21)	Annual (Jan–Dec)	TAF	566	77	389	-94
Total SWP Contractors Table A Deliveries (including A56)	Annual (Jan–Dec)	TAF	489	-14	339	-175
SWP Contractors South-of-Delta Table A Deliveries (including A56)	Annual (Jan–Dec)	TAF	475	-14	328	-171
SWP Contractors A21 Deliveries	Annual (Jan–Dec)	TAF	91	91	60	78
SWP FRSA Deliveries	Dry and Critical Annual (Jan–Dec)	TAF	5	10	5	17
Delta Outflow	Annual (Oct–Sep)	TAF	-864	-345	-516	-5
Delta Exports	Annual (Oct–Sep)	TAF	815	269	505	-27
Exports at North Delta Diversion Intakes	Annual (Oct–Sep)	%	47	46	49	49
Exports at South Delta Intakes	Annual (Oct–Sep)	%	-47	-46	-49	-49
Percent Differences from No Action Alternative (LLT)						
Trinity Lake	End of Sep Storage	%	0	2	-2	0
Shasta Lake	End of Sep Storage	%	4	6	-3	-1
Lake Oroville	End of Sep Storage	%	18	22	5	10
Folsom Lake	End of Sep Storage	%	4	11	-2	0
San Luis Reservoir	End of Sep Storage	%	0.14	-0.22	-0.11	-0.40
CVP North-of-Delta AG Deliveries	Annual (Mar–Feb)	%	12	10	2	1
CVP South-of-Delta AG Deliveries	Annual (Mar–Feb)	%	29	26	13	9
CVP North-of-Delta M&I Deliveries	Annual (Mar–Feb)	%	2	1	0	0
CVP South-of-Delta M&I Deliveries	Annual (Mar–Feb)	%	9	8	4	4
CVP Settlement Contractors Deliveries	Dry and Critical Annual (Mar–Feb)	%	0	1	0	1
CVP Exchange Contractors Deliveries	Dry and Critical Annual (Mar–Feb)	%	0	0	0	0
CVP Level 2 Refuge Deliveries	Dry and Critical Annual (Mar–Feb)	%	-1	0	-2	0
Total CVP South-of-Delta Deliveries (including AG, M&I, Exchange & Refuge)	Annual (Mar–Feb)	%	11	10	5	4
Total CVP Deliveries (including AG, M&I, Settlement, Exchange & Refuge)	Annual (Mar–Feb)	%	6	5	2	2
Total SWP Contractors Deliveries (including FRSA, Table A, A56 and A21)	Annual (Jan–Dec)	%	17	2	12	-3
SWP South-of-Delta Contractors Deliveries (including Table A, A56 and A21)	Annual (Jan–Dec)	%	24	3	17	-4
Total SWP Contractors Table A Deliveries (including A56)	Annual (Jan–Dec)	%	21	-1	14	-7
SWP Contractors South-of-Delta Table A Deliveries (including A56)	Annual (Jan–Dec)	%	21	-1	14	-7
SWP Contractors A21 Deliveries	Annual (Jan–Dec)	%	192	193	126	165
SWP FRSA Deliveries	Dry and Critical Annual (Jan–Dec)	%	1	1	1	2
Delta Outflow	Annual (Oct–Sep)	%	-5	-2	-3	0
Delta Exports	Annual (Oct–Sep)	%	18	6	11	-1
Exports at North Delta Diversion Intakes	Annual (Oct–Sep)	%	-	-	-	-
Exports at South Delta Intakes	Annual (Oct–Sep)	%	-47	-46	-49	-49

Note: "LLT" (Late Long-Term) indicates Alternatives that are simulated with 2060 climate change and sea level rise.