BUREAU OF RECLAMATION

Sacramento River Group Summary

July 24, 2025

Summary of Actions

Welcome, Agenda Review, and Purpose

Mia Schiappi, Kearns & West, welcomed all participants. She read a draft working purpose of the SRG extracted from the Proposed Action in section 3.13.3.1.2 of the U.S. Fish and Wildlife Service's November 2024 Programmatic Biological Opinion of the Long-Term Operation of the Central Valley Project and State Water Project, specifically Appendix 2, Chapter 3, noting that the SHOT would give final approval of the wording. The working purpose of the SRG is below:

> The Sacramento River Temperature and Flow Technical Group is a multiagency and stakeholder group that provides technical and scientific information regarding temperature management and instream flows for the Sacramento River. The SRG meets monthly to assist in development of temperature and flow plans to protect downstream winter-run Chinook Salmon returning adults and incubating eggs from temperature and flow stressors. Reclamation provides a draft temperature management plan to the SRG in April for its review and comment, consistent with California State Water Resources Control Board Water Rights Order 90-5.

Hydrology Update

Randi Field, Reclamation, provided the latest forecast and implications for the Sacramento River system and reported on current hydrologic conditions including flows. Field presented the information contained in the meeting packet shared with the SRG. Sections below correspond to groups of graphs, images and tables in the meeting packet provided by Reclamation.

Northern Sierra Precipitation as of July 24, 2025:

- Early July precipitation events included cloud cover and a distinct north-to-south precipitation gradient. Northern California received significantly more rain.
- Mild conditions expected throughout the rest of July.
- Accumulated precipitation at Shasta Reservoir is 66 inches at 113% of average.

Current Storage, Releases, Water Temperatures, and Current Operations: Daily CVP Water Supply as of July 15, 2025.

- Reservoir Releases:

    - Keswick Dam releases to the Sacramento River are approximately 14,000 cfs and holding. Delta needs will be met the American River releases and Folsom Lake storage will continue to be monitored.
    - Trinity River releases are approximately 650 cfs, and storage has peaked. One unit at the Carr Power Plant is out of service and is limiting diversion capability. The one unit still in service at the Carr Power Plant is maxed out. If the second unit comes back, the volume for the season will not change.
    - Whiskeytown finished the second pulse on Clear Creek, and releases decreased to 125 cfs. In July, there will be one more decrease in releases to 100 cfs.
- Storage and Inflow:
    - Shasta Reservoir storage is currently at 3.387 million acre feet (MAF) and will decrease throughout the rest of summer. 15 year average inflow is shy of 140%.
    - Trinity Reservoir storage is high.
- Seasonal Plot / Flood Control:
    - Shasta Reservoir neared conservation capacity around late April, after which controlled releases began to slowly draw down storage levels to maintain flood risk management while supporting seasonal water demands.
- Temperature Management:
    - On July 22, a configuration change was made to the Shasta Temperature Control Device (TCD). All upper gates have been closed and operations are entirely on middle gates.
    - Water temperatures at CCR measured 52.7°F as of July 23, 2025.
    - IGO conditions are at 57.9°F
    - IGO is warming up to 56.4 °F due to the combination of the heat and reduced flows on CCR.

Reservoir Profiles and Cold-Water Pool: Graphs on Isothermobaths-2025, Graphs on Cold Water Pool Volume, Percent Exceedances (1998-2023)

- Shasta Reservoir
    - Shasta Reservoir has warmed considerably, close to 80°F range in the upper reaches. There is a thermal decline as anticipated as you move into lower depths. The middle gates are in the 50°F and less range. Profiles are currently similar to those in wet years.
    - Shasta has good storage conditions and seasonal warming on the top with anticipated stratification.
    - The 48°F isotherm profiles indicate healthy cold-water pools. Conditions for 48°F are comparable to 2019.

- Trinity Lake
    - Well above average levels for Trinity Lake and tracking around the 25% exceedance.
- Whiskeytown Reservoir

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.

- Shasta storage conditions moving into September are projected at 2.4 MAF. Monthly releases are expected to have some power generation releases through August and then transitioning down.
- The transition from Shasta high flows into the fall to meet rice decomposition and adult fish needs, then down to the base flow of 4,000 cfs based on end of season storage.

Seasonal Temperature and Precipitation

- The HEC-5Q model may under predict fall temperatures.
- The side gate use pattern showed full gate use in October.
- Model suggest adequate cold-water pool volume remains through the fall, supporting a graceful transition to cool ambient conditions in November and December.

Questions and Discussion

- With the high storage conditions at Trinity, is the 50% outlook available as well? I'm interested in the fall and how likely safety of dams might be next year.
- We did not have the 50% ready for the meeting but based on the storage table for the 50% and 90%, you can see that into November, we're below safety of dams criteria for both. Reclamation will double check, but as of now it looks like 50% is safely below the threshold at around 1.8 MAF at the end of October.
- What is the status of the Spring Creek units?
- The Carr unit may return earlier, but Spring Creek is not projected to return until spring of next year.

USFWS Fish Conditions, Forecasts and Hatchery Updates

USFWS was not present and did not provide an update.

Bill Poytress, USFWS, shared that there are very low numbers of winter-run fry from the pre-2025 group with an estimated passage of 914 fish which is typical for this time of year.

CDFW Sacramento River Fish Monitoring Update

CDFW was not present and did not provide an update.

CVP Water Temperature Modeling Platform (WTMP) Presentation

Yung-Hsin Sun, Sunzi Consulting, began the WTMP presentation by introducing the WTMP team. Presentation slides will be shared post meeting. attached at the end of the meeting packet.

Mechele Pacheco, USBR Central Valley Operation Office, provided detailed comparisons of the WTMP-ResSim and HEC-5 outputs. The presentation focused on evaluating how the new WTMP model simulates cold water pool management and temperature compliance along the Sacramento River.

Reclamation emphasized that the goal is not to exactly reproduce HEC-5Q results but to verify WTMP functionality and build confidence in its application.

Modeling Approach & Inputs

The analysis compared:

- WTMP ResSIM results using HEC-5Q temperature targets
- WTMP ResSIM results using ResSIM-selected temperature targets
- HEC-5Q results using HEC-5Q targets (legacy comparison)
- Model Covered Trinity, Lewiston, Whiskeytown, Shasta, Keswick, and the Sacramento River.
- Initial Shasta Profile was taken from July 15.
- Meteorological Forcing was L3MTO-equivalent selected from available ResSIM met years.
- Operations Forecast used was the July 90% exceedance forecast, as presented earlier in the meeting.
- The TCD Gate Operation was automatically selected by the ResSIM model.

Temperature Target Approach

Two compliance strategies were tested:

- CCR temperature targets as determined by HEC-5Q
- CCR temperature targets as determined by ResSIM WTMP (ResSIM's internal optimization)
- Sensitivity analyses examined how target differences impacted cold water pool conservation and fall temperature profiles.

Results

HEC-5Q vs. WTMP ResSIM – Using HEC-5Q Temperature Targets

- Keswick release temperatures were slightly warmer in HEC-5Q during summer; very similar in fall.

- CCR compliance temperatures were nearly identical; ResSIM slightly cooler at times due to greater cold water pool use, resulting in warmer fall temperatures.
- Balls Ferry temperatures were close alignment between models, with minor heating differences depending on reach.

WTMP ResSIM – HEC-5Q Targets vs. ResSIM Targets

- For CCR targets, ResSIM-internal targets were adjusted based on system forecast:
    - Slightly increased in July to reduce cold water pool use.
    - Lowered during a projected early September heatwave.
    - Overall, resulted in greater cold water pool conservation and cooler fall temps.
- Keswick Temperatures showed that the WTMP ResSIM using ResSIM targets was warmer in summer due to less cold water pool use, and cooler in fall.
- CCR and Balls Ferry Temperatures
    - ResSIM still met compliance targets.
    - Minor exceedances of 55°F at Balls Ferry occurred only a few times.

Cold Water Pool (CWP) and Gate Usage

- Cold Water Pool Evolution:
    - All models showed progressive CWP drawdown through the summer with warming into the fall.
    - ResSIM runs with ResSIM targets preserved more CWP
- Side Gate Use (TCD):
    - HEC-5Q: First use on Aug 31; full use by Oct 14.
    - WTMP ResSIM (HEC-5Q targets): First use on Sep 5; full use by Oct 14.
    - WTMP ResSIM (ResSIM targets): First use on Sep 17; full use delayed to Nov 4.
- End-of-September Storage:
    - Cold Water Pool Volume:
        - HEC-5Q: 618,000 acre-feet
        - WTMP ResSIM (HEC-5Q targets): 472,000 acre-feet
        - WTMP ResSIM (ResSIM targets): 540,000 acre-feet
    - Shasta Total Storage: 2.41 million acre-feet for all scenarios.

Model Performance & Observations

- Observed Differences:

    - ResSIM showed higher summer temperatures and lower cold water use.
    - Fall temperatures were cooler due to more conservative early-season usage.
- Model Calibration:
    - WTMP models are calibrated using post-2000 data.
    - Calibration differences and river segment variations contribute to slight discrepancies between models.
- ResSIM Model Confidence:
    - The team is confident in ResSIM's performance given its specifications and calibration.
    - Differences between models are expected and understood given the distinct approaches to gate operations and temperature targeting.

Sensitivity Analysis Summary

- ResSIM temperature targets helped achieve:
    - Closer alignment with CCR compliance temperature (53.5°F target)
    - Improved fall performance
    - More efficient cold water pool preservation
- WTMP Goal:
    - Support improved temperature management—not mimic HEC-5Q.
    - Lay the groundwork for future integration with W2 model for full water quality-temperature coupling.
- Future Enhancements & Next Steps
- Upcoming Additions:
    - Displaying TCD gate settings in isothermobath visualizations to improve understanding of model gate logic and impacts.
    - Linking the WTMP W2 model with ResSIM (planned for future meetings).
- Roadout Event (Nov 6, 2025):
    - Will serve as a demonstration opportunity for broader tool engagement.
    - Additional communications and event details to be shared via the Reclamation website.

Topics for Elevation to Shasta Operations Team (SHOT)

The facilitator asked the group if there is anything that needs to be elevated to the SHOT. The group had no topics to elevate to the SHOT.

Adjourn