State of California

The Natural Resources Agency Department of Water Resources

Incidental Take Permit for the Long-Term Operation of the State Water Project: 2021 Annual Status Report

ITP No. 2081-2019-066-00-A1

First Draft Submitted December 1, 2021

Final Draft Submitted February 1, 2022

Contents

Attached Associated Documents

Appendix A. Daily Salvage, Exports, Turbidity and Temperature Data for Water Year 2021

Appendix B. John E. Skinner Fish Protective Facility Inspection and Maintenance Reports for Water Year 2021

Appendix C. Data Comparing the Daily USGS Tidally Filtered Old and Middle River Flow Gauge Readings (USGS OMR) and the Old and Middle River Index Calculations (OMRI) in Water Year 2021.

Purpose of the ITP Annual Status Report

The purpose of the Annual Status Report (ASR) is to summarize information on the California Department of Water Resources' (DWR) compliance with the Incidental Take Permit (ITP) for the Long-Term Operation of the State Water Project, as amended (No. 2081-2019- 066-00-A2), and issued by the California Department of Fish and Wildlife (CDFW). While the information in the ASR focuses primarily on Water Year (WY) 2021 (i.e., the period from October 1–September 30, 2021), the report does also include activities up to the present, for some Conditions of Approval. As required under ITP Condition of Approval (COA) 7.2, the ASR includes a copy of the table in the Mitigation Monitoring and Reporting Plan with notes showing the current implementation status of the ITP Conditions of Approval and mitigation measures.

This ASR is occurring early in the lifecycle of the ITP issued on March 31, 2020, and therefore it is difficult to assess the effectiveness of each Condition of Approval in avoiding, minimizing, and mitigating Project impacts, as required under COA 7.2. Additionally, critically dry conditions have prevented DWR from implementing some elements of the ITP that are conditional on the type of water year. Instead, DWR has attempted to capture the challenges and successes in implementing each of the conditions. In future years, as implementation of the ITP progresses, our ability to assess the effectiveness of individual Conditions in protecting the Covered Species that are the subject of the ITP will improve and be fully realized through the 4-year and 8-year reviews described in Section 3.13.8 of the ITP.

Nonetheless, the progress summarized within the ASR for Water Year 2021 represents the collective accomplishments of numerous DWR and CDFW personnel, along with partner agencies and non-governmental organizations, in successfully implementing the requirements of the ITP. Implementation of the ITP requirements will, almost certainly, prove beneficial to the protection of Longfin Smelt (LFS), Delta Smelt (DS), Winter-run Chinook Salmon (CHNWR), and Spring-run Chinook Salmon (CHNSR) in the Sacramento-San Joaquin Delta in the future.

Table 1 Status of ITP Implementation by Condition of Approval

Condition	Mitigation measure	Implementation schedule	Status
6.1	Designated Representative. Within one month of the effective date of this ITP, Permittee shall designate a representative (Designated Representative) responsible for communications with CDFW and overseeing compliance with this ITP. Permittee shall notify CDFW in writing within one month the effective date of this ITP of the Designated Representative's name, business address, and contact information, and shall notify CDFW in writing if a substitute Designated Representative is selected or identified at any time during the term of this ITP.	Within one month of effective date of the ITP.	The Designated Representative is Dr. Lenny Grimaldo, Assistant Environmental Director for the California Department of Water Resources. Email: lenny.grimaldo@water.ca.gov Mobile phone: (415) 823-1372 Address: P.O. Box 942836 Sacramento, CA 94236-0001
6.2	Designated Biologist. Permittee shall submit to CDFW in writing the name, qualifications, business address, and contact information of a biological monitor (Designated Biologist) within 30 days of the effective date of this ITP. Permittee shall ensure that the Designated Biologist is knowledgeable and experienced in the biology and the natural history of the Covered Species. The Designated Biologist	Within one month of effective date of the ITP.	The Designated Biologist for the ITP was initially identified as Dr. Ted Sommer in an email to CDFW on April 14, 2020. But with Dr. Sommer's retirement from State service in fall 2021, the Designated Biologist must be changed and DWR hereby submits Chris Wilkinson, Environmental Program Manager II, in the DWR Division of Integrated Science and Engineering, as the next Designated Biologist.

Condition	Mitigation measure	Implementation schedule	Status
	shall be responsible for monitoring Covered Activities described in Condition of Approval 7.7 to help minimize or avoid the incidental take of individual Covered Species and to minimize disturbance of Covered Species' habitat. Permittee shall obtain CDFW approval of the Designated Biologist in writing, and shall also obtain approval in advance in writing if the Designated Biologist must be changed.		Chris has been working in his current role at DWR as ITP Lead Biologist, managing implementation of the ITP, since September 2020. Prior to that, Chris managed the application and environmental compliance process for DWR in obtaining the ITP and has more than 20 years of experience working for DWR on projects directly involving the Covered Species. Email: christopher.wilkinson@water.ca.gov Mobile Phone: (916) 873-4301 Address: P.O. Box 942836 Sacramento, CA 94236-0001 Additionally, several other Designated Biologists have been approved by CDFW as biological monitors according to the terms of COA 7.7 Barker Slough Pumping Plant Sediment and Aquatic Weed Removal, during WY 2021.
6.3	Designated Biologist Authority. To ensure compliance with the Conditions of Approval of this ITP, the Designated Biologist shall have authority to immediately stop any activity that does not comply with this ITP, and to order any reasonable measure to avoid the unauthorized take of an individual of the Covered Species.	Throughout the term of the ITP.	DWR understands that Designated Biologist Authority includes the authority to immediately stop any activity that does not comply with the ITP and to also order any reasonable measure to avoid the unauthorized take of an individual of the Covered Species.

Condition	Mitigation measure	Implementation schedule	Status
6.4	CDFW Access. Permittee shall provide CDFW staff with reasonable access to the Project facilities and mitigation lands under Permittee control, and shall otherwise fully cooperate with CDFW efforts to verify compliance with or effectiveness of mitigation measures set forth in this ITP.	Throughout the term of the ITP.	DWR is committed to providing CDFW staff with reasonable access to the Project facilities and mitigation lands under DWR control.
7.1	Notification of Non-Compliance. The Designated Representative shall immediately notify CDFW in writing if it determines that the Permittee is not in compliance with any Condition of Approval of this ITP, including but not limited to any actual or anticipated failure to implement measures within the time periods indicated in this ITP and the MMRP. The Designated Representative shall report any non-compliance with this ITP to CDFW within 24 hours.	Throughout the term of the ITP.	During WY 2021, there was one incidence of DWR being out of compliance with a COA of the ITP. According to COA 7.4.2 Skinner Fish Facility Operations Manual, DWR was to work with CDFW to address comments on the draft revised manual and submit the final revised Skinner Fish Facility Operations Manual to CDFW for approval before September 30, 2021. But because of protracted negotiations between CDFW and DWR on the protocols to be included in the manual, the manual was not able to be finalized by the deadline identified in the ITP. Instead, DWR and CDFW have continued to collaborate on the development of the Skinner Fish Facility Operations Manual and DWR has continued to comply with all other requirements of COA 7.4.2.
7.2	Annual Status Report. Permittee shall provide CDFW with an Annual Status Report (ASR) no later than December 1 of every year beginning with issuance of this ITP	Throughout the term of the ITP.	The WY 2021 ASR includes all of the required items.

Condition	Mitigation measure	Implementation schedule	Status
	and continuing until CDFW accepts the Final Mitigation Report identified below. The ASR shall summarize information from the prior water year October 1 through September 30. Each ASR shall include, at a minimum: (1) a copy of the table in the MMRP with notes showing the current implementation status of each Condition of Approval and mitigation measure; (2) a copy of all SWP and CVP salvage data collected from the prior water year; (3) reports of inspections and maintenance of fish protective equipment; and (4) an assessment of the effectiveness of each completed or partially completed Condition of Approval mitigation measure in avoiding, minimizing, and mitigating Project impacts.		
7.3	Final Mitigation Report. No later than 45 days after completion of all mitigation measures or 90 days prior to the expiration of this ITP (whichever is sooner), Permittee shall provide CDFW with a Final Mitigation Report. The Designated Biologist shall prepare the Final Mitigation Report which shall include, at a minimum: (1) a summary of all ASRs; (2) a copy of	No later than 90 days prior to the expiration date of the ITP.	Not applicable.

Condition	Mitigation measure	Implementation schedule	Status
	the table in the MMRP with notes showing when each of the mitigation measures was implemented; (3) all available information about Project-related incidental take of the Covered Species; (4) information about other Project impacts on the Covered Species; (5) an assessment of the effectiveness of this ITP's Conditions of Approval in minimizing and fully mitigating Project impacts of the taking on Covered Species; (6) recommendations on how mitigation measures might be changed to more effectively minimize take and mitigate the impacts of future projects on the Covered Species; and (7) any other pertinent information.		
7.4	Skinner Fish Facility Operations. Permittee shall work in collaboration with CDFW to ensure essential information on salvage at the Skinner Fish Facility continues to be collected, verified for accuracy and quality, and reported to CDFW. CDFW will provide routine and regular oversight on operations as related to fish identification, handling, care, and transport to	Throughout the term of the ITP.	Since 2001, CDFW has provided oversight and retained responsibility for the salvage data and reporting process for the Skinner Fish Facility through a series of interagency agreements between CDFW Fish Facilities Unit and DWR's Delta Field Division. Salvage Data for the SWP and CVP from WY 2021 are provided in Appendix A.

Condition	Mitigation measure	Implementation schedule	Status
	maintain appropriate compliance with ITP requirements (see Condition of Approval 8.15). This is both an essential data source for Conditions of Approval 8.1.5, 8.1.5.1, 8.5.1.2*, 8.3.3, 8.4.1, 8.4.2, 8.5.2, 8.6.1, 8.6.2, 8.6.3, 8.6.4, and 8.7 as well as an important performance measure of their effectiveness. In addition, information on daily OMR flows and daily salvage are essential to ensure that the Conditions of Approval in this ITP are implemented effectively. Permittee shall continue to provide daily data sheets with preliminary salvage data from the SWP and CVP fish salvage facilities to CDFW no later than noon the following day, and final data shall be included in each ASR submitted to CDFW (Condition of Approval 7.2). *8.5.1.2 is an error in the original permit. Should be 8.1.5.2.		
7.4.1	Maintenance and Inspection Reporting. Permittee shall submit annual reports that describe regular inspections and maintenance of fish protective equipment at the Skinner Fish Facility that may affect screening and salvage efficiencies	Throughout the term of the ITP.	Annual reports describing regular inspections and maintenance of fish protective equipment at the Skinner Fish Facility are attached in Appendix B.

Condition	Mitigation measure	Implementation schedule	Status
	to CDFW each year as a part of the ASR (see Condition of Approval 7.2). Additionally, each time Permittee inspects or conducts maintenance on fish protective equipment they shall report the activities to CDFW staff assigned to support salvage facility operations (see Condition of Approval 8.15) verbally or via email as soon as feasible, but no later than 24 hours after each instance.		Also, as required, DWR continued the normal practice of reporting the inspection and maintenance activities to CDFW within 24 hours of each instance.
7.4.2	Skinner Fish Facility Operations Manual. Permittee shall ensure the existing salvage monitoring and reporting program samples no less than 30 minutes every two hours from November 1 through June 30. If the presence of large number of fish or debris may result in the loss of Covered Species in the salvage monitoring process, Permittee may operate to the existing reduced sampling time protocols for such circumstances (see Skinner Fish Facility Operations Manual v 2.0 October 19, 2005) and consult with CDFW immediately, or no later than 12 hours after, to discuss options available in real-time to maintain adequate detection of Covered Species when reduced sampling	Throughout the term of the ITP.	The draft updated salvage operations manual was submitted by DWR to CDFW on June 30, 2021. But because of the protracted negotiations between CDFW and DWR on the protocols to be included in the manual, the manual was not able to be finalized by the September 30 deadline identified in COA 7.4.2. Instead, DWR and CDFW have continued to collaborate on the development of the Skinner Fish Facility Operations Manual and DWR has continued to comply with all other requirements of COA 7.4.2.

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	time protocols are being implemented. The salvage process at the Skinner Fish Facility generates one of the largest data sources characterizing entrainment and take of Covered Species with a high amount of sampling effort. Reducing count times greatly reduces the ability to detect fish in the salvage facility sampling process, and often these outages occur concurrent with conditions which may be conducive to entrainment events. The intent of this Condition is to ensure a clear understanding exists between Permittee and CDFW regarding the circumstances in which reduced sampling times are necessary and appropriate, as the data collected from the facilities informs real-time operations such as OMR Management (Conditions of Approval 8.3 through 8.8). Permittee shall work with CDFW to update the Skinner Fish Facility Operations Manual and submit a draft updated manual to CDFW by June 30, 2021 for review. The		

Condition	Mitigation measure	Implementation schedule	Status
	updated draft operations manual shall include a new protocol for the Skinner Fish Facility which describes the decision-making process prior to reducing sampling times and the protocol used to determine whether Covered Species are present during debris removal efforts. Permittee shall work with CDFW to address comments on the draft manual and submit the final revised Skinner Fish Facility Operations Manual to CDFW for approval before September 30, 2021. Permittee shall operate the Skinner Fish Facility as described in the final CDFW-approved Skinner Fish Facility Operations Manual no more than 15 days after it is approved by CDFW.		
7.4.3	Continue to Refine Loss Equation. Permittee shall continue to refine the loss equation through annual performance evaluation studies for each component of the loss equation, including but not limited to salvage at the Skinner Fish Facility, pre-screen loss, louver (screen) efficiency, and handling and trucking loss. Performance evaluation studies shall also include post release survival studies on	Throughout the term of the ITP.	DWR continued implementation of the Delta SWP Fish Facilities Performance Evaluations Project (DFPE) which includes field evaluations of direct losses of salmonids at the SWP using mark-recapture methods. Implementation of the project in 2021 was impacted because of COVID-19 concerns, availability of hatchery late-fall Chinook Salmon as a result of hatchery disease issues, and a major electrical outage at DWR's Fish Science Building. Nevertheless, a limited

Condition	Mitigation measure	Implementation schedule	Status
	salvaged fish to evaluate loss associated with predation and reduced fitness as a result of the salvage and release process. Permittee shall work with Reclamation, CDFW, NMFS, and USFWS to develop refined protocols for daily estimation of salvage and loss for CHNWR and CHNSR, including relevant calculations, data, and information sources necessary to perform the relevant calculations used to estimate salvage and loss. Permittee shall update the loss equation with refinement to the loss equation components as approved by CDFW.		number of experimental releases were successfully completed using steelhead trout and Fall Chinook Salmon. Results from the WY 2021 evaluation should be available in early spring of 2022. In addition, DWR completed reporting for the WY 2018, 2019, and 2020 study years of the Skinner Evaluations/Improvements Study (SEIS) which similarly measured direct SWP losses using mark-recapture. Finally, DWR began refinement and improvement of an alternative loss equation tool using the data collected during the DFPE and SEIS projects. This alternative loss equation, first developed in response to Term and Condition 2a of the 2009 NMFS Biological Opinion (BiOp), uses probability distributions based on field evaluations for model parameters and uses a Bayesian approach to estimate loss when salvage is zero; both of these methods were recommendations of the BiOp Independent Review Panel. DWR expects to complete development of this updated tool and to present it at a workshop by the end of the year.
7.5	Winter- and Spring-run Chinook Salmon Monitoring and Science Requirements. To improve understanding of CHNWR and	Throughout the term of the ITP.	Status of 7.5 is addressed under its individual components (7.5.1, 7.5.2, and 7.5.3).

Condition	Mitigation measure	Implementation schedule	Status
	CHNSR population size, life history diversity, migration patterns, survival rates, habitat use, and impacts from water-operations related stressors, Permittee shall initiate, fund, and implement new monitoring and science. This new monitoring and science shall include the elements identified in Conditions of Approval 7.5.1, 7.5.2, and 7.5.3, and shall be combined with existing surveys and data to: 1) continue to build knowledge regarding the biology and life history of CHNSR and CHNWR; 2) better understand potential impacts of Project operations on CHNWR and CHNSR; 3) continue to refine the CHNWR juvenile production estimate (JPE); and 4) develop a CHNSR juvenile production estimate (JPE) and associated operational criteria that may be proposed to replace Condition of Approval 8.6.4 as a part of the AMP (described in Attachment 2) and a subsequent amendment to this ITP.		
7.5.1	Upstream Monitoring During Water Transfer Window. CHNSR are vulnerable to redd dewatering and juvenile stranding when flows in tributaries are increased rapidly to	Throughout the term of the ITP.	As required by this COA, DWR prepared a draft 2021 Water Transfer Monitoring Plan (WTMP) and submitted it to CDFW on October 1, 2020. DWR worked collaboratively with CDFW to address comments on the draft

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	initiate a water transfer, then decreased rapidly following the end of a water transfer. Permittee shall develop a plan to monitor relevant flow rates prior to, during, and after all water transfers and redd distribution, redd dewatering, and juvenile stranding during the Project water transfer window and submit the draft Water Transfer Monitoring Plan to CDFW for approval within six months of the effective date of this ITP. Permittee shall work collaboratively with CDFW to address comments on the draft plan before it is finalized and submitted to CDFW for approval. Permittee shall implement the final Water Transfer Monitoring Plan no more than 30 days after CDFW approval and provide data to CDFW annually thereafter within 30 days of the end of the water transfer window. Additionally, Permittee shall notify the Designated Representative as soon as possible, and no more than 24 hours, after each redd dewatering or juvenile stranding event observed as a part of this monitoring program.		WTMP and submitted a final version of the plan to CDFW that was approved on May 5, 2021. In October 2021, a spawning event in the Feather River triggered monitoring identified in the WTMP. As required, the CDFW Designated Representative was notified of the event. A final WTMP report will be prepared as required to summarize the 2021 effort. A 2022 WTMP will also be prepared and circulated to CDFW for review.

Condition	Mitigation measure	Implementation schedule	Status
7.5.2	New and Ongoing Monitoring Required to Develop and Establish a Spring-run Chinook Salmon JPE. Within 30 days of the effective date of this ITP, Permittee shall convene a Spring-run JPE Team including experts from CDFW, DWR, NMFS, USFWS, and Reclamation. To further advance collaboration, upon convening, the Spring-run JPE team may invite other experts in fish biology, hydrology, or operations of the SWP and CVP to meetings of the Spring-run JPE Team to assist with discussion and analyses. Permittee shall prepare a draft Spring-run JPE Monitoring Plan in collaboration with the Spring-run JPE Team that describes monitoring required to inform the development of the JPE prior to December 1, 2020. The plan shall include, but not be limited to: • Feather River adult passage monitoring and escapement surveys: Monitoring needed to develop adult spawner abundance estimates from which to derive production estimates. Monitoring includes continuing redd surveys and	Within thirty days of the effective date of the ITP.	DWR established five separate teams to plan and implement the five major elements of the "Spring-run Chinook Salmon JPE Science Plan" (JPE Plan). Progress on those elements includes: 1. Core Team: A multi-stakeholder team was established to provide guidance and review for all JPE Plan elements, and to use Structured Decision Making (SDM) as a framework for developing and selecting a recommended JPE approach or approaches. DWR funded three, separate, multiday SDM workshops for 60 interagency staff to introduce the JPE Core Team and other ITP-related decision teams to SDM tools and principles. The Core Team used SDM to develop a set of criteria for prioritizing spring-run streams for augmented monitoring, used the criteria to select a set of "Representative Streams," and determined the key life stages that should be targeted for monitoring to allow quantification of uncertainty around life-stage specific abundance estimates, monitoring costs, and monitoring feasibility, all of which to inform final selection of a JPE approach. DWR hired two Decisions Analysts, certified by the USFWS NCTC training program, to help facilitate and support

Condition	Mitigation measure	Implementation schedule	Status
	carcass surveys for CHNSR and collecting genetic samples from all carcasses. • Lower Yuba River adult passage monitoring and escapement surveys: Monitoring needed to develop adult spawner abundance estimates from which to derive production estimates. Monitoring includes continuing adult salmonid passage surveys via the Vaki Riverwatcher at Daguerre Point Dam, redd surveys for CHNSR, upstream of Daguerre Point Dam, and carcass surveys for CHNSR upstream of Daguerre Point Dam. Collect genetic samples from all carcasses. • Deer, Mill, and Butte Creek adult passage monitoring and escapement surveys: Monitoring needed to develop adult spawner abundance estimates from which to derive production estimates.		decisions. In 2021, the Core Team met on 21 occasions for a total of 57 hours to produce (i) a Decision Framing scoping statement and document, (ii) a list of discrete objectives, (iii) performance measures for each objective, (iv) a preliminary Decision Sketch Consequence Table, and (v) an initial suite of models for the modeling team to begin building to support uncertainty analysis and further refine the Consequence Table. 2. Monitoring Team: Was formed with a separate satellite team for each Representative Stream. These teams assessed current spring-run monitoring and needed augmented monitoring to achieve the full suite outlined by the Core Team. Based on these assessments, the Monitoring Team lead (Anna Allison, DFW) drafted the Spring-Run JPE Monitoring Plan — a subplan of the JPE Plan. To carry out the Monitoring Plan, DFW established a 5-year contract with CDFW, and purchased seven new rotary screw traps, with more screw traps expected to be purchased in 2022 following initial testing. Under this contract, CDFW hired new staff, and began planning and implementing improved monitoring in existing locations on Butte Creek,

Condition	Mitigation measure	Implementation schedule	Status
	Monitoring includes passage surveys via video monitoring stations on Deer, Mill and Butte creeks, carcass surveys, and redd surveys. • Feather River rotary screw trap monitoring at RM 61 and 45.8: Monitoring to provide estimates of the number of CHNSR emigrating through the upper limits of the Feather River via two existing rotary screw traps located at RM 45.8 (High Flow Channel RST) and RM 61 (Low Flow Channel RST). • Feather River rotary screw trap monitoring near Beer Can Beach: New monitoring near Beer Can Beach (river mile seven) to provide estimates of the number of CHNSR entering the Delta from the Feather River Basin. Data obtained would be used to integrate all Feather River Basin-origin fish into the JPE. The data obtained can also be used as a		Feather River, and the lower Sacramento River, and installing new RSTR monitoring stations in the lower Feather River and on the Sacramento River at the point of Delta entry. DWR also met with CDFW to determine responsibilities for new monitoring on the Yuba River, although this monitoring may not begin until mid-2022. 3. Data Management Team: A team was formed to guide the design and building of a data management system. At the center of the system design is a public-facing website with links to an accessible database holding all current and future data needed for calculating prospective JPE approaches, metadata, auto-updating data visualizations, auto-updating JPE model results, downloadable location-specific PLAD models to guide field crews in race identification and targeted genetic sampling, and upload links for newly collected spring-run monitoring data using standardized formatting across the Sacramento River watershed. DWR contracted FlowWest to construct the data management system and to gather and standardize existing data. FlowWest contacted data creators and holders and began building the database during the summer of 2021, and expects to have a

Condition	Mitigation measure	Implementation schedule	Status
	point of comparison for reach-specific loss estimates from upstream sites when used in conjunction with acoustic telemetry data. • Lower Yuba River rotary screw trap monitoring: Monitoring to provide estimates of the number of CHNSR emigrating through the lower Yuba River via two rotary screw traps located near Hallwood Boulevard. Collect genetic samples on all length-at-date CHNSR. These data can also provide an upstream measurement to assess reach-specific loss estimates in coordination with acoustic telemetry data. • Deer, Mill, and Butte Creek rotary screw trap monitoring: Monitoring needed to develop in-season production estimates and provide data on the egg-to-fry survival and emigration timing of yearling and young-of-year CHNSR.		prototype website constructed by June of 2022. 4. Quantitative Modeling Team: A team was formed to guide and assist the building of prospective JPE models based on JPE model conceptual diagrams requested by the Core Team. DWR contracted fisheries modeler Josh Korman (Ecometric Research and University of British Columbia) to build the equations, estimate parameters using the data collected by the Data Management Team or other sources as necessary, and conduct analyses for use in the SDM process, including uncertainty analyses and potentially value of information analyses. A JPE Modeling plan is expected to be completed in December of 2021. 5. Race Identification Team: A team was formed to plan and implement a new Chinook Salmon race identification program for spring-run JPE monitoring locations. Currently the team is focused on race ID for juveniles at rotary screw traps monitoring juvenile outmigration. The program combines genetics and probabilistic length-at-date (PLAD) models specific to monitoring locations. A Race ID plan was drafted describing the iterative process using PLAD models to guide genetic sampling and genetic

Condition	Mitigation measure	Implementation schedule	Status
	Collect genetic samples on all length-at-date CHNSR. These data can also provide an upstream measurement to assess reach-specific loss estimates in coordination with acoustic telemetry data. • Tisdale Weir and Knights Landing rotary screw trap monitoring: Monitoring is needed to provide estimates of the number of CHNSR entering the Delta from the Sacramento River Basin. Collect genetic samples on all length-at-date CHNSR. The data obtained can be used as a point of comparison for reach-specific loss estimates from upstream sites. Weir overtopping and Sutter Bypass activation can influence the detectability of Chinook salmon at the Knights Landing monitoring station. Water entering the Sutter Bypass provides an alternative route in which juvenile salmon are routed around the Knights		testing to update PLAD models. DWR facilitated the State Water Contractors in contracting Noble Hendrix (Queda Consulting and University of Washington, Seattle) to build the PLAD models, and DWR contracted the CDFW genetics lab to help process genetic samples. DWR contracted and collaborated with researchers at the University of California Davis and Michigan State University to develop SHERLOCK-based rapid genetic tests to allow same-day, low-impact testing of salmon, and purchased equipment to process samples and manufacture testing kits for non-expert application by regional monitoring programs. DWR held multiple trainings for regional monitoring staff at UC Davis Center for Aquatic Biology and Aquaculture to teach standardized techniques for genetic sampling.

Condition	Mitigation measure	Implementation schedule	Status
	Landing monitoring station. Monitoring upstream of Tisdale Weir will provide an additional measure of abundance prior to weir influence. • Rotary screw trap acoustic tagging monitoring: Monitoring using acoustic tagged fish to provide estimates of loss and timing of yearling CHNSR emigrants in the fall and emigrating young-of-year CHNSR in the spring at all new and ongoing rotary screw traps. • Genetic identification of CHNSR to support ongoing and new monitoring and development of a CHNSR JPE: Genetic samples shall be collected from all fish (or a subsample of fish where appropriate) and analyzed to race to improve identification of CHNSR-sized fish observed during monitoring and better inform migration and production estimates.		

Condition	Mitigation measure	Implementation schedule	Status
	Permittee shall coordinate with the CDFW Genetics Lab and NMFS Southwest Fisheries Science Center regarding the methodology for collecting and analyzing all genetic samples. • Trap capture efficiency studies: Research to guide annual CHNSR JPE calculations using current methods of visibly marking trap captured and hatchery sourced fish including late fall-run and fall-run Chinook salmon. Studies should also include developing trap efficiency models using the paired acoustic tagged (AT)-coded-wire tagged (CWT) releases from Livingston Stone National Fish Hatchery (NFH), Colman NFH, and Feather River Hatchery. • A list of the entities that shall receive funding from Permittee to implement required monitoring programs.		

Condition	Mitigation measure	Implementation schedule	Status
	This list of required monitoring may be modified in the final monitoring plan if approved by CDFW. Permittee shall work collaboratively with the Spring-run JPE Team members to incorporate edits and comments on the draft Spring-run JPE Monitoring Plan while preparing the final plan. After the final Spring-run JPE Monitoring Plan is approved in writing by CDFW, Permittee shall fund and implement required monitoring beginning the calendar year after the effective date of this ITP, according to the timelines specified in the CDFW-approved plan. At a minimum, Permittee shall convene the Spring-run JPE Team quarterly every year following initiation of the final monitoring plan to: • Review data obtained from new and ongoing monitoring programs, • Review methods used to implement monitoring and recommend adjustments as they deem appropriate, • Formulate an approach to calculating a CHNSR JPE,		

Condition	Mitigation measure	Implementation schedule	Status
	including the following elements: ○ Total in-river escapement, ○ Adult female estimate, ○ Adult female estimate minus pre-spawn mortality, ○ Average fecundity, ○ Total viable eggs, ○ Estimated egg-to-fry survival based on Juvenile Production Index (JPI) at ongoing and new monitoring stations/total viable eggs, ○ Fry equivalents of juvenile production, ○ Fry-to-smolt survival estimates, ○ Number of smolts, and ○ Upper river to Delta survival.		

Condition	Mitigation measure	Implementation schedule	Status
	• Request additional monitoring if it is deemed necessary to complete a CHNSR JPE within five years of the effective date of this ITP, • Recommend approaches to using the CHNSR JPE and monitoring results as operational criteria to minimize take of CHNSR as a result of Project operations, including operations at the south Delta export facilities, and • Evaluate the need to revise and update the plan to incorporate genetic testing of CHNSR when it becomes available. Permittee shall make all raw data acquired as a part of the monitoring program available to members of the Spring-run JPE Team within ten days of a request. Within four years of the effective date of this ITP, and in collaboration		

Condition	Mitigation measure	Implementation schedule	Status
	with the Spring-run JPE Team, Permittee shall review data collected over the past four years and prepare a draft plan that describes the approach to calculating a CHNSR JPE and long-term monitoring needed to collect the data to calculate a CHNSR JPE annually. Permittee shall submit the draft plan to the Spring-Run JPE Team for review and work collaboratively with team members to incorporate their comments into the final draft. Permittee shall submit the final plan to CDFW for approval no more than four years and six months after the effective date of this ITP to ensure that annual calculation of a CHNSR JPE is initiated within five years of the effective date of this ITP. After the final draft Spring-run JPE Plan is approved by CDFW, Permittee shall convene the Spring-run JPE Team annually to provide an annual JPE estimate for CDFW, Reclamation, USFWS, and NMFS and share all data obtained through long-term monitoring programs.		
7.5.3	Winter- and Spring-run Chinook Salmon Science Requirements. Permittee shall initiate, fund, and	Throughout the term of the ITP.	Pathology Monitoring: DWR established a Pathology Monitoring Team to evaluate and guide new pathology monitoring. The team

Condition	Mitigation measure	Implementation schedule	Status
	implement new science to continue to build knowledge of CHNWR and CHNSR ecology and the status of the ESUs. Permittee shall fund and implement the following scientific studies: • Pathology Monitoring: Within two years of the effective date of this ITP Permittee shall fund and initiate monitoring to provide information on the source and magnitude of CHNSR loss prior to Delta entry including in-season studies in the Sacramento and Feather Rivers and Delta. Disease has been well documented to be present in the Central Valley and to dramatically reduce production via reduction in adult spawners and egg and juvenile mortality. • Salmon Rearing Habitat in the Bay-Delta: To inform salmonid impact assessments and restoration activities, the Permittee shall fund research activities to investigate		determined near-term and long-term objectives for pathogen monitoring and research and held an expert elicitation meeting with the primary experts in salmon freshwater pathogens to help prioritize first steps toward meeting those objectives. Based on outcomes from this meeting and follow-up communication, DWR identified entities conducting pathogen science in the Sacramento River watershed and is in the process of planning ITP-funded pathogen research to fill gaps and help coordinate these discrete efforts to allow higher level synthesis of information. DWR intends to vet a plan outline with CDFW by the end of January 2022, to complete a written plan by mid-February, and to implement the plan by the end of March 2022. Salmon Rearing Habitat in the Bay-Delta: While DWR is not required to initiate this habitat use research until 2023, DWR has already led collaborators in the completion of four years of data collection on juvenile salmon use of and benefits accrued from tidal marsh habitat from the confluence of the Sacramento and San Joaquin rivers to San Pablo Bay (the Tidal Parr Studies). Much of this work was supported by grant funding with substantial matching spending by DWR.

Condition	Mitigation measure	Implementation schedule	Status
	juvenile salmonid habitat use in the Delta, Cache Slough, and Suisun Marsh, and subsequently conduct habitat occupancy modeling beginning no later than three years after the effective date of this ITP. This work shall build upon ongoing work funded by the Delta Conservancy (*Identifying Suitable Rearing Habitat for Chinook Salmon in the Sacramento-San Joaquin Delta*) and Permittee (Juvenile salmon distribution, abundance, and growth in restored and relict Delta marsh habitats). Data collected through this research will also inform ongoing CHNWR lifecycle modeling and the development of a new CHNSR lifecycle model.		But in 2021, DWR provided additional labor and contractor funding beyond matching requirements to support expansion of data collection and to support expanded genetic testing, statistical analyses, and occupancy modeling. This expanded support will continue into 2022 to produce occupancy and other models describing habitat use. Manuscripts describing this work are expected to be completed by June of 2022. DWR has initiated informal discussions to build upon this research in order to better understand the contribution of Bay-Delta habitats to actualized juvenile rearing. DWR is planning to initiate broader discussion with CDFW and other stakeholders to consider proposals to fulfill this ITP requirement beginning in May 2022. Spring-run Chinook Life Cycle Model: DWR contracted Flora Cordoleani (UC Santa Cruz/NMFS) to support continued development and refinement of a spring-run life cycle model.
	• Spring-run Chinook Life Cycle Model: Beginning five years after the effective date of this ITP Permittee shall fully fund and support the development		Winter-run Chinook entrainment prediction tool: DWR contracted ICF Fisheries to construct an entrainment prediction tool which was completed in April 2021, thus fulfilling this ITP requirement. This tool is most effective after initial detection of winter-

Condition	Mitigation measure	Implementation schedule	Status
	of a life cycle model for CHNSR. This life cycle model shall be developed and informed by ongoing and new monitoring described in this ITP, along with other available science. • Winter-run Chinook entrainment prediction tool: Within thirty dates of the effective date of this ITP Permittee and CDFW will convene a technical team to develop a model focused on predicting Chinook salmon entrainment events at the SWP and CVP salvage facilities. Within one year of the effective date of this ITP a CDFW- approved model developed as a part of this technical team shall be provided to Salmon Monitoring Team staff to use as a part of real-time risk assessments alongside other tools described in Condition of Approval 8.1.5.1.		run at salvage and helps predict expected subsequent salvage for different water ops management scenarios. IEP is currently leading a follow-up multi-agency effort (DWR participating) to develop a complimentary entrainment prediction tool that will provide probability of initial entrainment for a given set of environmental conditions and water management scenarios.

Condition	Mitigation measure	Implementation schedule	Status
	Permittee shall work collaboratively with members of the Spring-run JPE Team to review study plans, data, and reports associated with both studies. All final reports documenting the results of these studies shall be subject to CDFW approval.		
7.6.1	Longfin Smelt December Larval Surveys. Permittee shall fully fund at least one additional SLS survey and associated sampling and processing costs to be implemented by CDFW staff between December 1 and January 31, annually. The timing of additional SLS surveys shall be determined each year by CDFW Smelt Monitoring Team staff based on observations of LFS in the Chipps Island Trawl beginning on November 1. The additional surveys requested by CDFW Smelt Monitoring Team staff shall use the same sampling methodology as the SLS, however they shall be restricted in spatial extent to the following central and south Delta stations: 809, 812, 815, 901, 902, 906, 910, 912, 914, 915, 918, 919.	Throughout the term of the ITP.	This condition was incorporated into the Longfin Smelt Science Plan and submitted to CDFW as a 2020 ITP deliverable, demonstrating DWR's commitment to funding up to two additional SLS sampling events in December each year, at the request of the Smelt Monitoring Team. Two SLS surveys in the south and central Delta were implemented in December 2020, and contract support will be in place for two full SLS surveys (including the Napa River, Delta, and Suisun) in December 2021. December surveys were expanded from the language of 7.6.1 to meet the improved distribution monitoring component in the Longfin Smelt Science Plan (7.6.3).
7.6.2	Larval Smelt Entrainment Monitoring. Permittee shall fund	Within ninety days of the	A pilot larval smelt entrainment monitoring plan was accepted into the 2022 IEP Annual

Condition	Mitigation measure	Implementation schedule	Status
	and implement a new Smelt Larval Entrainment Program to quantify larval DS and LFS entrainment into CCF. Within ninety days of the effective date of this ITP Permittee shall convene a meeting of CDFW, DWR, USFWS, and Reclamation Smelt Monitoring Team staff to begin planning larval smelt monitoring protocol to fulfill this Condition of Approval. Smelt Monitoring Team staff shall evaluate options to conduct additional larval surveys within CCF and immediately outside CCF to better quantify larval entrainment into CCF. Permittee shall prepare and submit a draft monitoring plan to support a test pilot of the Smelt Larval Entrainment Program to participating Smelt Monitoring Team members for review and comment. Permittee shall work collaboratively with Smelt Monitoring Team members to incorporate their edits and feedback into the monitoring plan and pilot program. Permittee shall implement the pilot program within two years of the effective date of this ITP. Permittee shall	effective date of this ITP.	Workplan. DWR is supporting DFW to implement the trawling components of this plan in the winter and spring of 2022. Additionally, DWR and DFW are conducting experiments in the spring of 2022 to evaluate a suite of candidate sample preservatives for larval fish samples, with the goal of allowing for both genetic and morphological identification (currently genetic analysis is precluded by the use of formalin). Using a different preservative would allow for the use of genetic tools to screen larval samples and prioritize those with smelt present for morphological ID, thereby streamlining DFW's sample processing pipeline. Additionally, DWR will be leading the development of eDNA tools that will be used in conjunction with the DFW trawl sampling as part of the pilot monitoring plan. This eDNA work will start in late 2022, with pilot field sampling in early 2023.

Condition	Mitigation measure	Implementation schedule	Status
	provide raw data from the pilot program to CDFW and work collaboratively with the Smelt Monitoring Team members to use new information from the pilot program to develop a final monitoring plan within three years of the effective date of this ITP. Permittee shall fund and implement the final CDFW-approved monitoring plan and provide data to the Smelt Monitoring Team after each survey.		
7.6.3	Longfin Smelt Science Program Priorities. Permittee shall convene a meeting of the Longfin Smelt Science Program within 120 days of the effective date of this ITP. The Longfin Smelt Science Program shall include experts from CDFW, DWR, USFWS, and SWP Contractors. Permittee shall prepare a draft Longfin Smelt Science Program research plan in collaboration with the science program members that describes new LFS science needed to improve the understanding of LFS ecology and impacts as a result of SWP and CVP operations prior to December 1, 2020. The plan shall include, but	Within 120 days of the effective date of this ITP.	The Longfin Smelt Science Plan (LFSSP) was submitted to CDFW on November 25, 2020, and approved by CDFW on December 8, 2020, as a major milestone in fulfilling Condition 7.6.3. Of the seven science priorities outlined in the LFSSP, progress was made in 2021 on four priorities. Please see the update for 7.6.2 to get details on the larval smelt entrainment monitoring element (also listed in the LFSSP). DWR executed a contract with UC Davis to support Longfin Smelt culture and broodstock collection. This 3-year contract is for $3.9 million and will fund the creation of new recirculation tanks and other infrastructure at UCD's Putah Creek facility, continued broodstock collection efforts, and experiments to further refine culture and husbandry methods, with the aim of completing the lifecycle in captivity. DWR is

Condition	Mitigation measure	Implementation schedule	Status
	not be limited to, the following science priorities: • A schedule for implementation including deadlines for draft and final reports for each study required. • Develop a mathematical life cycle model for LFS, verified with field data collection, as a quantitative tool to characterize the effects of abiotic and biotic factors on LFS populations. • New and ongoing monitoring that: ○ Applies equal effort throughout the known spawning and rearing distribution spanning the Delta, Suisun Marsh, Suisun Bay, Napa- Sonoma Marsh and Alviso Marsh in South Bay. ○ Characterizes the distribution and abundance of adult,		in the process of executing a contract amendment to support DFW expanding SLS monitoring per the Improved Distribution Monitoring priority area in the LFSSP. See the update for 7.6.1 for details on what expanded monitoring is being supported for winter and spring 2022. Finally, the Longfin Smelt Tech Team is in the process of identifying hypotheses and scoping out work for the development of a Longfin Smelt Life Cycle Model, and by early 2022 we anticipate executing a contract with modelers to start work on the development of an LCM.

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	larvae and juvenile life stages. ○ Facilitates estimates of survival probabilities among life stages. ○ Characterizes changes in abundance and distribution of life stages across a range of hydrologic conditions, including different water year types. ○ Considers revisions to existing IEP monitoring programs to expand the spatial distribution of LFS sampling. ○ factors that influence LFS population abundance, distribution, and catchability, including vertical migration behavior, water transparency, and other factors that support growth and survival.		

Condition	Mitigation measure	Implementation schedule	Status
	• Complete LFS lifecycle in captivity at the FCCL. • Characterize LFS spawning substrate and spawning microhabitat requirements. • Improve understanding of LFS spawning substrate distribution in the Delta, Cache Slough, and Suisun Marsh. • Improve understanding of adult migration behavior and review the current conceptual model that assumes adult staging is followed by rapid migration into lower salinity water and spawning soon thereafter. • Improve the understanding of juvenile LFS outmigration behavior and transport mechanisms for out-migrating fish, as it related to the potential for miscuing resulting in increased entrainment at the south Delta facilities.		

Condition	Mitigation measure	Implementation schedule	Status
	Permittee shall work collaboratively with the science program members to incorporate edits and comments on the draft Longfin Smelt Science Plan while preparing the final plan. After the final Longfin Smelt Science Plan is approved in writing by CDFW, Permittee shall fund and implement required monitoring and science according to the timelines specified in the final plan. At a minimum, Permittee shall convene the Longfin Smelt Science Program quarterly every year following initiation of the final Longfin Smelt Science Plan to: • Review data obtained from new and ongoing monitoring programs. • Review methods used to implement monitoring and recommend adjustments as they deem appropriate. • Review draft results from new and ongoing science. Permittee shall make all raw data and modeling acquired as a part of the Longfin Smelt Science Plan		

Condition	Mitigation measure	Implementation schedule	Status
	available to members of the Longfin Smelt Science Plan within ten days of a request.		
7.6.4	Science to Improve Understanding of Delta Smelt Habitat in the Summer and Fall. There is a need for additional science to further investigate the spatial and temporal distribution of abiotic and biotic factors influencing DS habitat and survival during the summer-fall time period. To study habitat effects on DS survival, Permittee shall work collaboratively with CDFW and the Delta Coordination Group (Condition of Approval 9.1.3.1) to develop and conduct studies during implementation of the Summer-Fall Action Plan, including deployment of the Additional 100 TAF block of water (Condition of Approval 8.19) when it is available as described in the Delta Outflow Operations Plan (Condition of Approval 8.20). The Additional 100 TAF could be deferred in above normal or wet years and redeployed to operate the SMSCG in the summers of dry years, or supplement spring-summer outflow in below-normal	Throughout the term of the ITP.	Because water year 2021 was critically dry, no summer-fall habitat action was implemented. But DWR has continued to work collaboratively with CDFW and the Delta Coordination Group (DCG) to develop monitoring and studies for implementation of future Summer-Fall Habitat actions. Activities in 2021 included: • A multi-year Science and Monitoring Plan was developed to identify future monitoring and science needs. • Baseline monitoring data was collected in Suisun Marsh, Grizzly Bay, Suisun Bay, and the North Delta to describe conditions in a non-action year. This included water quality, phytoplankton, and zooplankton sampling. Sampling will be similar during an action year. • Hydrodynamic models and population models were developed to track habitat suitability and food supply for Delta Smelt associated with various suites of summer-fall habitat actions.

Condition	Mitigation measure	Implementation schedule	Status
	years to provide DS habitat and improve DS survival during this critical portion of their life history (Condition of Approval 8.19). The benefits associated with the Additional 100 TAF block of water shall be evaluated in conjunction with new monitoring in Grizzly Bay (Condition of Approval 9.1.3.3) to better quantify changes in salinity associated with SMSCG operations. This new science shall also facilitate testing and evaluating components of the Delta Smelt Resiliency Strategy by studying outflow effects on DS habitat.		• DWR prepared and shared with the DCG a synthesis of previous summer and fall flow pulses through the Yolo bypass to better quantify potential benefits of the North Delta Food Subsidy Action. Plans were developed to use caged Delta Smelt at several locations in the Marsh and Rio Vista to test the effectiveness of the action on Delta Smelt health. These were postponed due to prioritization of studies leading to supplementation of smelt, but implementation is planned for 2022.
7.7	Barker Slough Pumping Plant Sediment and Aquatic Weed Removal. If Permittee seeks to conduct aquatic weed or sediment removal in the vicinity of the BSPP when water temperatures are likely to be less than 25°C, Permittee shall coordinate with CDFW at least seven days prior to initiating the aquatic weed or sediment removal. Permittee shall provide a written description of the planned aquatic weed or sediment removal activities to CDFW including a description of whether activities are planned outside the embayment and the	Throughout the term of the ITP.	DWR provided advanced notification of all scheduled weed removal activities and provided monthly summary reports to CDFW. All weed removal activities occurred immediately in front of the fish screens. A biological monitor was present during each weed removal event. Additionally, environmental DNA (eDNA) samples were collected from the vegetation drain water from April 14, 2021, to June 16, 2021. This pilot eDNA monitoring was a proof of concept, and results will help inform discussions of using eDNA sampling in lieu of a biological monitor, if approved by CDFW. No Delta Smelt or Longfin Smelt were identified during BSPP weed removal or detected in eDNA

Condition	Mitigation measure	Implementation schedule	Status
	floating booms as shown in Figure 1 in the Project Description. Permittee shall ensure that a Designated Biologist is onsite before, during, and after the planned activities to assess the potential for take of DS or LFS that would not otherwise occur as a result of Project operations and permitted diversions at the BSPP.		samples. No sediment removal activities occurred during the reporting period. No sediment removal activities occurred during the reporting period.
7.8	Data Accessibility. Permittee shall provide CDFW with access to all raw data and associated analyses and reports for all monitoring required in Condition of Approval 7 of this ITP and described in the Project Description within 60 days of collection of data or completion of analyses and reports, and otherwise upon request.	Throughout the term of the ITP.	Data management and accessibility have been addressed in each of the deliverables developed as part of compliance with Condition 7 during the water year.
8.1	Real-time Operations, Monitoring, and Technical Teams. Permittee shall monitor and manage Project operations in response to risk assessments conducted by collaborative real-time operations monitoring teams that include representatives from CDFW, DWR, USFWS, NMFS, SWRCB and Reclamation.	Throughout the term of the ITP.	All required teams and risk assessments have been convened and functioning since the completion of the ITP. DWR's progress towards complying with Condition 8.1 during WY 2021 is described below.

Condition	Mitigation measure	Implementation schedule	Status
8.1.1	Smelt Monitoring Team. The purpose of the Smelt Monitoring Team is to meet weekly beginning November 1 and throughout the OMR management season and implementation of the Summer-Fall Action, or more often as needed, to consider and discuss: • The status of DS and LFS; • DS and LFS survey and salvage data at the SWP and CVP facilities; • Delta hydrology; • Other pertinent biotic or abiotic factors; • Exposure of DS and LFS to impacts associated with the operation of the CVP and SWP; • DS and LFS sensitivity to changes in behaviors of sheltering, foraging, and migration; • Results from the CDFW-approved DS life cycle model; and • The need to implement changes in operations as	Throughout the term of the ITP.	The SMT met throughout the WY 2021 entrainment season and provided advice to WOMT based on the guidance and triggers laid out in the ITP and BiOp. SMT discussion was documented in the Reclamation assessment, SMT notes, and ITP SMT Risk Assessment. Risk Assessments were posted to the CDFW Water Branch web page beginning in WY 2021. SMT notes are posted to the USBR Bay-Delta Office website beginning in WY 2020 (link below). For a complete summary and assessment of these activities and WY 2021 OMR management actions for Delta Smelt and Longfin Smelt, please refer to *Water Year 2021 Seasonal Report for Old and Middle River Flow Management* for all details. The report was prepared in August 2021 with U.S. Bureau of Reclamation, in coordination with U.S. Fish and Wildlife Service, the National Marine Fisheries Service, and the California Department of Fish and Wildlife. SMT Meeting Notes: Smelt Monitoring Team | Water Operations and Watershed Monitoring Technical Teams | Projects, Activities, Documents | BDO | Area Offices | California-Great Basin | Bureau of Reclamation (usbr.gov)

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	described in Conditions of Approval 8.3.1, 8.3.3, 8.4.1, 8.4.2, 8.5.1, 8.5.2, 8.17, 8.18, 8.19, 8.20, 9.1.3.1 and 9.1.3.2. The Smelt Monitoring Team shall include representatives from CDFW, USFWS, NMFS, DWR, SWRCB, and Reclamation. To further advance collaboration, upon convening, the Smelt Monitoring Team may invite, one other expert in fish biology, hydrology, or operations of the SWP and CVP each from the SWP Contractors and an NGO to participate in specific meetings of the Smelt Monitoring Team and assist with their discussion and analyses. Permittee shall: • Convene the first meeting of the Smelt Monitoring Team within three days of the effective date of this ITP and weekly thereafter. In each year, Permittee shall convene the Smelt Monitoring Team		

Condition	Mitigation measure	Implementation schedule	Status
	meeting weekly, beginning no later than November 1 each year, throughout the time frame when Conditions of Approval 8.3.1, 8.3.3, 8.4.1, 8.4.2, 8.5.1, 8.5.2, 8.7, 8.8, 8.17, 8.18, 8.19, 8.20, and 9.1.3.1 may be initiated, control operations, or off-ramp. • Distribute a meeting agenda, with relevant documents and analyses to be discussed (as applicable), to team members at least two working days prior to each Smelt Monitoring Team meeting. • Record and distribute regular meeting notes within two working days of each Smelt Monitoring Team meeting to team members for review. Incorporate member comments and post final notes on a publicly available website. • Provide an annual written report to CDFW no later than		

Condition	Mitigation measure	Implementation schedule	Status
	October 1 following the salvage season of approximately October through June. This report shall include a summary of major actions taken during the year to implement Conditions of Approval 8.3.1, 8.3.3, 8.4.1, 8.4.2, 8.5.1, 8.5.2, 8.7 and 8.8, an evaluation of their effectiveness, and recommendations for future actions. • Call for a special meeting of the Smelt Monitoring Team outside the regular weekly schedule, upon request from CDFW or any other Smelt Monitoring Team member. Such meetings shall be scheduled within one working day of receiving a request, and shall be held in a timeframe responsive to the issue(s) warranting the meeting. The Smelt Monitoring Team shall:		

Condition	Mitigation measure	Implementation schedule	Status
	• Provide advice for real-time management of operations to Permittee, CDFW, and WOMT consistent with the Project Description, Conditions of Approval in this ITP, and the applicable ESA authorizations, within one working day of each Smelt Monitoring Team meeting. • Meet weekly, or more often as needed, to consider and discuss survey data, salvage data, and other pertinent biotic and abiotic factors and conduct risk assessments (Condition of Approval 8.5.1.2).		
8.1.2	Salmon Monitoring Team. The purpose of the Salmon Monitoring Team is to meet weekly to consider and discuss survey data, salvage data, and other pertinent biotic and abiotic factors as described in Conditions of Approval 8.6.1, 8.6.2, 8.6.3, 8.6.4, and 8.7. The Salmon Monitoring Team shall include representatives from CDFW, USFWS, NMFS, DWR, SWRCB, and	Throughout the term of the ITP.	The Salmon Monitoring Team (SaMT) met from October to June in WY 2021 in accordance with the terms of the ITP and provided advice to WOMT based on the guidance and triggers laid out in the ITP and BiOp. SaMT discussion was documented in the Reclamation assessment, and SaMT notes (link below). Risk Assessments were posted to

Condition	Mitigation measure	Implementation schedule	Status
	Reclamation. To further advance collaboration, upon convening, the Salmon Monitoring Team may invite one other expert in fish biology, hydrology, or operations of the SWP and CVP each from the SWP Contractors and an NGO to participate in specific meetings of the Salmon Monitoring Team and assist with their discussion and analyses. Permittee shall: • Convene the first meeting of the Salmon Monitoring Team within three days of the effective date of this ITP and weekly thereafter. In each year, Permittee shall convene the Smelt Monitoring Team meeting weekly, beginning no later than October 1 each year, throughout the time frame when Conditions of Approval 8.3.1, 8.3.2, 8.3.3, 8.6.1, 8.6.2, 8.6.3, 8.6.4, 8.7, and 8.8 may be initiated, control operations, or off-ramp.		the CDFW Water Branch web page beginning in WY 2021. For a complete summary and assessment of these activities, including discussion of effectiveness and WY 2021 OMR management actions for salmon, please refer to *Water Year 2021 Seasonal Report for Old and Middle River Flow Management* for all details. The report was prepared in August 2021 with U.S. Bureau of Reclamation, in coordination with U.S. Fish and Wildlife Service, the National Marine Fisheries Service, and the California Department of Fish and Wildlife. SaMT Notes: Salmon Monitoring Team | Water Operations and Watershed Monitoring Technical Team | BDO | Area Offices | California-Great Basin | Bureau of Reclamation (usbr.gov)

Condition	Mitigation measure	Implementation schedule	Status
	• Distribute a meeting agenda, with relevant documents and analyses to be discussed (as applicable), to team members at least two working days prior to each Salmon Monitoring Team meeting. • Record and distribute regular meeting notes within two working days of each Salmon Monitoring Team meeting to team members for review. Meeting notes shall include issues considered, recommendations made, key information on which recommendations were based, and incorporate member comments. Final notes shall be posted on a publicly available website. • Provide an annual written report to CDFW no later than October 1 following the salvage season of approximately October through June. This report shall include a summary of major		

Condition	Mitigation measure	Implementation schedule	Status
	actions taken during the year to implement Conditions of Approval 8.3.1, 8.3.2, 8.3.3, 8.6.1, 8.6.2, 8.6.3, 8.6.4, 8.7, and 8.8, an evaluation of their effectiveness, and recommendations for future actions. • Call for a special meeting of the Salmon Monitoring Team outside the regular weekly schedule, upon request from CDFW or any other Salmon Monitoring Team member. Such meetings shall be scheduled within one working day of receiving a request, and shall be held in a timeframe responsive to the issue(s) warranting the meeting. The Salmon Monitoring Team shall: • Provide advice for real-time management of operations to Permittee, CDFW, and WOMT consistent with the Project Description, Conditions of Approval in this ITP, and the		

Condition	Mitigation measure	Implementation schedule	Status
	applicable ESA authorizations, within one working day of each Salmon Monitoring Team meeting. • Review Project operations in the Delta and the data collected from ongoing monitoring programs annually. • Meet weekly, or more often as needed, to conduct a risk assessment (Condition of Approval 8.1.5.1) and consider and discuss survey data, salvage data, and other pertinent biotic and abiotic factors. • Estimate the percentage of CHNWR and young-of-year CHNSR that are currently 1) upstream of the Delta, 2) in the Delta, or 3) exited the Delta past Chipps Island. • Estimate the risk of entrainment into the central Delta and the SWP and CVP export facilities and identify factors that influence the		

Condition	Mitigation measure	Implementation schedule	Status
	entrainment risks such as percent of the population in the Delta, Delta Cross Channel (DCC) gate operations, Sacramento River and San Joaquin River flows and a range of possible OMR flows. As required by Condition of Approval 8.1.4 conduct a collaborative risk assessment and recommend OMR targets to minimize the risk of exceeding 50% or 75% of the single year loss threshold (Condition of Approval 8.6.1) to the WOMT (Condition of Approval 8.1.3) within one working day of each Salmon Monitoring Team meeting and follow the process outlined in Condition of Approval 8.1.4.		
8.1.3	Water Operations Management Team. Beginning no later than October 1 each year Permittee shall convene the Water Operations Management Team (WOMT) on a weekly basis until the end of OMR management (Condition of Approval 8.8), or the end of implementation of the Summer-Fall Action (Condition of Approval 9.1.3.2), whichever is later.	Throughout the term of the ITP.	WOMT, SaMT, and SMT met during WY 2021 in accordance with terms of the ITP. WOMT notes for WY 2021 are posted to Reclamation's WOMT web page: Water Operations Management Team | Water Operations and Watershed Monitoring Technical Teams | Projects, Activities, Documents | BDO | Area Offices | California-

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	The WOMT shall be composed of manager-level representatives from Reclamation, DWR, USFWS, NMFS, SWRCB, and CDFW with decision-making authority. This management- level team shall facilitate timely decision-support and decision-making at the appropriate level. The Smelt and Salmon Monitoring Teams shall report weekly updates, operations recommendations, and risk analyses to the WOMT. Each week the WOMT shall review and evaluate these risk assessments and operational recommendations, discuss potential changes to Project operations, and make final determinations for Covered Species minimization needs and water operations. If WOMT representatives do not achieve a consensus regarding final determinations for Covered Species minimization and Project operations, Permittee and CDFW shall prepare written summaries of their operational recommendations to the Directors for discussion and final decision per Condition of		

Condition	Mitigation measure	Implementation schedule	Status
	Approval 8.1.4 (Collaborative Approach to Real-time Risk Assessment).		
8.1.4	Collaborative Approach to Real-time Risk Assessment. Beginning no later than October 1 (Salmon Monitoring Team) and November 1 (Smelt Monitoring Team) through the end of OMR Management (see Condition of Approval 8.8) the Smelt and Salmon Monitoring Teams shall meet weekly, or more often as required, to consider survey data, salvage data, and other pertinent biotic and abiotic factors and prepare risk assessments as described in Conditions of Approval 8.1.1, 8.1.2, 8.1.5.1 and 8.1.5.2. The Smelt and Salmon Monitoring Teams shall prepare operations advice for the WOMT as required by Conditions of Approval 8.3.1, 8.3.3, 8.4.1, 8.4.2, 8.5.1, 8.5.2, 8.6.1, 8.6.2, 8.6.3, 8.6.4, 8.7, and 8.8, including advice on operations. The Smelt and Salmon Monitoring Teams shall each prepare risk assessments and operations advice. Within each team, staff jointly develop the risk assessment and	Throughout the term of the ITP.	The Salmon and Smelt Monitoring Teams met during WY 2021 in accordance with terms of the ITP.

Condition	Mitigation measure	Implementation schedule	Status
	supporting documentation to accompany operations advice (see Conditions of Approval 8.1.5.1 and 8.1.5.2). DWR and CDFW Smelt and Salmon Monitoring Team staff may conclude different operations advice is warranted, in which case the difference shall be noted and elevated as described in this Condition of Approval. The Smelt and Salmon Monitoring Teams shall communicate their recommendations to WOMT. The WOMT shall then confer and attempt to reach a resolution and agreed-upon Project operations. If a resolution is reached, Permittee shall operate consistent with the decision regarding Project operations from WOMT. If the WOMT does not reach a resolution, the CDFW Director may require Permittee to implement an operational recommendation provided by CDFW. CDFW will provide its operational decision to Permittee in writing. Permittee shall implement the operational decision required by CDFW. Permittee shall ensure that its proportional share (see Condition of Approval 8.10) of		

Condition	Mitigation measure	Implementation schedule	Status
	the OMR flow requirement as a part of the operational decision is satisfied.		
8.1.5	Real-time Risk Assessments. The Smelt and Salmon Monitoring Teams (Conditions of Approval 8.1.1 and 8.1.2) shall prepare weekly risk assessments, or more often as required, and operations advice (as required by Conditions of Approval 8.3.1, 8.3.3, 8.4.1, 8.4.2, 8.5.1, 8.5.2, 8.6.1, 8.6.2, 8.6.3, 8.6.4, and 8.7) during their discussions and analyses. The Smelt and Salmon Monitoring Teams shall provide the risk assessments and pertinent supporting information to the WOMT (Condition of Approval 8.1.3) within one business day of each meeting.	Throughout the term of the ITP.	The Smelt and Salmon Monitoring Teams have been providing risk assessments to the WOMT in a timely fashion. Those risk assessments are located at: https://wildlife.ca.gov/Conservation/Watersheds/Water-Operations
8.1.5.1	Salmon Monitoring Team Risk Assessments. Salmon Monitoring Team risk assessments shall include, but not be limited to, Components A – F and associated data sources listed below: A. Assessment of hydrologic, operational and meteorological information	Throughout the term of the ITP	The Salmon Monitoring Team has been providing risk assessments to the WOMT in a timely fashion. Those risk assessments are located at: https://wildlife.ca.gov/Conservation/Watersheds/Water-Operations

Condition	Mitigation measure	Implementation schedule	Status
	i. Water operations conditions data: • Antecedent actions (e.g. DCC gate closure and required actions such as first flush, etc.) • Current controlling factor(s) • Water temperatures • Tidal cycle • Turbidity • Salinity ii. Water operations outlook data: • Meteorological forecast • Outages • Diversions • Storm event projection iii. Projection data: • DCC gate status • Freeport flows • Vernalis flows • Old River at Bacon Island (OBI) and Freeport turbidities		

Condition	Mitigation measure	Implementation schedule	Status
	• South Delta Exports • OMR B. Assessment of biological information for CHNWR and CHNSR i. CHNWR population status data: • Adult escapement • Redd distribution and fry emergence timing • JPE and hatchery releases • Distribution of natural CHNWR, Livingston Stone NFH CHNWR releases, and CHNWR in Battle Creek: ○ % of juveniles upstream of the Delta ○ % of juveniles in Delta ○ % of juveniles past Chipps Island ii. CHNSR population data: • Adult escapement • Redd distribution and fry emergence timing		

Condition	Mitigation measure	Implementation schedule	Status
	• Hatchery release (in-river vs. downstream) • Distribution of natural and hatchery fish: ○ % of juveniles upstream of the Delta ○ % of juvenile in the Delta ○ % of juveniles past Chipps Island iii. Change in risk of entrainment into the central Delta • Change in routing risk of entrainment into the central Delta • Comparison to the previous week C. Assessment of risk of entrainment into the central Delta and CVP/SWP facilities for CHNWR and CHNSR in the Sacramento River: i. Data sources to assess sensitivity to entrainment into the central Delta from the Sacramento River and western Delta:		

Condition	Mitigation measure	Implementation schedule	Status
	• In-Delta distribution of fish. • Acoustic telemetry, trawls (e.g. Spring Kodiak), EDSM catch, rotary screw traps, seines, and hatchery release notifications. • Hydraulic footprint. • STARS model. • Enhanced Particle Tracking Model (EPTM) (e.g. transitions between regions). • Data from new monitoring required in Conditions of Approval 7.5 in this ITP. ii. Exposure risk (low, medium, high): • Distribution of juvenile CHNWR estimated to be in the lower Sacramento and northern Delta. • Distribution of juvenile CHNSR estimated to be in the lower Sacramento and northern Delta.		

Condition	Mitigation measure	Implementation schedule	Status
	• Distribution of hatchery produced salmonids. • Incorporation of real-time acoustic tracking of AT/CWT fish. • Anticipated emigration to continue into the Delta. iii. Routing risk (low, medium, high): • Flows in the Sacramento River predicted with upcoming storm events. • DCC gate position. • Prediction of tidal interaction at Georgiana Slough. • Inflow to Delta from Sacramento River and the interaction of the muting of tidal effects around Georgiana Slough. • Precipitation in the forecast for the weekend and increasing river flows effects of routing into		

Condition	Mitigation measure	Implementation schedule	Status
	central and interior delta. iv. Overall entrainment risk: Combination of the above two risk assessments in ii and iii. D. CVP/SWP facilities entrainment risk for CHNWR and CHNSR in the central Delta over the next week: i. Data sources to assess sensitivity to entrainment into the south Delta from the San Joaquin River and central Delta. • In-Delta distribution of fish. • Acoustic telemetry, trawls (e.g. Spring Kodiak), EDSM catch, rotary screw traps, seines, and hatchery release notifications. • Hydraulic footprint. • EPTM (e.g. transitions between regions). ii. Data sources to assess sensitivity to entrainment in salvage in the south Delta.		

Condition	Mitigation measure	Implementation schedule	Status
	• In-Delta distribution of fish. • Acoustic telemetry, trawls (e.g. Spring Kodiak), EDSM catch, rotary screw traps, seines, and hatchery release notifications, and salvage monitoring data at the SWP and CVP facilities. • Trend analysis (historical timing). • Survival analysis (e.g. Zeug and Cavallo CWT Model). • Tillotson entrainment model, or other entrainment models as they are available. • EPTM (e.g. transitions between regions). • New monitoring required by Condition of Approval 7.5 in this ITP. iii. Exposure risk assessments (low, medium, high):		

Condition	Mitigation measure	Implementation schedule	Status
	• Listed Chinook salmon from the Sacramento River basin observed in monitoring sites in the lower Sacramento River and northern Delta (fish at the junction of Georgiana Slough, Mokelumne River, and San Joaquin River confluence). • Prediction of flows expected to change due to precipitation events. • Salvage trends in relation to OMR • Future export modifications. iv. Reporting OMR/export risk: • OMR -2,500 cfs: LOW. • OMR -3,500 cfs: LOW • OMR -5,000 cfs: MEDIUM. • OMR -6,250 cfs: MEDIUM-HIGH. • OMR -7,500 cfs: HIGH.		

Condition	Mitigation measure	Implementation schedule	Status
	• OMR -9,000 cfs: HIGH. v. Overall entrainment risk: Combination of the above two risk assessments in iii and iv E. Annual loss threshold risk i. Salvage loss at the SWP and CVP facilities compared to estimated remaining population in Delta and upstream of the Delta ii. Define risk of hitting a threshold, 50%, or 75%, or 100%, and actions to minimize that happening iii. Daily loss thresholds hit and subsequent loss and associated operations F. Alternative actions, if any i. Operations scenario. ii. Alternative exposure analysis.		
8.1.5.2	Smelt Monitoring Team Risk Assessments. Smelt Monitoring Team risk assessments shall include, but not be limited to, Components A–F and associated data sources listed below:	Throughout the term of the ITP	The Smelt Monitoring Team has been providing risk assessments to the WOMT in a timely fashion. Those risk assessments are located at: https://wildlife.ca.gov/Conservation/Watersheds/Water-Operations

Condition	Mitigation measure	Implementation schedule	Status
	A. Assessment of hydrologic, operational and meteorological information i. Water operations conditions: • Antecedent actions (e.g. DCC gate closure and actions such as integrated early winter pulse protection, etc.). • Current controlling factor(s). • Water temperatures. • Tidal cycle. • Turbidity. • Salinity. ii. Water Operations Outlook: • Meteorological forecast. • Outages. • Diversions. • Storm event projections. iii. Projections: • Date. • DCC status. • Freeport flows. • Vernalis flows.		

Condition	Mitigation measure	Implementation schedule	Status
	• OBI and Freeport turbidities. • South Delta exports. • OMR. B. Assessment of biological information for DS and LFS i. DS population status • EDSM. • LCM. • Biological conditions (spawned/unspawned). • % in Delta zones. ii. LFS population status • FMWT and Bay Study. iii. Change in exposure • Comparison to the previous week. C. Assessment of risk of entrainment into the central Delta and CVP/SWP facilities for DS and LFS in the Sacramento River: i. Data sources to assess sensitivity to entrainment into the central Delta from the Sacramento River and western Delta: • In-Delta distribution of fish.		

Condition	Mitigation measure	Implementation schedule	Status
	• Trawls (e.g. Spring Kodiak, FMWT, SFBS, and EDSM) catch. • Hydraulic footprint • EPTM (e.g. transitions between regions). • New monitoring required by Conditions of Approval 7.6.1 and 7.6.2 in this ITP. ii. Exposure risk (low, medium, high): • Distribution of DS estimated to be downstream of the lower Sacramento and northern Delta. • Distribution of all life stages of larval and juvenile DS and LFS estimated to be in the lower Sacramento and northern Delta. • Anticipated onset of spawning movement into upstream Delta habitats. iii. Routing risk (low, medium, high):		

Condition	Mitigation measure	Implementation schedule	Status
	• Flows in the Sacramento River predicted with upcoming storm events. • Precipitation in the forecast for the weekend and increasing river flows effects of routing into central and interior delta. iv. Overall entrainment risk: Combination of the above two risk assessments in ii and iii. D. CVP/SWP facilities entrainment risk for DS and LFS in the central Delta over the next week: i. Data sources to assess sensitivity to entrainment into the south Delta from the San Joaquin River and central Delta • In-Delta distribution of fish. • Trawls (e.g. Spring Kodiak, FMWT, SFBS, and EDSM) catch. • Hydraulic footprint		

Condition	Mitigation measure	Implementation schedule	Status
	• EPTM (e.g. transitions between regions). • New monitoring required by Conditions of Approval 7.6.1 and 7.6.2 in this ITP. ii. Data sources to assess sensitivity to entrainment in salvage in the south Delta • In-Delta distribution of fish. • Trend analysis (e.g., historical timing). • Temperature conditions. • New monitoring required by Conditions of Approval 7.6.1 and 7.6.2 in this ITP. iii. Exposure risk assessments (low, medium, high): • DS or LFS observed in monitoring sites in the lower Sacramento River, northern Delta, lower San Joaquin River and Sacramento- San Joaquin confluence. • Daily salvage thresholds exceeded, subsequent		

Condition	Mitigation measure	Implementation schedule	Status
	loss, and associated operations. • Recruitment informed by available life cycle model. • Prediction of flows expected to change due to precipitation events. • Salvage trends in relation to OMR. • Future export modifications. • Environmental surrogates. iv. Reporting OMR/export risk: • OMR -2,500 cfs: LOW. • OMR -3,500 cfs: LOW. • OMR -5,000 cfs: MEDIUM. • OMR -6,250 cfs: MEDIUM-HIGH. • OMR -7,500 cfs: HIGH. • OMR -9,000 cfs: HIGH. v. Overall entrainment risk: Combination of the above two risk assessments in iii and iv. E. Alternative actions, if any		

Condition	Mitigation measure	Implementation schedule	Status
	• Operations scenario. • Alternative exposure analysis.		
8.2	Independent Review Panels. In the event that an independent review panel is convened to review aspects of the Project or AMP, Permittee shall provide drafts of 1) the list of potential panel participants, 2) the panel charges and associated review questions, and 3) the panel report and findings to CDFW for review at least 20 days before they are scheduled to be finalized. Permittee shall incorporate CDFW comments into the final panel selection and panel charge before they are finalized. Permittee shall facilitate CDFW communication with panelists, as requested, to help address CDFW questions on the draft panel report before a final report is completed. Permittee shall work collaboratively with CDFW to address CDFW comments in the final panel report.	Throughout the term of the ITP.	No independent review panels were convened during 2021.
8.3	Onset of OMR Management. From the onset of OMR Management (initiated as described in Conditions of Approval 8.3.1, 8.3.2, or 8.3.3) to the end (Condition of Approval 8.8) Permittee shall maintain a 14-	Throughout the term of the ITP.	In WY 2021 OMR management was regulated in accordance with the terms of section 8.3.

Condition	Mitigation measure	Implementation schedule	Status
	day average OMR index that is no more negative than -5,000 cfs, except during OMR Flex operations (see Condition of Approval 8.7) or if a more positive OMR index is required. The OMR index shall be calculated using the equation provided in Hutton (2008). When a more positive OMR index is required by any Condition of Approval of this ITP, except when ending OMR Flex During Excess Conditions (Condition of Approval 8.7), Permittee shall reduce south Delta exports to achieve the new required OMR index within three days of exceeding a threshold or acceptance of flow advice (see Conditions of Approval 8.3.1, 8.3.2, 8.3.3, 8.4.1, 8.4.28.5.1, 8.5.2, 8.6.1, 8.6.2, 8.6.3, 8.6.4, 8.7, and 8.8). The new moving average will be calculated beginning no later than the third day moving forward.		
8.3.1	Integrated Early Winter Pulse Protection. Between December 1 and January 31 each year Permittee shall reduce south Delta exports for 14 consecutive days to maintain a 14-day average OMR index no more negative than -2,000 cfs, and convene the Smelt Monitoring Team	Throughout the term of the ITP.	This condition was not triggered in WY 2021. See *Water Year 2021 Seasonal Report for Old and Middle River Flow Management* for all details. The report was prepared in August 2021 with U.S. Bureau of Reclamation, in coordination with U.S. Fish and Wildlife Service, the National Marine Fisheries Service,

Condition	Mitigation measure	Implementation schedule	Status
	within one day of triggering the following criteria: • Three day running average daily flows at Freeport greater than, or equal to, 25,000 cfs, AND • Three day running average of daily turbidity at Freeport is greater than, or equal to, 50 Formazin Nephelometric Units (FNU), OR • The Smelt Monitoring Team determines that real-time monitoring of abiotic and biotic factors indicates a high risk of DS migration and dispersal into areas at high risk of future entrainment. After maintaining a 14-day average OMR index no more negative than -2,000 cfs for 14 days. Permittee shall reduce south Delta exports to maintain a 14-day average OMR index no more negative than -5,000 cfs, initiating the OMR Management season, until the OMR Management Season ends (Condition of Approval 8.8).		and the California Department of Fish and Wildlife.

Condition	Mitigation measure	Implementation schedule	Status
	The Integrated Early Winter Pulse Protection Action may only be initiated once during the December 1 through January 31 time period each year.		
8.3.2	Salmonid Presence. After January 1 each year, if Conditions of Approval 8.3.1 or 8.3.3 have not already been triggered, the OMR Management season shall begin when the Salmon Monitoring Team first estimates that 5% of the CHNWR or CHNSR population is in the Delta whichever is sooner. Upon initiation of the OMR Management season, Permittee shall reduce exports to achieve, and shall maintain a 14-day average OMR index no more negative than -5,000 cfs, until the OMR Management season ends (see Condition of Approval 8.8). In the event that a salmon daily or single-year loss threshold is exceeded (Conditions of Approval 8.6.1, 8.6.2, 8.6.3, or 8.6.4) prior to the start of OMR Management season the requirements in those Conditions shall control operations.	Throughout the term of the ITP.	SaMT estimated that at least 5% of CHNWR were in the Delta by January 1, 2021, triggering the onset of OMR Management. See *Water Year 2021 Seasonal Report for Old and Middle River Flow Management* for all details. The report was prepared in August 2021 with U.S. Bureau of Reclamation, in coordination with U.S. Fish and Wildlife Service, the National Marine Fisheries Service, and the California Department of Fish and Wildlife.
8.3.3	Adult Longfin Smelt Entrainment Protection. After December 1, if an Integrated Early Winter Pulse	Throughout the term of the ITP	This condition was not triggered in WY 2021.

Condition	Mitigation measure	Implementation schedule	Status
	Protection (Condition of Approval 8.3.1) has not yet initiated, Permittee shall reduce south Delta exports to maintain a 14-day average OMR index no more negative than -5,000 cfs and initiate OMR Management (Condition of Approval 8.3) if: • Cumulative combined LFS expanded salvage (total estimated LFS counts at the CVP and SWP salvage facilities beginning December 1 through February 28) exceeds the most recent Fall Midwater Trawl (FMWT) LFS index divided by 10, OR • Real-time monitoring of abiotic and biotic factors indicates a high risk of LFS movement into areas at high risk of future entrainment, as determined by DWR and CDFW Smelt Monitoring Team staff. When evaluating the possibility of LFS movement into areas that may be subject to an elevated risk of entrainment, the Smelt Monitoring Team shall evaluate catch of LFS		See *Water Year 2021 Seasonal Report for Old and Middle River Flow Management* for all details. The report was prepared in August 2021 with U.S. Bureau of Reclamation, in coordination with U.S. Fish and Wildlife Service, the National Marine Fisheries Service, and the California Department of Fish and Wildlife.

Condition	Mitigation measure	Implementation schedule	Status
	with fork length ≥ 60 mm by the Chipps Island Trawl (conducted by USFWS) as an early warning indicator for LFS migration movement into the Delta, in addition to other available survey and abiotic data. The Smelt Monitoring Team shall communicate the results of these risk assessments and advice to the WOMT (Condition of Approval 8.1.3), and operational decisions shall be made as described in Condition of Approval 8.1.4 (Collaborative Approach to Real-time Risk Assessment).		
8.4.1	OMR Management for Adult Longfin Smelt. From the onset of OMR Management (Condition of Approval 8.3) through February 28, the Smelt Monitoring Team shall conduct weekly, or more often as needed, risk assessments (see Condition of Approval 8.1.5.2) and decide whether to recommend an OMR flow requirement between -5,000 cfs and -1,250 cfs to minimize entrainment and take of adult LFS. The Smelt Monitoring Team may provide advice to restrict south Delta exports for seven consecutive days to achieve a	Throughout the term of the ITP.	This condition was not triggered in WY 2021. See *Water Year 2021 Seasonal Report for Old and Middle River Flow Management* for all details. The report was prepared in August 2021 with U.S. Bureau of Reclamation, in coordination with U.S. Fish and Wildlife Service, the National Marine Fisheries Service, and the California Department of Fish and Wildlife.

Condition	Mitigation measure	Implementation schedule	Status
	seven-day average OMR index within three risk categories: • Low risk: OMR between -4,000 cfs to -5,000 cfs. • Medium risk: OMR between -2,500 cfs to -4,000 cfs. • High risk: OMR between -1,250 cfs to -2,500 cfs. If a risk assessment conducted by the Smelt Monitoring Team determines that a more restrictive OMR flow requirement is needed to minimize take of adult LFS, the Smelt Monitoring Team shall provide its advice to WOMT (Condition of Approval 8.1.3) and operational decisions shall be made following the process described in Condition of Approval 8.1.4 (Collaborative Approach to Real-time Risk Assessment). This Condition will terminate when a high-flow off-ramp occurs (Condition of Approval 8.4.3), or when LFS spawning has been detected in the system, as determined by the Smelt Monitoring Team, or, if there is disagreement and resolution is not reached within		

Condition	Mitigation measure	Implementation schedule	Status
	WOMT, as determined by CDFW. The Smelt Monitoring Team shall consider results from Additional LFS Larval Sampling (Condition of Approval 7.6.1) to inform its assessment of the start of LFS spawning. After LFS spawning has been observed, Permittee shall implement Condition of Approval 8.4.2 to minimize take of larval and juvenile LFS.		
8.4.2	Larval and Juvenile Longfin Smelt Entrainment Protection. From January 1 through June 30, when a single Smelt Larva Survey (SLS) or 20 mm Survey (20 mm) sampling period exceeds one of the following thresholds: • LFS larvae or juveniles found in four or more of the 12 SLS or 20 mm stations in the central Delta and south Delta (Stations 809, 812, 815, 901, 902, 906, 910, 912, 914, 915, 918, 919), or • LFS catch per tow exceeds five LFS larvae or juveniles in two or more of the 12 stations in the central Delta and south Delta (Stations 809, 812,	Throughout the term of the ITP.	This condition was triggered in WY 2021. See *Water Year 2021 Seasonal Report for Old and Middle River Flow Management* for all details. The report was prepared in August 2021 with U.S. Bureau of Reclamation, in coordination with U.S. Fish and Wildlife Service, the National Marine Fisheries Service, and the California Department of Fish and Wildlife.

Condition	Mitigation measure	Implementation schedule	Status
	815, 901, 902, 906, 910, 912, 914, 915, 918, 919). Permittee shall restrict south Delta exports for seven consecutive days to maintain a seven-day average OMR index no more negative than -5,000 cfs. Permittee shall also immediately convene the Smelt Monitoring Team to conduct a risk assessment (see Condition of Approval 8.5.1.2) to assess the risk of larval and juvenile LFS entrainment into the South Delta Export Facilities, determine if an OMR flow restriction is warranted, and recommend an OMR flow limit between -1,250 and -5,000 cfs. The Smelt Monitoring Team risk assessment and operational recommendation shall be reviewed by the WOMT (Condition of Approval 8.1.3) via the Collaborative Real-time Decision-making process (Condition of Approval 8.1.4). Permittee shall operate to the export restriction and OMR flow target approved through Conditions of Approval 8.1.3 and 8.1.4. Each week the Smelt Monitoring Team shall convene to conduct a new risk		

Condition	Mitigation measure	Implementation schedule	Status
	assessment and determine whether to maintain, or off ramp from, export restrictions based on the risk to LFS, or until the DS and LFS off-ramp has been met as described in Condition of Approval 8.8 (End of OMR Management). From January 1 through June 30, DWR and CDFW Smelt Monitoring Team staff shall conduct weekly, or more often as needed, risk assessments (see Condition of Approval 8.5.1.2) to assess the risk of larval and juvenile LFS entrainment into the South Delta Export Facilities. As a part of the risk assessment the Smelt Monitoring Team shall recommend appropriate OMR flow targets to minimize LFS entrainment or entrainment risk, or both. The Smelt Monitoring Team shall provide its recommendation to WOMT (Condition of Approval 8.1.3) and use the Collaborative Approach to Real-time Risk Assessment process described in Condition of Approval 8.1.4 to determine if an OMR flow restriction is warranted and determine OMR flow limit between -1,250 and -5,000 cfs. The		

Condition	Mitigation measure	Implementation schedule	Status
	OMR flow limit shall be in place until the next risk assessment conducted by the Smelt Monitoring Team determines that it is no longer necessary to minimize take or related impacts to LFS, or until the DS and LFS off-ramp has been met as described in Condition of Approval 8.8 (End of OMR Management).		
8.4.3	High Flow Off-Ramp from Longfin Smelt OMR Restrictions. OMR management for adult, juvenile, or larval LFS as described in Conditions of Approval 8.4.1 and 8.4.2 are not required, or would cease if previously required, when river flows are (a) greater than 55,000 cfs in the Sacramento River at Rio Vista or (b) greater than 8,000 cfs in the San Joaquin River at Vernalis. If flows subsequently drop below 40,000 cfs in the Sacramento River at Rio Vista or below 5,000 cfs in the San Joaquin River at Vernalis, the OMR limit previously required as a part of Conditions of Approval 8.4.1 and 8.4.2 shall resume.	Throughout the term of the ITP.	This condition was not triggered in WY 2021. See *Water Year 2021 Seasonal Report for Old and Middle River Flow Management* for all details. The report was prepared in August 2021 with U.S. Bureau of Reclamation, in coordination with U.S. Fish and Wildlife Service, the National Marine Fisheries Service, and the California Department of Fish and Wildlife.
8.5.1	Turbidity Bridge Avoidance. The purpose of this Condition is to minimize the risk of entrainment of	Throughout the term of the ITP.	This condition was not triggered in WY 2021.

Condition	Mitigation measure	Implementation schedule	Status
	adult DS in the corridors of the Old and Middle rivers into the south Delta export facilities. This Condition is intended to avoid the formation of a turbidity bridge from the San Joaquin River shipping channel to the south Delta export facilities, which historically has been associated with elevated salvage of pre-spawning adult DS. After the Integrated Early Winter Pulse Protection (Condition of Approval 8.1.3) or February 1 (whichever comes first), until April 1, Permittee shall manage exports to maintain daily average turbidity in Old River at Bacon Island (OBI) at a level of less than 12 FNU. If the daily average turbidity at OBI is greater than 12 FNU, Permittee shall restrict south Delta exports to achieve an OMR flow that is no more negative than -2,000 cfs until the daily average turbidity at OBI is less than 12 FNU. If, after five consecutive days of OMR flow that is less negative than -2,000 cfs, the daily average turbidity at OBI is not less than 12		See *Water Year 2021 Seasonal Report for Old and Middle River Flow Management* for all details. The report was prepared in August 2021 with U.S. Bureau of Reclamation, in coordination with U.S. Fish and Wildlife Service, the National Marine Fisheries Service, and the California Department of Fish and Wildlife.

Condition	Mitigation measure	Implementation schedule	Status
	FNU the Smelt Monitoring Team may convene to assess the risk of entrainment of DS (Condition of Approval 8.1.5.2). The Smelt Monitoring Team may provide a recommendation to WOMT regarding changes in operations that could be conducted to minimize the risk of entrainment of DS (Condition of Approval 8.1.3). The Smelt Monitoring Team may also determine that OMR restrictions to manage turbidity are infeasible and may instead recommend a different OMR flow target that is between -2,000 and -5,000 cfs and is protective based on turbidity and adult DS distribution and salvage to the WOMT for consideration (Condition of Approval 8.1.3). Operational decisions shall be made following the process described in Condition of Approval 8.1.4 (Collaborative Real Time Risk Assessment). Turbidity readings at individual sensors can generate spurious results in real time. Spurious results could be incorrectly interpreted as a turbidity bridge, when in fact the cause is a result of local conditions		

Condition	Mitigation measure	Implementation schedule	Status
	or sensor error. To assess whether turbidity readings at OBI are attributable to a sensor error or a localized turbidity spike, Permittee, in coordination with Reclamation, may consider and review data from other nearby locations and sources. Additional information that will be reviewed include regional visualizations of turbidity, alternative sensors, and boat-based turbidity mapping, particularly if there was evidence of a local sensor error. Permittee may bring data from these additional sources to the Smelt Monitoring Team for consideration during the development of a risk assessment to be provided to the WOMT for evaluation (Condition of Approval 8.1.3). Permittee shall use the decision-making process described Condition of Approval 8.1.4 (Collaborative Real-time Risk Assessment) to determine if south Delta exports may increase after five-days of OMR no more negative than -2,000 cfs, or to determine that this action is not warranted due to a sensor error or localized turbidity event.		

Condition	Mitigation measure	Implementation schedule	Status
	Permittee shall implement this action until CDFW is in agreement that the action may be ended or modified.		
8.5.2	Larval and Juvenile Delta Smelt Protection. If the five-day cumulative salvage of juvenile DS at the CVP and SWP facilities is greater than or equal to one plus the average prior three years' FMWT index (rounded down), Permittee shall restrict south Delta exports for seven consecutive days to maintain a seven-day average OMR index no more negative than -5,000 cfs. Additionally, if the five-day cumulative salvage threshold is met or exceeded, Permittee shall immediately convene the Smelt Monitoring Team to conduct a risk assessment (Condition of Approval 8.1.5.2) and determine the future risk of entrainment and take of larval and juvenile DS. The Smelt Monitoring Team may recommend further restricting south Delta exports to maintain a more positive OMR than -5,000 cfs. The Smelt Monitoring Team may provide advice for further restrictions within three risk categories:	Throughout the term of the ITP.	This condition was not triggered in WY 2021. See *Water Year 2021 Seasonal Report for Old and Middle River Flow Management* for all details. The report was prepared in August 2021 with U.S. Bureau of Reclamation, in coordination with U.S. Fish and Wildlife Service, the National Marine Fisheries Service, and the California Department of Fish and Wildlife.

Condition	Mitigation measure	Implementation schedule	Status
	• Low risk: Limit OMR between -4,000 cfs to -5,000 cfs • Medium risk: Limit OMR between -2,500 cfs to -4,000 cfs • High risk: Limit OMR between -1,250 cfs to -2,500 cfs The duration and magnitude of operational recommendations shall be provided to the WOMT (Condition of Approval 8.1.3) and decisions shall be made following the process described in Condition of Approval 8.1.4 (Collaborative Real Time Risk Assessment). When conducting risk assessments to evaluate the risk of entrainment and take of juvenile DS the Smelt Monitoring Team shall evaluate the following information sources, in addition to any other models or surveys they deem appropriate and those listed in Condition of Approval 8.1.5.2: • Results from a CDFW-approved DS life cycle model. • DS recruitment levels identified by the Smelt Monitoring Team using the CDFW-approved life cycle		

Condition	Mitigation measure	Implementation schedule	Status
	model that links environmental conditions to recruitment, including factors related to loss as a result of entrainment such as OMR flows. In this context, recruitment is defined as the estimated number of post-larval DS in June per number of spawning adults in the prior February-March period. • Hydrodynamic models and forecasts of entrainment informed by the EDSM or other relevant survey data to estimate the percentage of larval and juvenile DS that could be entrained. If expanded salvage at the CVP and SWP facilities of juvenile DS exceeds 11 within a three-day period under this condition, Permittee shall restrict south Delta exports for seven consecutive days to maintain a seven-day average OMR index no more negative than 3,500 cfs. If juvenile DS continue to be salvaged at the CVP and SWP facilities during the seven days of OMR restrictions, then Permittee shall continue restrictions and		

Condition	Mitigation measure	Implementation schedule	Status
	request a risk assessment by the Smelt Monitoring Team to determine if additional advice and subsequent restrictions are warranted and provide advice to WOMT (see Condition of Approval 8.1.3) and follow the decision-making process described in Condition of Approval 8.1.4		
8.6.1	Winter-run Single-year Loss Threshold. In each year, Permittee shall, in coordination with Reclamation, operate the Project to avoid exceeding the following single-year loss thresholds: • Natural CHNWR (loss = 1.17% of JPE) • Hatchery CHNWR (loss = 0.12% of JPE) The loss threshold and loss tracking for hatchery CHNWR does not include releases into Battle Creek. Loss of CHNWR at the at the CVP and SWP salvage facilities shall be calculated based on length-at-date criteria.	Throughout the term of the ITP.	This condition was not triggered in WY 2021. See *Water Year 2021 Seasonal Report for Old and Middle River Flow Management* for all details. The report was prepared in August 2021 with U.S. Bureau of Reclamation, in coordination with U.S. Fish and Wildlife Service, the National Marine Fisheries Service, and the California Department of Fish and Wildlife.

Condition	Mitigation measure	Implementation schedule	Status
	Annual loss of natural and hatchery CHNWR at the CVP and SWP salvage facilities shall be counted cumulatively beginning November 1 each calendar year through June 30 the following calendar year. CHNWR shall be identified based on the Delta Model length-at-date criteria. Loss shall be calculated for the South Delta Export Facilities using the 2018 California Department of Fish and Wildlife loss equation (Attachment 6). During the water year, if cumulative loss of natural or hatchery CHNWR exceeds 50% of the annual loss threshold, Permittee shall restrict south Delta exports to maintain a 14-day average OMR index no more negative than -3,500 cfs through the end of OMR Management (see Condition of Approval 8.8). After 14 days of operations to maintain an OMR index no more negative than -3,500 cfs Permittee may convene the Salmon Monitoring Team to conduct a risk assessment (Condition of Approval 8.1.5.1) and determine whether the risk of		

Condition	Mitigation measure	Implementation schedule	Status
	entrainment and loss of natural and hatchery CHNWR is no longer present. Risks shall be measured against the potential to exceed the next single-year loss threshold. The results of this risk assessment and associated OMR recommendations shall be provided to WOMT according to Condition of Approval 8.1.3 and the decision-making process shall follow the process described in Condition of Approval 8.1.4. The -3,500 cfs OMR flow operational criteria, adjusted and informed by this risk assessment, shall remain in effect until the end of OMR Management (Condition of Approval 8.8). During the water year, if cumulative loss of natural or hatchery CHNWR at the at the CVP and SWP salvage facilities exceeds 75% of the single-year loss threshold, Permittee shall restrict OMR to a 14-day moving average OMR flow index that is no more negative than -2,500 cfs through the end of OMR Management (Condition of Approval		

Condition	Mitigation measure	Implementation schedule	Status
	8.7). After 14 days Permittee may convene the Salmon Monitoring Team to conduct a risk assessment (Condition of Approval 8.1.5.1) and determine whether the risk of entrainment and take of natural and hatchery CHNWR is no longer present. The results of this risk assessment and associated OMR recommendations shall be provided to WOMT according to Condition of Approval 8.1.3 and the decision-making process shall follow the process described in Condition of Approval 8.1.4. The -2,500 cfs OMR flow operational criteria adjusted and informed by this risk assessment shall remain in effect until the end of OMR Management (Condition of Approval 8.8). During the water year, if natural or hatchery CHNWR cumulative loss at the at the CVP and SWP salvage facilities exceeds the single-year loss threshold, Permittee shall immediately convene the Salmon Monitoring Team to review recent fish distribution information and operations and provide advice regarding future planned Project		

Condition	Mitigation measure	Implementation schedule	Status
	operations to minimize subsequent loss during that year. The Salmon Monitoring Team shall report the results of this review and advice to the WOMT (see Condition of Approval 8.1.3). Operational decisions shall be made following the process described in Condition of Approval 8.1.4 (Collaborative Real Time Risk Assessment). If the single-year loss threshold is exceeded, Permittee and Reclamation shall also convene an independent panel to review Project operations and the single-year loss threshold prior to November 1, as described in Condition of Approval 8.2. The purpose of the independent panel is to review the actions and decisions contributing to the loss trajectory that lead to an exceedance of the single-year loss threshold, and make recommendations on modifications to Project implementation, or additional actions to be conducted to stay within the single-year loss threshold in subsequent years.		

Condition	Mitigation measure	Implementation schedule	Status
	Permittee shall, in coordination with Reclamation, continue monitoring and reporting salvage at the at the CVP and SWP salvage facilities. Permittee and Reclamation shall continue the release and monitoring of yearling Coleman National Fish Hatchery (NFH) late fall-run and yearling CHNSR surrogates. The Salmon Monitoring Team shall use reported real-time salvage counts along with qualitative and quantitative tools to inform risk assessments (see Condition of Approval 8.1.5.1).		
8.6.2	Early-season Natural Winter-run Chinook Salmon Discrete Daily Loss Threshold. To minimize entrainment, salvage, and take of early-migrating natural CHNWR Permittee shall restrict south Delta exports for five consecutive days to achieve a five-day average OMR index no more negative than -5,000 cfs when daily loss of older juveniles (natural older juvenile Chinook salmon and yearling CHNSR used as a surrogate for CHNWR) at the SWP and CVP salvage facilities exceeds the following thresholds:	Throughout the term of the ITP.	This condition was not triggered in WY 2021. See *Water Year 2021 Seasonal Report for Old and Middle River Flow Management* for all details. The report was prepared in August 2021 with U.S. Bureau of Reclamation, in coordination with U.S. Fish and Wildlife Service, the National Marine Fisheries Service, and the California Department of Fish and Wildlife.

Condition	Mitigation measure	Implementation schedule	Status
	• From November 1 — November 30: 6 older juvenile Chinook salmon • From December 1 — December 31: 26 older juvenile Chinook salmon All natural older juvenile Chinook salmon juveniles shall be identified based on the Delta Model length-at-date criteria. Loss shall be calculated for the South Delta Export Facilities using the equation provided in CDFW (2018) (Attachment 6). This Condition of Approval may be modified through the process described in Condition of Approval 8.6.6 and an amendment to this ITP.		
8.6.3	Mid- and Late-season Natural Winter-run Chinook Salmon Daily Loss Threshold. To minimize entrainment, salvage, and take of natural CHNWR during the peak and end of their migration through the Delta, Permittee shall restrict south Delta exports for five days to achieve a five-day average OMR index no more negative than -3,500 cfs when daily loss of natural older juveniles at the SWP and CVP	Throughout the term of the ITP.	This condition was not triggered in WY 2021. See *Water Year 2021 Seasonal Report for Old and Middle River Flow Management* for all details. The report was prepared in August 2021 with U.S. Bureau of Reclamation, in coordination with U.S. Fish and Wildlife Service, the National Marine Fisheries Service, and the California Department of Fish and Wildlife.

Condition	Mitigation measure	Implementation schedule	Status
	salvage facilities exceeds the following thresholds based on the JPE reported in January of the same calendar year: • January 1 — January 31: 0.00635% of the CHNWR JPE • February 1 — February 28: 0.00991% of the CHNWR JPE • March 1 — March 31: 0.0146% of the CHNWR JPE • April 1 — April 30: 0.00507% of the CHNWR JPE • May 1 — May 31: 0.0077% of the CHNWR JPE All natural older juvenile Chinook salmon juveniles shall be identified based on the Delta Model length-at-date criteria. Loss shall be calculated for the South Delta Export Facilities using the equation provided in CDFW (2018) (Attachment 6). This Condition of Approval may be modified through the process described in Condition of Approval 8.6.6 and an amendment to this ITP.		
8.6.4	Daily Spring-run Chinook Salmon Hatchery Surrogate Loss Threshold. To minimize entrainment of emigrating natural juvenile CHNSR	Throughout the term of the ITP.	This condition was not triggered in WY 2021. See *Water Year 2021 Seasonal Report for Old and Middle River Flow Management* for all

Condition	Mitigation measure	Implementation schedule	Status
	from the Sacramento River and tributaries, including the Feather and Yuba rivers into the channels of the central Delta, south Delta, CCF, and the Banks Pumping Plant, Permittee shall restrict exports based on the presence of hatchery produced CHNSR surrogate groups at the CVP and SWP salvage facilities. CHNSR surrogate groups shall consist of all in-river fall- and spring-run surrogate release groups of Chinook salmon from the Coleman National Fish Hatchery, Feather River Hatchery, and the Nimbus Fish Hatchery. Each water year between February 1 and June 30 Permittee shall reduce south Delta exports for five consecutive days to achieve a five-day average OMR index no more negative than -3,500 cfs when: • Feather River Hatchery coded wire tagged (CWT) CHNSR surrogates (includes both spring- and fall-run hatchery release groups) cumulative loss at the at the CVP and SWP salvage facilities is		details. The report was prepared in August 2021 with U.S. Bureau of Reclamation, in coordination with U.S. Fish and Wildlife Service, the National Marine Fisheries Service, and the California Department of Fish and Wildlife. DWR supported CDFW to complete the following surrogate releases: Coleman National Fish Hatchery: Group 1: 1,290,150 total fall-run released 3/10/2021. Group 2: 372,072 total fall-run released 3/24 and 3/26/2021. Group 3 (substitute for Nimbus groups); 5,389,856 total fall-run released on 4/8/2021. Feather River Fish Hatchery: Group 1: 514,027 total spring-run released on 3/19/2021. Group 2: 500,312 total spring-run released on 4/1/2021. Nimbus Fish Hatchery: Unable to release in-river due to extreme drought conditions. As a substitute, third group was released from Coleman National Fish Hatchery.

Condition	Mitigation measure	Implementation schedule	Status
	greater than 0.25% for each release group, OR • Coleman National Fish Hatchery and Nimbus Fish Hatchery CWT fall-run release groups cumulative loss at the at the CVP and SWP salvage facilities is greater than 0.25% of the total in-river releases for each release group. This Condition of Approval may be modified through the process described in Condition of Approval 8.6.6 and an amendment to this ITP.		
8.6.5	Funding for Spring-run Hatchery Surrogates. Permittee shall provide at least $72,000 one-time start-up costs per hatchery and $150,000 of additional funding each year for each hatchery to CDFW to support the following hatchery surrogate release group protocol to enable implementation of Condition of Approval 8.6.4: • 100% CWT for each hatchery in-river surrogate release group	Throughout the term of the ITP.	DWR worked with CDFW to develop a surrogate release schedule designed to protect a range of spring-run Chinook salmon life history types consisting of releases of several different life stages at multiple locations over the migration season. DWR supported the release plan. Note that the plan was modified with concurrence from DWR regarding the need for contingency planning during extreme drought conditions as detailed above under 8.6.4. For WY 2021 implementation, CDFW and DWR agreed that if contingencies were to arise,

Condition	Mitigation measure	Implementation schedule	Status
	• Unique CWT for each hatchery in-river surrogate release group to allow differentiation among groups at the salvage facilities • At least two hatchery in-river surrogate release groups per hatchery, per year Permittee shall provide sufficient funding to ensure that all hatchery surrogate release groups can be produced in addition to annual production releases. Locations and times of year for in-river surrogate releases shall be developed to best represent natural juvenile CHNSR migration into the Sacramento River and Delta. Permittee shall provide technical support and guidance to CDFW, as needed, to inform CDFW's development of its annual plan for in-river surrogate releases. CDFW's annual planning includes specifying the number of fish included in each release group, and the timing and the locations of in-river releases.		CDFW could request funding from DWR to meet the requirements of Condition of Approval 8.6.5. Although CDFW did not request funding from DWR to meet requirements of this COA during WY 2021, DWR did agree to implement a pulse flow to the Feather River to help a spring-run Chinook salmon hatchery release at Boyd's Pump Boat Launch, upon CDFW's request. The pulse flow, initiated on April 1, 2021, consisted of an additional 450 cfs released from the Thermalito Afterbay Outlet.
8.6.6	Evaluate Proactive Salmon Entrainment Minimization During	Throughout the term of the ITP.	Not applicable for WY 2021.

Condition	Mitigation measure	Implementation schedule	Status
	Real-time Operations. When a new Chinook salmon entrainment model is developed and approved by CDFW as required by Condition of Approval 7.5.3, it shall be evaluated during real-time operations for two water years by the Salmon Monitoring Team (Condition of Approval 8.1.2) as a part of their weekly risk assessments (Condition of Approval 8.5.1.1). If Permittee and CDFW agree that the new entrainment model provides a more proactive approach to minimizing CHNWR entrainment and loss, while providing the same level of protection as Conditions of Approval 8.6.2 and 8.6.3, Permittee may request an amendment to the ITP to modify or replace Conditions of Approval 8.6.2 and 8.6.3 with salmon entrainment thresholds based on the entrainment model. When a CHNSR JPE is approved by CDFW and implemented (see Condition of Approval 7.5.2), Permittee and CDFW staff shall work with the Spring-run JPE Team to evaluate minimization provided by Condition of Approval 8.6.4. Permittee may request an		

Condition	Mitigation measure	Implementation schedule	Status
	amendment to the ITP to modify or replace Conditions of Approval 8.6.4 and 8.6.5 with CHNSR entrainment minimization measures that incorporate new information gleaned from the new monitoring and CHNSR JPE.		
8.7	OMR Flexibility During Delta Excess Conditions. Permittee may increase exports to capture peak flows in the Delta during storm-related events (hereafter OMR flex) when: • The Delta is in excess conditions, AND • QWEST is greater than 0, AND • A measurable precipitation event has occurred in the Central Valley, AND • Permittee, in coordination with Reclamation, determines that the Delta outflow index indicates a higher level of outflow available for diversion due to peak storm flows, AND • None of the following Conditions of Approval are controlling Project operations: 8.3.1, 8.3.3, 8.4.1, 8.4.2, 8.5.1, 8.5.2, 8.6.1, 8.6.2, 8.6.3, and 8.6.4, AND	Throughout the term of the ITP.	OMR Flexibility During Delta Excess Conditions was not implemented during WY 2021.

Condition	Mitigation measure	Implementation schedule	Status
	• Risk assessments conducted by the Salmon and Smelt Monitoring Teams (Conditions of Approval 8.1.5.1 and 8.1.5.2) indicate that an OMR more negative than -5,000 cfs is not likely to trigger an additional real-time OMR restriction (Conditions of Approval 8.3.1, 8.3.3, 8.4.1, 8.4.2, 8.5.1, 8.5.2, 8.6.1, 8.6.2, 8.6.3, and 8.6.4), AND • Cumulative salvage at the CVP and SWP facilities of yearling Coleman NFH late fall-run Chinook salmon (as yearling CHNSR surrogates) is less than 0.5% within any of the release groups, AND • Risk assessments conducted by the Salmon and Smelt Monitoring Teams determines that no changes in spawning, rearing, foraging, sheltering, or migration behavior as a result of OMR Flex operations beyond those anticipated to occur through operations described in Conditions of Approval 8.3.1, 8.3.3, 8.4.1, 8.4.2, 8.5.1, 8.5.2, 8.6.1,		

Condition	Mitigation measure	Implementation schedule	Status
	8.6.2, 8.6.3, and 8.6.4 are likely to occur. If, during OMR flex operations, any of the following conditions occurs, Permittee shall reduce south Delta exports to achieve a 14-day average OMR index no more negative than -5,000 cfs, unless a further reduction in exports is required by another Condition of Approval. The more positive OMR index shall be achieved within 48 hours of the occurrence of the condition, and the 14-day moving average shall apply from that point forward. • Risk assessments conducted by the Salmon and Smelt Monitoring Teams (Conditions of Approval 8.1.5.1 and 8.5.1.2) indicate that an OMR more negative than -5,000 cfs is likely to trigger an additional real-time OMR restriction (Conditions of Approval 8.3.1, 8.3.3, 8.4.1, 8.4.2, 8.5.1, 8.5.2, 8.6.1, 8.6.2, 8.6.3, and 8.6.4), OR • Cumulative salvage at the CVP and SWP facilities of		

Condition	Mitigation measure	Implementation schedule	Status
	yearling Coleman NFH late fall-run Chinook salmon (as yearling CHNSR surrogates) exceeds 0.5% within any of the release groups, OR • A risk assessment conducted by the Salmon or Smelt Monitoring Teams identifies changes in spawning, rearing, foraging, sheltering, or migration behavior as a result of OMR Flex operations beyond those anticipated to occur through operations described in Conditions of Approval 8.3.1, 8.3.3, 8.4.1, 8.4.2, 8.5.1, 8.5.2, 8.6.1, 8.6.2, 8.6.3, and 8.6.4, OR • Operational restrictions described in Conditions of Approval 8.3.1, 8.3.3, 8.4.1, 8.4.2, 8.5.1, 8.5.2, 8.6.1, 8.6.2, 8.6.3, 8.6.4, and 8.17 are required.		
8.8	End of OMR Management. Permittee shall operate the Project to meet the requirements included in Conditions of Approval 8.3.1, 8.3.3, 8.4.1, 8.4.2, 8.5.1, 8.5.2, 8.6.1, 8.6.2, 8.6.3, and 8.6.4 to ensure that entrainment and take of Covered Species is minimized	Throughout the term of the ITP.	OMR management for LFS and DS off-ramped on June 21, 2021. OMR management for CHNWR and CHNSR off-ramped on June 8, 2021.

Condition	Mitigation measure	Implementation schedule	Status
	during the OMR Management season through June 30, or until the following species-specific off-ramps occur: • LFS and DS: Daily mean water temperature at CCF is greater than 25 °C for three consecutive days. • CHNWR and CHNSR: ○ More than 95% of CHNWR and CHNSR have migrated past Chipps Island as determined by the Salmon Monitoring Team, AND ○ Daily average water temperature at Mossdale exceeds 22.2 °C for 7 non-consecutive days in June, AND ○ Daily average water temperature at Prisoner's Point exceeds 22.2 °C for 7 non-consecutive days in June.		See *Water Year 2021 Seasonal Report for Old and Middle River Flow Management* for all details. The report was prepared in August 2021 with U.S. Bureau of Reclamation, in coordination with U.S. Fish and Wildlife Service, the National Marine Fisheries Service, and the California Department of Fish and Wildlife.
8.9.1	<u>Construct and Operate a Salmonid Migratory Barrier at Georgiana Slough</u>. A salmonid migratory barrier at Georgiana Slough is expected to provide a higher probability of survival for		Permittee shall construct and operate a salmonid migratory barrier at Georgiana Slough within three years of the effective date of this ITP (by March 30, 2023). • 90+% design complete. • Equipment procurement in-progress.

Condition	Mitigation measure	Implementation schedule	Status
	emigrating juvenile CHNWR and CHNSR that encounter the Sacramento River-Georgiana Slough junction and reduce entrainment of emigrating CHNWR and CHNSR into the central and south Delta. Permittee shall construct and operate a salmonid migratory barrier at Georgiana Slough within three years of the effective date of this ITP. This timeline shall be subject to Permittee attaining required state and federal permits. If permits are not obtained within 2.5 years after the effective date of this ITP, Permittee shall confer with CDFW to determine a timeline for permit acquisition and construction of the migratory barrier. Permittee shall develop a Georgiana Slough Migratory Barrier Operations Plan and associated operating criteria in collaboration with CDFW, USFWS and NMFS to maximize benefits to migrating CHNWR and CHNSR. Permittee shall prepare a draft Georgiana Slough Migratory Barrier Operations Plan and submit it to CDFW, USFWS, and NMFS at least 120 days before beginning		• Construction Contractor selected. • Property access in-progress. ○ Phase I Assessment completed. ○ All access completion expected by December 2021. Permittee shall attain required State and federal permits within 2.5 years after the effective date of this ITP. • CEQA document released, NOI submitted to State Clearinghouse October 1, 2021. • All other state and federal permit applications complete; submittal in-progress. Permittee shall develop a Georgiana Slough Migratory Barrier Operations Plan and associated operating criteria in collaboration with CDFW, USFWS and NMFS to maximize benefits to migrating CHNWR and CHNSR. • Draft operations plan is complete, initial feedback/revisions have been received from resource agency representatives, second draft operations plan is in-progress. Permittee as part of the AMP shall continue pilot investigations to refine the understanding of barrier efficiency and

Condition	Mitigation measure	Implementation schedule	Status
	construction and deployment of the barrier. Operation of the Georgiana Slough Migratory Barrier shall not commence until the final Georgiana Slough Migratory Barrier Operations Plan and associated criteria are approved in writing by CDFW. Permittee as part of the AMP shall continue pilot investigations to refine the understanding of barrier efficiency and benefits to Covered Species in coordination with CDFW, NMFS and USFWS. This ITP does not provide take authorization for construction of the migratory barrier at Georgiana Slough. Permittee shall submit a separate 2081(b) application for incidental take authorization associated with construction of the barrier.		benefits to Covered Species in coordination with CDFW, NMFS and USFWS. • Draft study plan and monitoring plan in-progress. • Draft Monitoring Plan to be distributed to ITP workgroup November 2021. This ITP does not provide take authorization for construction of the migratory barrier at Georgiana Slough. Permittee shall submit a separate 2081(b) application for incidental take authorization associated with construction of the barrier. • An ITP application was submitted on 11/23/2021 LSAA application was submitted on 12/08/2021 for construction activities as part of the above- mentioned State and federal permit applications.
8.9.2	<u>Evaluate Benefits of Salmonid Guidance Structures at Sutter and Steamboat Sloughs</u>. Fish guidance structures near the junction between the Sacramento River and Sutter and Steamboat sloughs are expected to provide a higher probability of survival for emigrating juvenile CHNWR and CHNSR by increasing the proportion of juveniles that enter Sutter and	Throughout the term of the ITP.	Within two years of the effective date of this ITP, Permittee shall use SDM, in collaboration with CDFW, NMFS, and USFWS, to evaluate a range of potential approaches to designing and operating fish guidance structures. • SDM workgroups with required resource agency representatives have been established and completed at least six formal working group sessions.

Condition	Mitigation measure	Implementation schedule	Status
	Steamboat sloughs and minimizing the proportion of juveniles that migrate into the central and south Delta. Within two years of the effective date of this ITP, Permittee shall use SDM, in collaboration with CDFW, NMFS, and USFWS, to evaluate a range of potential approaches to designing and operating fish guidance structures near Sutter and Steamboat sloughs. Permittee shall submit a draft report documenting the results of the SDM process and associated implementation recommendations to CDFW, NMFS, and USFWS within three years of the effective date of this ITP.		• Fish guidance structure alternatives have been identified and analysis activities are in-progress. Permittee shall submit a draft report documenting the results of the SDM process and associated implementation recommendations to CDFW, NMFS, and USFWS within three years of the effective date of this ITP (March 31, 2023). • Analysis activities are in-progress; report development will begin in 2022.
8.10	SWP Proportional Share. Due to the historically coordinated operations of the SWP and CVP, joint operational criteria related to OMR flows and export restrictions have been developed for SWP and CVP that assume coordinated implementation by Permittee and Reclamation. Conditions of Approval 8.3.1, 8.3.2, 8.3.3, 8.4.1, 8.4.2, 8.5.1, 8.5.2, 8.6.1, 8.6.2, 8.6.3, 8.6.4, 8.7, 8.8, and 8.17 set out	Throughout the term of the ITP.	All applicable OMR flow and export restrictions for the SWP per COA 8.10 were met in WY 2021. Because of drought conditions, the SWP operated to health and safety standards in April and May.

Condition	Mitigation measure	Implementation schedule	Status
	such operational criteria that assume coordination by Permittee and Reclamation to meet the criteria and that are subject to the process set out in this condition. During the term of this ITP there may be instances when operational requirements stated in or determined by these Conditions of Approval are different from operational requirements of the applicable ESA authorizations, which govern operations at the CVP as well as the SWP. If an operational restriction required by this ITP, pursuant to one or more of the Conditions of Approval listed above, is more restrictive than the then-controlling operations required by the applicable ESA authorizations, Permittee shall take the following steps to meet its proportional share of the operational criteria stated or determined by the Condition of Approval(s) at issue: 1. Permittee is legally bound, both statutorily and through agreements with the Bureau of Reclamation, not to utilize State facilities (including the		

Condition	Mitigation measure	Implementation schedule	Status
	CCF, Banks Pumping Plant, the California Aqueduct, and the SWP share of San Luis Reservoir) or allow third parties (including the CVP) to use State facilities in a manner that would result in a violation of law, including the operational criteria stated in or determined by Conditions of Approval 8.3.1, 8.3.2, 8.3.3, 8.4.1, 8.4.2, 8.5.1, 8.5.2, 8.6.1, 8.6.2, 8.6.3, 8.6.4, 8.7, 8.8, and 8.17 of this ITP. 2. If prohibiting the use of state facilities for CVP purposes will not result in conditions that meet the operational criteria stated in or determined by the Condition of Approval at issue, Permittee shall provide CDFW with a written estimate of the total allowed exports at both the SWP and CVP facilities that would be required to meet the operational criteria stated in or determined by the Condition of Approval at issue.		

Condition	Mitigation measure	Implementation schedule	Status
	3. Under Excess Conditions: Based on the written estimate prepared under paragraph 2 of this condition, Permittee shall reduce exports at the Banks Pumping Plant to 40% of the estimated total allowed exports that would be allowed if both the SWP and CVP were operating to meet the requirement stated in or determined by the Condition of Approval at issue. Under Balanced Conditions: Based on the written estimate prepared under paragraph 2 of this condition, Permittee shall reduce exports at the Banks Pumping Plant to 35% of the estimated total allowed exports that would be allowed if both the SWP and CVP were operating to meet the requirement stated in or determined by the Condition of Approval at issue. Excess and Balanced Conditions are defined in Section 1.4 of the Project Description. The SWP shares of		

Condition	Mitigation measure	Implementation schedule	Status
	allowable exports in Step 3 above are defined based on the SWP share of exports during excess and balanced conditions described in the 2018 COA Addendum. This condition in combination with other Conditions of Approval required by this ITP are intended to further satisfy Permittee's obligations pursuant to CESA. If the COA is revised after the effective date of this ITP, Permittee shall notify CDFW per Condition of Approval 5. Permittee shall not be required to reduce exports below 600 cfs, the minimum required to health and safety standards.		
8.11	Ongoing comparison of OMR Index to Tidally Filtered OMR. The United States Geological Survey (USGS) Tidally Filtered Method to calculate OMR flow is defined in the NMFS 2009 BiOp and uses values reported by the USGS for the Old River at Bacon Island and Middle River at Middle River monitoring stations. Permittee shall continue to calculate and report OMR as estimated using the USGS Tidally Filtered Method in all risk analyses conducted as a part of the Smelt and Salmon	Throughout the term of the ITP.	DWR has continued to calculate and report OMR as estimated using the USGS Tidally Filtered Method in all risk analyses conducted as a part of the Smelt and Salmon Monitoring Teams and reported to the WOMT, in addition to OMR flows as calculated using the OMR Index. Data comparing the daily OMR Index and USGS Tidally Filtered OMR over Water Year 2021 are provided in Appendix C.

Condition	Mitigation measure	Implementation schedule	Status
	Monitoring Teams and reported to the WOMT, in addition to OMR flows as calculated using the OMR Index. Permittee shall provide raw data for the daily OMR Index and USGS Tidally Filtered OMR and a report comparing the estimates over the prior water year annually as a part of the ASR (Condition of Approval 7.2).		
8.12	Barker Slough Pumping Plant Longfin and Delta Smelt Protection. Permittee shall operate the BSPP to protect larval LFS from January 15 through March 31 of dry and critical water years. Permittee shall operate to protect larval DS from March 1 through June 30 of dry and critical years. If the water year type changes after January 1 to below normal, above normal or wet, this action will be suspended. If the water year type changes after January to dry or critical, Permittee shall operate according to this Condition of Approval. From January 15 through March 31 of dry and critical water years, Permittee shall reduce the maximum seven-day average diversion rate at BSPP to less than	Throughout the term of the ITP	Barker Slough Pumping Plant restrictions for larval Longfin Smelt were triggered three times in WY 2021, on January 19, February 2, and March 2, 2021. See *Water Year 2021 Seasonal Report for Old and Middle River Flow Management* for all details. The report was prepared in August 2021 with U.S. Bureau of Reclamation, in coordination with U.S. Fish and Wildlife Service, the National Marine Fisheries Service, and the California Department of Fish and Wildlife.

Condition	Mitigation measure	Implementation schedule	Status
	60 cfs when larval LFS are detected at Station 716. In addition, in its weekly meetings from January 15 through March 31, the Smelt Monitoring Team shall review LFS abundance and distribution survey data and other pertinent abiotic and biotic factors that influence the entrainment risk of larval LFS at the BSPP. When recommended by the Smelt Monitoring Team, and as approved through the decision-making processes described in Conditions of Approval 8.1.3 and 8.1.4, Permittee shall reduce the maximum seven-day average diversion rate at BSPP according to the advice provided by the Smelt Monitoring Team. From March 1 through June 30 of dry and critical water years, Permittee shall reduce the maximum seven-day average diversion rate at BSPP to less than 60 cfs when larval DS are detected at Station 716. In addition, in its weekly meetings from March 1 through June 30, the Smelt Monitoring Team shall review DS abundance and distribution survey data and other pertinent abiotic and		

Condition	Mitigation measure	Implementation schedule	Status
	biotic factors that influence the entrainment risk of larval DS at the BSPP (including temperature and turbidity). When recommended by the Smelt Monitoring Team, and as approved through the decision-making processes described in Conditions of Approval 8.1.3 and 8.1.4, Permittee shall reduce the maximum seven-day average diversion rate at BSPP to less than 60 cfs. The DS requirements described in this condition may be adjusted to align with USFWS requirements to minimize take of DS through an amendment to this ITP.		
8.13	Water Year Type Definition. All references to water year type in this ITP shall be defined based on the Sacramento Valley Index unless otherwise noted.	Throughout the term of the ITP.	DWR will define water year type based on the Sacramento Valley Index unless otherwise noted.
8.14	Clifton Court Forebay Aquatic Weed Control Practices. Permittee may apply Aquathol K and copper-based aquatic pesticides, as needed, from June 28 to August 31. Permittee may apply Aquathol K and copper-based aquatic	Throughout the term of the ITP.	Aquatic weed treatments occurred on two occasions during the reporting period. After conferring with CDFW that no CESA-listed fish species were present and at risk, a treatment was conducted on November 3, 2020. A second treatment was conducted on June 29, 2021, which was within the permitted work window. The aquatic herbicides were applied

Condition	Mitigation measure	Implementation schedule	Status
	pesticides, if necessary, prior to June 28 or after August 31 if the average daily water temperature within the CCF is greater than or equal to 25 °C, and if DS, LFS, CHNWR and CHNSR are not at additional risk from the treatment, as confirmed by CDFW, NMFS and USFWS. Before applying aquatic pesticides outside of the June 28 to August 31 time frame, Permittee shall notify and confer with CDFW, NMFS and USFWS to determine whether ESA- or CESA-listed fish species are present and at risk from the proposed treatment. Permittee may apply Aquathol K and copper-based aquatic pesticides, outside of the June 28 to August 31 timeframe and when the average daily water temperature in the CCF is below 25 °C only as approved by CDFW and subject to the following conditions. Permittee shall: • Close the CCF radial gates for 24 hours after Aquathol K application is completed, unless CDFW determines that rapid dilution of the herbicide would be beneficial to reduce		within permissible concentration limits. All treatment conditions were followed.

Condition	Mitigation measure	Implementation schedule	Status
	the exposure duration to Covered Species present within the CCF. • Monitor the salvage of Covered Species at the Skinner Fish Facility prior to the application of the aquatic herbicides and algaecides in the CCF. If salvage of Covered Species occurs Permittee shall confer with CDFW prior to initiating aquatic weed control. • Close the radial intake gates at the entrance to the CCF for at least 24 hours prior to the application of Aquathol K and copper compounds pesticides to allow fish to move out of the targeted treatment areas and toward the salvage facility and to minimize the possibility of aquatic pesticide diffusing into the Delta. • Close the radial gates for a minimum of 12 and up to 24 hours after treatment with Aquathol K and copper compounds to allow for the recommended duration of contact time between the aquatic pesticide and the		

Condition	Mitigation measure	Implementation schedule	Status
	treated vegetation or cyanobacteria in CCF, and to reduce residual endothall concentration for drinking water compliance purposes. Permittee shall not open radial gates until a minimum of 36 hours (24 hours pre-treatment closure plus 12 hours post- treatment closure). • Close the radial gates prior to the application of peroxide-based algaecides to minimize the possibility of the algaecide diffusing into the Delta. Permittee may reopen the radial gates immediately after treatment with peroxide-based algaecides. • Ensure that aquatic herbicides are applied by a licensed applicator under the supervision of a California Certified Pest Control Advisor. • Apply aquatic herbicides and algaecides by boat or by aircraft. • Apply aquatic herbicides by boat using a subsurface injection system for liquid		

Condition	Mitigation measure	Implementation schedule	Status
	formulations and a boat-mounted hopper dispensing system for granular formulations. Applications shall start at the shoreline and move systematically farther offshore, enabling fish to move out of the treatment area. • Use helicopter or aircraft for aerial application of aquatic herbicides during times when wind speeds are less than 15 mph to prevent spray drift. • Restrict application to the smallest area possible (no more than 50% of the CCF at one time) that provides relief to SWP operations or water quality. • Collect water quality samples to monitor copper and endothall concentrations within or adjacent to the treatment area, per NPDES permit requirements, before, during and after application. Additional water quality samples may be collected during the following		

Condition	Mitigation measure	Implementation schedule	Status
	treatment for drinking water compliance purposes. • Measure dissolved oxygen concentration prior to and immediately following application within and adjacent to the treatment zone.		
8.15	Skinner Fish Salvage Facility CDFW Staff. To support implementation of Conditions of Approval 7.4, 7.4.1, 7.4.2 and 7.4.3 Permittee shall fully fund two existing Environmental Scientist and one new Senior Environmental Scientist Specialist CDFW staff positions to work collaboratively with DWR Skinner Fish Salvage Facility staff starting on July 1 in the same year this ITP becomes effective. Permittee shall work collaboratively with these CDFW staff to ensure that they have the access and information needed to perform their duties and discuss roles and responsibilities relative to existing DWR facility staff. CDFW staff duties will include, but not be limited to, the following: • Receive daily salvage data from the SWP and CVP fish salvage facilities,	Throughout the term of the ITP.	The agreement for DWR to provide full funding to CDFW for the two existing Environmental Scientist and one new Senior Environmental Scientist CDFW staff positions was the subject of negotiation into WY 2021. DWR and CDFW met and corresponded regularly to collaboratively develop the terms of the agreement, which was successfully completed and approved by the Department of General Services on June 27, 2021, with the effective dates of January 1, 2021 through June 30, 2025.

Condition	Mitigation measure	Implementation schedule	Status
	• Conduct salvage data QA/QC, • Train salvage facility staff, • Monitor salvage facility operations, • Work collaboratively with DWR staff to develop a revised Skinner Fish Facility Operations Manual v 2.0 October 19. 2005 (see Condition of Approval 7.4.2), • Review annual salvage reports, • Receive notifications regarding inspections or maintenance of fish protective equipment, • Work collaboratively with Permittee to develop a new protocol which describes the decision-making process prior to reducing sampling times, • Engage in real-time decision making to determine whether reduce count times are needed and measures to ensure adequate detection of Covered Species during reducing count times, and • Conduct special studies to refine estimates of entrainment, expanded		

Condition	Mitigation measure	Implementation schedule	Status
	salvage, and loss (see Condition of Approval 7.4.3) Permittee shall provide reasonable access to the Skinner Fish Salvage Facility for the three CDFW staff identified in this Condition of Approval.		
8.16	Relationship Between the Adaptive Management Program and This ITP. The Adaptive Management Program (Attachment 2, AMP) shall be used to consider and address scientific uncertainty regarding the Bay-Delta ecosystem, Covered Species ecology, and to inform the understanding of minimization of take and impacts of the taking associated with the operational criteria in this ITP. The AMP may result in recommendations regarding operational components described in Conditions of Approval in this ITP, and consequently Permittee may request amendment of this ITP based on new information developed through new science and monitoring (Condition of Approval 5) and according to the amendment standards and processes identified in CESA's implementing regulations. The AMP	Throughout the term of the ITP.	An Adaptive Management Team (AMT) was formed, consisting of two designated representatives each from DWR, CDFW, and the SWC. The AMT has identified key adaptive management tasks and timelines associated with specific Actions in the ITP, which will be important to consider as part of the Adaptive Management Program (AMP). The AMT agreed that individual adaptive management plans should be developed for specific Actions that are subject to adaptive management to best guide an Action through an adaptive management cycle. Some of these individual adaptive management plans have been drafted for specific actions (e.g., operations of the Suisun Marsh Salinity Control Gates) and others are still being developed. These individual adaptive management plans are a key part of the overarching AMP as outcomes from them will help inform scientific understanding of Covered Species and evaluate potential changes in the ITP's operational criteria. The AMP contained within the ITP (i.e., Attachment 2 of the ITP, refined

Condition	Mitigation measure	Implementation schedule	Status
	shall be used to build scientific understanding of Covered Species and evaluate potential changes in the operational criteria in this ITP. The AMP (Attachment 2) describes this structure and steps associated with adaptive management in more detail. The AMP does not govern real-time operations. Recommendations of the AMP shall not commit Permittee or CDFW to a definite course of action related to ITP amendments. The AMP shall not modify CDFW's discretionary decision-making as set out in the Conditions of Approval, CESA, or CESA's implementing regulations. Condition of Approval 5 describes circumstances when CDFW anticipates that Permittee may request an amendment to this ITP in the future, including amendments that may be requested in response to recommendations from the AMP.		in early 2021), will continue to serve as the foundation for adaptive management under the ITP, and the AMT is currently discussing some approaches to bolster that document. Finally, the AMT has been in discussions with the Delta Science Program (DSP), and they are willing to help provide facilitation and peer-review support during the 4-yr review cycle for several ITP Actions. As these reviews are an integral part of the AMP, the AMT is working to ensure the necessary resources are available to complete these reviews.
8.17	Export Curtailments for Spring Outflow. As described in Sections 1.5 and 3.17 of the Project	Throughout the term of the ITP.	The export curtailments for spring outflow described in the COA 8.17 did not restrict exports in WY 2021 because the project's

Condition	Mitigation measure	Implementation schedule	Status
	Description, as part of the Voluntary Agreement process, Permittee and its SWP Contractors have proposed a reduction in SWP exports to protect outflows in the spring time period. Each year, following the finalization of the March forecast, Permittee will confer with CDFW regarding export reductions from April 1 to May 31. If in any year during the term of this ITP, Permittee and its SWP Contractors identify in a written operations plan, submitted to CDFW following the March forecast, and throughout April and May conduct SWP export reductions pursuant to the Voluntary Agreements that are consistent with the SWP export reductions required by this Condition, then the Voluntary Agreement implementation may satisfy the reductions required to meet this Condition. The following shall be implemented by Permittee during any year in which SWP export reductions pursuant to the Voluntary Agreements are not identified and conducted as described in the preceding paragraph. Permittee		exports were already below 1500 cfs for the entirety of the April through May period to address other regulations and the unavailability of water.

Condition	Mitigation measure	Implementation schedule	Status
	shall operate the Project during the spring each year to restrict exports and enhance Delta outflow. Permittee shall reduce exports from April 1 to May 31 each year to achieve the SWP proportional share (Condition of Approval 8.10) of export reductions established by the ratio of Vernalis flow (cfs) to combined CVP and SWP exports, scaled by water year type, to provide incidental spring outflow. In a critically dry year, the ratio of Vernalis flow to CVP and SWP combined exports shall be 1 to 1. In a dry year, the ratio of Vernalis flow to CVP and SWP combined exports shall be 2 to 1. In a below normal year, the ratio of Vernalis flow to CVP and SWP combined exports shall be 3 to 1. In an above normal or wet year, the ratio of Vernalis flow to CVP and SWP combined exports shall be 4 to 1[1]. In wet years SWP export curtailments required by this Condition of Approval for spring outflow in April and May is limited to 150 TAF. The ratio of Vernalis flows to export reductions is intended to serve as an operational mechanism to		

Condition	Mitigation measure	Implementation schedule	Status
	achieve the Delta outflow required by this Condition of Approval for minimization of the Covered Activities' impacts to Covered Species. For purposes of this Condition of Approval only, the Joaquin Valley "60-20-20" Water Year Hydrologic Classification and Indicator as defined in the Water Quality Control Plan for the San Francisco Bay/Sacramento-San Joaquin Delta Estuary (SWRCB 2006) is used. Permittee shall not be required to restrict operations as described above under either of the following circumstances: • If the three-day average Delta outflow is greater than 44,500 cfs, then Project operations shall not be controlled by this Condition until the flows drop below 44,500 cfs on a three-day average. • Permittee shall not be required by this Condition of Approval to restrict exports at the Banks Pumping Plant		

Condition	Mitigation measure	Implementation schedule	Status
	below its minimum health and safety exports of 600 cfs. The ratios used to establish export restrictions by water year type are a tool that incorporates San Joaquin River inflows while also allowing for a high outflow offramp of 44,500 cfs, which is expected to be driven by inflow from the Sacramento River. Spring export curtailments are intended to augment Delta outflow during a critical time in the life history of all four Covered Species. When April and May Delta outflow is augmented salinity in Suisun Bay is reduced and central Delta productivity is dispersed westward, improving habitat for both Delta and longfin smelt. At the upper end of managed flows when X2 is in San Pablo Bay, export curtailments help maintain this favorable location and sustain food web productivity and other conditions for improved longfin smelt recruitment in San Pablo Bay. Reductions in outflow during such conditions could restrict longfin smelt nursery habitat upstream to less favorable habitat in Carquinez Strait. Augmenting spring outflow		

Condition	Mitigation measure	Implementation schedule	Status
	through export curtailments improves migratory conditions for CHNWR and CHNSR by reducing Covered Activities' impacts on routing and through-Delta survival. Maintaining a higher Delta outflow during this time period will also provide a proactive approach to entrainment minimization that is expected to reduce CHNWR and CHNSR routing into the central and south Delta and minimize loss of all Covered Species at the SWP export facility. Additionally, increases in Delta outflow are associated with increased food web transport to, and productivity in, Suisun Bay. Immediately following the SWRCB's adoption of final Voluntary Agreements Permittee, SWC and CDFW will meet and confer to review the Project in light of the final form of the Voluntary Agreements. Consistent with Condition of Approval 5, CESA, and CESA's implementing regulations, the Permittee and CDFW, in consultation with SWC and as appropriate depending on the results of that review, may replace the ratio of Vernalis flows to		

Condition	Mitigation measure	Implementation schedule	Status
	exports used as an operational mechanism to determine spring outflow volumes in this condition of approval, based on the final Voluntary Agreements and as part of such amendment process.		
8.18	Potential to Redeploy up to 150 TAF for Delta Outflow. Permittee shall curtail exports at the Banks Pumping Plant to maintain the SWP contribution to spring Delta outflow as required by Condition of Approval 8.17 from April 1 to May 31. If approved in writing by CDFW, Permittee may increase exports at the Banks Pumping Plant between April 1 and May 31 above what would otherwise be allowed by operating to Condition of Approval 8.17. When making the determination about whether to approve an increase in exports CDFW will weigh the benefits of increasing exports to bank water for other purposes against the risk of entrainment of Covered Species or impacting Covered Species habitat during that water year.	Throughout the term of the ITP.	The Sacramento Valley Index this year was critical, and Delta hydrology did not present opportunities in April or May to develop an additional block of water as outlined in COA 8.18.

Condition	Mitigation measure	Implementation schedule	Status
	If an increase in Project exports is approved by CDFW in April and May, the increase in the volume of water exported during this time period, up to 150 TAF (hereafter Spring Outflow Block), shall be accounted for by Permittee and available for use by CDFW after March 1 of the next water year, except if the following year is critical. The Spring Outflow Block is in addition to the water required to achieve criteria in Table 9-A in Condition of Approval 9.1.3.1 and the Additional 100 TAF Block (Condition of Approval 8.19). Condition of Approval 8.19, Delta Outflow Operations Plan and Report, describes the required planning, accounting, and reporting process that shall be used by Permittee, in collaboration with CDFW, each year following a water year in which CDFW approves an increase in exports during April and May. CDFW is most likely to approve an increase in exports for the purpose of building a Spring Outflow Block in wetter water years.		

Condition	Mitigation measure	Implementation schedule	Status
	In wet water years Permittee may export no more than 30 TAF above what would be allowed by operating to Condition of Approval 8.17. This 30 TAF is intended to offset the water required to operate SMSCG for 30 days during summers of dry years that follow a below normal water year as described in Condition of Approval 9.1.3.1, Table 9-A.The timing and magnitude of exports to capture 30 TAF in a wet year shall be described in the Delta Outflow Operations Plan (Condition of Approval 8.20) to avoid sharp reductions in Delta outflow during April and May that may increase take of Covered Species as a result of entrainment into the central and south Delta. In addition, Permittee shall provide a Spring Outflow Block Report to CDFW by August 1 of the same water year in which the increased exports are approved by CDFW. The Spring Outflow Block Report shall quantify the increase in Project exports, account for the water available in the Spring Outflow Block, and include the following		

Condition	Mitigation measure	Implementation schedule	Status
	daily information from April 1 through May 31: • Delta outflow • Delta conditions (excess vs. balanced) • Total exports at Banks Pumping Plant • Jones Pumping Plants • OMR index • San Joaquin inflow • Flow at Freeport • Controlling factor each day and associated SWP allowable exports • Estimated daily exports at Banks Pumping Plant from April 1–May 31 of that year that would have occurred if all SWP operations remained the same except exports were restricted by operating to Condition of Approval 8.17 Permittee shall address comments and questions from CDFW on the draft Spring Outflow Block Report before it is finalized and submitted to CDFW for approval, no later than October 31.		

Condition	Mitigation measure	Implementation schedule	Status
	The following water year, Permittee shall adjust operations of the Project to provide the Spring Outflow Block (as specified in the CDFW-approved Delta Outflow Operations Plan, Condition of Approval 8.20), unless that water year is critical. The Spring Outflow Block shall be stored in Oroville Reservoir and will be subject to spill if redeployed to the following year. Permittee shall ensure that the water provided by the SWP achieves the defined purpose in the CDFW-approved Delta Outflow Operations Plan by dedicating the Spring Outflow Block of water to outflow for the duration of this ITP through agreements with downstream water users, a term-limited Section 1707 dedication as provided under the California Water Code, reliance on Term 91 conditions as enforceable by the SWRCB, or other means to ensure the water is not diverted for any intended use other than Delta outflow.		

Condition	Mitigation measure	Implementation schedule	Status
8.19	Additional 100 TAF for Delta Outflow. To provide benefits to DS or LFS during a critical part of their life histories Permittee shall operate the project to provide a flexible block of water to enhance Delta outflow during the spring, summer, or fall months. Permittee shall provide 100 TAF of water to supplement Delta outflow (Additional 100 TAF) as approved by CDFW. Permittee shall provide the Additional 100 TAF of water subject to the following conditions: • This water may be used in June through September of wet and above normal water years, and the October immediately following, to supplement Delta outflow in addition to flow required to meet the criteria in Condition of Approval 9.1.3.1, Table 9-A, and improve DS habitat. • As approved by CDFW, the Additional 100 TAF of water available in a wet or above normal water year may instead be deferred and redeployed in the following water year to supplement Delta outflow during the	Throughout the term of the ITP.	Because of the dry conditions in WY 2020, there was no 100 TAF carryover from WY 2020 as described in COA 8.19.

Condition	Mitigation measure	Implementation schedule	Status
	March through September time period, or the October immediately following the end of that water year. The Additional 100 TAF shall be provided in addition to outflow required to meet the criteria in Table 9-A of Condition of Approval 9.1.3.1 in that following year, except if the following year is dry. The Additional 100 TAF is not required to be provided if the following water year is critical as determined by the May forecast with planning beginning in February each year as described in Condition of Approval 8.20, Delta Outflow Operations Plan and Report. • The Additional 100 TAF shall be stored in Oroville Reservoir and will be subject to spill from Oroville Reservoir if redeployed to the following year. • The Additional 100 TAF from a wet or above normal water year may be deferred only to the following water year, or the October immediately		

Condition	Mitigation measure	Implementation schedule	Status
	following the end of that water year. Permittee shall provide the Additional 100 TAF as described in the CDFW-approved Delta Outflow Plan (Condition of Approval 8.20). In determining the use of the Additional 100 TAF, CDFW and Permittee will plan for the possibility that the following year is dry and this water would be needed to operate the SMSCG for 60 days during the June–October time period. Sixty days of SMSCG operations in the summer of a dry year is anticipated to require an additional 60–70 TAF of Delta outflow to ensure that other Project operating requirements (including Delta salinity standards) are met. CDFW anticipates that another high-priority use of the Additional 100 TAF, if deferred and redeployed to the following year, would be to supplement outflow in the spring of below normal water years. Permittee shall ensure that the water provided by the SWP achieves the defined purpose in the		

Condition	Mitigation measure	Implementation schedule	Status
	CDFW-approved Delta Outflow Operations Plan by dedicating the 100 TAF to outflow for the duration of this ITP through agreements with downstream water users, a term-limited Section 1707 dedication as provided under the California Water Code, reliance on Term 91 conditions as enforceable by the SWRCB, or other means to ensure the water is not diverted for any intended use other than Delta outflow.		
8.20	Delta Outflow Operations Plan and Report. Conditions of Approval 8.18 and 8.19 describe blocks of water that shall be made available to supplement spring, summer or fall Delta outflow at the discretion of CDFW. Additionally, Condition of Approval 9.1.3.1 describes a requirement to operate the SMSCG during above normal, below normal, and dry water years and operate to an X2 standard in September and October of wet and above normal water years. Each year, to facilitate the planning, accounting, and reporting of these Conditions of Approval, Permittee shall:	Throughout the term of the ITP.	DWR and CDFW collaborated and jointly reached a decision, documented in an email dated May 10, 2021, that there was no need for DWR to prepare a Delta Outflow Operations Plan or Report for WY 2021. The Sacramento Valley Index this year was critical, and Delta hydrology did not present opportunities in April or May to develop an additional block of water as outlined in COA 8.18. Because of the dry conditions in WY 2020, there was no 100 TAF carryover from WY 2020 as described in COA 8.19.

Condition	Mitigation measure	Implementation schedule	Status
	1. Develop and operate to a Delta Outflow Operations Plan: • Beginning no later than February 1, work collaboratively with CDFW to develop a draft Delta Outflow Operations Plan that describes: ○ The amount of water available to supplement Delta outflow associated with the Additional 100 TAF (Condition of Approval 8.19) and Spring Outflow Block (Condition of Approval 8.18). ○ The timing and volume of water to be made available on a daily basis between March 1 and October 31 associated with the available blocks of water. ○ Anticipated Project operational actions (e.g. export restrictions or storage releases) that would be taken to ensure the available		

Condition	Mitigation measure	Implementation schedule	Status
	blocks of water supplement Delta outflow. ○ An accounting of how and when each available block of water would be used to supplement Delta outflow in addition to water required to operate to X2, SMSCG operational criteria, or other controlling operational criteria as required in Table 9-A and Condition of Approval 9.1.3.2. ○ Ongoing coordination with CDFW throughout deployment of the available blocks of water to evaluate operations relative to the requirements described in the Final Delta Operations Plan. • Permittee shall work collaboratively with CDFW on an ongoing basis after February 1 to update the draft Delta Outflow Operations Plan based on refinements in		

Condition	Mitigation measure	Implementation schedule	Status
	understanding of Covered Species status and distribution, Project operations, and hydrologic and temperature forecasts. • Submit the draft Delta Outflow Operations Plan to CDFW no less than 15 days prior to the start date of operational requirements described in the plan and incorporate CDFW comments and edits into the final plan no less than five days prior to the start of operational requirements described in the plan. • Operate the Project consistent with the final CDFW-approved Delta Outflow Operations Plan. 2. By October 31, submit to CDFW a draft Delta Outflow Operations Report that includes the following daily information throughout the duration of the implementation of the Delta Outflow Operations Plan that year:		

Condition	Mitigation measure	Implementation schedule	Status

	• Delta outflow
	• Total exports at Banks Pumping Plant
	• Total exports at Jones Pumping Plant
	• OMR index
	• USGS Tidally Filtered OMR flow
	• San Joaquin inflow
	• Flow at Freeport
	• Flow on the Feather River immediately below Thermalito
	• State and federal share stored in San Luis Reservoir
	• Releases from the following reservoirs:
	  ○ Nimbus
	  ○ Keswick
	  ○ Oroville
	  ○ Whiskeytown
	• Jersey Point salinity
	• Salinity at Belden's Landing
	• Flow as measured at Lisbon Weir
	• Delta outflow controlling factor each day and		

Condition	Mitigation measure	Implementation schedule	Status
	associated allowable SWP exports • Minimum required Delta outflow that would be required to meet applicable controlling standards • Documentation of the volume and timing of the Additional 100 TAF and Spring Outflow Block planned to be used in that year according to the CDFW-approved Delta Outflow Operations Plan • Depiction of operations that would have occurred during the timeframe outlined in the Delta Outflow Operations Plan for that water year if the available blocks of water and the Summer-Fall Action had not been implemented. This depiction shall include estimates of all required hydrologic data points used to quantify actual operations during the same time period		

Condition	Mitigation measure	Implementation schedule	Status
	3. Incorporate CDFW comments and edits into the draft Delta Outflow Operations Report and submit it to CDFW for approval before December 1.		
8.21	Drought Contingency Planning. On October 1, if the prior water year was dry or critical, Permittee, in coordination with Reclamation, shall meet and confer with USFWS, NMFS, SWRCB, and CDFW to develop a drought contingency plan to be implemented if dry conditions continue into the following year. On February 1 if dry conditions continue, Permittee shall submit the drought contingency plan to CDFW and shall update the plan monthly based on current and forecasted hydrologic conditions. If dry conditions continue, Permittee shall regularly convene this group to evaluate hydrologic conditions and the potential for continued dry conditions that necessitate implementation of measures identified in the drought contingency plan for the current water year. By February 1 of each year following the development of a drought contingency plan, Permittee shall submit a report to		Because WY 2020 was considered dry, DWR arranged to "meet and confer" with USFWS, NMFS, SWRCB, and CDFW during an LTO Agency Coordination meeting on September 30, 2020, to begin drought contingency planning. As dry conditions continued, DWR, in coordination with Reclamation, developed the *State Water Project and Central Valley Project Drought Contingency Plan,* which DWR submitted to CDFW on February 1, 2021. Since then, DWR updated the plan on a monthly basis through the end of WY 2021 to provide SWP and CVP operations forecasts, as well as updates on species status, the drought monitoring plan, and updates on planned drought actions. The Drought Contingency Plan for WY 2021 and all updates are available on DWR's website: Endangered Species Protection (ca.gov)

Condition	Mitigation measure	Implementation schedule	Status
	CDFW on the measures employed during the previous year, including an assessment of their effectiveness.		
9.1.1	Tidal Wetland Habitat Restoration for Delta Smelt. Within 6 years of the effective date of this ITP, Permittee shall site, design, restore, and conserve 8,000 acres of DS tidal wetland habitat as compensatory mitigation to expand the diversity, quantity, and quality of DS rearing and refuge habitat in the tidal portions of the Delta and Suisun Marsh. This requirement is carried forward from the compensatory mitigation obligation originally established in the 2008 BiOp and associated CDFW consistency determination. Permittee shall site, design, restore, and conserve an additional 396.3 acres of DS tidal wetland habitat as compensatory mitigation for increased diversions at the BSPP. Permittee shall coordinate with USFWS and CDFW during the process of site selection and restoration design for HM lands		As of 12/31/2021, acreage estimates for Conservation Measures 9.1.1 and 9.1.2 are as follows: *Delta Smelt* • Required Acreage: 8396.30. • Estimated creditable acreage planned and/or constructed to date: 7954.00. • Acreage awarded credits to date: 0. *Longfin Smelt* • Required Acreage: 1196.30. • Estimated creditable acreage planned and/or constructed to date: 2833.00. • Acreage awarded credits to date: 590.94. DWR is now in the crediting process for following completed projects: • **Arnold Slough:** DWR completed constructing all restoration features at Arnold Slough in October 2021, but erosion control and hydroseeding work remains. All construction work will be concluded by November 30, 2021.

Condition	Mitigation measure	Implementation schedule	Status
	intended to serve as compensatory mitigation for impacts to DS habitat. HM lands and restoration designs shall be informed by the specifications and habitat crediting process described in the 2012 *Fish Restoration Program Agreement Implementation Strategy*, the *Draft 2008 FWS BiOp Delta Smelt Crediting Decision Model Guidelines*, and the *Draft 2008 FWS BiOp Delta Smelt Crediting Decision Model* (Guidance for Smelt HM Lands Suitable for Compensatory Mitigation, Attachment 4). All DS tidal wetland habitat restoration shall be subject to approval by CDFW.		Approximately 155 acres were created for Delta and longfin smelt. Post-construction monitoring is anticipated to begin after construction work is concluded. • **Decker Island Tidal Habitat Restoration Project:** Construction was completed in October 2018. Approximately 112 acres were created for Delta smelt. DWR is currently in the third year of post-construction monitoring. The annual monitoring report covering the second year of monitoring was submitted to USFWS, CDFW, NMFS, and USBR in October 2021. • **Tule Red Tidal Habitat Restoration Project:** Construction was completed in October 2019. Approximately 590 acres were created for Delta smelt. DWR is currently in the second year of post-construction monitoring. The annual monitoring report covering the second year of monitoring is currently being reviewed for submission to USFWS, CDFW, NMFS, and USBR. CDFW has awarded DWR 590.94 acres of credit for longfin smelt. • **Lower Yolo Ranch Tidal Habitat Restoration Project:** Construction was completed in November 2020.

Condition	Mitigation measure	Implementation schedule	Status
			Approximately 1,713 acres were created for Delta smelt. • **Wings Landing Tidal Habitat Restoration Project:** Construction was completed in November 2020. Approximately 190 acres were created for Delta and Longfin smelt. • **Winter Island Tidal Habitat Restoration Project:** Construction was completed in September 2019. Approximately 540 acres were constructed for Delta smelt. DWR is currently in the third year of post-construction monitoring. The annual monitoring report covering the second year of monitoring was submitted to USFWS, CDFW, NMFS, and USBR in October 2021. • **Yolo Flyway Farms Tidal Habitat Restoration Project:** Yolo Flyway Farms construction was completed in September 2018. Approximately 294 acres were constructed for Delta smelt. DWR is currently in the third year of post-construction monitoring. The annual monitoring report covering the second year of monitoring was submitted to USFWS, CDFW, NMFS, and USBR in October 2021.

Condition	Mitigation measure	Implementation schedule	Status
			DWR is now in the planning process for the following projects: • **Bradmoor Island Tidal Habitat Restoration Project:** DWR will be constructing restoration features at Bradmoor Island in 2022. All permits have been obtained and construction is anticipated to begin in July 2022. Approximately 588 acres are expected to be created for Delta and longfin smelt. • **Chipps Island Tidal Habitat Restoration Project:** DWR has acquired all three parcels of Chipps Island for restoration construction. DWR has also developed multiple restoration design alternatives through collaboration with regulators, regional experts, and other interested parties. DWR plans to select a design for construction soon. Permit application preparation and environmental analyses will begin following design selection. Construction of the restoration project will address remaining notice of violations that were transferred to DWR through acquisition of the Chipps properties. Approximately 757 acres are expected to be created for Delta and longfin smelt.

Condition	Mitigation measure	Implementation schedule	Status
			Below are project milestones completed: ○ Acquired property. Upcoming milestones in planning: ○ Determine restoration design — November 2021. ○ Submit permit applications — Summer/Fall 2022. ○ Begin construction — Fall 2023. ○ Complete construction — Fall 2025. • **Lookout Slough Tidal Habitat Restoration and Flood Improvement Project:** DWR is currently still in its permitting and approvals stage of the Lookout Slough Tidal Habitat Restoration and Flood Improvement Project. Project activities are restricted until all approvals are obtained in 2022. EIP and Hanford Construction has targeted construction for Spring 2022 and completed by 2024. Approximately 3,000 acres are expected to be created for Delta smelt. Below are project milestones completed: ○ EIR NOD. ○ Final Design.

Condition	Mitigation measure	Implementation schedule	Status
			○ 401 Water Quality Certification. ○ CDFW 1600 and ITP. ○ CVFPB Encroachment Permit. ○ Section 106. ○ Section 7. ○ USACE 404 and 408. Upcoming milestones in planning: ○ Delta Stewardship Council Consistency Determination Certification — March 2022. ○ Begin construction — March 2022* (Pending approvals and permit requirements). ○ Complete Construction — September 2024. • **Potrero Marsh Tidal Habitat Restoration Project:** DWR has awarded a Request for Proposal contract to Westervelt Ecological Services to build the Portrero Marsh restoration project. DWR expects the contract to be executed at the end of November. Approximately 489 acres are expected to be created for Delta and longfin smelt.

Condition	Mitigation measure	Implementation schedule	Status
			• **Prospect Island Tidal Habitat Restoration Project:** DWR is currently still in its permitting and approvals stage of the Prospect Island Tidal Habitat Restoration and Flood Improvement Project. Project activities have been on hold since December 2019. Decisions are being made regarding funding sources and when work can begin again. Below are project milestones completed: ○ EIR NOD. ○ 401 Water Quality Certification. ○ CVFPB Encroachment Permit (though needs to be amended). ○ Section 106. ○ Section 7. ○ USACE 404 and 408. Upcoming milestones in planning: ○ Delta Stewardship Council Consistency Determination Certification — TBD. ○ CDFW 1600, ITP — TBD. ○ CEQA Addendum — TBD. ○ Complete design and specifications — TBD. ○ Begin construction — TBD.

Condition	Mitigation measure	Implementation schedule	Status
9.1.2	Habitat Restoration for Longfin Smelt. Within 6 years of the effective date of this ITP, Permittee shall site, design, restore, and conserve 800 acres of LFS mesohaline habitat and 396.3 acres of LFS tidal wetland habitat as compensatory mitigation to expand the diversity, quantity, and quality of LFS rearing and refuge habitat in the tidal portions of the Delta and Suisun Marsh. The requirement to restore and conserve 800 acres of mesohaline habitat is carried forward from the compensatory mitigation obligation originally established in the 2009 ITP issued by CDFW for take of LFS. Permittee shall coordinate with CDFW during the process of site selection and restoration design for HM lands intended to serve as compensatory mitigation for impacts to LFS habitat. HM lands and restoration designs shall be informed by the specifications and habitat crediting process described in the 2012 *Fish Restoration Program Agreement Implementation Strategy*, the *Draft 2008 FWS BiOp Delta Smelt*	Within 6 years of the effective date of this ITP.	See 9.1.1 update.

Condition	Mitigation measure	Implementation schedule	Status
	Crediting Decision Model Guidelines, and the *Draft 2008 FWS BiOp Delta Smelt Crediting Decision Model* (Guidance for Smelt HM Lands Suitable for Compensatory Mitigation, Attachment 4) and adapted for the specific habitat requirements of LFS, as approved by CDFW. All LFS mesohaline habitat restoration shall be subject to approval by CDFW.		
9.1.3	Delta Smelt Summer-Fall Habitat Action. The DS summer-fall habitat action (Summer-Fall Action) is intended to benefit DS food supply and habitat, thereby contributing to the recruitment, growth, and survival of DS. The FLaSH conceptual model[2] states that DS habitat should include low-salinity conditions of 0 to 6 parts per thousand (ppt), turbidity of approximately 12 FNTU, temperatures below 25 °C, food availability, and littoral or open water physical habitats. The highest-quality habitat in Suisun Marsh and Grizzly Bay includes areas with complex bathymetry, in deep channels close to shoals and shallows, and in proximity to extensive tidal or freshwater	Throughout the term of this ITP.	Because WY 2021 was Critically Dry, no Delta Smelt Summer-Fall Habitat Action occurred.

Condition	Mitigation measure	Implementation schedule	Status
	marshlands and other wetlands. The Summer-Fall Action will provide the aforementioned habitat components in the Suisun Marsh and Grizzly Bay through a range of actions by water year type to improve water quality and food supplies. As described in Sections 1.6 and 3.9.2 of the Project Description, proposals under the Voluntary Agreements may be implemented in a way that complements the Delta Smelt Summer-Fall Habitat Action by providing summer outflow during above normal, below normal, and dry water year types, in a manner that is equivalent to or greater than the flow needed to achieve the standards described in Conditions of Approval 9.1.3.1 and 9.1.3.2 for Permittee. Permittee shall implement SMSCG operations as described in Conditions of Approval 9.1.3.1 and 9.1.3.2 through its operations, including through reducing its exports at Banks Pumping Plant.		

Condition	Mitigation measure	Implementation schedule	Status
9.1.3.1	Summer-Fall Action Plan. Each year Permittee shall initiate the process to develop a plan to operate the Project, achieve criteria described in Table 9-A and requirements in Conditions of Approval 8.19, 9.1.3, and 9.1.3.2, and implement additional actions, as available, including monitoring, science, and food enhancement actions to enhance DS habitat (Summer-Fall Action Plan). As a part of this annual planning and implementation process, reports documenting summer-fall operations and results from monitoring (including Condition of Approval 9.1.3.3) and scientific investigations (including Condition of Approval 7.6.4) shall be used to better understand DS habitat during the summer-fall time period and investigate the way in which SWP-CVP operations interact with the full range of components of DS habitat. The planning process will investigate the extent to which providing flow and low salinity conditions of various volumes and locations improves the quality and quantity of DS habitat and food in the summer and fall, and whether	Throughout the term of this ITP.	Because the WY 2021 was Critically Dry, no Delta Smelt Summer-Fall Habitat Action occurred, so no plan was developed. The Delta Coordination group continued to meet and refine their process and structured decision model. Specific accomplishments during water year 2021 include: • Refinement of the Guidance Document to include two technical working groups made up of subject-matter experts to provide advice and technical information to the DCG decision makers. • Review of monitoring plans associated with baseline monitoring of the North Delta Food Subsidy action and the SMSCG action. • Preliminary numeric modeling of Delta smelt habitat suitability and food production from various combinations of actions. • With the facilitation of a structured decision-making expert, the DCG developed a preliminary structure for their structured decision model to apply to the 2022 water year. • DWR, in collaboration with Reclamation, is currently preparing the Summer Fall

Condition	Mitigation measure	Implementation schedule	Status
	DS survival, viability, and abundance improves in response to the Summer-Fall Action. The planning process shall also consider tradeoffs between actions to benefit DS and effects on other Covered Species. For example, the planning process shall include consideration of the potential for CHNSR juvenile stranding in upstream tributaries associated with reservoir releases. The Summer-Fall Action Plan shall be developed based on hydrologic, operational, and temperature forecasts using the best available modeling to plan SMSCG operations (Table 9-A in the ITP) to maximize the number of days that Belden's Landing three-day average salinity is equal to, or less than, 4 ppt in all but dry years following below normal years. In a dry year following a below normal year the Summer-Fall Action Plan shall be developed to maximize the number of days that Belden's Landing three-day average salinity is equal to, or less than, 6 ppt. CDFW anticipates that a three-day average salinity of 4 ppt at Belden's Landing (or 6 ppt in dry years following below normal		Seasonal Report which will describe all monitoring that occurred during 2021 and results from 2020 that were not available last year. This will provide "no action" data to which future years may be compared.

Condition	Mitigation measure	Implementation schedule	Status
	years) may be met by operating the SMSCG intermittently throughout the summer-fall. The required days of SMSCG operations (Table 9-A) need not be on consecutive days. As a result, this action is likely to extend beyond the required number of days of SMSCG operations to maximize benefits to DS. Project operations shall be consistent with the operations described in the Summer–Fall Action Plan from June–October each year. Permittee shall meet and confer with CDFW within thirty days of the effective date of this ITP to determine actions to implement June–August to improve Delta smelt habitat to the maximum extent feasible, including the possibility of operating the SMSCG. The requirements described in this Condition shall begin with the 2021 water year. Permittee shall: • Within 30 days of the effective date of this ITP, convene a Delta Coordination Group (two representatives each from DWR, Reclamation, USFWS, NMFS and CDFW and one representative each from		

Condition	Mitigation measure	Implementation schedule	Status
	the CVP water contractors and SWP water contractors) to select a SDM model and complete initial model runs (and annual model runs thereafter) testing various approaches to satisfying environmental and biological goals, based on the criteria described in Table 9-A, monitoring and science, and additional actions, if available, such as DS food enhancement actions (see Section 3.9.1 in the Project Description and Section 5.3.3 in the FEIR). • Distribute a meeting agenda to group members at least four working days prior to each Delta Coordination Group meeting. • Record and distribute regular meeting notes within two working days of each Delta Coordination Group meeting to group members for review. Incorporate member comments and post final notes on a publicly available website. • Before April 15, develop a draft Summer-Fall Action Plan		

Condition	Mitigation measure	Implementation schedule	Status
	in collaboration with the Delta Coordination Group accounting for forecasted hydrology and temperatures over the summer and fall that describes: ○ How planned operations are expected to meet the criteria in Table 9-A based on the anticipated water year type; ○ Planned operations of the SMSCG if the group anticipates an above normal, below normal, or dry water year, including whether the SMSCG operations are anticipated to be conducted pursuant to the Voluntary Agreements or by Permittee independently; ○ A schedule for applying the Additional 100 TAF as described in the CDFW-approved Delta Outflow Operations Plan, if applicable; ○ Planned studies and monitoring during the planned Summer-Fall		

Condition	Mitigation measure	Implementation schedule	Status
	Action Plan to improve understanding of DS summer-fall habitat and survival during this time period (see Conditions of Approval 7.6.4 and 9.1.3.3); ○ A schedule for regular meetings and coordination between CDFW and Permittee throughout the implementation of the Summer-Fall Action Plan each year; ○ Habitat conditions expected to be achieved through use of the Additional 100 TAF (Condition of Approval 8.19) as described in the CDFW-approved Delta Outflow Operations Plan to supplement Delta outflow during the spring, summer, or fall and further improve DS habitat conditions beyond those required through operations criteria governing X2 and SMSCG operations included in Table 9-A;		

Condition	Mitigation measure	Implementation schedule	Status
	○ Hypotheses to be tested through ongoing monitoring and scientific investigations, the suite of actions and operations conducted to test the hypotheses, and the expected outcomes; and ○ Information learned from data and prior year Summer-Fall Action Reports. • Submit the draft Summer-Fall Action Plan to the Delta Coordination Group and work collaboratively to address comments and prepare a final report no later than May 15. • No later than December 31 annually, Permittee shall submit a draft Summer-Fall Action Report to the Delta Coordination Group that: ○ Synthesizes results from abiotic and biotic monitoring conducted during the prior summer-fall season; ○ Synthesizes results from actions conducted as a part of the Summer-Fall		

Condition	Mitigation measure	Implementation schedule	Status
	Action Plan including scientific research and additional summer-fall food actions; ○ Describes Project operations (including south Delta exports and dates of SMSCG operations) implemented to comply with the final Summer-Fall Action Plan for the prior water year; ○ Includes all raw data from monitoring efforts conducted as a part of the Summer-Fall Action; ○ Includes the criteria required in Table 9-A and summaries of monitoring data demonstrating whether criteria were met through planned operations. • Submit a final Summer–Fall Action Report to the Delta Coordination Group that incorporates comments and edits from CDFW prior to February 28 each year.		

Condition	Mitigation measure	Implementation schedule	Status
	Each year, the Delta Coordination Group shall: • Collaboratively assess forecasted hydrologic conditions, precipitation and temperature forecasts, and review available information regarding the distribution and abundance of DS and LFS prior to March 15. • Use a SDM model to analyze the environmental and biological goals based on the criteria described in Table 9-A, proposed DS food enhancement summer-fall actions (see Section 3.9.1 in the Project Description and Section 5.3.3 of the FEIR), and make predictions regarding the potential outcomes for various implementation scenarios. This structured decision-making process shall be used to inform the Summer-Fall Action Plan prepared each year. • Review draft Summer-Fall Action Plan prior to May 1.		

Condition	Mitigation measure	Implementation schedule	Status
	• Collaboratively review available monitoring data and results from scientific studies following the completion of a Summer-Fall Action. • Review the draft Summer-Fall Action Report and provide comments to Permittee to assist in developing a final report prior to February 28. • Use the results from prior year reports to inform the subsequent SDM modeling exercise and develop future Summer-Fall Action Plans. The Summer-Fall Action shall be included in the Four-Year Reviews under the Adaptive Management Program (Attachment 2), including the SDM model used to develop the annual Summer-Fall Action Plan. If, in a given year, CDFW does not approve the Summer-Fall Action Plan developed by the Delta Coordination Group, CDFW may develop a new Summer-Fall Action Plan, consistent with the parameters of Conditions of Approval 8.19, 8.20, 9.1.3, 9.1.3.1,		

Condition	Mitigation measure	Implementation schedule	Status
	and 9.1.3.2 and Table 9-A, and submit it to Permittee prior to June 1. Permittee shall operate the Project consistent with the CDFW-developed Summer-Fall Action Plan beginning June 1.		
9.1.3.2	Summer-fall Delta Smelt Habitat During Successive Dry Years. Permittee shall operate the Project to enhance DS summer-fall habitat as described in Conditions of Approval 9.1.3.1, except if the current water year is dry and was preceded by a dry or critical water year. If a dry water year was preceded by a dry or critical water year, Permittee shall confer with CDFW prior to April 1 to collaboratively develop a plan for June through October to enhance DS habitat to the maximum extent practicable. Permittee shall evaluate their ability to operate the SMSCG during the June–September time period and implement other appropriate actions to enhance DS habitat.	Throughout the term of this ITP.	Because Water Year 2021 was Critically Dry, no summer-fall habitat enhancement actions were possible.
9.1.3.3	Improved Monitoring in Grizzly Bay. Permittee shall convene the Smelt Monitoring Team within 60 days of the effective date of this ITP to collaboratively develop a draft	Throughout the term of this ITP.	The Grizzly Bay monitoring plan was combined with the overall effectiveness monitoring plan for the SMSCG summer-fall action. This plan was reviewed and approved by CDFW and the DCG in spring of 2021. The

Condition	Mitigation measure	Implementation schedule	Status
	Grizzly Bay Monitoring Plan to identify and implement three additional monitoring stations and improve measurement of temperature, salinity, turbidity, and other relevant abiotic factors in areas expected to be influenced by planned operations of the SMSCG in the summer and fall. At least one of these new stations shall be sited in the western margin of Grizzly Bay near the mouth of Montezuma Slough. Permittee shall submit the draft Grizzly Bay Monitoring Plan to CDFW and the IEP Science Management Team (SMT) for review and comments. After CDFW and IEP SMT review, Permittee shall prepare a final Grizzly Bay Monitoring Plan to deploy, maintain, and fund these additional monitoring stations within nine months of the effective date of this ITP and submit the final Grizzly Bay Monitoring Plan to CDFW for review. If approved by CDFW, Permittee shall implement the final Grizzly Bay Monitoring Plan and incorporate data from new monitoring stations into annual Summer-Fall Action data collection, planning and		plan includes three new stations in Grizzly Bay — one at the mouth of Montezuma Slough, one in the shallow of Grizzly Bay, and one at Tule Red Restoration Site. The Grizzly Bay stations were installed in November of 2020, and the Tule Red station was installed and maintained by Environmental Science Associates May 2020–May 2021, then re-installed by DWR in August of 2021.

Condition	Mitigation measure	Implementation schedule	Status
	reporting processes within one year of the effective date of this ITP.		
9.1.4	Rio Vista Estuarine Research Station. Permittee shall provide 66% of the total funding required during the term of this ITP to construct the Rio Vista Estuarine Research Station (RVERS) to provide long-term support for Bay-Delta science and research to enhance the understanding of Covered Species ecology. RVERS shall be constructed in conjunction with the USFWS Fish Technology Center, a research facility for cultured fish and a potential future home for Delta smelt refuge populations.	Throughout the term of this ITP.	During the past year, representatives from the Interagency Ecological Program agencies that will house staff and/or equipment at RVERS (i.e., USFWS, CDFW, USBR, USGS, NMFS, and DWR) participated in a series of information-gathering meetings with the Dept. of General Services and a contracted agency (Stantec) to develop Performance Criteria specifications. A final report, including specifications for all of the key development criteria, was completed in Fall 2021. The next step in the development process is to include these Performance Criteria in a Request for Proposals (RFP) bid package. However, this is not planned to occur until full funding for project development is obtained. The source for one-third of the development cost for RVERS remains uncertain and until that is resolved, the project cannot move into the development phase.
9.2.1	Mitigation for Impacts Associated with Project Operations**. Permittee shall provide funding toward at least one restoration project annually, identified in coordination with CDFW, NMFS, USFWS, Reclamation and other entities undertaking restoration and enhancement in the Sacramento River watershed. Permittee shall	Throughout the term of this ITP.	DWR and CDFW agreed in WY 2021 that work funded by DWR to evaluate habitat restoration concepts on the upper Sacramento River near Willow Bend and adjacent to Moulton Weir fulfilled the requirement to provide funding toward at least one restoration project annually. In executing the task order for CDM Smith, a contractor to DWR, to evaluate habitat restoration concepts near Willow Bend, DWR worked

Condition	Mitigation measure	Implementation schedule	Status
	make its first funding payment toward one or more approved restoration projects no later than April 1, 2021. A funding commitment for a larger project that extends over multiple years will satisfy the annual funding requirement if approved by CDFW. Permittee shall fund a total of $20,000,000 for restoration projects over the term of the ITP as approved by CDFW. The selected restoration projects shall provide one or more of the biological benefits described below to either CHNWR or CHNSR, or both species, in the Sacramento River watershed upstream of the Delta, subject to CDFW's approval and determination that the funding required by this Condition, on the whole, will result in benefits to both species, as compensatory mitigation for impacts associated with Project operations. Larger restoration projects may be carried over multiple years. Restoration projects shall align with CHNWR and CHNSR recovery needs and be guided by information in the Salmon Resiliency Strategy.		collaboratively with CDFW to develop a restoration concept, refine project goals and objectives, and review deliverables. The three tech memos produced as part of the effort and reviewed jointly by DWR and CDFW were the following: • **TM #1:** Concept Development and Evaluation Goals and Objectives, Data Evaluation, and Draft Concept Summary. • **TM #2:** Concept Evaluation Criteria. • **TM #3:** Concept Evaluation and Recommendations. In addition, DWR and CDFW met several times during WY 2021 to collaboratively develop a tool that uses a Structured Decision-Making (SDM) approach to evaluate projects for potential funding under COA 9.21. The effort is aimed at making the implementation of COA 9.21 more efficient and effective in selecting projects, such that benefits to winter-run and spring-run Chinook salmon can be realized. To address concerns that CDFW staff raised about the evaluation and recommendations included in Tech Memo #3, described above, concepts described in the Willow Bend

Condition	Mitigation measure	Implementation schedule	Status
	Biological Benefits of Improved Juvenile Upstream Rearing Habitat: Channelization of rivers to manage flood risk and convert wildlife habitat to agricultural use has eliminated 95% of riparian and floodplain wetland habitat in the Central Valley. Historically, these habitats benefited rearing CHNWR and CHNSR by providing increased primary productivity and prey availability, refuge from predators, respite from high flows, and efficient locations to feed. These benefits allow for increased growth of juvenile CHNWR and CHNSR, which may be reflected in higher adult return rates. Remaining riparian and floodplain wetland habitat in the Sacramento and San Joaquin river basins is largely unavailable for rearing juvenile CHNWR and CHNSR due to the reduced frequency and duration of seasonal over-bank flooding. Restoring connectivity of floodplains with adjacent streams increases the available habitat that is inundated with the frequency and duration of		analysis will be collaboratively evaluated and compared among themselves and against other, previously proposed restoration concepts using the SDM tool.

Condition	Mitigation measure	Implementation schedule	Status
	suitable floodplain rearing habitat. This connectivity with adjacent streams is critical to provide volitional entry and exit for rearing juveniles that cue migration based on the hydrograph of the river. Projects to improve rearing habitat for juvenile salmonids are limited in scope by engineered leveed waterways, but primarily include breaching or setbacks of levees to create bench habitat. These habitats provide shallow water foraging and refuge habitat for rearing juveniles. Other projects include channel margin enhancement that focuses on improving channel geometry and restoring riparian, marsh, and mudflat habitats on the water side of levees. Similar to breaching and setbacks of levees, channel margin enhancement is expected to increase rearing habitat through enhancement and creation of additional shallow water habitat that will provide foraging opportunities and refuge from unfavorable hydraulic conditions and predation.		

Condition	Mitigation measure	Implementation schedule	Status
	Restoring juvenile rearing habitat is intended to increase habitat diversity and complexity, which can lead to population resiliency during times of increased temperatures and water demands. *Biological Benefits of Improved Adult Passage*: Passage barriers exist in many forms, including low-flow road crossings, bridges, flow control structures, and dams. Many of these structures require minimum flows to allow passage; however, flows are often limited due to high water demands. Each in-water structure within the Sacramento and San Joaquin river basins can cause delays in upstream passage for CHNWR and CHNSR. CHNWR and CHNSR may sustain injuries or experience pre-spawn mortality due to stress as they attempt to navigate barriers. Loss of upstream spawners can lead to a reduction in genetic diversity as well as a decrease in juvenile production.		

Condition	Mitigation measure	Implementation schedule	Status
	The decline in CHNWR and CHNSR populations increased following the construction of major water project facilities and development projects in the mid-1900s. Many of these projects impede or completely block upstream migration of CHNWR and CHNSR to historic cold-water spawning and rearing habitats. This has led to a reduction in available spawning habitat (e.g., suitable spawning and egg incubation temperatures and flow) and has increased competition and hybridization between CHNSR and CHNFR. As a result of reduced spawning habitat CHNWR and CHNSR are more vulnerable to serious effects of elevated, and potentially lethal, temperatures during egg incubation that can occur in most years. The frequency of increased temperatures is expected to increase with increased water demands and climate change, necessitating the evaluation of passage above known barriers. Improving fish passage throughout the Sacramento and		

Condition	Mitigation measure	Implementation schedule	Status
	San Joaquin river basins will reduce migratory delays and loss of adult CHNWR and CHNSR at barriers and can enhance ecosystem function through improved habitat connectivity. After consulting with Reclamation, USFWS, and NMFS, Permittee and CDFW shall work to collaboratively select the restoration projects to be funded to restore and enhance either CHNWR or CHNSR, or both species, spawning and rearing habitat on the Sacramento River and its tributaries. CDFW acknowledges that planning, environmental review, and permitting may be necessary for restoration project implementation and funding under this Condition of Approval may be used for these project development activities. In some cases, implementation may be in the form of funding a restoration project in whole or in part to supplement restoration projects being implemented by others, when appropriate and approved by CDFW and when CDFW determines that funding under this Condition of Approval will ensure		

Condition	Mitigation measure	Implementation schedule	Status
	additive benefits to the species, that would not occur in the absence of Permittee's contribution. However, under no circumstances shall any funds under this Condition of Approval be used to fund any other regulatory permitting requirement other than those established in this ITP. Final allocation of this funding shall be subject to CDFW approval each year. If, as described in Section 1.6 of the Project description and as part of the Voluntary Agreement Review (Section 3.13.9), the Voluntary Agreements are approved and Permittee, or its SWP Contractors acting on Permittee's behalf, conduct habitat restoration for CHNWR and CHNSR, Permittee and CDFW shall collaborate to review the Project in light of the final form of the Voluntary Agreements. Consistent with Condition of Approval 5, CESA, and CESA's implementing regulations, Permittee and CDFW will utilize results from the review to consider whether the Voluntary Agreements' implementation modifies the scope		

Condition	Mitigation measure	Implementation schedule	Status
	or nature of the Project, or the circumstances under which it is implemented, to an extent that warrants a permit amendment. **Language updated in 2020 ITP amendment		
9.2.2	Implement the Yolo Bypass Salmonid Habitat Restoration and Fish Passage Project. Within 6 years of the effective date of this ITP Permittee shall implement the Yolo Bypass Salmonid Habitat Restoration and Fish Passage Project (Salmonid Habitat and Fish Passage Project). The objective of the Salmonid Habitat and Fish Passage Project is to enhance floodplain rearing habitat and fish passage in the Yolo Bypass by implementing the Project as described in in Alternative 1 of the Yolo Bypass Salmonid Habitat Restoration and Fish Passage Final EIR/EIS. This project will benefit CHNWR, CHNSR, Central Valley steelhead, and the Southern DPS of North American green sturgeon to benefit CHNWR, CHNSR, Central Valley steelhead, and the Southern DPS of North American green sturgeon.	Within 6 years of the effective date of the ITP.	All features listed in 9.2.2 are on schedule to be constructed and operational within six years of the issuance date of the ITP. DWR has begun preparing the project site for construction. The site preparation scope includes cutting down trees within the permanent project footprint and placing fill material to build up a pad for the headwork structure's control building, adjacent to the east Yolo Bypass levee. In May 2022 DWR will begin constructing the Intake Channel, Headwork Structure, Transport Channel, and Downstream Channel Improvements. The Supplemental Fish Passage (SFP) Structure will begin construction in 2024. Below are project milestones completed: • EIR/EIS ROD/NOD. • Final Design. • 401 Water Quality Certification. • CDFW 1600 and ITP. • CVFPB Encroachment Permit. • Delta Stewardship Council Consistency Determination Certification.

Condition	Mitigation measure	Implementation schedule	Status
	The first objective of the Salmonid Habitat and Fish Passage Project is to increase the availability of floodplain rearing habitat for juvenile CHNWR, CHNSR, and Central Valley steelhead. This action can also improve conditions for Sacramento splittail and Central Valley fall-run Chinook salmon. Specific biological goals include: • Improve access to seasonal habitat through volitional entry • Increase access to and acreage of seasonal floodplain fisheries rearing habitat • Reduce stranding and presence of migration barriers • Increase aquatic primary and secondary biotic production to provide food through an ecosystem approach The second objective of the Salmonid Habitat and Fish Passage Project is to reduce migratory delays and loss of fish at Fremont Weir and other structures in the Yolo Bypass. Specific biological goals include:		• Section 106 (except for SFP structure). • USACE 404 and 408. Upcoming milestones we're planning: • Begin construction — May 2022. • Acquire real estate rights for project operations — Oct. 2023. • Begin operating Big Notch headwork structure — Nov. 2023. • Begin construction of SFP Structure — May 2024. • Complete SFP Structure — Nov. 2024.

Condition	Mitigation measure	Implementation schedule	Status
	• Improve connectivity within the Yolo Bypass for passage of salmonids and green sturgeon • Improve connectivity between the Sacramento River and the Yolo Bypass to provide safe and timely passage for: ○ Adult CHNWR between mid-November and May when water surface elevations in the Sacramento River are amenable to fish passage ○ Adult CHNSR between January and May when elevations in the Sacramento River are amenable to fish passage ○ Adult California Central Valley steelhead in the event their presence overlaps with the defined seasonal window for other target species when elevations in the Sacramento River are amenable to fish passage ○ Adult Southern DPS green sturgeon between February and May when		

Condition	Mitigation measure	Implementation schedule	Status
	elevations in the Sacramento River are amenable to fish passage. Primary Project activities include the construction of a notch in Fremont Weir located in the Northern Yolo Bypass, including the construction of the following features: • *Intake channel:* The intake channel shall connect the Sacramento River to the proposed headworks structure at the appropriate elevation to facilitate an upstream fish passage facility for adult fish and for passing rearing habitat flows and juvenile salmonids. • *Headworks structure:* The headworks structure shall bisect the existing Fremont Weir on the east side and would control the diversion of Project flow from the Sacramento River into the Yolo Bypass. It would also serve as the primary upstream fish passage facility for adult fish and the primary		

Condition	Mitigation measure	Implementation schedule	Status
	facility for passing rearing habitat flows and juvenile salmonids into the Yolo Bypass. The components of the headworks shall include a concrete control structure, an upstream vehicular bridge crossing, and a concrete channel transition, which transitions the rectangular sides of the control structure to the side channel slopes of the transport channel. • *Transport channel:* The transport channel shall serve as the primary facility for upstream adult fish passage between the existing Tule Pond and the headworks structure. It would also serve as the primary channel for conveying juvenile salmonids and rearing habitat flows from the headworks structure to the existing Tule Pond. • *Downstream channel improvements:* Improvements shall be made to the existing channel that extends from the Tule Pond outlet to the beginning of Tule Canal. The improvements		

Condition	Mitigation measure	Implementation schedule	Status
	would be made to facilitate upstream adult fish passage between the existing Tule Canal and Tule Pond. The location of each of these facilities is described in Alternative 1 in the Yolo Bypass Salmonid Habitat Restoration and Fish Passage Final EIR/EIS. The project also includes a supplementary fish passage structure located on the west side of Fremont Weir.		