

Synopsis of DWR's Proposed Long-Term Operations of the State Water Project

March 26, 2020

Introduction

The California State Water Project (SWP) is a water storage and delivery system of reservoirs, aqueducts, power plants, and pumping plants extending more than 700 miles—two-thirds the length of California. Planned, constructed, and operated by the Department of Water Resources (DWR), the SWP is the nation's largest state-built, multi-purpose, user-financed water project. It supplies water to more than 27 million people in Northern California, the Bay Area, the San Joaquin Valley, the Central Coast, and Southern California. SWP water also irrigates about 750,000 acres of farmland, mainly in the San Joaquin Valley. In addition to water supply, the SWP was designed to provide multiple benefits, including flood control, fish and wildlife habitat, power generation, and recreation.

The SWP operates to balance the needs of water delivery and environmental protection. In cooperation with the federal Central Valley Project (CVP), DWR operates the SWP to limit salinity intrusion into the Sacramento-San Joaquin Delta and Suisun Marsh by supplementing freshwater outflows to the ocean and limiting water exports from the Delta during certain times of the year (Figure 1). The sustainability of California's water resources depends on the environmental health of the Sacramento-San Joaquin Delta.



Figure 1. Suisun Marsh Salinity Control Gates

The SWP is subject to multiple layers of State and federal regulation. For example, California regulates the SWP directly through the California Department of Fish and Wildlife (CDFW) under the California Endangered Species Act (CESA) and through the State Water Resources Control Board under California's Porter-Cologne Water Quality Control Act and California's implementation of the federal Clean Water Act.

Over the last decade, scientific knowledge about the Delta ecosystem and its relationship to water operations has grown, largely due to new science that has been developed through collaborative processes since the issuance of the existing endangered species "take" authorizations for current SWP operations. Developed in

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consultation with CDFW, and refined based on comments received during the environmental review process, the proposed long-term operations incorporate this new science, as well as information about the current status of listed species. The operational updates are designed to minimize adverse environmental effects, particularly with respect to listed species and water quality, accounting for operational restrictions for the protection of listed species as well other environmental conditions such as salinity and turbidity. For example, the proposed long-term operations include pumping restrictions for the protection of listed species to be triggered in most water year types, which will be more often than under current SWP operations. The updates also allow operational flexibility where appropriate, but incorporate specific bounds with regulatory oversight, such as CDFW's ability to stop certain operational adjustments when it determines that such operations would violate CESA standards. In addition, a State-organized adaptive management plan will allow for continuous evaluation of the long-term SWP operations and establish procedures to ensure that continued operations are consistent with applicable legal requirements and protective of species. The operational updates will improve existing operations and will allow the the State to continue to meet its water supply needs while protecting fish and wildlife based on the best available scientific information.

Project Purpose and Objectives

DWR has applied for an incidental take permit (ITP) from the CDFW pursuant to CESA to allow DWR to continue the long-term operation of the SWP consistent with applicable laws, contractual obligations, and agreements. Consistent with the underlying purpose of obtaining this new ITP, DWR's project objectives are to store, divert, and convey water in accordance with DWR's existing water rights to deliver water



Figure 2. Location of SWP Delta Facilities

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pursuant to water contracts and agreements up to full contract quantities, and to optimize water supply and improve operational flexibility while protecting fish and wildlife based on the best available scientific information. Figure 2 shows the locations of existing and proposed SWP facilities in the Delta and vicinity that are included in the proposed project.

Overview of Proposed Long-Term Operations

Proposed Refinements to State Water Project Operations

The proposed long-term operation of the SWP (described in DWR's Final Environmental Impact Report as "Refined Alternative 2b") would use the best available scientific information to meet contractual obligations while also providing appropriate protections for listed species. The key elements of DWR's proposed long-term operation of the SWP include:

- **Stronger Species Protections:** DWR and DFW worked together to provide strong and clear criteria to protect smelt and salmon. Examples of this include distinct seasonal and daily loss thresholds for salmon and more restrictive criteria for Longfin Smelt than provided for in prior CESA authorizations for SWP operations.
- **Water Dedicated for Delta outflow:** The proposed project includes a dedicated "block" of water for summer or fall Delta outflow as well as additional spring maintenance flows that would be provided on a flexible basis. CDFW would have the ability to use flows for explicit purposes such as routing water into key areas to provide habitat benefits for sensitive species. Adjustments to these actions would be made over time as new information is learned.
 - As illustrated by Figure 3, these Delta outflows could be used in Summer-Fall of the current year or spring, summer, or fall of the following year. In coordination with CDFW, DWR would work to assess ecosystem conditions and provide this water in times when sensitive aquatic species need it most.
 - These blocks of water would be used to test hypotheses about how best to use Delta outflow to support Longfin Smelt and Delta Smelt.
- **Innovative Use of Facilities for Fish Management:** DWR will be using a unique water management system, the Suisun Marsh Salinity Control Gates, to improve habitat conditions in Suisun Marsh, one of the key habitats for Delta Smelt. DWR has committed to extending the operation of the Suisun Marsh Salinity Control Gates not only for 60 days in June through October of below normal, above normal, and some wet years, but also for 30 days in dry years following below normal years to provide improved habitat conditions for Delta Smelt in the marsh.

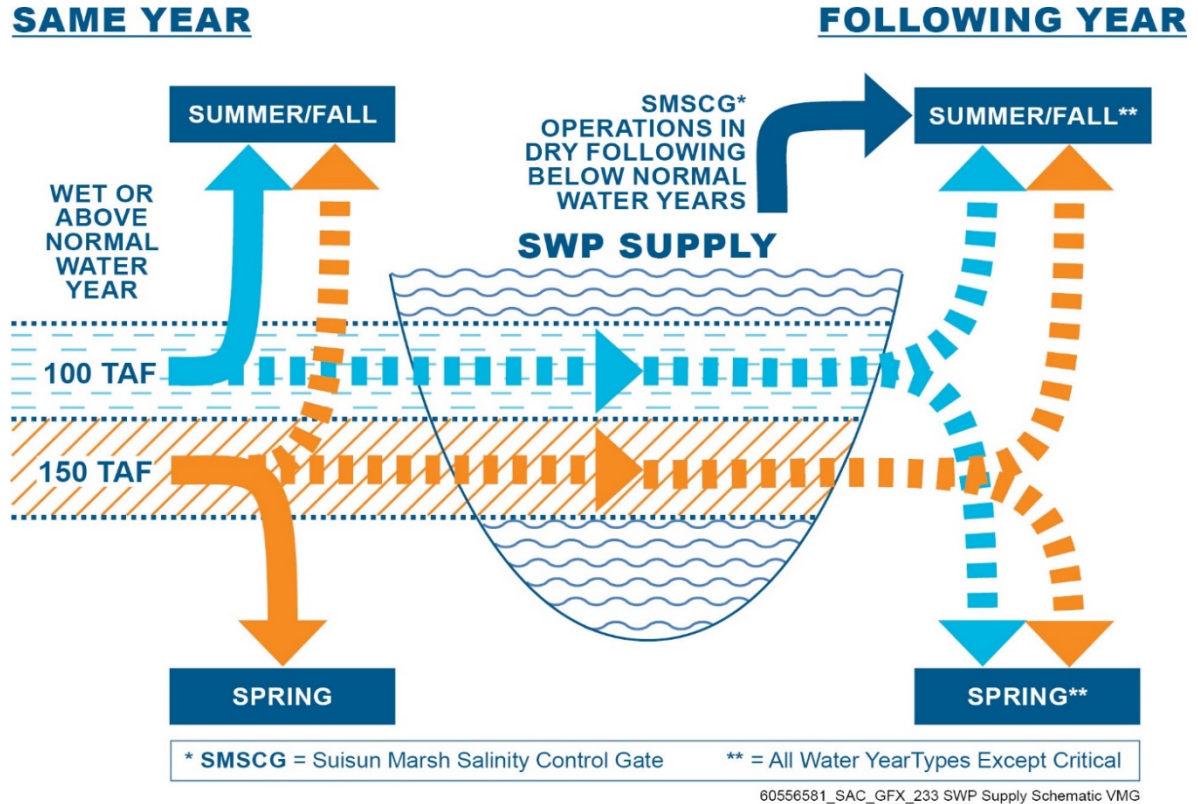


Figure 3. Illustration of the Dedicated Water for Delta Outflow

- **Decision-making authority for DFW:** DFW and DWR will jointly work to assess potential risks associated with real-time water project operations. If DWR and DFW cannot reach a resolution on how to proceed, the Director of CDFW may require DWR to implement CDFW’s operational decision and DWR will operate to this requirement.
- **New protections for migrating salmon:** One of the problems for migrating juvenile salmon is that they can stray into the central Delta where survival is poor. DWR will install and operate a behavioral modification barrier at the confluence of Georgiana Slough and the Sacramento River in January through May of each year to help keep young salmon out of the central Delta. Further, DWR will consider whether placing additional guidance barriers in the Sacramento River near the mouths of Sutter and Steamboat sloughs could also improve survival of emigrating salmon through these areas.
- **Operational Clarity and Flexibility:** The proposed project provides clear direction on when Delta pumping can be increased during storm events and caps the amount that exports can be increased in those events. Additionally, a clear definition around storm events has been provided.

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- **Real-time operations:** The real-time operations would use updated modeling, monitoring, and quantitative analyses to support habitat actions and species protection.
- **Adaptive Management Plan:** The proposed project includes funding to implement a comprehensive Adaptive Management Plan (AMP) to collect, analyze, and inform management actions over the permit period.
- **Enhanced Studies, Monitoring, and Financial Commitments:** The proposed project includes funding for the implementation of an AMP that would increase scientific understanding of Delta ecosystems and use that knowledge to reduce effects of SWP operations on aquatic species. The AMP will develop and implement a science program to address uncertainties and to support implementation of adaptive management in coordination with key science programs, as appropriate. DWR is committed to funding millions of dollars for core long-term monitoring elements in support of the ITP. A more comprehensive list of focused studies is described in the AMP.
- **SWP exports similar to existing conditions:** The hydrologic and biologic modeling that was conducted for the proposed project shows that in December through June of most years, SWP exports would be similar to conditions existing under the 2008 USFWS and 2009 NMFS Biological Opinions. However, modeling output shows that there would be increases in modeled entrainment at SWP facilities during April and May, which is attributable to CVP operations (i.e., CVP increases in pumping during this time pull fish toward SWP intakes). The SWP may also increase pumping in wetter years, when Delta inflow is over 44,500 cubic feet per second (cfs) and in those years, some increases in entrainment can be attributed to both the SWP and the CVP.

Four of these elements listed above are highlighted below: dedicated blocks of water, real-time operations, stronger species protections, AMP, and impact minimization.

Dedicated Blocks of Water

The proposed project would include dedicated blocks of water for deployment in the Delta to benefit listed species. DWR will pursue dedication of water provided by the SWP for outflow purposes and not picked up by other water diversions.

Delta Outflow in Spring (Spring Maintenance Flows). The proposed project would curtail exports to maintain the current SWP spring outflow contribution.

Development and Redeployment of Spring Maintenance Flows for Spring, Summer, or Fall. As determined by CDFW, the proposed project would provide for the shifting of spring maintenance flows to develop up to 150 Thousand Acre-Feet (TAF) of water for

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use in the Summer-Fall period of the current year or spring-fall of the following year, except if the following year is a “critical” water year.

Adaptively-Managed “Block” of Delta Outflow in Summer or Fall. The proposed project would provide 100 TAF of water to supplement Delta outflow any time between June and October of “wet” and “above normal” water years. As recommended by CDFW, this water would be provided for the purposes of testing and evaluating some components identified in the Delta Smelt Resiliency Strategy, or other purposes as identified in the AMP. The water would be made available from water purchases or SWP project water.

Real-Time Operations and Enhanced Species Protections

The flow at Old and Middle River (OMR) is a surrogate indicator of the influence of export pumping on hydrodynamics in the South Delta. The proposed project would include real time operations for OMR flow that include the following:

- **Longfin Smelt Entrainment Protections.** DWR and CDFW will use the Collaborative Real-time Risk Assessment process to determine when more restrictive OMR flow levels are needed to protect larval, juvenile, and adult Longfin Smelt (Figure 4).
- **Delta Smelt Entrainment Protections.** DWR, in coordination with the U.S. Bureau of Reclamation (Reclamation), would reduce exports during “first flush,” a key time when Delta Smelt begin to migrate following the initial major winter storms. Following these actions, DWR and Reclamation will manage exports in order to maintain daily average turbidity in Old River at Bacon Island to avoid the formation of a turbidity bridge from the San Joaquin River shipping channel to the South Delta fish facilities. This action helps keep adult Delta Smelt away from the export facilities. The Collaborative Real-time Risk Assessment process will be used to decide whether a more restrictive OMR flow requirement than - 5,000 cfs (cubic feet per second) is needed for larval/juvenile Delta Smelt protection.
- **Salmonid Entrainment Loss Protections.** The proposed project would include daily loss thresholds cumulative loss thresholds, single-year loss thresholds, and an interim use of hatchery surrogate species and a commitment to develop a better tool to determine and protect against winter-run and spring-run salmonid entrainment loss.

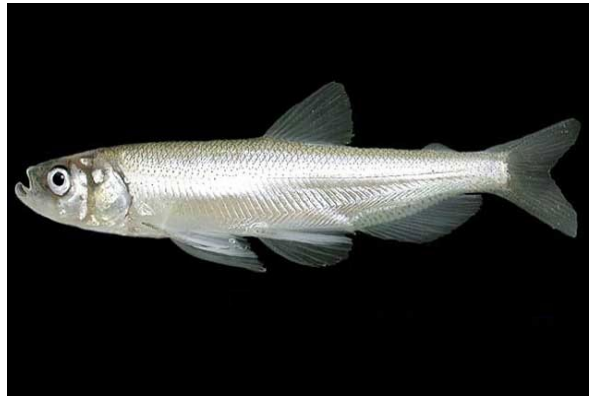


Figure 4. Longfin Smelt

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- **Delta Smelt Summer-Fall Habitat Action.** Summer-Fall habitat actions would improve Delta Smelt habitat management to achieve the following: 1) maintain low-salinity habitat in Suisun Marsh and Grizzly Bay; 2) manage the low salinity zone to overlap with turbid water and available food supplies; and 3) establish contiguous low-salinity habitat from Cache Slough Complex to Suisun Marsh. Additionally, the proposed project provides for summer operation of the Suisun Marsh Salinity Control Gates in above normal, below normal and most dry years, a critical location and time for smelt.

The proposed project includes the flexibility to capture excess flows in the Delta when QWEST is positive, and flows are sufficient to meet water quality control plan flow and salinity requirements and other applicable regulations. During excess flow events, DWR would operate to an OMR flow no more negative than -6,250 cfs. The triggers for implementing flexible OMR management are provided in Figure 5.

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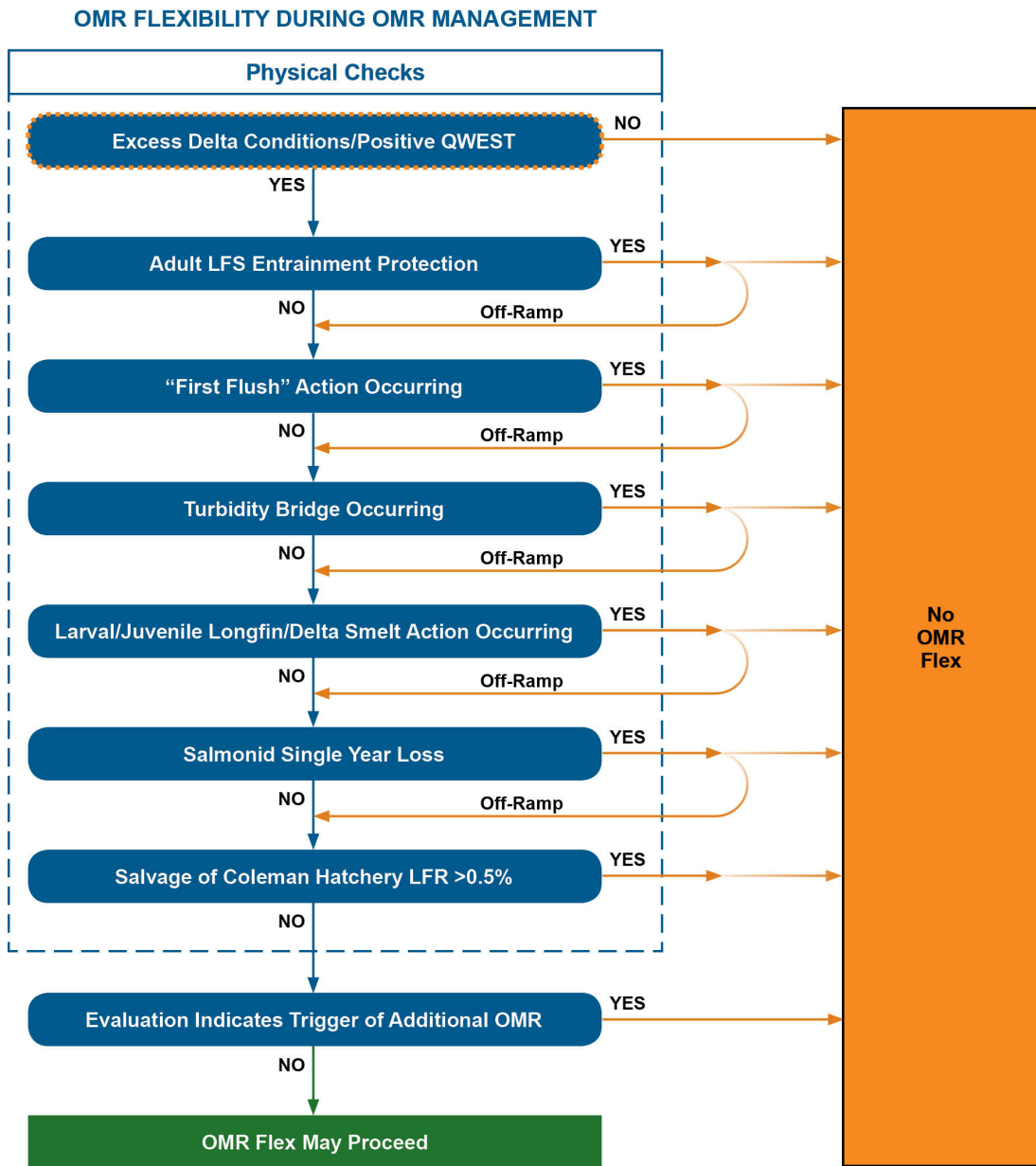


Figure 5. Thresholds for Implementing OMR Management

Figure 6 on the following page summarizes the timeline for the fish protection and other OMR measures.

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Adaptive Management Plan

DWR will fund and implement an AMP to evaluate the efficacy of specific operations and activities, including outflow, fish barriers, predator management, and other management actions. The AMP will be used to evaluate the efficacy of actions in the proposed project, and identify refinements if necessary, by addressing areas of known uncertainty, improving scientific understanding by filling data gaps and weighing whether new information should be incorporated into the ITP through an amendment.

The AMP will use new and existing monitoring programs to track the status of listed species of fish and to ascertain performance of minimization measures associated with the proposed project.

Impact Minimization at Georgiana Slough

DWR would install and operate a non-physical barrier at the confluence of Georgiana Slough and the Sacramento River (the “Georgiana Slough Behavior Modification Barrier”). The Georgiana Slough Behavior Modification Barrier would be a non-physical deterrent to impede emigrating Sacramento River juvenile salmonids from entering Georgiana Slough during the period when wild juvenile salmonids are present (primarily between October 1 through June 1). Additionally, DWR would conduct studies to determine the efficacy of placing behavioral guidance barriers in the Sacramento River near the mouths of Sutter and Steamboat sloughs for the purpose of directing emigrating salmonids into these sloughs.

Next Steps

DWR is working closely with CDFW to finalize the ITP for State-listed species potentially affected by long-term operations of the SWP. Additional next steps will include:

- Implementation of the AMP and continued studies to refine the management of listed species in the Delta.
- Continued implementation of habitat restoration to support sensitive aquatic species in the Delta consistent with existing commitments.
- Collaboration with CDFW to implement real-time decision-making for SWP operations as specified in the EIR and the terms and conditions of the ITP.

Glossary

AMP – Adaptive Management Plan: An appendix to the FEIR that describes the process that will be implemented by DWR to collect data and evaluate the effectiveness of management actions. The AMP describes the process by which future management actions would be refined based on feedback from this process.

CDFW – California Department of Fish and Wildlife: The state agency responsible for implementing the California Endangered Species Act.

CEQA – California Environmental Quality Act: The California Environmental Quality Act (CEQA) requires public agencies to review potential impacts and identify mitigation measures if a project funded or approved by the agency would result in potentially significant environmental impacts.

CESA - California Endangered Species Act: The California Endangered Species Act (CESA) is a California environmental law enacted in 1970 and amended in 1984 and 1997 that conserves and protects plant and animal species at risk of extinction.

cfs – cubic feet per second: measurement of the volume of water moving across a single point in a channel that is equal to about 7.5 gallons per second.

CVP – Federal Central Valley Project: A complex, multi-purpose network of dams, reservoirs, canals, hydroelectric powerplants and other facilities. The CVP provides flood protection for the Central Valley and supplies domestic and industrial water in the Central Valley.

D-1641 – State Water Resources Control Board’s Water Rights Decision 1641: This decision implements the current water quality objectives that are set forth in the 1995 Bay-Delta Plan, adopted May 22, 1995.

DWR – California Department of Water Resources: The state agency responsible for managing and operating the SWP facilities

OMR – Old and Middle Rivers: Two channels in the Delta that convey water southward toward Clifton Court Forebay for diversion at Banks Pumping Plant. Flows in the Old and Middle River channels are managed to limit the potential for entrainment of special status fish

ppt = parts per thousand: A ratio used in the FEIR to refer to the concentration of salts in water (i.e. salinity).

SWP – State Water Project: A water storage and delivery system of reservoirs, aqueducts, power plants, and pumping plants that is operated by the Department of Water Resources (DWR)

TAF – Thousand Acre-Feet: The amount of water that would cover approximately 757 football fields one foot deep.