Sacramento River Temperature Task Group Meeting Summary

May 23, 2024

Members Attending

- Bureau of Reclamation (Reclamation): Derek Rupert, Emily Barnum, Elissa Buttermore, Elizabeth Kiteck, Jo Anna Beck, Lisa Elliot, Peggy Manza, Tom Patton
- U.S. Fish and Wildlife Service (USFWS): Bill Poytress, Craig Anderson, Dan Kratville, Matt Brown, Tanya Sommer
- California Department of Fish and Wildlife (CDFW): Crystal Rigby, Colby Hause, Doug Killam, Erica Meyers, Gang (Gary) Zhao, Tracy Grimes, Travis Apgar, Vanessa Gusman Costa
- National Marine Fisheries Service (NMFS): Stephen Maurano
- Southwest Fisheries Science Center (SWFSC): Cyril Michel, Miles Daniels
- California Department of Water Resources (DWR): Mike Ford, Ryon Kurth
- California State Water Resources Control Board (SWRCB): Claudia Bucheli, Craig Williams, Jeff Laird
- Sacramento River Settlement Contractors (SRSC): Mike Deas, Lee Bergfeld
- Western Area Power Administration: Vanessa Armentrout
- Yurok Tribe: Chris Laskodi
- The following SRTTG members did not have a representative present: and Hoopa Tribe.
- Facilitation Team: Victoria Pebbles and Jack Hughes, Kearns & West.

Summary of Recommendations and Actions

Recommendations for Shasta Planning Group Consideration

- SRTTG anticipates general support for the updated draft TMP provided the information requested in at this meeting (summarized in the “actions” section below) is included and that the TDM modeling outcomes from the SWFSC do not indicate unacceptable levels of risk or differ substantially from the modeling outcomes provided by Reclamation.

Actions

- Reclamation will work with SWRCB, NMFS, USFWS, and SRSC in advance of May 30 to develop draft language to include in the TMP to reflect the intention to manage to 53.5 °F at CCR through October 31, 2024.
- Reclamation will update the Draft 2024 TMP to include and discuss:
    - new modeling scenarios in the 2024 TMP:
        - Forecasted CVP operations and modeled temperature management (53.5°F at CCR) with and without a pulse flow using a 90% May forecast and a 25% May meteorology. (Scenarios 1 and 2)
        - Forecasted CVP operations and modeled temperature management (56°F at Balls Ferry) with a pulse flow using a 90% May forecast and a 25% May meteorology. (Scenario 3)
        - Forecasted CVP operations and modeled temperature management (53.5°F at CCR) with a pulse flow using a 50% May forecast and a 25% May meteorology. (Scenario 4)
    - TDM modeling for the above scenarios
    - Language to reflect intent of stabilizing flows and minimizing large fluctuations in flows during peak spawning in July and August when eggs are incubating in gravel.
- Reclamation will send the SRTTG the TDM data and updated 2024 TMP when it is ready.
- The Southwest Fisheries Science Center will undertake a separate TDM modeling analysis for the same scenarios and share with the SRTTG in advance of its May 30 meeting.
- Reclamation will get a change order to begin the start of temperature management targeting 53.5°F on the Sacramento River at Clear Creek (CCR) on May 24, 2024.

Topics

Welcome, Agenda Review, and Purpose

Victoria Pebbles, Kearns & West, welcomed all participants and reviewed the purpose of the SRTTG 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 and Pulse Flow Implementation Update

Tom Patton, Reclamation, provided the latest forecast and implications for the Sacramento System and reported on current hydrologic conditions including flows. The sections below correspond to groups of graphs, images and tables in the meeting packet provided by Reclamation.

- At the time of the meeting, it was the third day of a pulse flow measuring 12,000 cfs at Keswick Dam. The pulse flow would continue for one more day, then Reclamation would reduce the flow to 7,500 cfs. Reclamation was considering only reducing the flow to around 8,700 cfs depending on conditions.
- Storage at Shasta Reservoir was starting to decrease. At the time of the meeting, there was around 6,000 cfs inflow and 12,000 cfs in outflow.
- The pulse flow at Clear Creek was nearly complete for May. There will be another pulse flow in June and after that flows will drop to minimums of 200 cfs for the rest of the summer. Whiskeytown was full and set for summer recreation season.
- Trinty Reservoir was gaining storage and is at around 2.1 MAF.
- Per the Record of Decision (ROD) releases below Lewiston Lake were at 3,100 cfs and being reduced daily. Inflow to the lake was at around 3,000 cfs. Warmer temperatures in the near future might contribute a little more snow melt to that flow.
- There has not been much precipitation for a while, and the cumulative total of 47.2 inches in the Northern Sierras is holding steady. This cumulative total is 93% of the average for this time of year. There is no rain in the forecast.
- Northern California snow water content is 33% of the April 1 average and 90% for this time of year. Snowpack is quickly disappearing.

Daily Central Valley Project (CVP) Water Supply from 5/22/2024 showing Current Storage, Releases, and Mean Water Temperatures

- Releases are at 12,017 cfs at Keswick Dam and 3,213 cfs at Trinity Reservoir, both which are higher than the fifteen-year median.
- Storage, precipitation, and inflow are typical for this time of year.
- Shasta Reservoir inflow is 121% of the 15-year average.
- Reclamation opened one middle gate on May 12 and all upper gates are open. This cooled river temperature, but river temperatures have begun increasing again. Reclamation was considering opening another middle gate but will wait until the pulse flow moves lower to minimize draw of too much cold water from the reservoir to achieve 53.5°F at Clear Creek (CCR).
- CCR dropped below 53.5°F on May 21 and warmed to 53.7°F at the time of the meeting. After the pulse moves through, it will be easier to manage the temperature.
- Reclamation was starting to divert water from the Trinity system to help raise the

Whiskeytown Reservoir.

- USGS reported the Lewiston temperature probe was fixed and will begin to supply data from this point. The North Fork gauge has not been fixed.

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

- Shasta Lake is warmer at its surface than previously. Its cold-water pool volumes this year are similar to 2016 and 2018.
- Trinity Lake's 52°F and 50°F cold-water pools are above average for this time of year.
- Whiskeytown Reservoir is starting to warm and more water from Trinity Reservoir will help.

Additional Modeling Scenarios to Inform the 2024 TMP

Tom Pattern, Reclamation, presented on the forecast of operations modeled temperature management for four scenarios that the SRTTG was expressed interest in to inform the 2024 TMP.

Scenario 1: Forecasted CVP operations and modeled temperature management (53.5°F at CCR) without a pulse flow using a 90% May forecast and a 25% May meteorology.

- In this hypothetical scenario with no pulse flow, the Sacramento River flows stayed around 7,300 cfs in May, and at the end of September storage at Shasta was 2.8 MAF with an 893 TAF end of year cold-water pool.
- The first side gate is anticipated to open on August 19 and the final side gate would on September 3.

Scenario 2: Forecasted CVP operations and modeled temperature management (53.5°F at CCR) with a pulse flow using a 90% May forecast and a 25% May meteorology.

- The main difference between this forecast and Scenario 1 is the 8,200 cfs pulse (versus a 7,300 cfs release with no pulse) flow release in May.
- End of September storage at Shasta is only slightly lower in this scenario at 2.76 MAF; with an 863 TAF end of December cold-water pool. There are still higher flows in July due to higher accretions.
- Trinity River releases are modified with additional diversions in July including 100 TAF through Carr in July to offset the higher release at Keswick Dam.
- Trinity storage would be 1.6 MAF at the end of September.
- The side gates are projected to open first around August 19 and a second and final time on September 3; same as Scenario 1.
- There is no major difference in Clear Creek operations.

Scenario 3: Forecasted CVP operations and modeled temperature management (56°F at Balls Ferry) with a pulse flow using a 90% May forecast and a 25% May meteorology.

- There are differences in how the TCD is operated in this scenario, but the result is comparable to Scenario 2 (targeting 53.5°F at CCR), with an end of September storage at Shasta of 2.76 MAF and an 863 TAF end of year cold- water pool.
- The first opening of the side gates is a little earlier under this scenario on August 16; final opening of side gates is September 3.

Scenario 4: Forecasted CVP operations and modeled temperature management (53.5°F at CCR) with a pulse flow using a 50% May forecast and a 25% May meteorology.

- End of September storage is higher in this scenario than the other scenarios, closer to 1.7 MAF for Trinity and over 3 MAF at Shasta.
- Sacramento River releases are slightly different, peaking at 12,000 cfs due to wetter conditions.
- Flood operations would begin in February in this scenario.
- In terms of temperature modeling, there are small changes with side gates opening earlier on July 27, but there is a similar date of September 3 for the final opening of the side gates.
- This scenario predicts the largest Shasta cold-water pool at the end of September with 975 TAF.

Questions and Comments

- NMFS asked how Reclamation interprets the Shasta Reservoir temperatures increasing in September onward without downstream temperatures also increasing in Scenario 4.
    - Reclamation responded that the sun angle is lower into the late summer and fall period which results in reducing the impact on downstream water temperatures from air temperatures and meteorology.

- NMFS asked if Reclamation would be using the newer temperature modeling platform next season.
    - Reclamation responded that hopefully they would be using the new model next year. They are running it in parallel with the current one this year. The new model will hopefully give more confidence in later season output.

- USFWS noted that one factor in whether this year will be closer to the 50% or the 90% exceedance is accretion and depletion and asked if Reclamation had made improvements in the accuracy of predicting those.
    - Reclamation responded that wetter years are easier to forecast. This year, although not as wet as last year, was still wet. Reclamation has more confidence in this year's accretion/depletion forecast than it has in drier years. However, there is always uncertainty.

Discussion on Updates to the Draft 2024 Temperature Management Plan

The SRTTG continued their discussion about the considerations and recommendations for the 2024 TMP from their May 16 ad hoc meeting. Reclamation stated that all four scenarios reviewed previously in the meeting would be discussed in the 2024 TMP. Reclamation said it would also include the TDM data for all four scenarios presented at the meeting in the TMP and would send this information to the SRTTG as soon as it was ready. SWFSC would conduct their own TDM modeling, and Reclamation would compare both sets of modeling results.

At the previous meeting, the SRTTG expressed an interest in updating the draft TMP as presented to reflect the intention to manage to 53.5 °F at CCR through November 15, 2024. Reclamation stated that the SPG did not want an alternative criterion different to the Proposed Action. Instead of a temperature target, Reclamation suggested management actions and real time operations would be used to achieve more reproductive success in the fall. Reclamation could add language to the TMP to reflect that intention, however.

The SRTTG discussed why it would be good to include this language in the plan, even though some noted that active temperature management at that time of year was likely not possible. It was noted that stating this intent would be an incremental step toward a time when better analytical tools for fall TDM projections were available. It was hoped that these tools could help better understand cold-water needs. Also, it was noted, Shasta cold-water pool documents focus on the winter run, but not fall-run. Analytical tools might help to better balance the needs of the winter and fall-run. SWRCB, NMFS, USFWS, and SRSC offered to work with Reclamation to develop draft language to include in the TMP to reflect the intention to manage to 53.5 °F at CCR through November 15, 2024.

The SRTTG next discussed delaying the implementation management target of 53.5°F at River at Clear Creek (CCR) to May 23, 2024. Reclamation suggested that it might start temperature management on May 26 as the pulse flow was ending. However, Reclamation adjusted the date to May 24 based on SRTTG feedback.

The SRTTG discussed slowing or minimizing large fluctuations in flow (i.e., “smoothing” flows) during peak spawning in July and August when eggs are incubating in gravel. Reclamation noted that language was in the draft 2024 TMP and that Reclamation would revisit it to see if it needed any changes.

The SRTTG expressed a desire to see a revised draft of the TMP before giving final feedback. Reclamation said a new version that incorporated the feedback heard at this meeting would be ready next week. Reclamation clarified that there are no legally binding deadlines in the 2024 Interim Operations Plan regarding completion of the final 2024 TMP. The Shasta Planning Group (SPG) would finalize the 2024 TMP the first week of June. The SRTTG agreed to meet and discuss the new draft of the TMP at an ad hoc meeting on May 30. The SRTTG anticipates general support for the updated draft TMP provided the information requested in at this meeting is included and the TDM modeling outcomes from the SWFSC do not indicate unacceptable levels of risk or differ substantially from the modeling outcomes provided by Reclamation.

Additional Questions and Comments

- SWRCB suggested a table with all of the most important information, such as when side gates are used or when cold-water is depleted, be included in the TMP so that this information can be easily compared across all scenarios.
- CDFW noted that on the first page of the draft TMP it states there is 2.8 MAF of "total storage" that classifies this as a Tier 1 year and asked if that needs to be changed to "cold-water pool."
    - Reclamation said they would double check that.

CDFW Sacramento River Fish Monitoring Update

Doug Killam, CDFW, provided the following river fish monitoring updates.

- There has been a rise in fish observed in monitoring activities over the previous two weeks.
- A helicopter flight found 4 redds, redds were observed as far downstream as the Highway 44 bridge in Redding.
- CDFW has seen eleven carcasses to date. Last year at this point, CDFW saw five and in 2021 they had seen was seventeen at this date.
- This number is only two percent of the run average this year to date. It is too early in season to make any assumptions about why the numbers are low.
- CDFW has seen no shallow redds and no prespawn mortality in females to date.

USFWS Fish Conditions, Forecasts and Hatchery Updates

Bill Poytress, USFWS, gave an overview of graphs showing preliminary in-situ pulse flow catch data. The graphs show a response in Red Bluff catch from the pulse flows.

Next Steps

Victoria Pebbles of Kearns & West summarized the action items and next steps for this team. An ad hoc meeting will be scheduled for May 30, 2024 so that the group can see and discuss the requested modifications in an updated and final draft TMP.

Adjourn