BUREAU OF RECLAMATION

Upper Sacramento Scheduling Team, Spring Pulse Flow Planning Subgroup Meeting Summary

Thursday, April 11, 2024, 9:00–10:30 a.m.

Participants

- CDFW: Crystal Rigby, Doug Killam, Michael Memeo, Ryan Revnak, Tracy Grimes, Travis Apgar
- DWR: Kevin Reece, Ryon Kurth
- NMFS: Stephen Maurano
- USBR: Derek Rupert, Elissa Buttermore, Tom Patton
- SWFSC: Cyril Michel
- SWRCB:
- SRSC: Anne Williams, Yuen Lenh
- USFWS: Craig Fleming, Matt Brown
- Kearns & West: Eva Spiegel, Terra Alpaugh

Action Items

- Elissa Buttermore to finalize the Pulse Flow Operations Plan.
- The Spring Flows Group will share recommendation to SRTTG for three pluses in Weeks 4, 6, 8 with the caveat that the group will continue to monitor conditions in real time and evaluate appropriate need for third pulse during Week 8.

Key Discussion Topics with Summary of Perspectives and Outcomes

Recap of Meeting Outcomes from April 4

Kearns & West reviewed outcomes from the last week's discussions, including:

- The Spring Flows Group coalesced support around a potential recommendation for a three-pulse scenario that would begin once flows stabilize in the 5,000 to 10,000 cfs

range. The group focused on pulses in weeks 4, 6 and 8; if only two pulses are feasible, they would target weeks 4 and 6 or weeks 4 and 8. The first pulse would occur with coordination with CDFW regarding tagging.

- If the group agrees on a recommendation this morning, it will be brought to SRTTG today, April 11, 2024.

Operations Update

Reclamation provided a brief update on the current conditions and operations with a focus on the parameters for planning a pulse flow.

- Flows at Keswick are currently at 6,000 cfs but will increase to 8,000 cfs today or early Friday. There is a small incoming weather system that is forecasted to increase flows to 15,000 cfs.
- The Delta needs does not require additional flows from Keswick.
- Shasta Storage is just over 4.3-million-acre feet and there is about 7 feet of room before the lake is full.
- Reclamation think they can pass flows of 15,000 maximum cfs based on past years with ACID.
- Conditions are forecasted to be drier after this week, which will reduce flows at Wilkins Slough.
- In late April, diversions will begin increasing with 5,000 cfs demand by early May.

Spring Pulse Flow Scenario Review & Recommendation

Participants discussed the pulse flow scenarios that were the highest performing in terms of survival estimates in the latest SWFSC analysis, which assessed survival using passage data from Red Bluff Diversion Dam, Mill Creek, and Deer Creek. The group proposed the following recommendation:

- Implement three, four-day pulses in Week 4 (April 22), Week 6 (May 6) and Week 8 (May 20), which corresponds to the M6 scenario in Reclamation's Excel document.
- In the event of base flows at Wilkins Slough above 11,000 cfs (most likely Week 4), implement a "maximum" pulse flow (i.e. a max flow that keeps Keswick below 15,000 cfs and Wilkins Slough below 18,000 cfs).
- Continue discussion at USST around timing and benefits of a third pulse flow in Week 8. Depending on conditions, the group may make subsequent recommendation to move that flow to Week 7 or skip it entirely.
- Coordinate acoustic tagging efforts with Ryan Resnick, whose crew is also tagging fall run at RBDD during the same period.

The following rationale were discussed in support of the above recommendation:

- The group confirmed that the recommended scenarios were all under 90,000-acre feet and thus will meet the requirement that they will not exceed 150,000-acre feet.
- There is no part of the model that accounts for whether there is a reservoir of fish ready to move. Therefore, SWFSC recommended at least a week between pulse flows to ensure there is a new group of fish ready to migrate when the second pulse is initiated. With this in mind, the group prioritized high ranking scenarios that included this spacing between pulses.
- Pulses in weeks four, six, and eight consistently rank in the top ten across all three different data sets (RBDD, Mill Creek, and Deer Creek) and will ideally support the slightly different migration timings of fish from those areas (e.g., earlier from Deer Creek; later from Mill Creek).
- There is a discrepancy of 6.8 TAF in the water cost of the Week 4 scenario analyzed by Reclamation and the SWFSC, because Reclamation capped their flow to maintain 11,000 cfs at Wilkins Slough, rather than maximizing releases at Keswick to 15,000 cfs. Reclamation confirmed they are open to maximizing that release to 15,000 cfs.
- Week 4 SWFSC results are a little bit different from the rest in that Wilkins Slough flows are higher that 11,000 cfs (and therefore, provide no additional survival benefit in the model) for the first half of the week and then drop below 11,000 cfs for the second half of the week, which is where the calculated benefit is generated. The group believes there is also a benefit to flows above 11,000 cfs. Having one pulse at higher flows and two at lower flows will enable them to evaluate this hypothesis.
- The understanding is that the ascending limb of the hydrograph is triggering the fish in the Upper Sacramento to move. The higher flows are then also benefiting the fish migrating out of the tributaries. This is simulating the natural snow melt hydrograph (elevated flows that then trend downward) if only for a shorter time.
- The hatchery fish will have likely moved through the system by the time of the recommended pulse flows (they generally take 3-7 days), but if any are still in the system, the recommended pulse flows would help them move through.
- Reclamation staff working on Clear Creek advised not to change the Sacramento pulse flow recommendations in an effort to align perfectly with Clear Creek pulses.
- There is not a significant concern that the recommended scenarios will risk putting outmigrating smolt in conditions with too high temperatures. The Stanislaus will also be doing pulse flows at the same time, so there should be plenty of flow in the Delta.
- CDFW confirmed that they are tagging spring run surrogates at RBDD. Their current plan is to tag 200 fish biweekly through the second week of May but that schedule is flexible and can be coordinated with SWFSC tagging.
- DWR advised that the Bioacoustic Fish Fence (BAFF) that deters fish from entering Georgiana Slough and the South Delta will be removed at the end of May. A week 8 pulse could move stragglers out before the BAFF is removed.

- Reclamation expressed concerns with committing to plans with conditions being uncertain in late May and wanted to continue gathering input from the group. The USST agreed that the last pulse could be reevaluated based on conditions as they approach late May.
- Reclamation will model the temperature dependent mortality impacts of the pulse flows as part of the Temperature Management Plan. There is not expected to be a significant impact.

Next Steps

- The Spring Pulse Flows Group will present the recommendation to SRTTG on April 11, 2024.