



Sacramento River Temperature Task Group Notes

April 27, 2023

Members Attending

- USBR: Derek Rupert, Elissa Buttermore, Elizabeth Kiteck, Emilia Barnum, Emily Van Seeters, John Hannon, Tom Patton
- USFWS: Bill Poytress, Charles Chamberlain, Craig Fleming, James Earley, Kaitlin Dunham, Matt Brown
- CDFW: Crystal Rigby, Doug Killam, Erica Meyers, Kimberley Holley, Tracy Grimes, Vanessa Gusman
- NMFS: Stephan Maurano
- SWFSC: James Gilbert, Miles Daniels
- DWR: John Ford, Kevin Reece
- SWRCB: Craig Williams, Diane Riddle, Jeff Laird, Matt Holland
- SRSC: Lee Bergfeld, Mike Deas
- WAPA: Michael Prowatzke
- Yurok Tribe: Christopher Laskodi, Cort Pryor

Topics/Actions

- Reclamation – will identify the location at which 56°F can be reached in TMP.
- All SRTTG Members – review the draft TMP and provide comments by May 18th.
- Kearns and West/Reclamation – Organize Upper Sacramento Scheduling Team to resume meeting in the late summer and agendize redd dewatering and rice decomp discussions.

Welcome, Agenda Review, and Purpose

Adam Fullerton, Kearns and West welcomed all participants.

Purpose and Objective

The purpose of the SRTTG is to “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.”

Hydrology, Operations, Forecasts, and Temperature Management

Reclamation presented the hydrology, operations, and temperature management updates.

Northern Sierra Precipitation:

- Sac River- 8 station Precipitation Index is at 61 inches, 127% of average (or about 10 inches above average) for this date.
- There is also a chance of showers in the coming weeks, and cooler temperatures are anticipated for the first two weeks of May.
- Snowplots:
- The upper plot shows the northern system snowpack is relative to average for this time of year. On average snowpack usually peaks around April 1st and then goes on a downward trend. Warm weather has led to an increase in run-off and inflows.
- Snowpack in the northern part of the state is not as high as other regions, but it is still doing well at 218% of average for this date.
- Central basins are up at 214% of April 1st average, 250% of average for this date.
- Southern Sierra basins are at 264% of April 1st average, 323 % average for this date. There is concern for flooding in the southern part of the Central Valley.

Releases and Storage:

- Shasta:
 - As of April 25th, releases at Keswick are at 8,500 cfs. Plan to increase to 9,000 cfs on Saturday (April 29th) and will hold that as long as possible. Additional flows for the pulse will occur on Monday the 8th of May.
 - Storage is nearly full with 4.3-million-acre feet (MAF) in Shasta. Less than 7 feet to go to be full. As the inflow increases, then modifications will be made to increase the release at Keswick, depending on the weather.
 - Inflows are around 12,000 cfs into Shasta. Will peak out at around 20,000 cfs over the weekend. Inflows will recede as cooler air temperatures come in over the weekend, and Reclamation will adjust releases accordingly.
 - Reclamation will continue to increase releases to maintain storage levels which will result in continued high-water levels downstream.
 - The plan is to not put any water in the Yolo bypass this spring but will be dependent on weather conditions.
 - Shasta storage is at 121% of average, Trinity storage is below the 15-year average.
 - Expect to fill Shasta completely. Storage will remain high through May and may begin to decrease in June. Monthly releases are expected to be high this summer,

maintaining river high enough for diversions. End of September storage is expected to be at 3.2/3.3 MAF. Storage will need to be 3.2 MAF or below by December to manage for flood control going into next winter. If next year's winter is an average year, there will be early flood releases out of Keswick.

- Trinity River Division:
 - Trinity River has shown larger flows for the ROD wet year type designation. Peak flows are close to 11,000 cfs down the Trinity River. Flows will be expected to recede to lower flows throughout May. The highest flows have passed or are occurring right now.
 - No plans to divert water through Carr to Whiskeytown. Whiskeytown is currently full of Clear Creek natural flow. No diversions were needed to help fill Whiskeytown this year. Once full, Spring Creek powerplant flows will be used to maintain summer levels.
 - Accumulated inflows:
 - Trinity inflows are at 100% of average to date.
 - Trinity storage remains below the 15-year average.
 - Expect run-off percentages to increase.

Water Temperatures:

- Shasta:
 - TCD: all upper gates are open; middle and lower gates are closed; the plan to continue skimming the warm water off the top of the reservoir – currently about 49°F water.
 - Downstream the temperatures start to warm up because of daytime heating and warm side flows that are coming in above Bend Bridge.
 - 54.5°F target will be adjusted to 53.5°F at CCR. Reclamation will adjust as needed on the TCD, but it is not needed at this time given the high flows. TCD will be adjusted as flows decrease later in the season.
- Trinity:
 - Data provided from USGS on Douglas City temperatures will be reviewed and reevaluated and will be revised as updates come in.
 - The lake is very cold; will pick up some storage and cold water pool later in the summer when the snow melts.
 - Zero diversions are anticipated for Spring Creek and Carr diversions are minimal. Will revise throughout the season if there is a need. Keep water moving through Lewiston Reservoir if there is a need to cool the water down in the Trinity.

SRTTG representatives' questions and comments included:

- CDFW asked if Reclamation anticipates Trinity to fill up to average levels with the snowmelt.
 - Reclamation shared that it would not despite the good size snowpack. Trinity is a large reservoir, and it is difficult to fill due to the amount of inflow and the size of the lake compared to others. It will have higher storage levels compared to the last few years but still on the lower side.
 - End of September storage is forecasted to be about 1.26 MAF. Topping off at 1.3-1.4 MAF which is better than in past years. No plans to move water or make any snowmelt releases.
- USFWS asked a question on Shasta releases. He noted that there is a lot of water at Shasta, and releases will need to be high in August and then brought down by October. USFWS is concerned about redd dewatering and the approach to that, which may be worth discussing later this summer.
 - Reclamation agreed that there will be a difference from previous years on how to manage when the water is tapered off in late summer and fall. There will be some rice decomposition around that time as well.
 - USFWS added that rice decomposition could have a big impact on fall-run Chinook salmon. There may be political pressure to make sure there are efforts being taken for fall-run Chinook salmon this year because of this year's fishery closure. There might need to be discussions on the tradeoffs to fall-run Chinook and winter-run Chinook salmon.
 - Reclamation added that there is the potential for the Fall X2 action, which, for that action in a wetter year, would keep Keswick releases above 3,250 cfs. This would make it easier in that flows would not have to go down as far and would be kept higher than average going into the winter months, which would help with redd dewatering.
 - USFWS asked for further explanation on fall X2 action and how that affects Shasta.
 - Reclamation shared that the fall X2 action, which requires increased delta outflow, only applies to the wetter years; there is some LTO language that keeps flows higher in September/October and is Delta driven. In a wetter year there is a lot of water in the system, so it probably would not affect upstream reservoirs. Flows out of Keswick are projected to be near 7,000 cfs in September and then dropping off to 4,500 cfs in October, so based on this forecast, there is no current need for any water from Sacramento to help meet those standards.
- USFWS asked what it would take to maintain a higher base flow to get us through December. In the 50% forecast, the base flow goes down in November, which we want to avoid for fall-run Chinook salmon. What kind of conditions will be needed to maintain higher flows this fall season?

- Reclamation said if we see higher flows coming out of Folsom, Keswick will not need to release as much. Flood control needs could be driving releases for Shasta. Flow will be significantly higher this year than in past years, since inflows will continue coming into Shasta throughout the summer and will force higher Keswick releases. Shasta needs to be down toward the 3.2 MAF mark. Seeing potential for an upcoming El Nino water year including, the summer heat forecast as part of the El Nino forecast. Typical El Nino is wet. If this occurs, then Keswick releases will remain higher than minimum requirements; however, this will be monitored through the fall.
- USFWS asked if the Upper Sacramento Scheduling Team will be meeting to discuss the Sacramento River rice decomposition?
 - Reclamation noted that the team is currently focusing on the Spring Pulse but will reconvene in late summer to address fall scheduling issues.

Spring Pulse Updates:

Tom Patton, Reclamation, provided a Spring Pulse update. The Upper Sacramento Scheduling Team had a meeting earlier today. There was a scheduled increase in Keswick releases from 3,250 to 4,500 cfs to help with ACID installation last Friday. The ACID diversion dam appears to be in good shape. The spring pulse flow began this past Monday with releases increasing to 8,500 cfs. We have been at 8,500 cfs since then and have a scheduled increase to 9,000 cfs on Saturday due to storage management. Hoping to hold Keswick releases 9,000 cfs until the second pulse flow on May 8th. Releases will then increase to 13,000 cfs depending on conditions. Diversions are increasing, but so is creek flow that is also flowing into the systems. Reclamation is targeting 11,000 cfs at Wilkins Slough. Before the first spring pulse flow began, Wilkins Slough was at 11,000 cfs. Flows are back up to 12-13,000 cfs and projected to be 16-18,000 cfs. Trying to keep flows downstream at Wilkins below 18,000 cfs. Trying to continue to release the pulse flows as well as managing Shasta storage with rising Shasta in-flows.

- Elissa Buttermore, Reclamation, provided an update on initial monitoring: they have been tagging fish with acoustic tags. Rotary Screw Traps are not sampling the increased flows as of now, because of concerns with mortality of fish with high flows.
- Bill Poytress, USFWS, added that they will be doing sampling as of Tuesday, because of the influx of hatchery fish including both winter-run and fall-run Chinook salmon releases. USFWS was concerned about the substantial numbers of fall-run Chinook salmon that were released into the river from Coleman National Fish Hatchery, therefore, they suspended sampling for a couple of days.

Coordinated Operations Agreement:

Tom Patton, Reclamation, shared that the Delta has been in excess. Still at 18,000-acre feet. No changes.

Draft Temperature Management Plan (TMP):

Tom Patton, Reclamation, updated the SRTTG group that a Draft TMP Plan is available and ready for review. Reclamation is planning to operate at 53.5 °F at CCR for the entire temperature management season based on the modeling that was conducted. For now, it looks like releases are going to be high through the summer. Reclamation has very few diversions planned, so operations will not be relying on anything from the Trinity. This should not be an issue since Shasta is near capacity. They used the 90% forecast for our projections for operations. Flows used the normal projection from the National Weather Service forecast, which trends toward a warm summer. It's a conservative approach for heat as well as air temps and climate for the summer.

Reclamation will keep an eye on projects for Trinity and expects them to be more realistic as we move through the season. Will provide actuals and make updates to the model. Reclamation also noted that TMP Attachment 1 is the inputs from their 90% forecast; Attachment 2 shows the modeling results; and Attachment 3 is Biological Modeling. They will continue to update the May forecast, incorporating any new profiles.

SRTTG representatives' questions and comments included:

- CDFW asked a question on the key areas of uncertainty in the modeling. According to the graph of temperature at CCR in Attachment 2, temperature management would be able to continue into November when we start to see ambient air taking over the cooling. They noted that there may be increased pressure to manage to or not to disadvantage the fall-run Chinook salmon due to the fishery closing.
 - Reclamation noted that this is an early model run, so there is a lot of uncertainty. The model is not using the side gates, so there should be plenty of cold water at the end of the year. One of the metrics states that at the end of September, the cold-water pool volume at 56 °F will be over 1 MAF of water.
 - CDFW added that there may be a point where there might be tradeoffs for spring-run, fall-run, and winter-run Chinook salmon. CDFW would like to see some modeling and discussion on what the tradeoffs will be and what they mean.
- SWRCB, asked if there was a designation of the 56 °F control point to make sure that we satisfy the procedural needs of 90-5. Identify where you can meet 56 °F. Make that the control point and make the case that there are factors beyond USBRs control.
 - Reclamation- It was not talked about; instead, the TMP discussed that we are going to shoot for the 53.5° F at CCR. Reclamation can incorporate suggestions into the final plan.
- USFWS commented that the Clear Creek Igo model looks lower than what is realistic. Even now the daily average temperature yesterday was 52.3 °F, which is the max prediction of what the summer is for that output.
 - Reclamation will take a closer look at the modeling for Clear Creek.
- Reclamation asked the SRTTG group to please provide comments on the Draft TMP before the next meeting on May 18th.

TDM Modeling

Tom Patton, Reclamation presented the recent data for TDM Modeling.

- Higher flows this year will make temperature management easier.
- Early in the season, side flow management will need to occur.
- It will be warmer in lower sections of the river with the tributaries and the melting snowpack.
- The modeling used a historical 25% L3MTO, which represents temp patterns that have some heat waves and TCD must adjust accordingly. There is some flexibility to move around. Curtains for the middle gates are available.
- Models do not foresee the need to use the side gates.
- Shasta profiles will be provided weekly starting in May.
- Updated profiles for Whiskeytown and Trinity monthly.

Miles Daniels, SWFSC, provided updates from the Science Center's TDM modeling.

- The river temperature modeling is based on the April 12 forecast from USBR. There are more recent forecasts now but the data should be similar.
- Keswick is the upstream boundary and ran through the river temperature modeling raft. Then used the stage dependent/temperature dependent mortality model.
- The regular temperature mortality landscape looks good. The TDM modeling shows low temperature-dependent mortality. The plan is to keep updating these as well.
- SRSC, asked what the significance is behind the white line on the graph.
 - Miles explained that the white line is the 75th percentile of TDM, - above the white line, there is less than 75% TDM and below the line, there is higher than 75% TDM.

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

Doug Killam, CDFW, updated the SRTTG that winter-run carcass survey starts Monday of next week. Water is murky due to the high tributary inputs downstream, so no aerial flights have been done. The carcass crew is mapping the late fall-run. Have not seen any pre-spawn mortalities in any of the winter-run adults that are holding. Mortality at this point is identified as unspawned carcasses or fresh carcasses with no marks on them.

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

Bill Poytress, USFWS, nothing to report.

Livingston Stone Hatchery Update:

Kaitlin Dunham, USFWS, shared the fish collection at Keswick has been going well. The hatchery experienced a dip last week in fish collections and only received 4 in the trap on Tuesday and 0 in the trap on Friday. This week we have around 47 Chinook and could see that there were 20 outside of trap. Brood stock are about 3 weeks out from spawning, they are starting to mature, and will likely see spawning out on the river soon.

Topics for Elevation to Shasta Planning Group:

No topics for elevation.

Adjourn