BUREAU OF RECLAMATION

Sacramento River Temperature Task Group Meeting Summary

August 22, 2024

Members Attending

- Bureau of Reclamation (Reclamation): Derek Rupert, Elissa Buttermore, Emelia Barnum, Karissa Bridges, Lisa Eliott, Mechele Pacheco, Tom Patton
- U.S. Fish and Wildlife Service (USFWS): Bill Poytress, Brett Galyean, Matt Brown, Tanya Sommer, Vanessa Gustman Costa
- California Department of Fish and Wildlife (CDFW): Crystal Rigby, Doug Killam, Gang (Gary) Zhao, Mallory Boro, Marelle Arndt, Tracy Grimes
- National Marine Fisheries Service (NOAA, NMFS): Garwin Yip, Stephen Maurano
- California Department of Water Resources (DWR): Kevin Reece
- California State Water Resources Control Board (SWRCB): Claudia Bucheli, Craig Williams, Diane Riddle, Jeff Laird, Matt Holland
- Sacramento River Settlement Contractors (SRSC): Lee Bergfeld, Mike Deas
- Yurok Tribe: Christopher Laskodi
- The following SRTTG members did not have a representative present: Hoopa Tribe, WAPA
- Facilitation Team: Victoria Pebbles and Jack Hughes, Kearns & West

Summary of Actions

- The SRTTG agreed to hold an in-person meeting with associated field trip somewhere in the Trinity System in February 2025. Kearns & West will follow up with Reclamation and other SRTTG members to firm up details in the coming months.

Topics

Welcome, Agenda Review, and Purpose

Victoria Pebbles, Kearns & West, welcomed all participants. The objective for the meeting was to discuss the latest forecast and implications for the Sacramento River System and the implementation of the 2024 Temperature Management Plan for the Sacramento River. The purpose of the SRTTG is as follows:

> Sacramento River Temperature Task Group (SRTTG) consists of agency representatives having direct interest in cold water pool management on the Sacramento River and meets at least monthly February through October. The purpose of the SRTTG is to "share operational information monthly and improve technical dialogue to inform the development and the implementation of an annual Temperature Management Plan (TMP) for the Sacramento River." The TMP is developed by the U.S. Bureau of Reclamation (Reclamation) in accordance with California State Water Resources Control Board Water Rights Order 90-5 to assist with improving and stabilizing Chinook salmon populations in the Sacramento River.

Hydrology Update

Tom Patton, Reclamation, provided the latest forecast and implications for the Sacramento System and reported on current hydrologic conditions including flows. Patton noted that Reclamation was releasing 11,500 cfs at Keswick Dam at the time of the meeting, and that they were scheduled to reduce releases to 11,000 cfs the next day, August 23, 2024. Reclamation planned to hold releases at 11,000 cfs through the weekend and reevaluate the following week. Diversions in the system appeared to have peaked, so Reclamation planned to ramp down flows through the rest of August and September.

Northen Sierra Precipitation as of August 21, 2024

- There has been no measurable precipitation for a while and the total Northern Sierra precipitation remains at 47.3 inches for the water year.

Current Storage, Releases, Water Temperatures and Current Operations: Daily CVP Water Supply as of August 20, 2024.

- Trinity River releases were down near the 450 cfs minimum for the rest of the summer.
- Storages at the major reservoirs remained slightly higher than the 15-year average, especially at Trinity Reservoir and Shasta Reservoir, which were at 127% and 114% of the 15-year average, respectively.
- Storage at Shasta Reservoir was at 3.1 MAF at the time of the meeting, and Reclamation projected it would be near 2.8 MAF at the end of September.
- The northern system has received more accumulated inflow in the water year than the central system. Trinity Reservoir had received 139% of the 15-year average.

Temperature Management

- Shasta System
    - Reclamation just closed the Shasta Temperature Control Device (TCD) Middle Gates 1, 2, and 3, so this was not reflected on the Shasta TCD Configuration figure in the meeting packet.
    - Sacramento River mean daily water temperatures have been steady this summer in part due to the higher flows.
    - Water temperatures rose to 53.7°F on the Sacramento River at CCR on August 12, 2024, which is 0.2°F over the target temperature. The temperature fell to 53.5°F the next day. Reclamation has been continuing to make adjustments to the TCD to maintain the target water temperature.
- Trinity System
    - The Douglas City Gage (DGC) on the Trinity River has been measuring the water temperature under 60°F. The Trinity Basin Plan for the North Coast Regional Water Quality Control Board calls for temperatures in the river from Lewiston to Douglas City to be less than or equal to 60°F between July 1 and September 14.
    - Reclamation has been maintaining steady diversions to keep Lewiston Reservoir cool and help reduce the need to release water from the Shasta system.
    - Trinity Reservoir storage is lowering but there should still be decent carryover to next water year. The levels are below the Safety of Dam criteria. Reclamation will monitor for any storms that might push it above that criteria since it could mean releasing water to the Trinity River.
    - There will be a diversion outage in Carr Tunnel tentatively scheduled for November 2024 to March 2025.

Reservoir Profiles and Cold-Water Pool: Graphs on Isothermobaths-2024, Graphs on Cold Water Pool Volume, Percent Exceedances (1998-2023)

- Shasta Reservoir:
    - Water temperatures are warming to near 60°F near the middle gates at the 900- and 950-foot elevation. This warming was why Reclamation closed three middle gates.
    - Shasta Reservoir cold water volume of 52°F and lower and 48°F and lower were comparable to 2016 and 2018.
    - Shasta Reservoir volume of water 52°F and lower and 50°F and lower was near the 25% exceedance and the volume of 48°F and lower water was near the 50% exceedance.
- Trinity Lake:
    - There is still a sizable cold-water pool in Trinity Lake. Cold water volumes were above average. Cold water pools were all near 25% exceedance.

- Whiskeytown Lake:
    - The temperature of water coming out of Spring Creek Power Plant was near 57.5°F and had likely peaked. Water temperature at the Igo gage (IGO) was under the target temperature of 60°F.

Seasonal Temperature and Precipitation Outlook:

- The current 30-day forecast shows leaning above temperatures inland and equal chances of above and below average temperatures in coastal California.
- The seasonal outlook for the months of September, October, and November predicts a similar pattern, but with a bit more widespread equal chances of above or below average temperatures.

50% Exceedance Forecast: Estimated Central Valley Project (CVP) Operations. This forecast relies on an average inflow scenario, i.e., there is a 50% chance actual streamflow volume will exceed the forecast and a 50% chance it will be less. The tables depict the resulting storages, releases and diversions under this forecast.

- This forecast is similar to July's with only slight adjustments to releases.
- A Klamath augmentation flow has not been needed but Reclamation put in a place holder for Trinity flows in case it is needed.
- End of September storage for Trinity Reservoir was projected to be 1.66 MAF and 2.77 MAF for Shasta Reservoir.
- Flows at Keswick were forecasted to be 4,000 cfs through the winter.
- By February, flows on the Sacramento River were forecasted to rise to 7,500 cfs, due to projected flood operations.
- Trinity diversions were forecasted as being steady from August into September, before tapering off in October, and nearly zeroing out for November through March.

90% Exceedance Forecast: Estimated CVP Operations. This forecast relies on a conservative inflow scenario (e.g., drier years with lower-than-average precipitation), in which there is a 90% chance actual streamflow volume will exceed the forecast and a 10% chance it will be less. The tables depict the resulting storages, releases, and diversions under this forecast.

- This forecast is used to input into the temperature model to make it more conservative.
- This forecast is similar to the 50% exceedance forecast but with slightly lower inflows and drier accretions and depletions. The main differences occur next water year.

Temperature modeling

- The modeling results for the Sacramento River are very similar to those from the previous months and the results in the 2024 TMP.
    - The first side gate opening on the Shasta TCD was projected for August 27 and

full opening on September 3.

    - The end of September cold water pool increased slightly to 751 TAF.

- The modeled temperature of Clear Creek at IGO diverges from the actual current temperature perhaps due to a difference in the modeled meteorology.

    - Flows at IGO increase from 150 to 200 cfs on October 1.

- There is a decent cold-water pool in Trinity Reservoir and no temperature issues are anticipated.

    - Reclamation will continue to divert water to help keep Lewiston Reservoir from warming through the early parts of the fall.

    - Reclamation will reduce flows on the Trinity River at Lewiston Reservoir from 450 to 300 cfs in mid-October.

Questions and Comments

- NMFS stated that it seemed like there were more releases from Shasta Reservoir this summer compared to the past ten years and asked Reclamation why this was the case.

    - Reclamation responded that Fall X2 Outflow Action requirements may contribute to the increased releases. Also, since Reclamation is not able to release water in the other seasons, there is a trend to release more in the summer. In wetter years, flows tend to be higher too.

- NMFS observed that, based on the temperature graph shown in the packet, Reclamation did a remarkable job in maintaining the targeted temperature with heat spells and other variables.

    - Reclamation responded that it was harder to meet targets in July but in August they are doing better. Reclamation is trying to wait a bit longer before making TCD configuration changes to maintain temperature control as long as possible.

- Reclamation announced that a project was underway at Shasta Reservoir to connect a new cold-water pipeline from the 750-foot lake elevation to Livingstone Hatchery's water manifold. This will allow the hatchery to pull water directly from the lake, instead of through the TCD and penstocks into the hatchery. This will be useful during drought or when the reservoir surface water elevation is low. Also, the water at this lake elevation is consistently cold throughout the season. It will still be possible to take warmer water from the penstocks and blend it with the cold water to adjust the temperature. This project will likely be completed by this fall.

- CDFW asked if this project would eliminate the need for semi-truck chillers and pumps.

    - Reclamation responded that it would mostly reduce the need, however, those chillers and pumps would still be needed some years when the water is still too warm at the 750 foot elevation.

- USFWS asked if the flows passing through Wilkins were for Delta outflow.

    - Reclamation responded that the increased flows due to the Fall X2 Outflow

Action requirements. Reclamation has started to reduce flows at Keswick, but most of the reductions have been in places like the American River and the Feather River. Reclamation expects more reductions in the coming weeks.

USFWS Fish Conditions, Forecasts and Hatchery Updates

Brett Galyean, USFWS, gave an update from Coleman National Fish Hatchery. USWS had 926,000 late-fall Chinook salmon at the hatchery. They were scheduled for release sometime after Thanksgiving in coordination with a storm event. The hatchery also had 675,000 steelhead that were scheduled to be released in mid-December with a storm event. Water temperatures had cooled and were ranging between 63°F to 67°F. The hatchery was using Intakes 2 and 3 and not Intake 1 because of preventative maintenance on PG&E infrastructure.

Bill Poytress, USFWS, presented an update on the estimated population of steelhead, winter-run and spring-run Chinook salmon upstream of Red Bluff Diversion. Winter-run Chinook salmon counts were increasing and USFWS estimated that the passage of about 20,500 through August 19. This represents about 2.36% of the average passage for this time of year. USFWS did not see many spring-run Chinook salmon or steelhead.

Galyean gave an update for Livingston Stone National Fish Hatchery. The hatchery completed winter Chinook spawning operations week. USFWS estimated that they have 600,000 eggs. Some of the early eggs from May and June were beginning to hatch. The hatchery completed the final egg transfer to the McLeod project. They transferred a total of 62,000 eggs this year for that project. The hatchery will start working on the captive brood winter Chinook program. Half of the eggs (approximately 120,000) from that project will be transferred to the Mount Lassen Trout Farm and will be released from there in the spring of 2025.

CDFW Sacramento River Fish Monitoring Update

Doug Killiam, CDFW, provided river fish monitoring updates. The current total Redds CDFW observed in aerial surveys was 24. Aerial surveys were not done during the peak run in the summer because of maintenance issues with the contracted helicopter. Shallow redd surveys conducted by boat were ongoing, and 16 had been observed so far. Many redds were in deeper water. The farthest down the river a shallow redds and winter-run Chinook were observed by the mouth at Clear Creek. Water temperatures have been cooler this year compared to drier years. 5.4% of fresh female carcasses observed were unspawned. By this time of year, CDFW would expect to see 147 female redds based on female counts.

CDFW observed 263 winter-run Chinook carcasses as of August 24, 2024. This is the second-lowest number since 2003. This is probably a result of poor Chinook survival three years ago. There has been an unusual number of two-year old grills, or “jack” and “jill” Chinook salmon, observed late in the season. Many were identified in carcass surveys as having been bred at Livingston Stone Fish Hatchery. This may mean that there will be many hatchery fish observed as adults next year. CDFW has video stations ready to observe fall-run Chinook on Battle Creek and Clear Creek.

Questions and Comments

- CDFW asked if USFWS was still sending out an update email for river fish populations upstream of Red Bluff Diversion Dam.
    - USFWS responded that they were still updating procedures. They would likely be posting data from April and August directly on the SacPAS website. Reports will be uploaded in the regular fashion, likely starting in September.
- NMFS asked how CDFW estimates the dewatering flows for winter-run redds?
    - CDFW responded that they have specific locations on the river where the shallow redds are. CDFW has been using the best judgment of the experienced surveyors who have observed the areas through the years. CDFW is evaluating some shape files to see if they match with the areas redds are observed this year.
- USFWS asked if 5.4% of the pre-spawn mortality for females was a higher rate than usual.
    - CDFW responded that the rate was slightly higher than usual, but the overall count was low. Typically, when there is small number of salmon available the local otter population impacts them more significantly, so many of the fish in this category might have been killed by otters before they could spawn. There were five unspawned fish and 88 spawned fish. So, if three or four of those unspawned fish were killed by otters, it would really skew the numbers.
- USFWS asked if CDFW had any more information on the rates of hatchery versus wild-spawned fish they observed.
    - CDFW responded that they do have that data but not on hand. The survey crews were reporting the fish they saw from boats were relatively small and primarily hatchery fish.
- Reclamation stated that Columbia River fish data can be used as a surrogate for the Klamath and Sacramento Rivers. Many fish were being observed coming into the Columbia River early. Reclamation asked if CDFW has any sense of if any fall-run fish might be in the lower Sacramento River. (Link to data on website available at University of Washington.)
    - CDFW responded that they shut down commercial and recreational fall-run fishing this year due to expected low fish returns. These fishermen provided reports of early fish in the past. CDFW anticipates a poor return of fall-run fish again this year based on the warm water in 2022. Much of the 2022 summer cold water was used to protect the winter run, which left the 2022 fall run exposed to warm water. Drought conditions in 2021 also impacted fish that year.

Additional Announcements & Discussion

The SRTTG discussed the potential timing and location of a SRTTG field trip and in-person meeting. Representatives from NOAA-NMFS, SWCRB, Reclamation, and the Yurok Tribe expressed value in field trips and periodic in-person meetings. Some SRTTG members mentioned scheduling conflicts and budget constraints in fall 2024. The Trinity System was suggested as a

desired location for a field trip. Several members stated having the field trip early next year would increase the likelihood they could attend. Yurok Trib offered to host the SRTTG in person meeting if it was associated with a field trip in the Trinity System. The Kearns & West facilitation team agreed to continue exploring a field trip to the Trinity System in February 2025 with Reclamation and other SRTTG members.

Adjourn