

Sacramento River Temperature Task Group (SRTTG) Meeting
March 25, 2021 | 1:00 PM – 3:00 PM
Meeting Summary

Participants

Alessia Siclari, SWRCB	Kristal Davis, CDFW
Alyson Scurlock, Kearns & West	Lee Bergfield, MBK Engineers/SRSC
Bill Poytress, USFWS	Levi Johnson, Reclamation
Charlie Chamberlain, USFWS	Liz Kiteck, Reclamation
Chris Laskodi, Yurok Tribe	Matt Brown, USFWS
Craig Anderson, USFWS	Matt Johnson, CDFW
Craig Williams, SWRCB	Michael Macon, SWRCB
Derya Sumer, Reclamation	Mike Harris, CDFW
Diane Riddle, SWRCB	Mike Prowatzke, WAPA
Doug Killam, CDFW	Mike Wright, Reclamation
Elissa Buttermore, Reclamation	Miles Daniels, NMFS
Eric Danner, NMFS	Robert Sheffer, USFWS
James Gilbert, NMFS	Stephen Maurano, NMFS
Jim Earley, USFWS	Suzanne Manugian, Reclamation
Jo Anna Beck, Reclamation	Taylor Lipscomb, USFWS
John Hannon, Reclamation	Terra Alpaugh, Kearns & West
Jonathan Williams, CDFW	Thad Bettner, Glenn Colusa Irrigation District/SRSC
Julie Leimbach, Kearns & West	Tom Patton, Reclamation
Ken Kundargi, CDFW	

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

Action items

1. **Tom** - continue to look into what regulatory document drives the 3,250 cfs flow requirement between March and August.
2. **Tom** - check on 15-year median flow value for the Sacramento reservoir in the Daily CVP Water Supply Report in the meeting packet.
3. **KW** - work with Tom to send out links to online data with the meeting summary.
4. **Tom** - check with group that generates Shasta profiles to see if more frequent profiles can be generated through April and to confirm what the QA/QC process is to ensure the resulting data is reliable; report back to SRTTG.
5. **All** - email Jo Anna Beck (jbeck@usbr.gov), Reclamation if interested in Shasta TCD Performance Evaluation and Improvements, including joining the technical team.
6. **KW** - redistribute the Shasta TCD charter and announcement with the meeting action items.

7. **KW/Tom** - work with Tom to distribute Reclamation's Temperature Management Plan from last year and provide a draft Temperature Management Plan for this year prior to the April meeting.
8. **KW** - distribute the March 2021 Spring Pulse Flow Operations Plan.
9. **KW/Reclamation** - discuss having an intermediary meeting in April to continue the discussion re: development of the Temperature Management Plan, the potential to incorporate additional scenarios, how to integrate learnings from NMFS' modeling, and exploring the appropriate uses and limitations of the various tools for assessing operations and temperature management before the April 22 SRTTG meeting and let group know.

1. Introductions

Terra Alpaugh, Kearns & West, welcomed everyone and noted that the meeting was extended by 15 minutes to accommodate a full agenda. Roll call will be skipped going forward and only new participants and those joined via phone only will be asked to introduce themselves.

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."

Since the SRTTG meetings are focused on real-time operations, Kearns & West will note any items that arise that are emerging science that can be explored in alternative forums such as the Sacramento River Science Partnership (SRSP).

3. Prior Action Items

Addressed:

- **All** - contact Alyson Scurlock, Kearns & West (KW) to be added to SRTTG meeting invite – *Complete*.
- **All** - email Elissa Buttermore if interested in work with NMFS on Non-Flow Action Charter – *Complete*.
- **All** - reach out to Suzanne Manugian if curious about suite of spring pulse flow scenarios being proposed – *Complete*.
- **Elissa Buttermore, Reclamation** - provide access to SRTTG reports from previous years and **KW** to distribute – *Links sent/ongoing updates*.

- **KW** - check in with Reclamation on outcome of March 4 LTO meeting with regards to discussion of Non-flow Action Charter for Spring Management of Spawning Locations – *Further discussion on emerging science and modeling for spring management of spawning locations in April 21 SRSP meeting.*
- **Suzanne Manugian, Reclamation** - run scenarios exercise on historic year in which Shasta storage is just below 4 MAF to see if tiers change – *USST April 7 meeting will provide a presentation on modeling spring pulse flows.*

Outstanding:

- **Reclamation** - check flows less than 3,250 cfs in March 2014 and March 2015 and verify 3,250 cfs minimum flow requirement – *See Operations Update and Forecasts agenda item.*
- **NMFS** - evaluate fisheries reason for keeping flows at 3,250 cfs during March – *See Operations Update and Forecasts agenda item.*

Ongoing:

- **KW** - work with Reclamation to distribute meeting materials day before meeting – *Ongoing.*

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

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

- Currently, CDFW staff are observing a lull between runs; late fall-run is finishing up, and a handful of carcasses have been found; winter-run will begin spawning in late April or early May.
- A lot of winter-run adults in the upper river are migrating into the system; late fall-run adults are moving out of the system, late fall-run juveniles are emerging from eggs, fall-run are rearing, and winter-run juveniles are mostly gone from last year.
- Further down the river, yearling spring-run have mostly left the system; some young-of-the-year are coming in from the tributaries from spawning events in last October and November.
- CDFW's crews conduct carcass surveys year-round.
- CDFW has not been actively looking for shallow redds for redd counts since flows have stabilized at 3,250 cfs.
- Stranding surveys are ongoing, and some stranding is occurring.

5. 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, presented the fish distribution/forecasts update for Red Bluff Diversion Dam.

- Winter-run passage of last year's fish is at about 99%.
- The hatchery influences spring-run during this time period; about 53% of spring-run have passed, plus or minus about 24%.
- Fall-run passage is at about 78%, plus or minus 28%.
 - USFWS is starting to see some fry.
- USFWS distributes a biweekly report that includes the fish passage values; the next report will be sent out on March 26.

Taylor Lipscomb, USFWS, presented the fish distributions/forecasts update for the Livingston Stone Hatchery.

- Up to 66 female and 56 male winter-run Chinook have been kept from the Keswick fish trap.
- USFWS is on track for an increased collection target for females and slightly behind for males; males usually come later in the year.

6. Hydrology Update

Tom presented the hydrology update (refer to meeting materials). Key takeaways included:

- Not much has changed; conditions are still very dry.
- Releases out of Keswick are at 3,500 cfs; there are no plans to change releases.
- ACID started installing their diversion structures in the river on March 22.
- Shasta storage is just under 2.4 MAF; Reclamation is still releasing water out of the middle gates and will likely not be able to pull water from the upper gates this year.
- The current and historical data is posted online; KW will work with Reclamation to send out the online links with the meeting notes.
- The Trinity and Whiskeytown profiles were just gathered; those profiles have not been updated in the March 25 meeting packet.

The group discussed the following:

- An observation that the 15-year median flow value for the Sacramento reservoir in the Daily CVP Water Supply Report looks incorrect.
 - Reclamation will check on this.
- Request for more frequent Shasta profiles earlier in the season since there are a lot of discussions happening in April for which they would be informative. Are there any additional QA/QC measures for double-checking the profiles as a small error would have a large cost to management?
 - Reclamation – Shasta profiles were initially monthly and now are biweekly. Profiles will shift to weekly starting in May. A request for more frequent profiles may need to be raised to WOMT. Reclamation will check on the QA/QC process; they noted that thermistor string could be way to QA/QC.

- SRSC – There is also a new model for Shasta that may be able to identify modeling errors or if measurements are in realm of possibility when a new temperature profile is run.

7. Operations Update and Forecasts

Tom presented the operations update and forecasts (refer to meeting materials). Key takeaways included:

- Real-time conditions are drier than what the 50% exceedance forecast shows; the 90% exceedance forecast is more realistic.
- Shasta storage at the end of April is between 2.3-2.4 MAF; a pulse flow is unlikely based on this year's storage.
- Releases on the river and Trinity diversions are forecasted to be very low through the year. There is also very minimal pumping forecasted in the Delta.
- Reclamation projects the first side gate opening occurring in early August and full side gate operations starting in October.
- Do not have volume of cold water pool to meet 56° F throughout the year.
- Reclamation is considering ways to mitigate the inability to release from the upper gates, including a potential bypass to the upper river outlets and adjusting the timing of some Trinity diversions to help temperature management.

Tom and Stephen Maurano, NMFS, reported out on an action item from the February SRTTG meeting, which asked them to identify the origin of the 3,250 cfs flow requirement after March 1.

- Reclamation
 - The 3,250 cfs requirement goes back to the 1960 MOA between Reclamation and the Department of Fish and Game.
 - In 1981, there was an agreement that the September through February minimum flow requirement would be 3,250 cfs in normal years; Order 90-5 pulled the minimum flow requirement from that agreement for September through February.
 - Reclamation is still looking at why 3,250 cfs is required in other months.
- NMFS
 - From fisheries perspective, key information is the 2006 Mark Guard report on physical habitat and hydrologic modeling.
 - The report identified benefits for keeping flows above 3,250 cfs; going below 3,250 cfs includes risk beyond what is modeled.
 - Fisheries colleagues recall that when flows dropped below 3,000 cfs in the past, there were severe mortality impacts.
 - It would be good to understand options for the upcoming winter.
- Reclamation and NMFS will continue to investigate what regulatory language drives the 3,250 cfs flow requirement for March through August.

Terra discussed weekly Fish and Operations Outlook distribution list.

- Because participants requested more frequent operations updates at a recent USST meeting, Kearns & West is now distributing the weekly Fish and Operations Outlook to the USST.
- Terra asked SRTTG members to indicate in the chat if they wanted to be added to the distribution list.

Jo Anna Beck, Reclamation, announced the Shasta TCD performance evaluation and improvements that Reclamation will coordinate under the conservation measures in the Proposed Action.

- Reclamation has drafted a project charter and is looking for participants to join a technical team.
- First meeting is tentatively scheduled for April 14.

8. Temperature Management and Temperature Management Plan

Tom provided an update on temperature management and Reclamation's Temperature Management Plan.

- Reclamation has started analyzing various temperature target scenarios and their associated TDM impacts; plugging in 56° F all year into initial TDM modeling shows 90% mortality.
- Reclamation will be developing the 2021 Temperature Management Plan over the next month; the draft plan will be presented at the April SRTTG meeting before it is finalized in May.
- The SRTTG needs to decide what is best for the fish and what types of scenarios should be considered for operations.

The group discussed the following comments:

- Asked to clarify SRTTG's role and time frame in developing the Temperature Management Plan.
 - Reclamation – Will send out last year's plan to refresh memory on what we did. This year will be different in terms of tier selection. SRTTG members will have the opportunity to review the plan and help evaluate the different scenarios.
- Suggestion to have draft plan available for SWRCB Public Workshop on April 21 so Reclamation can discuss what scenarios are being evaluated.
 - SWRCB – April 21 Public Workshop will be focused on Sacramento River temperature management issues to inform planning decisions. Still coordinating presenters; all information will be coming out soon. It is not necessary for the draft plan to be ready for the workshop but could be opportunity to talk about some of scenarios being evaluated and get input from public.

9. Temperature Dependent Mortality (TDM)

Miles Daniels, NMFS, presented the TDM update (see meeting materials).

The group discussed the following comments:

- Are the redd distributions the total of all years from 2012-2019 or an average of those years?
 - NMFS – Aggregated all years together and calculated the mean and doing a sensitivity analysis; TDM spread is 87-94% depending on year.
- Do we still get redds as far downstream with the current conditions?
 - NMFS – The redd distribution has contracted over time. Hard to predict ahead of time where redds will be. NMFS is working on a predictive model to figure out what distribution would look like.
 - CDFW – In 1980's, would see winter-run below Red Bluff Diversion Dam. We have seen some as far downstream as Battle Creek (32 miles downstream) in recent years. In May or June during wet years, winter-run will spawn down there, but their survival depends on what happens in September/October. The 2014-2016 drought concentrated winter-run distribution 10 miles above Clear Creek, and that is where most of the spawning takes place now.

Eric Danner, NMFS, and James Gilbert, NMFS, introduced the SWFSC TDM modeling framework.

The group discussed the following comments:

- What is the TDM percentage for USBR's initial forecast for operations? Most of the modeling suggests decreased releases from Keswick would result in lower levels of mortality.
 - NMFS – The analysis Miles presented showed 90% mortality. The bulk of these scenarios result in lower TDM than that, because most of the samples are lower discharges than what is seen in the black dotted line.
- What model are you using to do this? Last year, early TDM projections were much higher than what they ended up at. Is there a way to get early forecasts to a more trued up number?
 - NMFS – The models used in this approach are similar to the models used for our full TDM estimates; they are just faster. These results are a way of looking rapidly at a whole range of operations and are not intended to use for ultimate decision making. Truing up the forecasts is complicated because there are many things that can cause the initial forecasted TDM to be different such as changes in operations, meteorology, hydrology, etc.
- The modeling looks like a helpful tool. Do you have an idea of how to further constrain the modeling going forward?
 - NMFS – We are still working on how to determine the best way to make the tool available in a useful way to the SRTTG and others. Will get back to you on how to narrow down scenarios. Can start adding meteorological and hydrologic variation once we have narrowed down the scenarios.
- Any insights on what temperature window results in the lowest TDM?

- NMFS – Do not have any real insights at this point, but this is something we need to focus on as a group and figure out way to present data that shows range of window options.
- SRSC – Would be very useful to figure out what window length would be possible and when to start that window based on redd surveys.
- NMFS – Length of that window will depend on whether you are using the stage-dependent mortality model or stage-independent mortality model.

10. Discussion and Recommendations: Agencies provide feedback and information to Reclamation regarding temperature management operations

The group discussed the following comments:

- Idea of having interim meeting since there will be a lot of model simulations run before the April SRTTG meeting.
 - KW and Reclamation will discuss having additional meeting and let group know.
- Hope the new TDM approach is more than an exercise and contributes to figuring out what operations make the most sense.
 - SRSC – Need to better understand the limitations of the available tools and what information the modeling provides and does not provide. Providing context will be helpful, especially when all of this goes public.
 - NMFS – Reminder that this approach is new, and idea is not for results to be final. The new TDM approach is a way of examining the possibilities before they are run through more prudent models.

11. Upper Sacramento Scheduling Team (USST) Update: 2021 Pulse Flow Operations Draft Plan

Suzanne Manugian, Reclamation, provided an update on the pulse flow operations plan that the USST spring flows subgroup has been working on.

The group discussed the following comments:

- The new TDM approach will be really useful for evaluating the pulse flow tradeoffs.

12. Review Action Items

Terra said that Kearns & West would send out the action items after the meeting.

13. Next Meeting Scheduling

The next SRTTG meeting will be held on the 4th Thursday of next month, April 22, 2021.