Upper Sacramento Scheduling Team

Flow Smoothing Coordination

Thursday, August 25, 2023, 10–11 a.m.

Meeting Summary

Members Attending

- CDFW: Erica Meyers, Tracy Grimes, Doug Killam, Crystal Rigby
- DWR: Mike Ford
- Kearns & West: Julie Leimbach, Mia Schiappi, Nahal Ipakchi
- Reclamation: Elissa Buttermore, Derek Rupert, Liz Kiteck, Josh Israel
- NMFS: Evan Sawyer, Garwin Yip, Stephan Maurano
- SWRCB: Claudia Bucheli, Jeff Laird
- SRSC: Anne Williams, Mike Deas, Yuen Lenh
- USFWS: Craig Flemming, Jim Earley, Matt Brown, Michael Derrico

Action Items

- Reclamation (Elissa Buttermore) will continue to work on fall-run Chinook dewatering estimates.
- CDFW (Doug Killam) will continue to work on the specific year expansion factors and will share with the USST for review.
- Kearns & West will draft a recommendation email to the Shasta Planning group based on the current discussion.
- All USST Members: will review the draft recommendation email for accuracy before being sent to the Shasta Planning Group.

Operations Update

- Reclamation cancelled the 9,250 cfs to 9,000 cfs flow decrease that was scheduled for 8/24/2023.

Discussion included the following:

- NMFS asked whether there is a volume Reclamation needed to release based on their 9,000 cfs release goal.

    - Reclamation is not targeting anything other than preparing for the next water year. They do not anticipate any issue getting Shasta Reservoir down to the flood control diagram, it is just question of how. The goal is to not be at flood control during the first storm. Based on the current year type, flows can be higher without any impact to storage.

- NMFS asked if the Proposed Action targets for the fall are 3.2 MAF and 5,000 cfs base flow?

    - Reclamation confirmed these targets, which continue through either February or March. If the upcoming year is a dry year, the rules are not hard and fast. There will be an opportunity for discussion, but at this time the hydrology cannot be predicted for the upcoming water year.

- NMFS commented that it would be an unfortunate trade-off if winter-run Chinook redds were dewatered to stabilize flows for fall-run Chinook, especially if flows end up increasing for needs such as rice decomp, refuges, and flood control. They asked if Reclamation saw this scenario as a likelihood and how confident are they that flows will be 5,000 cfs in December.

    - Reclamation explained that majority of rice decomp concludes on October 31 and have been notified by irrigators that rice decomp will need 180,000 AF this season. To meet this need, they are targeting 5,000 cfs. There is a possibility that flows will increase during the first couple weeks of rice decomp and then decrease to 5,000 cfs.

- NMFS commented that if Reclamation is not going to decrease fully to 5,000 cfs in October, those flows would allow for fall-run Chinook redds to potentially not be dewatered.

Fishery Monitoring Update

Reclamation provided information for the fishery update:

- CDFW is monitoring 26 of the shallowest redds. Details of these redds, including depth, the flows they were born on, when the crews first noted their existence, can be seen here: CDFW Upper Sacramento River Basin Salmonid Monitoring website.

    - The redds noted in yellow on the far-right column are the redds that are getting more shallow.

- One redd will be dewatered at 9,250 cfs however, this redd currently has 2.5 inches of water over the tallest part of the redds.[1]

- Dewatering data are intended to be estimates based on staff measuring the redds and their location.

- The hydrology of the river in any given spot can make a big difference. In many places, as

[1] Clarification provided after the meeting by Doug Killam, CDFW- "By currently I mean when the redd was last measured. Flows and estimates are based on KWK gage at time of measurement (KWK flow is adjusted backwards in time to account for redd distance from KWK location-if redd measured downstream of ACID for instance at 9AM, then the KWK flow at 8AM would be correct flow for redd depth at 9AM since it takes an hour for 8AM flow to reach below ACID.

flows decrease there will not be a significant change in depth, and the depths in some areas remain resistant until very large drops in flows. For instance, a redd's location at the top of the riffle versus at the bottom of a riffle plays a role: as flows decrease, the ones at the top of the riffle will see decreases in depth, whereas the redds at the bottom of the riffle will have a lot of water cascading down towards them.

- 2023 data will be finalized in November and will include the total number of redds made during the year. The estimate is generated based on the total number of spawning females in the river rather than redd counts. Hypothetically, if 1,000 females spawned in the river in 2022, those 1,000 fish represent 1,000 total redds. As of August, they have an estimate how many redds/spawners that remain based on current count. This count is made prior to the analysis using the statistical model used to generate the final estimates which is generated after survey is over and all data is QC'ed in November.
- Currently, the estimate is 347 total redds in the river which represents the minimal number of female carcasses observed to date. This provides a minimum number of redds and generates an early indication of how many redds at minimum will be in the river this year.
- CDFW discussed the expansion factor:
    - The expansion factor looks at historical years and looks at how many female carcasses were seen, how many redds were seen at the end of the year and what is the difference?
    - Last year the average expansion was 0.7, meaning that the total number of female spawned carcasses is 70% more than the observed number. CDFW is working on updated (simplified) expansion numbers to make this calculation clearer to understand.
    - The final estimate of the number of female carcasses is, on average, 70% more than the crew observes in any given year. This expansion could be used to guardrail the total number of redds that can be dewatered under the BiOp.

Discussion include the following:

- NMFS asked if there is an expansion factor set for a certain point in the year? Does the expansion decrease as the year goes along?
    - CDFW clarified that the exercise done last year that came up with the 0.7 expansion factor was based on a total of 2018-2021 data comparing carcass counts versus final calculations of the annual number of redds. The expansion for each year varies depending on the environmental conditions. In years where there is a lot of turbidity, the expansion may be a lot greater because you can't see all the fish.
- NMFS asked if the conditions this year were amenable to sampling? If not, what were the conditions?
    - CDFW explained that turbidity was slightly higher than average, and the high flows still make it difficult to sample and observe fish. The expansion factor will likely be greater than 0.7. However, you can not generate a final expansion

factor number for the year until the final female number is known. Using an average over past years provides a guideline.

- CDFW asked what the 0.7 looks like in real life? Does the 0.7 expansion factor mean they are marking and recapturing about 70% of fish?
    - In real life, the crew sees a number of spawned females each year. That number is totaled and equals "observable female." This number represents the minimum number of redds that should be in the river at the end of the season. The Cormack-Jolly-Seber then expands the numbers based on the recapture rate of tagged carcasses. It takes into account the period by period information. For winter-run Chinook, the period is three days. The recapture rate can be higher or lower depending on the time of year and the conditions, specifically flows.
    - The expansion factor isn't directly related to recapture rates, as suggested in the question. 70% isn't the recapture rate of females this year or on an average year, it is independent of that. In some years, there are downstream redds that are outside the carcass survey, and those have their own expansion factor that gets put into the final estimate. However, this hasn't occurred in the past couple decades, other than once a few years ago with one downstream spawner at Battle Creek.
- Reclamation asked if it would still be helpful to use the 0.7 this year?
    - CDFW commented that last year's 0.7 estimate was a back of the envelope calculation based on 2018 through 2021 results. They are working on calculating estimates for each individual year. The group can look at those calculations and decide what expansion factor to use after looking at similar years with similar flows. These new calculations will likely be available next week.
- CDFW commented that the last spreadsheet Reclamation distributed did not have an expansion factor. They ask Reclamation what the necessary timeline is for them to have the expansion factor? Or should a technical team be working on the side to determine the most appropriate middle and long-term plan?
    - Reclamation confirmed that the expansion factor had been removed, because they had wanted to understand how the expansion factor was calculated before including it. It is not currently urgent, because no redds have yet to be dewatered and flows are not scheduled to change. When the expansion factor is decided, it may motivate changes to the flow schedule.
    - Reclamation commented it would be helpful to have a sense of the population level. They have good information on fall-run Chinook and are working on fall-run dewatering estimates, and it would be useful to have similar information for winter-run Chinook.
- NMFS commented that it is easy math to divide the potential dewatering with the final redd count and determine the percent take, but they refer to not use the word take and focus on the amount of redds that are dewatered. The expansion factor may change what we are comfortable dewatering. For instance, are we as comfortable dewatering 5 out 350 redds as we are dewatering 5 out 500 redds? It's all relative to the population.

- CDFW commented that the data pulled from CalFish was different than the data Reclamation provided. This is because crews on the water watch redds and flow changes and get a better idea of what they think the dewatering will be. Flows changes can be plus or minus 1,000 cfs; therefore, when a 1,000 cfs decrease occurs it is very difficult to know if a redd with a dewatering estimate of 800 cfs or 1,200 cfs is going to be dewatered. There are a lot of moving pieces, and we should try to keep in mind there is a big buffer around the dewatering estimates.

Kearns & West solicited support for the adaptative management approach discussed.

- CDFW, NMFS, USFWS provided support for the following technical recommendation.
- DWR and SWRCB appreciated support for the discussion.

Recommendation to the Shasta Planning Group:
The USST suggested a recommendation to the Shasta Planning Group to provide support or an alternative recommendation for the following:

- Reclamation will reduce flows to 8,000 cfs the week of August 28, 2023.
- Adopt an adaptive management approach to implementation of alternatives 3c or 3d.
- Monitor the depth of the redds weekly and adjust flow reduction plans accordingly.

Next Meeting

Tuesday September 5, 2023 10:00 a.m.

Communications with the Shasta Planning Group

Kearns & West to Shasta Planning Group on 8/25:

Dear Shasta Planning Group,

The Upper Sacramento Scheduling Team (USST) of the SRTTG met to discuss the fall flows reduction on August 25, 2023. NMFS, CDFW, and USFWS made the following technical recommendations and DWR and SWRCB appreciated the discussion.

We request that the Shasta Planning Group provide support or an alternative recommendation to the USST. If the Shasta Planning Group supports the technical recommendation, then Reclamation will reduce flow to 9,000 cfs the week of August 28, 2023.

Technical Recommendation:

- Adopt an adaptive management approach to implementation of either alternatives 3c or 3d. (See attachment)
- Monitor the depth of the redds weekly and adjust flow reduction plans accordingly.

For your reference:

- Reducing flows to 9,000 cfs is expected to dewater 5 winter-run redds.
- Under alternative 3c and 3d Reclamation would reduce flows to approximately 8,000 cfs average for September.

I expect that your individual SRTTG representative will be briefing you further on the details and rationale supporting the recommendation, but please feel free to reach out to K&W if you need any of the materials the subgroup considered during their discussions.

Mia Schiappi

Kearns & West

From Reclamation to Shasta Planning Group on 8/28:

Hello all,

I would like to clarify a few things:

- Reducing flows to 9,000 cfs is anticipated to only dewater 1 winter-run redd based on the real- time shallow redd monitoring data dated 8/24. Flows would need to stay above 9,000 cfs until around October 13 to avoid dewatering this redd.
- USST members recommended reducing flows toward around 8,000 cfs this week and reevaluating flow reduction plans with updated data.
- Reducing flows to 8,000 cfs this week is anticipated to dewater a total of 5 winter-run chinook salmon redds. Anticipated emergence dates: 9/23/2023, 10/13/2023, 10/26/2023, and 10/28/2023.

Elissa Buttermore

Fish Biologist

From Reclamation to Shasta Planning Group on 8/30

Hi SPG,

Reclamation supports the technical team recommendation. Thanks all.

Sincerely,

Levi Johnson

Deputy Operations Manager Central Valley Operations Office Bureau of Reclamation

From NMFS to Shasta Planning Group on 8/30

Thank you Mia,

The NMFS SPG representatives agree with the technical recommendation to adopt an adaptive management approach to implementation of either alternatives 3c or 3D which includes monitoring the depth of the redds weekly and adjust flow reduction plans accordingly.

If possible, I would like to request that moving forward the SPG is also provided with specific details about estimates of the total WR redd #s and the cumulative number or redds that may be dewatered with each incremental reduction in flow.

Thank you!

Howard Brown

Policy Advisor

NOAA Fisheries, West Coast Region

From Kearns & West to NMFS on 8/30

Hi Howard,

Acknowledging your request for estimates of the total WR redd #s and the cumulative number of redds that may be dewatered with each incremental reduction. To clarify, would you like these to be provided by the USST after each of their meetings, or by Reclamation, before each change order?

Many thanks,

Terra Alpaugh Kearns & West

From NMFS to Kearns & West on 8/30

That's a good question but I suppose it depends on how the adaptive approach will be applied between the USST and the execution of change orders. I had assumed an adaptive approach would be iterative between the USST, the SPG and the issuance of change orders. If there is a change order being considered that would result in redd dewatering then it makes sense to share the redd information I requested. If the change order would not result in additional redd dewatering, then I don't believe the SPG would not need to be provided with redd data.

Howard Brown Policy Adviser

NOAA Fisheries,

West Coast Region

From CDFW to Shasta Planning Group on 8/30

CDFW agrees with NMFS.

Jason Roberts

Senior Fisheries Supervisor

CDFW Norther Region (Region 1)