

**Addendum to the
State Water Project and Central Valley Project
Drought Contingency Plan**

August 31, 2022

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This Drought Contingency Plan (Drought Plan) Addendum has been prepared by the California Department of Water Resources (DWR) and the U.S. Bureau of Reclamation (Reclamation) to provide the latest information about the operations forecast and drought actions being taken.

DWR and Reclamation operate the State Water Project (SWP) and the Central Valley Project (CVP), respectively, to the 2019 U.S. Fish and Wildlife Service (USFWS) Biological Opinion and 2019 National Marine Fisheries Service (NMFS) Biological Opinion (Collectively the 2019 Biological Opinions), and DWR also operates to the 2020 California Department of Fish and Wildlife Incidental Take Permit (ITP). Certain operational requirements have been modified by an interim operations plan for the 2022 water year (2022 IOP) that was proposed by the federal and state agencies in ongoing litigation and ordered by the United States District Court for the Eastern District of California on March 14, 2022.¹ This Addendum is submitted by DWR to the California Department of Fish and Wildlife (CDFW) in response to Condition 8.21 of the ITP. Concurrently, this Addendum will also be shared with the members of the Water Operations Management Team (WOMT) which includes representatives from DWR, Reclamation, USFWS, NMFS, CDFW, and the State Water Resources Control Board (SWRCB) (collectively referred to as Agencies).

This Addendum includes current hydrologic conditions, plus updates on the following: operations status and the latest SWP and CVP (collectively referred to as Projects) operations forecasts; species status; and known WY 2022 drought actions.

DWR and Reclamation are committed to working with the Agencies through further development of drought actions, WOMT coordination, and other forums as necessary.

SWP and CVP Operations Status

Storage

Storage conservation at Shasta, Trinity, Folsom, New Melones and Oroville reservoirs continues to be a priority. The 2022 TUCO, which was conditionally approved on April 4, allowed the Projects to decrease reservoir releases in April through June and continue conserving storage this spring to help meet needs this summer. Above average April precipitation in the Northern Sierra Basin also allowed for higher than forecasted inflows into primarily Oroville and Folsom reservoirs. As of August 24, storage in Shasta and Oroville remains well below average for this time of year, whereas Folsom storage is about average.

¹ Order Granting Federal Defendants' Motion for Voluntary Remand without Vacatur, U.S. District Court for the Eastern District of California, Case Nos. 1:20-cv-00431-DAD-EPG and 1:20-cv-00426-DAD-EPG (Mar. 14, 2022).

Lake Oroville storage is about 1.34 million acre-feet (MAF) (38% of capacity and 63% of historical average).

Lake Shasta reached its peak storage for the season of approximately 1.827 MAF on May 21. Storage has been slowly decreasing and, as of August 24, is now about 1.61 MAF (35% of capacity and 57% of historical average). Projected end-of-September storage is approximately 1.48 MAF; however, storage is likely to continue decreasing under dry fall conditions. Trinity Reservoir reached its peak storage for the season of approximately 808 TAF on April 4 and began decreasing shortly afterward with the implementation of the spring pulse flow. As of August 24, storage is about 625 TAF (25% of capacity and 38% of historical average). Unfortunately, Lake Shasta and Trinity Reservoir have not benefited significantly from the storm events in WY 2022 because most of the storms centered on watersheds farther south or west. Folsom Lake greatly benefited from both the early season and late season storms and did not reach its peak storage until June 9 at approximately 865 TAF. As of August 24, storage is approximately 477 TAF (49% of capacity and 85% of historical average) and decreasing.

In the San Joaquin watershed, New Melones Reservoir reached its peak storage for the season of approximately 992 TAF on February 1. As of August 24, storage is approximately 656 TAF, which is 27% of capacity and 47% of historical average.

Releases

As of August 24, releases to the Sacramento River from Keswick Reservoir are at 4,400 cubic feet per second (cfs). Reclamation is operating Shasta Reservoir and the Sacramento River consistent with a multi-agency approach based on maximum monthly average Keswick releases of 4,500 cfs from May through August. Shasta releases are expected to be reduced to minimum flows (3,250 cfs) by October.

Total releases to the Feather River from Lake Oroville are currently 3,000 cfs. Oroville releases may be modified to meet Delta needs, but releases are planned to be reduced for storage conservation later this summer and fall.

Releases from Folsom are at 3,250 cfs and are expected to remain within this range throughout August before decreasing in September and October to reach minimum flows (approximately 1,300 cfs) in the fall.

Releases from New Melones for the month of June were targeted to achieve a monthly average Vernalis flow of 710 cfs as per the TUCO Condition 1(c). Releases are currently at 250 cfs to meet dissolved oxygen standards but may decrease to 150 cfs later this summer.

Exports

Combined Project exports have been approximately 3,300 cfs to 3,400 cfs since July 10. CVP exports increased to a range of 1800 cfs – 2700 cfs in July to support demands for public health and safety, senior water rights, and wildlife refuges south of the Delta, as well as some transfer water. SWP exports have ranged around 600-700 cfs and include transfers as well as water to support public health and safety demands.

DCC

The Delta Cross Channel gates were kept closed throughout June to maintain water quality at Emmaton/Threemile Slough but have been open since July 1 to assist with interior Delta water quality.

SWP and CVP Operations Forecasts

Although the final official Water Supply Index Bulletin 120 forecast for the year was issued on May 1, 2022, the SWP/CVP Operations forecast provided has been adjusted to account for observed conditions in June and July, and it assumes very dry conditions through September.

The August 2022 SWP and CVP operations forecast is shown in Attachment 1 and includes storage and flows under the 90% exceedance hydrologic scenario. At this point in the water year, there is very little difference in projected inflows between the 99%, 90% and the 50% exceedance levels. The operations forecast uses the runoff forecast as model inputs to simulate Project operations under required regulatory requirements, predominantly SWRCB D-1641 Bay-Delta Standards, and produce forecasted reservoir storages, releases, and flows under the same hydrologic exceedances. This operations forecast gives general guidance for annual water delivery, storage management, and power planning purposes for this exceedance assumption. Outputs as provided in this August Addendum, represent system responses to the overlay of specific expected monthly operating criteria on the discrete hydrologic scenarios.

The forecast assumptions utilize existing storage conditions, actual runoff through July, forecasted runoff based on the hydrology, projected water supply deliveries, and releases needed to meet existing flow and water quality standards, and fish and wildlife protections. The forecast includes monthly storage levels, reservoir releases, Delta export rates, and Delta outflow through September 30, 2022. DWR and Reclamation will continue to update the operations forecasts with each new monthly water supply forecast, and expect that with each updated operations forecast, SWP and CVP operations may change.

Trinity River

The Spring pulse flow on the Trinity River, consistent with the annual allocation as prescribed by the Trinity River Main-stem Fishery Restoration Record of Decision, was completed May 16, 2022. Consistent with fish health criteria, releases to augment flows in the Lower Klamath River may also be considered in late summer. The storage forecasted in the 90% exceedance forecast for the end of September is extremely low at 501 TAF and does not leave a storage buffer in the event WY 2023 is also dry. In addition, low storage of this level also likely results in temperature management concerns both this water year and in WY 2023. To conserve storage in Trinity Reservoir to the largest degree possible, Reclamation is diverting minimal water from Trinity to the Sacramento River. Imports to the Sacramento River are limited to those necessary to reduce the residence time in Lewiston Reservoir and support temperature management down the Trinity River.

Sacramento River

Due to the very low storage at Shasta Reservoir and the two back-to-back years of low egg to fry survival for the endangered winter-run Chinook Salmon, Reclamation, DWR, NMFS, FWS, CDFW and the SWRCB worked with the Sacramento River Settlement Contractors to develop a Keswick release plan that conserves Shasta storage and prioritizes temperature management in the Sacramento River. The monthly release schedule for the water year is shown below, although April, May and June were all below these levels due to decreased demands and additional runoff from precipitation events.

Operations Information/Month	April	May	June	July	August	September
Shasta Releases (TAF)	183	267	253	257	257	218
Keswick Releases (cfs)	3,500	4,500	4,500	4,500	4,500	4,000
Keswick Releases (TAF)	193	277	268	277	277	238
Spring Creek Power Plant (TAF)	10	10	15	20	20	20
Shasta End-of-Month Storage (TAF)	1,746	1,646	1,523	1,382	1,238	1,135

The release schedule above includes very low releases from Keswick Reservoir into the Sacramento River as well as very low releases from Spring Creek Power Plant into the

Sacramento River system. These low flows create a high level of uncertainty with both flow/temperature relationships as well as other river operations such as impacts to riparian diverters. Additionally, downstream depletions, Delta demands, and infrastructure limitations may also change the releases from the schedule above. Reclamation will be working with DWR, NMFS, USFWS, CDFW and the SWRCB regularly regarding these uncertainties and any potential for deviating from the release plan above. Releases from Keswick were considerably lower than in the above table for the months of May (215 TAF actual) and June (242 TAF actual). The Shasta storage forecasted in the 90% exceedance forecast for the end of September is estimated at 1.48 MAF which is over 300 TAF higher than what was included in the final temperature management plan and approximately 400 TAF higher than the end of WY 2021.

The Final Temperature Management Plan for the lower Sacramento River was submitted to the SWRCB on May 2, 2022, and the SWRCB provided a conditional approval on May 6.

Clear Creek

Flows on Clear Creek will be consistent with the 2019 NMFS Biological Opinion. The timing of any prescribed pulse flows will be closely evaluated through technical teams to minimize effects on temperature management and/or ability to help meet other system flow needs. Concerns with Clear Creek temperature management will be similar to those of the Trinity system.

Feather River – Lake Oroville

Lake Oroville hit its peak storage for WY 2022 on May 8, at 776.95 feet elevation and 1.94 million acre-feet (MAF), about 400 TAF higher than the peak in 2021. This year's higher storage was primarily attributed to the well above average rainfall during the fall of 2021 and in April 2022. Based on this water supply forecast, the end of September carryover storage is projected to be in the range of 1.2 to 1.3 MAF (about 60% to 70% of historical average), which is about 400 to 500 TAF higher than the historical low storage of 787 TAF experienced at the end of WY 2021. The increased projected end of water year storage is primarily attributed to the fall 2021 and April 2022 storms; however, it is below the planning carryover target of 1.6 MAF.

The main intake structure at Lake Oroville has a number of shutters that can be added or removed to control the elevation and temperature of water released from Lake Oroville. Feather River temperature management can be achieved through the removal of shutters from the intake structure. Typically, once a shutter is removed, it is not re-installed until the following year. However, in dry and critical years when the lake elevation is low, there is not enough storage to support the installation of all the shutters, which is typical in a critical year. Therefore, during the summer and fall, when ambient temperatures are high, storage is low, and the shutters are exhausted, DWR will blend warmer water being conveyed through the main Hyatt intakes with colder water from Oroville Dam's low-level outlet. DWR expects the blending operations to begin in September.

American River

Flows on the American River will be consistent with the provisions of action included in the 2019 NMFS Biological Opinion. Current storage is 477 TAF (as of August 24) which is 243 TAF higher than the storage at this same time in 2021. Flows in August and September will be higher than minimum flows outlined in the 2017 revised American River Flow Management plan to meet Delta needs or to meet the temperature management plan for the American River. Reclamation's current forecast shows Folsom at or above 300 TAF at the end of September. This volume minimizes the risk of not meeting public health and safety demands in the event of a dry fall and lowers the risk of early flood releases in an average fall. Reclamation's Temperature Management Plan was finalized in July through discussions with the American River Group and targets 66 degrees Fahrenheit at Fair Oaks throughout the summer.

Stanislaus River

Flows on the Stanislaus River will be consistent with the provisions of the 2019 NMFS Biological Opinion and D-1641 Vernalis base flow and water quality requirements. Stanislaus flows through June were primarily driven by the D-1641 Vernalis base flow requirement (as modified by the 2022 April-June TUCO), which was met through releases from New Melones combined with flows in the San Joaquin River upstream of the Stanislaus River confluence. The key area of concern for the Stanislaus River basin is carryover storage. New Melones has a very low refill rate, meaning it only typically fills in very wet years (such as 2017) and can go many years between filling even with non-drought hydrology. The 90% exceedance forecast shows a carryover storage below 700 TAF at the end of September, leaving very little buffer for New Melones should WY 2023 also be dry.

In 2021, Reclamation released a significant volume of water (approximately 148 TAF) from New Melones Reservoir to meet Delta needs and to offset the need for additional releases from Shasta, Oroville and Folsom reservoirs. This operation was implemented in consideration of the extremely low storages at Shasta, Oroville, and Folsom reservoirs and the relatively higher storage at New Melones Reservoir. Due to the lower storage at New Melones Reservoir this year, there is currently no plan to conduct a similar operation in WY 2022. Reclamation and DWR are coordinating on an appropriate mechanism to recognize this 2021 operation.

Sacramento-San Joaquin Delta

August Project operations are in accordance with D-1641 objectives. Due to the increase in storage at both Folsom and Oroville reservoirs, the Projects did not request further modifications to D-1641 after June.

Higher releases from Folsom throughout the summer has resulted in increased exports after meeting the D-1641 Delta requirements. For the CVP, increased exports are currently

contributing to meeting demands for public health and safety, refuge, and Exchange Contractors. The CVP was able to increase deliveries to the Exchange contractors from the Delta in July, thereby decreasing releases to the Exchange Contractors from Friant Dam. Reductions in Friant Dam releases are supporting both the San Joaquin River Restoration Program and water supply to Friant Division contractors. Releases from Oroville will be to meet D-1641 Delta requirements as well as support exports to meet public health and safety needs.

[Species Status Update](#)

Salmonids

There are no updates regarding salmonids since the July Drought Plan Addendum submittal.

Delta Smelt

Since July 1, 2022, the Enhanced Delta Smelt Monitoring Program (EDSM) has collected five juvenile and sub-adult Delta Smelt (47-63mm), including two juveniles in the lower Sacramento River and two juveniles and one sub-adult in the Sacramento Deep Water Shipping Channel. These detections are the first catch of Delta Smelt since the spring. Genetic analysis will be conducted to verify species identity and to determine hatchery or wild parentage.

Longfin Smelt

Longfin Smelt distribution in summer is typically downstream of the Delta. Since July 1, 2022, EDSM has sampled 14 Longfin Smelt (45-100mm) in Suisun Marsh and Suisun Bay. These constitute the furthest upstream detections of Longfin Smelt during this period.

[Updates on 2022 Drought Actions](#)

The Projects have undertaken the following actions in response to the continuing drought. Future Drought Plan updates may include additional drought actions, should they be needed.

West False River Emergency Drought Salinity Barrier

Construction of this rock-filled channel closure, across West False River from Jersey Island to Bradford Island, began on June 3, 2021, and installation was completed on June 22, 2021. Removal of the barrier was originally planned to begin in October and full removal was anticipated by November 30, 2021.

However, in response to the continuing drought conditions, DWR received approval from CDFW, U.S. Army Corps of Engineers, and the SWRCB to keep the emergency drought salinity barrier in place through the winter. In January 2022, the barrier was notched by removing rock from

approximately 400 feet from the center section to allow boat and fish passage. The notch was backfilled on April 13, 2022. The barrier is planned to be fully removed no later than November 30, 2022.

In addition, DWR is working to get all environmental approvals, through standard non-emergency processes, to allow for up to two installations of the West False River barrier between 2023 and 2032, if needed. These future barrier installations would occur no sooner than April 1 of any given year and would be fully removed no later than November 30 that same year or the following year.

Feather River Settlement Contractors

The official determination of the delivery to the Feather River Settlement Contractors (FRSC) is based on the April 1 B120 Feather River runoff forecast. The April 1 B120 forecast triggered the drought deficiency criteria of the FRSC Agreements, and as such, the contractual deliveries to the FRSC have been reduced to 50% for WY 2022.

Reduction to water available for Sacramento River Settlement Contractors and North of Delta Wildlife Refuges

As noted above, due to the very low storage at Shasta Reservoir and the two back-to-back years of low egg to fry survival for the endangered winter run chinook salmon, Reclamation, DWR, NMFS, FWS, CDFW and the SWRCB worked with the Sacramento River Settlement Contractors to develop a Keswick release plan that conserves Shasta storage and prioritizes temperature management in the Sacramento River. This release plan was used to determine the available water for diversion by the Sacramento River Settlement Contractors and the wildlife refuges north of the Delta. The current estimate is that approximately 18% of the total contract value will be available for delivery in WY 2022 based on this release assumption. The shortage provision for a Shasta Critical year included in their contracts is 75%.

Release of water from Friant Dam for Contractual Demands in Mendota Pool

Due to the inability of Reclamation to provide enough water from the Delta in 2022 for the contractual demands of senior water rights contractors in Mendota Pool, Reclamation began making releases from Friant Dam on April 1, 2022, to meet these demands. As a result, the San Joaquin River Restoration Program had to cease San Joaquin River releases on April 11, 2022, due to the unavailability of river capacity for the Restoration Program flows. The Friant Dam releases began decreasing in late June and are now at 250 cfs. Since July 10, water is no longer being provided to Mendota Pool for the Exchange Contractors.

Next Steps

DWR and Reclamation continue to provide condition and Project operations updates to members of the WOMT. In addition, DWR and Reclamation will continue to coordinate with the existing Long-term Operation Agency working groups and Drought Relief Year Team to develop a robust drought monitoring program with updates to WOMT and other forums as necessary. In addition, this Drought Plan will be updated next month to include the current hydrological conditions, SWP and CVP operational forecasts that incorporate any forecast updates, and additional potential drought actions, if warranted.

MODELED FORECAST RESULTS

For the 2022 Drought Action Plan

August - 90% HYDROLOGY

END OF MONTH STORAGES (TAF)		
RESERVOIRS	AUGUST	SEPTEMBER
Shasta	1,559	1,479
Folsom	440	340
Oroville	1,304	1,257
New Melones	657	638
MONTHLY AVERAGE RELEASES (CFS)		
RIVERS	AUGUST	SEPTEMBER
Sacramento	4,500	4,000
American	3,400	2,550
Feather	3,050	2,150
Stanislaus	250	150
DELTA SUMMARY (CFS)		
	AUGUST	SEPTEMBER
Sac River at Freeport	9,450	8,050
SJ River at Vernalis	175	175
Computed Outflow	3,250	3,000
Combined Project Pumping	2,950	3,200