



# Sacramento River Temperature Task Group

## Spring Pulse Flow Planning Subgroup Meeting Summary

March 16, 2023

### Participants

Agency	Attendees
CDFW	Crystal Rigby, Tracy Grimes
DWR	Kevin Reece
NMFS	Stephen Maurano, Garwin Yip
Reclamation	Elissa Buttermore, Tom Patton
SWFSC	Cyril Michel, Flora Cordoleani
Hoopla Tribe	Veronica Yates
SRSC	Yuen Lenh, Anne Williams
USFWS	Jim Earley
Kearns & West	Mia Schiappi, Terra Alpaugh

### Action Items

- **Tom Patton** to send out draft forecast [DONE]
- **Tom Patton** will continue to coordinate with ACID on when they plan to install their diversion dam and notify the Spring Pulse Group
- **Cyril Michel** to coordinate with **Stephen Maurano and Elissa Buttermore** prior to 3/23 SRTTG meeting to prepare short update on spring pulse planning process and range of scenarios being examined (see below) [DONE]
- **Stephen** to talk with **Garwin Yip** about need to ensure any spring pulse flow complies with any additional IOP requirements; Garwin to raise at SRTTG meeting with request to elevate to Shasta Planning Group for their input. [DONE]
- Spring Pulse Group will proceed with doing the analysis for a pulse flow this year under the assumption that the next forecast will show > 4 MAF May 1 Forecast.
  - They will analyze pulse flow scenarios with the following criteria:
    - 1-2 pulse flows, 11k cfs over 4 days each (for a total of less than 150 TAF)
    - Last week of April or the first two weeks of May

- Next steps for this analysis:
  - **Tom, Elissa, and Lisa Elliot** will update the spring pulse scenario spreadsheet with this year's forecasted flows to calculate the water cost and impacts on overall cold water pool, and assess feasibility of different options.
  - **Tom** will send the spreadsheet **to Cyril** by next week (week of 3/20 – earlier the better!) to generate travel time and survival estimates of each scenario to share in the meeting the week of 3/27
    - **Elissa/Lisa** will determine whether there are staff to also generate travel time and survival estimates using SacPas (or whether to rely solely on SWFSC results)
  - **KW** will schedule a meeting the week of 3/27 to discuss results
  - **Cyril** [Note: this was not discussed in the meeting]: can you reach out to Miles and the rest of the SWFSC team working on TDM estimates to make sure they will have time at the end of the month to run TDM estimates on the desired scenarios?

## Key Discussion Topics with Summary of Perspectives, Outcomes, and Agreements

### Meeting Objectives

1. Review Operations Update and May storage projections.
2. Initiate discussion of potential pulse scenarios.
3. Determine next steps needed to make recommendation to SRTTG.

### *Coordination Updates*

Reclamation has not coordinated with the CA-NV Forecast Center regarding the spring pulse this season; they have been busy forecasting flood risk during the storms.

ACID was going to start installation of their diversion dam on Monday, since they have a new crew, but crew was busy with flood operations. Since they do not have to divert water immediately, they are pausing their installation plans temporarily. Reclamation will continue to coordinate with them; their new General Manager is committed to a high level of communication.

- SRSC reminded participants that the ACID diversion dam can be installed as early as March 15, since installation takes two weeks and if conditions are dry, the dam needs to in by April 1<sup>st</sup>. However, if conditions are wet, they do not need to be diverting water on April 1; the earliest ramp up in diversions would be April 15 and likely will be after May 1.

- SRSC said that the ACID structure was designed for a max of 12k cfs but has been operated up to 15k cfs, so those are the parameters they keep in mind. They have different levels of flash boards depending on the year.

### *Operations Update & Discussion of Next Steps*

Reclamation provided a brief update on the current conditions and operations with a focus on the parameters impacting whether a spring pulse flow can be considered.

- Based on the draft March 1 50% exceedance forecast, Reclamation was projecting 3.2 MAF storage in Shasta at the end of March, but current storage is already 3.2 MAF, so it is ahead of the forecast. The most recent storm was not incorporated into that forecast. The end-of-April forecast was 3.786 MAF, which is below the 4 MAF threshold for a pulse flow, but this is now outdated. With Bulletin 120 updates provided weekly, they should be able to adjust this forecast to better reflect reality. There is a high likelihood of 4 MAF storage on May 1.
- Releases were increased at Keswick due to sides flows – ramped up to 4,750 cfs and are now slowly ramping down to 3,250 cfs. However, there is another forecasted storm this weekend and again next week.
- Reclamation observed that with the wet conditions contributing side flows and other accretions, they may not need to release as much at Keswick to get the desired flow at Wilkins Slough.

Perspectives and questions shared by subgroup members included:

- Question (Q) (NMFS): Should we fear issues in runoff efficiency?
  - Reclamation is more concerned this year about it being too wet. According to the forecasters, things are supersaturated, so they could be under-forecasting the amount of anticipated runoff.
- Q (SWFSC): What is the likelihood of flood releases this year?
  - Reclamation is not sure, given that January and March were wet but February was dry. While there is still plenty of room before the lake is filled, the concern in raising it too high is the possibility of a big rain event in the spring. The lake is capable of absorbing snowmelt.
- Q (SWFSC): What flow is anticipated in March/April? If the flows are always high, it is not optimal for a pulse flow.
  - The flow peaked at around 115k cfs at Bend Bridge on March 15 and 26k cfs Wilkins Slough. That peak will take a while to recede and Reclamation projects flows around 10k cfs at Wilkins Slough at the end of March. Reclamation aims to get back to 3,250 cfs releases, which they think they can hold through March and April before ramping up in May and June.
- Q (SRSC): Would there still be a benefit from a pulse in a year like this where we are already seeing pulses?

- The SWFSC explained potential benefits as including:
  - Triggering movement of fish in the upper section of the river where lot of the salmon spawn and rear but which has been pretty stable over the past weeks;
  - Improved survival in the lower river; and
  - The potential for learning more about the hypothesized benefits of pulse flows (i.e., that they help fish outmigrate) and testing their monitoring tools; learning and refining are important as pulse flows are being proposed as possible management actions in more and more venues but have never been implemented on the Sacramento.

### **Proposed Timing and Duration of Pulse Flow**

SWFSC presented data on fish migration timing and hydrograph trends during above normal and wet years. The peak catches of fish at Red Bluff screw traps, most of which are fall run, are in late April and early May and then decline gradually thereafter. In the four years of hydrograph data, two did not need a pulse flow because the whole system was in excess and two might have benefitted from a pulse flow. Given that flood control releases are less likely this year because there was so much room in reservoir, SWFSC would suggest targeting 1-2 pulse flows in the last week of April or first two weeks of May, each of 2-5 days with a preference for 4 days each. SWFSC noted that when river conditions are cold, fish might be ready to migrate on the later side, so early May is likely the best time for a pulse, but if the water cost were lower and two pulses could be done in late April for less than 150 TAF, that could be a positive tradeoff.

Questions and comments included:

- DWR agreed with SWFSC's reasoning on timing. It is also a safe period to target because regardless of the year, those same weeks pop out as high migration periods.
- CDFW asked whether peak spawn timing had been typical in the years used in the analysis. SWFSC did not have that data. Last year, because of really warm temperatures in the Sacramento in the fall, spawn times were late and so the fish might be maturing later than usual.
- SRSC asked whether these same data are available for individual years. SWFSC can provide those data but they get much noisier and potentially harder to interpret.

The group agreed that they should proceed with planning for a pulse flow assuming that there will be 4 MAF of storage in Shasta on May 1. They will need to update the Pulse Flow Operations Plan; this will include incorporating Cyril's rationale for the timeline and volume of pulses. Reclamation will update the spreadsheet on flows and water costs, targeting a flow of 11k cfs with the timeline and duration proposed above. Then they will need to estimate the TDM of each of the scenarios.