

Sacramento River Temperature Task Group (SRTTG) Meeting
May 27, 2021 | 1:00 PM – 2:45 PM
Meeting Summary

Participants

Alessia Siclari, SWRCB	Kimberly Holley, CDFW
Alyson Scurlock, Kearns & West	Kristal Davis, CDFW
Ammon Danielson, WAPA	Kristin White, Reclamation
Craig Anderson, USFWS	Laura Shaskey, National Park Service
Craig Williams, SWRCB	Lee Bergfield, MBK Engineers/SRSC
Crystal Rigby, CDFW	Mario Manzo, Reclamation
Dave Mooney, Reclamation	Matt Brown, USFWS
Diane Riddle, SWRCB	Matt Holland, SWRCB
Doug Killam, CDFW	Max Ramos, Yurok Tribe
Elissa Buttermore, Reclamation	Michael Macon, SWRCB
Erica Meyers, CDFW	Mike Harris, CDFW
Eric Danner, SWFSC/NMFS	Mike Prowatzke, WAPA
Garwin Yip, NMFS	Mike Wright, Reclamation
James Gilbert, SWFSC/NMFS	Miles Daniels, SWFSC/NMFS
Jeff Laird, SWRCB	Roman Pittman, NMFS
Jim Earley, USFWS	Russ Weatherbee, Whiskeytown National Recreation Area
Jo Anna Beck, Reclamation	Stephen Maurano, NMFS
Josh Hoines, Whiskeytown National Recreation Area	Suzanne Manugian, Reclamation
Josh Israel, Reclamation	Thad Bettner, Glenn Colusa Irrigation District/SRSC
Julie Leimbach, Kearns & West	Tom Patton, Reclamation
Katrina Poremba, NMFS	
Ken Kundargi, CDFW	

**Key Discussion Topics with
Summary of Recommendations and Outcomes**

Action items

1. **All** - send any comments on Whiskeytown NEPA process to Dave Mooney or Jo Anna Beck, Reclamation.
2. **Tom Patton, Reclamation** - distribute final Temperature Management Plan.
3. **Miles Daniels/James Gilbert/Eric Danner, SWFSC** - share presentation slides.
4. **James Gilbert, SWFSC** - share Shasta carryover storage and refill probability analysis.
5. **Miles Daniels, SWFSC** - look further at discrepancy between TDM estimates across models and complete additional model run with Reclamation's Tailbay temperatures.
6. **KW** - schedule modeling subgroup meeting to discuss differences in TDM estimates across models.

7. **KW** - add Eric Danner's presentation on window shaping to 6/3 weekly SRTTG meeting agenda.
8. **KW** - add Josh Hoines to SRTTG distribution list.

1. Introductions

Julie Leimbach, Kearns & West, welcomed everyone and reviewed the meeting agenda.

2. Purpose and Objective

In the Shasta Cold Water Pool Management Guidance Document, Reclamation "proposes to convene the Sacramento River Temperature Task Group (SRTTG), consisting of agency representatives having direct interest on cold water pool management on the Sacramento River, at least monthly February through October, share operational information monthly, and improve technical dialogue on the implementation of the temperature management plan." Reclamation provides "a draft temperature management plan to the SRTTG in April for its review and comment, consistent with WRO 90-5."

3. Prior Action Items

1. **Eric Danner/Miles Daniels/James Gilbert, SWFSC** - include representation of both transfer and retention of 150 TAF and 99% exceedance hydrology in next model runs to provide broader range of operations; provide modeling metadata documentation by the end of April 26 and share modeling results prior to next SRTTG meeting on April 28 – *Complete*.
2. **Stephen Maurano, NMFS** - convene fisheries subgroup and report back about recommendations for power bypass scheduling – *Complete*.
3. **KW** - schedule ad hoc meeting on April 28 and weekly SRTTG meetings starting the week of May 3 – *Complete*.
4. **Thad Bettner, SRSC** - share SRSC water transfer information with Reclamation; Reclamation to include in future model runs – *Complete*.
5. **Tom Patton, Reclamation** - communicate any modifications to the management of the power bypass to the modelers – *Complete*.
6. **Taylor Lipscomb, USFWS** - keep in close communication with Reclamation if any changes are needed to the power bypass operations regarding temperatures for fish hauling – *Complete*.

4. Temperature Management Plan

Tom Patton, Reclamation, reviewed components of Reclamation's Temperature Management Plan (refer to meeting materials). Key takeaways included:

- The monthly forecasted operations for Shasta and Keswick Reservoir releases and estimated storage for June-September were based on the May 1 inflow values from DWR; Reclamation is tracking fairly close to inflow values for May.
- Shasta End-of-Month (EOM) storage in September is 1.25 MAF.

- Spring Creek Power Plant hydropower generation values have been fairly consistent over the last few months.
- Reclamation is expecting to implement an additional smaller pulse on Clear Creek in June. Reclamation will reduce releases from 200 to 125 cfs today, then release a pulse and readjust flows back down. Essentially, net neutral in terms of total volume released. Generally, June Clear Creek releases will be around 150 cfs.

The group discussed the following comments:

- What drives Keswick release of 7,500 cfs in July?
 - Reclamation – We are estimating peak demands in July to be around 4,000 cfs; anything lower than 7,500 cfs impacts downstream demands at Wilkins Slough. We are targeting roughly 3,500 cfs at Wilkins Slough in July but could be closer to 3,000 cfs.
- How would any changes in assumptions (e.g., estimated inflow in Shasta) affect operations?
 - Reclamation – We will track any changes as we go through the season and keep everyone informed. The Drought Contingency Plan will address additional checks and adjustments and the May forecast is coming in close to the estimated values.
- Reclamation is exploring a lot of drought actions beyond what is required in the Drought Contingency Plan. Reclamation is considering an early draw down of Whiskeytown, which could have benefits or impacts to water supply and temperatures. Reclamation intends to start a NEPA process to consider this option. SRTTG members can send Reclamation any comments to JoAnna Beck.
 - USFWS – Has there been analysis of the benefits of the early draw down of Whiskeytown? People were surprised there were few benefits when it was attempted 30 years ago.
 - Reclamation – It could have benefits but we are not sure about benefits to the system as a whole.
- The USFWS snorkel survey on Clear Creek suggested about 1,100 fish the week of May 17, when the historical average number usually is around 50 fish. About 85% of fish are in the lower part of Clear Creek because warm temperatures subject fish to hibernation. Reclamation is planning to implement a pulse flow to signal fish to move upstream into the cold reaches of the creek.
 - Reclamation – We should be able to implement a pulse flow in early June. With the incoming heat and lower flows, river temperatures might be closer to the 60° F compliance mark the week of May 31.

Tom Patton, Reclamation, presented the two scenarios (Scenarios 13 and 14) that will be included in the final Temperature Management Plan (refer to meeting materials).

The group discussed the following comments:

- Given that Reclamation mentioned that assumptions for both model runs are the same, what is the reason for the different model results?

- Reclamation –
 - Scenario 13 (S13) characterized by a shaped flow release pattern.
 - Focus on releasing cold water at target times during the season.
 - Temperature target of 54°F Jul-Sept.
 - First side gate use in July.
 - End of September Cold-Water-Pool less than 56 deg F: 173 TAF
 - Scenario 14 (S14) is characterized by a flatter flow release pattern.
 - Temperature target of 55°F Jun-Aug
 - Preserves more water for later in the season.
 - First sidegate use in August.
 - End of September Cold-Water-Pool less than 56 deg F: 230 TAF
 - Tradeoff between the two scenarios:
 - S13: colder water in river for the bulk of the season with more risk for loss of temperature control at the end of the season in September.
 - S14: less cold water in river for the bulk of the season with more potential for temperature control through the end of the season in September. Delayed sidegate use reduces risk of loss of temperature control at end of season as compared to S13.
- TDM estimates for the two scenarios.
 - Reclamation – TDM estimates were higher than anticipated compared to previous scenarios presented by the SWFSC.
 - Scenario 13 was in the range of 80% TDM
 - Scenario 14 was in the range of 90% TDM.
- Context for interpreting Reclamation’s and SWFSC’s TDM estimates when the final Temperature Management Plan is distributed.
 - KW to schedule modeling subgroup meeting to discuss differences in TDM estimates across models and scenarios.

Miles Daniels, SWFSC/NMFS, presented TDM sensitivity with variability in meteorological conditions for Reclamation’s Scenarios 13 and 14. Key takeaways included:

- Reclamation’s scenarios 13 and 14 were run through the CVTemp modeling framework in two different simulations (River only and Reservoir & River).
- Meteorological conditions from 2009-2018 were used to represent a decade of variability.
- Mean annual TDM was calculated for each scenario and meteorological year.
- The Reservoir & River simulations tends to predict cooler summer temperatures and warmer fall temperatures compared to the River Only simulations and uncertainty is greatest at the end of the season.

Post-Meeting Email Clarification from Miles Daniels: The exercise was not set up to compare two modeling platforms. The goal of this exercise was to assess TDM sensitivity to meteorological uncertainty. Considering this, I would recommend focusing on the uncertainty within the blue and yellow lines, and not on comparing the blue to the yellow lines.

The group discussed the following comments:

- What inputs does the Reservoir River model run include for gate operations?
 - SWFSC – Reclamation provided gate operations for the model run.
- Scenario 14 shows that Highway 44 is slightly cooler than Keswick in September. Is that correct?
 - Reclamation – Highway 44 was recently added into the model; Reclamation is checking to see if any adjustments need to be made.
- Recommendation to run CVTemp with Reclamation’s target tailbay temperatures.
 - SWFSC will look further at discrepancy between TDM estimates across models and complete additional model run with Reclamation’s tailbay temperatures.

James Gilbert, SWFSC/NMFS, presented analysis of Shasta carryover and refill probability. Key takeaways included:

- Holding back 150 TAF EOS storage increases probability of reaching at least 3 MAF on May 1 by 3-4%.
- Benefit of extra 150 TAF EOS is not constant; depends on May 1 storage metric used.
- Historical record indicates lower October-April inflows are more likely, wet years less likely.
- Volume and frequency of spill depends on how the flood curve is applied and the metric for “spill”.

Post-Meeting Email Clarification from James Gilbert: The analysis I presented on 5/27 showed a second set of "adjusted" exceedance plots for May 1 storage using historical Shasta inflow data. I found that I had applied an adjustment that was inconsistent for the historical dataset. The historical data, by definition, defines the exceedance probability when that data is used as input for this analysis. Updated materials are provided: slides, annotated version of the python code used to do the analysis (also compiled into a pdf), along with the spreadsheet of Shasta inflow data used.

The group discussed the following comments:

- SWFSC to share Shasta carryover storage and refill probability analysis code.
- Reason for weighting years differently aside from dry years.
 - SWFSC – Distribution is not uniform if years are converted into categories.
- Thresholds for storage are not necessarily the most important point. Suggestion that the bigger issue revolves around how having additional water increases carryover storage in the following year if there is another dry year.

5. River Fish Monitoring: 1) carcass surveys 2) redd counts 3) stranding and dewatering surveys.

Doug Killam, CDFW, presented the river fish monitoring update.

- CDFW has observed about 102 winter-run carcasses on the carcass survey; approximately half of the winter-run carcasses are females and of the females, about two-thirds are pre-spawn mortalities.
- The aerial redd surveys reported eight new redds the week of May 17 and no new redds the week of May 24 despite there being good visibility; two of the eight redds are located near the Sundial Bridge in Redding.

Group members made the following comments:

- Did any of the pre-spawned mortalities come through the fish trap?
 - CDFW– Some may have come through the fish trap but CDFW has not seen many tags; they have only seen about 2-3 Floy tags on the river this season so far.
- Estimate of what population CDFW is expecting to come back?
 - CDFW – May 27 on average is about 2.8% of runs. Since two-thirds of the 102 winter-run carcasses are unspawned, the May fish estimates may be artificially inflated. Real-time winter-run data is uploaded weekly to the CalFish website.

6. Fish Distribution/Forecasts: 1) Estimated percentage of the population upstream of Red Bluff Diversion Dam for steelhead, winter-run, and spring-run Chinook salmon 2) Sampling at rotary screw traps at Red Bluff Diversion Dam 3) Steelhead update 4) Livingston Stone Hatchery.

Matt Brown, USFWS, presented the fish distribution/forecasts update for Red Bluff Diversion Dam and Livingston Stone Hatchery.

- There are very few winter-run at this time of year; most winter-run have already moved out of the system.

Stephen Maurano, NMFS, reported out from the fisheries subgroup regarding thiamine deficiencies in fish.

- Livingston Stone Hatchery has a health management plan to which genetic monitoring was added in 2015. However, the genetic monitoring is not currently happening.
- Twelve out of 114 observed fish were pre-spawn mortalities, but nothing was found to be wrong at the hatchery.
- USFWS reached out to NOAA to investigate the thiamine deficiencies further; it is unclear if fish are expected to have thiamine deficiencies or not this season due to changing ocean conditions and food webs.
- Experiments on eggs are underway to analyze what the relative influence of thiamine deficiencies is; there are also plans to collect fish samples.

7. Hydrology Update

Tom Patton, Reclamation, presented key components of the hydrology update (refer to meeting materials).

- Because there is an incoming heat wave, Reclamation may need to open the PRG gate to provide colder water into the TCD to maintain 56° F at Highway 44.
- The temperature curtain is currently at an elevation of 953'. Reclamation hopes to keep operating out of the middle gates of the TCD as late as possible into June and wants to ensure the temperature curtains are not damaged when the lake drops. The temperature curtains will be out of the water for this first time and may not be deployed at all this year.

8. Operations Update and Forecasts

Tom Patton, Reclamation, provided an update on the power bypass. Key takeaways included:

- The power bypass was initiated in mid-April and ended on May 24; Reclamation does not currently have plans to reinitiate the power bypass during this temperature management season.
- The estimated cost for the total power bypass operations during Spring 2021 was \$5M.
- The power bypass conserved approximately 300 TAF or more of CWP.

The group discussed the following comments:

- Since the power bypass cost is just an estimate and can be influenced by supply and demand for power, will Reclamation go back and calculate the cost of foregone power based on demand?
 - Reclamation – We do not have plans to go back and revise the power bypass cost estimate. Reclamation's power team conducted a detailed analysis to generate the cost estimate.
- The power bypass had benefits for the CWP and power and may have had negative impacts on fish; implementing the power bypass allowed water to be saved for other purposes.
- Can you reflect on the spikes in the Shasta isothermobaths plot and whether the reservoir is stratified at this point?
 - Reclamation – The spikes were due to a lot of wind during that time and Reclamation sees stratification on Shasta Lake.

9. Shasta Storage Rebuilding and Spring Pulse Seasonal Report

Tom Patton, Reclamation, stated that the Shasta Storage Rebuilding and Spring Pulse Seasonal Report is a new report that came out of the BiOp and will be sent out to the SRTTG soon to start collecting input.

10. Review Action Items

Julie Leimbach reviewed the action items.

11. Next Meeting Scheduling

The next weekly meeting will be on June 3, 2021; the next monthly meeting will be held on the 4th Thursday of next month, June 24, 2021.