

Geographic Scope of Project's Influence on Flow

2D.1 Purpose of this Memorandum

The purpose of this memorandum is to explain how the Department of Water Resources (DWR) identified the geographic scope of flow changes associated with the project described in the Environmental Impact Report (EIR) for the Long-Term Operation of the California State Water Project (Proposed Project). In making this determination, DWR considered: (1) the geographic scope of State Water Project (SWP) operations' influence (i.e., the "zone of influence")¹ particularly with respect to the operations described in the Proposed Project; and (2) whether, in light of SWP and Central Valley Project (CVP)² coordinated operations, the Proposed Project would cause a reasonably foreseeable response by United States Bureau of Reclamation (Reclamation) that could result in changes in CVP operations outside the SWP zone of influence.

This memorandum describes the zone of influence affected by the Proposed Project as the Sacramento River below the confluence of the Feather River, the legal Delta, and the Suisun Marsh and Bay. This memorandum also explains that DWR cannot reasonably foresee how Reclamation will operate the CVP because, even though DWR and Reclamation coordinate to meet joint regulatory requirements, DWR and Reclamation exercise independent discretion over how to operate the SWP and CVP, respectively, to best meet those requirements in concert with other obligations. How Reclamation might respond to the Proposed Project, and any potential implications of Reclamation's response, is speculative. Thus, the analysis of flow-related impacts is appropriately focused on the SWP zone of influence and does not include areas that are affected only by CVP actions.

2D.2 Approach

This memorandum first relies on the knowledge and experience of SWP operators to describe both the SWP zone of influence and the independent operational decisions controlling SWP and CVP operations. DWR and Reclamation make operating decisions based on real-time data that constantly change. SWP operators are well-suited to describe the operational decision-making process. Operators understand the complexities of the decision-making process and, therefore, can accurately and realistically explain how those operational decisions relate to flow changes.

This memorandum explains that DWR also performed a modeling analysis to further confirm whether and to what extent change might occur outside the Proposed Project's geographic scope. The modeling approach is discussed in Section 2D.5, "Modeling Approach and Verification of Scope." Computer models, such as CalSim, can only provide a generalized representation of the Projects that

¹ For the purposes of this memorandum, the zone of influence means the spatial area or volume of receiving water flow within which some change in flow or water quality is anticipated to occur as a result of a discharge, extraction, or other activity.

² The SWP and CVP are jointly referred to as "Projects."

simulate operations based on specific rules.³ Thus, while modeling is helpful for a high-level understanding, an experienced operator's explanation may be better specialized to address these circumstances because it accounts for real-time operational decision-making.

2D.3 SWP Zone of Influence

The SWP is made up of dams, reservoirs, generation and pumping plants, conveyance, both natural and man-made, and delivery structures, among others. The major components of the SWP that influence flow in the natural waterways are: 1) the Oroville-Thermalito Hydroelectric Complex (Oroville Complex or Oroville), and 2) SWP Delta facilities, including Clifton Court Forebay, Barker Slough Pumping Plant, and Suisun Marsh Salinity Control Gates.

At Oroville, DWR manages runoff from the Feather River Watershed for flood control, environmental flows, local agricultural use, and water supply for the SWP. Water originating from Oroville only influences waterbodies that are directly downstream and that naturally receive drainage from the Feather River basin. As depicted in the Project Location map in the Draft EIR,⁴ the receiving waterbody is the Sacramento River at the confluence with the Feather River. The Sacramento River then drains into the Delta. Operations of the Oroville Complex and resulting flows in the Feather River are not included in the EIR because Oroville operations are governed by separate legal authorizations, including a Federal Energy Regulatory Commission license and other associated regulatory reviews and requirements. No changes to operations of the Oroville Complex are proposed as part of this Project.

Within the Delta, SWP export facilities including Clifton Court Forebay and Barker Slough Pumping Plant divert: 1) water that was previously stored in Oroville, and 2) other unstored water that is in excess of all other regulatory requirements. This excess flow may originate from flood control releases or other unstored runoff and is exportable under SWP water rights permits. When the SWP export facilities divert water that was previously stored in Oroville, the Clifton Court Forebay allotment and the Oroville releases are managed together to maintain compliance with the regulatory requirements. These requirements include but are not limited to flow and water quality requirements. The Proposed Project's zone of influence during these conditions would extend from the Sacramento River below the confluence with the Feather River to the southern part of the Delta and Suisun Marsh and Bay.

Flows available during excess conditions⁵ are independent of export operations at the SWP, where the export operations do not influence the amount of inflow into the Delta but may change the flow paths within the Delta region. The zone of influence during these excess conditions would be limited to the Delta and Suisun Marsh and Bay.

³ CalSim is developed jointly by DWR and Reclamation to simulate SWP and CVP operations for long-term planning analyses. While the model is not able to capture all complexities of real-time operations, it does apply generalized rules that represent SWP and CVP operations. CalSim is currently the best available tool for evaluating the SWP and CVP long-term planning activities.

⁴ Draft EIR, Figure 1-1. "Long-Term SWP Operations Project Area."

⁵ The Coordinated Operations Agreement (COA) defines "excess water conditions" as "periods when it is agreed that releases from upstream reservoirs plus unregulated flow exceed Sacramento Valley inbasin uses, plus exports." COA at Article 3(c).

In addition to the changes in releases and diversions at the SWP export facilities, DWR manages the Suisun Marsh Salinity Control Gates (SMSCG) and the south Delta temporary barriers (commonly referred to as the Temporary Barriers Program or TBP). The SMSCG are used to manage the water quality within the Suisun Marsh. The gates are typically operated to tidally pump fresher water into Montezuma Slough. Because the SMSCG effectively pumps fresher water into the Suisun Marsh, a compensating action is typically required to maintain similar salinity conditions within the central Delta. The zone of influence of the SMSCG is the Suisun Marsh and Bay, and the central Delta; however, compensating actions could include export or release changes.

The TBP are temporary rock structures with the primary purpose of maintaining water elevations for the local diverters. These structures influence the water elevations in the south Delta as well as the flow paths. The zone of influence of the TBP is the south Delta starting at the bifurcation of the San Joaquin River into the head of Old River and extending downstream and diminishing before connecting again with the San Joaquin River.

A subsequent Project approval is the water right time extension for SWP Feather River/Delta water right permits 16478, 16479, 16481, 16482, 16477, and 16480 to allow long-term operations consistent with the diversion rates and quantities analyzed in this EIR within the limits authorized by the water right permits. The analysis simulates SWP operations in both Feather River and the Delta. No changes to operations of the Oroville Complex and Delta export facilities are required for time extension.

In summary, for the purposes of this EIR, the Proposed Project's zone of influence is confined to the Sacramento River below the confluence with the Feather River, the legal Delta, and the Suisun Marsh and Bay.

2D.4 CVP Independent Operation

When identifying the area of flow changes for the purpose of the EIR, DWR considered whether SWP operations would cause reasonably foreseeable CVP operational responses in areas outside the SWP zone of influence due to coordinated SWP and CVP operations. The SWP and CVP operate together to meet the joint regulatory requirements in the Delta including those defined in the State Water Resources Control Board Water Quality Control Plan (currently set forth in D-1641). The Coordinated Operations Agreement (COA) is a 1986 agreement, updated in 2018, that governs how the SWP and CVP share water under their water rights and operate to meet these regulatory requirements.⁶

Even though the SWP and CVP coordinate operations, DWR and Reclamation independently decide how to operate the individual projects to best meet applicable requirements. The COA does not define what actions DWR or Reclamation will take in any given set of circumstances. These decisions occur in real time, allowing operators to account for constantly changing conditions such as tides, accretions and depletions, and hydrology.

⁶ Agreement Between the United States of American and the State of California for the Coordinate Operation of the Central Valley Project and the State Water Project (Nov. 24, 1986); Addendum to the Agreement Between the United States of America and the Department of Water Resources of the State of California for the Coordinated Operation of the Central Valley Project and the State Water Project (Dec. 12, 2018).

Typically, the SWP and CVP either implement storage or export changes to meet many of the regulatory requirements. For example, when making operational decisions, SWP operators essentially have two options: 1) releases from Oroville, and 2) SWP exports. When SWP operators manage the Oroville releases and Clifton Court Forebay allotment, they are managing to conditions within the Feather River, like flood and minimum instream flow requirements. They are also managing conditions in the Delta including outflow, interior flow, and water quality requirements. Although SWP operators discuss their management decisions with CVP operators, SWP operational actions are determined by DWR only.

Similarly, CVP operators select from a set of options to make operational changes to meet regulatory requirements such as Shasta Reservoir, Trinity Reservoir, Folsom Reservoir, the Delta Cross Channel, and CVP exports. Reclamation has manual control over, and has discretion to choose, any potential combination of operational actions to achieve its desired result. It would be speculative for DWR to try to predict how Reclamation will exercise its discretion in real time.

2D.5 Modeling Approach and Verification of Scope

The modeling completed for this analysis begins with the CalSim model which is designed to simulate the SWP and CVP operations in meeting shared in-basin use requirements including regulatory requirements and deliveries to respective water contractors.

Modeling assumptions for the effects analysis focused on isolating SWP effects where proposed elements were applied to SWP, while the CVP assumptions remained consistent between scenarios, with exception to the cumulative analysis. However, a few of the proposed changes in the Delta are shared by CVP and SWP (e.g., Old and Middle River flow [OMR] constraints). The model simulates both the CVP and SWP under these shared conditions and necessarily operates CVP exports and CVP reservoirs to those conditions, which can result in minor changes to the CVP operations.

An assessment was completed to evaluate the extent of modeled change outside the Proposed Project's geographic scope. Due to model assumptions and approaches detailed in Appendix 4A Attachment 8, Model Limitations, the CalSim 3 model output includes minor fluctuations of up to 5%. Therefore, for these analytical purposes differences of 5% or less are considered minimal. Differences in CalSim 3 outputs of greater than 5% would not necessarily constitute an impact on a specific resources but would be considered actual physical differences that could be expected to occur. The assessment indicated minimal changes in flows when compared to existing conditions modeling for the most part. The exception in the assessment was at the Feather River upstream of the confluence with the Sacramento River, where modeled changes indicated a few instances of >5% change. In response to this finding, additional analysis was completed to assess potential effects, including fishery impacts and water temperature, in the Feather River (Attachment 1). The analysis concluded that the few instances of >5% change would not result in any significant impacts.

2D.6 Conclusion

In conclusion, DWR appropriately identified the Proposed Project's geographic scope of flow changes as its zone of influence, which includes the Sacramento River below the confluence of the Feather River, the legal Delta, and the Suisun Marsh and Bay. Although DWR and Reclamation jointly operate the SWP and CVP under the COA, the agencies exercise independent discretion regarding how to carry out operations to meet shared legal requirements. It would be speculative for DWR to identify any potential flow changes of the Proposed Project outside the zone of influence because DWR cannot reasonably foresee how Reclamation might respond to the Proposed Project.