

## Sacramento River Temperature Task Group (SRTTG) Meeting

June 25, 2020 | 1:00 – 3:00 pm

### Meeting Summary

#### *Participants*

Charlie Chamberlain, USFWS	Josh Israel, Reclamation
Chris Laskodi, Yurok Tribe	Johnathon Williams, CDFW
Craig Williams, SWRCB	Julie Leimbach, Kearns & West
Kristal Davis-Fadtke, CDFW	Lauren McNabb, CDFW
Diane Riddle, SWRCB	Liz Kiteck, Reclamation
Duane Linander, CDFW	Matt Holland, SWRCB
Elissa Buttermore, Reclamation	Michael Macon, SWRCB
Eric Danner, Southwest Fisheries Science Center	Miles Daniels, Southwest Fisheries Science Center
Erica Meyers, CDFW	Mike Harris, CDFW
Garwin Yip, NMFS	Mike Prowatzke, WAPA
George Kautsky, Hoopa Valley Tribe	Mike Wright, Reclamation
Howard Brown, NMFS	Randi Field, Reclamation
James Gilbert, Southwest Fisheries Science Center	Sheena Holley, CDFW
Jerry Robbins, WAPA	Stephen Maurano, NMFS
Jim Earley, USFWS	Suzanne Manugian, Reclamation
Jim Smith, USFWS	Taylor Lipscomb, USFWS
Jo Anna Beck, Reclamation	Tom Schlosser, Hoopa Valley Tribe

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

#### **June Action Items**

1. Randi - Update the SRTTG Agenda
  - a. Put fisheries items before hydrology
2. Randi – Follow up with Charlie Chamberlain, USFWS re: questions about the Whiskeytown thermocline.
3. Josh Israel and Jim Smith – Clarify agenda topics.
4. Randi –Request invitation for SWRCB to participate in forums where temperature modeling is being discussed.
5. All – Request from Reclamation to provide feedback from everyone on recommendations to adjust the Temperature Management Plan given new information.
6. Randi – Agendize topics for future interim SRTTG meetings
  - a. Discussion on Martin and Anderson Model and assumptions for those models. Specifically timing and distribution of redds.

#### **1. Introductions**

Randi Field took roll call.

## **2. Purpose and Objectives**

Randi Field discussed the goal of having a professional meeting even when we have differences of opinion.

The Sacramento River Temperature Management Plan is developed and monitored as part of State Water Board Order 90-5, the 2019 Proposed Action of the Coordinated Long-Term Operation of the CVP and SWP, and NMFS Biological Opinion Reasonable and Prudent Measures. Reclamation's objective is to solicit feedback from agencies on the Sacramento River temperature management and operations.

This month, Randi thanked Reclamation BDO Josh Israel, Elissa Buttermore, and John Hannon to collaboratively accomplish the temperature dependent mortality results given multiple dynamic inputs to help us understand a new piece of information this year.

## **3. Prior Action Items**

1. Randi Field – Follow up with George Kautsky, Hoopa Tribe when he is available. – Complete.
2. Reclamation – Put on the June SRTTG agenda - Science Center share their graphics for their temperature modeling. – Complete.
3. Diane Riddle, SWRCB – Respond to Reclamation's final Temperature Management Plan within 10 days of its release, which is June 1. – Complete.
4. Josh Israel – Provide updates on the modeling outputs for Scenario 148 from the Anderson temperature dependent mortality model. Eric might be able to run the Anderson model. Josh will follow up to run through the Anderson model with SacPAS and work with the same timeline proposed by NMFS. Start with the May model runs and email out the results. – Complete.
5. Randi Field – Send Miles and Eric the DSS file. – Complete.
6. Miles Daniels – Towards the end of the temperature management season compare temperature-dependent egg mortality using the observed 2020 vs. simulated (i.e. 2012-2019) redd distribution in time and space. The Center will run the Martin Model with the observed 2020 redd distributions as well as with variations to give a sense of the sensitivity of the model to different redd distributions. – end of October 2020.
7. Randi Field - Distribute information on Shasta Critical Year determination as soon as she receives it from Reclamation management. – Complete.
8. Randi Field - Solicit topics from SRTTG each Monday and convene or cancel standing Tuesday SRTTG interim meetings as appropriate. – Complete.
9. Jim Smith – send the SRTTG an update on the fisheries data. – Complete and sent the most recent update prior to the June SRTTG meeting.

## **4. Communications**

- June 1 – SWRCB sent a response on the Temperature Management Plan.
- June 8 – Reclamation sent a Shasta Non-Critical Determination.
- June 10 – Reclamation sent temperature model runs to SWRCB.
- June 22 – Reclamation responded to SWRCB.
- June 23 – Reclamation sent additional modeling runs to the SWRCB and Reclamation responses to technical questions.
- June 25 – Reclamation expects to send an additional package of modeling by the end of

day in response to SWRCB most recent request for additional modeling.

### *Status of Trinity River Diversion to Sacramento River*

Due to the outage of one Spring Creek Power Plant, Reclamation is running the Spring Creek unit nearly all the time to divert water from the Trinity River to the Sacramento River via Whiskeytown Lake. Depending on the time of year, this operation can enhance and degrade temperature management of the Sacramento River; for Trinity and Clear Creek the determining factor for managing downstream temperatures appears to be the overall water diversion volume.

Randi answered questions submitted by Craig Williams, SWRCB on the following topics:

1. Will Reclamation look at different patterns other than 2015, given the inter-annual variation in the timing and spatial distribution of spawning?

Response (R) – The Temperature Management Plan submitted in May was based on the 2007-2014 redd distribution and timing. Earlier in June, Reclamation used data from SacPAS and now has returned to using the 2007-2014 data.

2. CEQUAL-W2 Shasta Lake Temperature Analysis: Scenario 148 - In the flow plot, the total outflow often does not appear to match the combined flow through the gates. Can this be clarified?

(R) - Last month Reclamation presented a complementary model run using the CEQUAL-W2 model. The attached graphic excluded part of the flow due to TCD leakage; it has been revised.

3. Can you pass along the analysis used to conclude that 2009 meteorological conditions were most adverse?

(R) - Watercourse Engineering Inc., provided the following: “We used an equilibrium temperature model. We like this approach because rather than relying on single meteorological parameter (e.g., air temperature), this approach uses the full heat budget to consider the full set of meteorological conditions (e.g., solar radiation, air temperature, humidity terms, wind speed).”

## **5. Long Term Operations Implementation – Update**

There are no slides included in the agenda packet on this topic. We have passed through the critical decision-making phase as illustrated by the decision tree that we reviewed in the past SRTTG meetings.

## **6. Hydrology Update**

Reclamation is optimistic that mid-month, it will be able to reduce the releases from Keswick when water transfers begin. Operations at Shasta are still riding on the storage benefits of wet conditions last year. This year had poor hydrologic and precipitation. In Jan–Apr there was significant lack in precipitation and runoff with a bit of recovery in May but not enough to compensate for the losses earlier in the season.

## **7. Operations Update and Forecasts**

### ***7a. Storage / Release Management Conditions***

Reclamation is actively drawing on coldwater pool reserves. It is difficult to capitalize on the ambient temperature drops when timeframes for cooling and heating of ambient temperatures are so short. In the short term, the forecast consistently predicts below normal temperatures which might offer an opportunity to preserve more of the coldwater pool.

Reclamation modified the TCD gates yesterday, June 24, by closing all the upper TCD gates and

is releasing through middle gates. The current TCD configuration is ahead of schedule projected by the temperature model. When necessary, Reclamation will next open the lower/pressure release gates (PRGs).

### ***7b. Temperature Management***

The downstream temperature performance has been consistently better than the temperature target thresholds and is flattening at CCR and Balls Ferry. (Slide 12)

*2020 Shasta Coldwater Pool Volume  $\leq 49^\circ F$  (Slide 25)*

There is comfort in future expectations as we continue to manage close to the modeled results.

### *Model Results*

Reclamation presented a modeled scenario in which Keswick releases were reduced by 100 TAF in the month of July. The modeling and results will be shared with this group for informational purposes. Reclamation stated that they will not be voluntarily reducing the CVP allocations for Shasta Temperature management.

The group discussed the comparison of results of the model runs:

- “Extend 53.5°F in August” – Results show erosion in the end of Sept. coldwater pool performance and in the end of season side gate use. There is a 6-week difference in sidegate use between model results provided to the SWRCB on Monday and today’s model result. Randi explained that first, the profile is significantly changed between the two runs, causing the period of side gate use to move forward and back. Second, the modeling for the full side gate use is not an accurate prediction. Based on historical use, Reclamation expects to utilize the second gate approximately two weeks after using the first side gate. If you look at the historical use presented a few meetings back, for the most part, once you pull the first side gate, there is not much time until you use the full side gate use. The modeling for the full side gate use is not necessarily accurate. Usually, Reclamation expects to utilize the second gate a couple weeks after using the first side gate. The model does not so much inform accurately when the side gates will be used but how much water will be pulled.
- “Reduce Keswick Release by 100 TAF in July” (Slide 40) – In comparison to other runs, results show an improvement in the end of September coldwater pool and end of September storage but there is an insufficient end of Sept. coldwater pool to meet a sustained fall temperature target at Balls Ferry. The run predicts similar side gate use to the previous set of model runs. (See page 45,46, 47).
  - Q: Doesn’t the model run “Reduce Keswick Release by 100 TAF in July” (Slide 40) still represent an incremental improvement? Are you concerned about the 9/15 full side gate use?
    - A: Yes, the model run does represent an improvement in the summertime but not in the fall when compared to Reclamation’s proposed model run. I focus on the first side gate usage and coldwater pool performance.
- Model run closest to mimicking the run “Reduce Keswick Release by 100 TAF in July” – Results of the “Reduce Keswick Release by 100 TAF in July” are close to the model run to “Extend 54°F in September” with regard to the temperature targets. The run results in more coldwater at the end of Sept. but does not meet the coldwater pool threshold for temperature target of 56°F at Balls Ferry. Randi says it’s possible the run

could result in improved conditions during the fall but that is difficult to discern due to the physical model limitations.

### ***7c. Temperature Dependent Mortality***

Josh Israel presented modeled temperature and life stage development based on stage-dependent and stage-independent mortality methods (Slide 48). The results demonstrate that egg mortality is decreasing and survival is increasing under both models. He asked for the group's thoughts about redds at the exposure points before hatch and before emergence under the different mortality estimation methods. (Slides 49-52)

The group discussed the following questions and topics:

- Rationale for improvement from May modeling, less cold water from the fall, and effects on mortality estimates.

(R) - The actual temperature data that had previously been simulated is used as input to the model runs. There may have been benefits. Stage-dependent mortality tends to be less than stage-independent mortality because those eggs have hatched earlier. The improvement could be related to using the actual data for the first 6 weeks, slightly warmer temperatures and lack of information about the coldwater pool profile. Facility capabilities with the TCD might also add reservoir storage that we did not know about in May and informed the HEC 5 modeling.

- Do these model runs factor in the fall conservative temperature caveat related to the HEC5Q modeling?

(R) - No, for these model runs we used the actual HEC5 output through Nov.

We do not have confidence in the model results as they predict the fall time period. Reclamation provided a second model in the TTSP which provides additional confidence September 15 through October 31. Reclamation proposed to discuss this at the Temperature Modeling Technical Committee.

### ***Summary Document for Shasta/Keswick Operational Scenarios***

Miles Daniels presented model results of Reclamation's four modeled scenarios under the NMFS temperature mortality model (Martin Model) (Slide 53). Eric Danner explained that the Center identified the goal as protecting this year's redd distribution. Accordingly, Eric and the group discussed the following four criteria for selection of redd distribution:

1. Reflecting as close to actual redd distribution for this year.
2. Protecting robust historic redd distribution; not an ever-shrinking redd distribution.
3. Producing a stationary temperature target to which Reclamation can manage.
4. Accounting for changes affecting location and timing of redd distribution, notably: i) Raise of RBDD starting in 2002 and then in 2012 and ii) ACID new fish ladders, which are more effective and changed redd distribution upriver.

### **8. Temperature Dependent Mortality Sensitivity: Stage independent and stage dependent**

Eric Danner and Miles Daniels presented a preliminary analysis of the comparison of the stage-independent model (Martin) with the stage-dependent model (Anderson). Eric Danner stated that neither model is entirely correct but recommends that the better model and most appropriate for this exercise is the Stage independent model (Martin) (Slide 54).

*[Post-meeting Addendum: The NMFS Science Center clarified and provided updated modeling information at the SRTTG meeting July 7<sup>th</sup>, agenda and meeting materials are included herein*

*for transparency. Conclusions based on the preliminary information distributed to SRTTG may no longer be accurate.]*

Eric Danner requested the SRTTG's feedback on this preliminary analysis to answer these questions:

1. If it is unclear which model is correct, how do we select the window target?
2. What is the cost of operating to the center date to one or the other model?
3. What is the risk associated with doing using one or the other model to set the center date for temperature management?

### **River Fish Monitoring: carcass surveys, redd counts, stranding and dewatering surveys and sampling at rotary screw traps**

Jim Smith, USFWS and Mike Harris, CDFW reported that:

- Too early to determine the winter-run Chinook population size.
- Carcass counts as of today: 419 carcasses, 485 average. Average carcass count for this time of year - 10% of end of year carcass counts. Recapture rates are at 24%.
- Hatchery fish proportions - 53%. This is not surprising because 3 years ago there were low numbers of natural juveniles produced. The hatchery portion is pretty high.
- Completed aerial surveys of winter-run Chinook - 56 redds, 217 total. In 2019, there were 288 at this time.
- 66 new redds found upstream of ACID to 1.5 miles upstream of CCR.

### **9. Fish Distribution / Forecasts: Estimated percentage of the population upstream of Red Bluff Diversion Dam for steelhead, winter-run and spring-run Chinook salmon, steelhead update and Livingston Stone Hatchery.**

Jim Smith and Matt Brown, USFWS reported:

- Rotary screwtraps will go back in the river Tues. with samples starting Wed. CDFW and USFWS don't expect a lot of catches early because of late spawning this year.
- The Hatchery is one-third through spawning and will usually end in the first part of August. Pre-spawn mortality is pretty low.
- This year the Livingston-Stone Hatchery increased normal production based on early modeling and concerns over overly warm in-river temperature forecast. Consequently, the Hatchery is producing more fish than past years.
- Taylor Lipscomb is the new Livingston-Stone Hatchery Manager.

### **11. Seasonal Topics**

Josh Israel plans to update the SRTTG in July on the Upper Sacramento Scheduling Team.

### **12. Discussion**

Were the comparisons of model runs for local comparisons or meant for SRTTG to consider those model runs?

- (R) - Reclamation reaffirmed they will not be reducing the CVP allocations voluntarily for Shasta temperature management. The modeling and results are presented at the request of the SWRCB and are shared with SRTTG for informational purposes.

Could the SWRCB please be invited to other forums where the modeling is being discussed.

- (R) - Reclamation will invite and request invitations for the SWRCB.

Is Reclamation going to change the Temperature Plan in response to the SWRCB request?

- (R) - Right now, Reclamation is not seeing a clear signal from the SRTTG members that we need to deviate from the Temperature Management Plan. Reclamation reiterated the solicitation for SRTTG members to provide feedback and recommendations to adjust the Temperature Management Plan.

### **13. Review Action Items**

Julie Leimbach, Kerns & West reviewed the Action Items.

### **14. Next Meeting Scheduling**

The next monthly SRTTG teleconference - 4<sup>th</sup> Thursday of next month, July 23, 2020.

Next weekly interim SRTTG meeting - Tuesday, July 7.