

Upper Sacramento Scheduling Team

Spring Pulse Flow Planning Subgroup

Wednesday, March 17, 2021, 9:00-10:30 a.m.

Meeting Summary

Participants

Agency	Attendees
Reclamation	Elissa Buttermore, Suzanne Manugian, Tom Patton
USFWS	Jim Earley
NMFS	Cyril Michel, Stephen Maurano
CDFW	Matt Johnson
DWR	
SWRCB	Michael Macon
SRSC	Anne Williams
Kearns & West	Terra Alpaugh, Alyson Scurlock

Action Items

- Kearns & West to cancel the subgroup meeting on March 25.
- Suzanne to consider including the following in the **presentation** for the March 25 SRTTG meeting:
 - Mention that once a spring pulse flow has been implemented, it will generate information on positive and negative impacts that can be used to refine future flows.
 - Mention NMFS' modeling exercise (ran same data through their survival model) and describe high level conclusions (e.g., while the percentage improvements differ between the two models, the ranking of the scenarios in terms of performance is largely the same).
 - Add column to tables in the presentation with the volume of water being used in each pulse scenario.
 - Consider adding the example SWFSC box plots to presentation (updated or not updated) to provide example to group for what could look at in future for TDM.
- Suzanne to consider including the following in the **Operations Plan**:
 - Outline next steps for April/May analysis, particularly with respect to cold water pool impact and TDM.
 - Add another column for actual volumes in the table in addition to the column that specifies pulses are less than 150 TAF.
 - Include the flow spreadsheet as an attachment and describe how it can be used as an assessment tool; include the role of all the tabs in the sheet (and how that data is or will be collected).
- Tom/Reclamation to validate what volume difference is required to make a temperature run comparison meaningful.
- Suzanne to run the pulse flow scenarios using 2021 data.
- Reclamation to look at impacts on cold water pool and TDM for winter-run.

- Cyril to talk to SWFSC about ability to add a pulse flow toggle to CVTemp (highest priority), updating the box plots with new pulse information for several scenarios, and the process for making a temperature change TDM prediction for this season without the pulse.
- All to consider making the following revisions to the **Spring Flows Study Plan** after the season:
 - Reassess timelines in general, particularly CVO's ability to implement pulse flows on short notice.
 - Discuss the potential to piggyback on weather events/fish counts that indicate fish are moving downstream; identify what additional information or partnerships with CA/NV River Forecast Center could assist in this effort (e.g., tracking snow melt events, weather, diversions).
 - Explicitly identify need to coordinate with ACID re: diversion dam installation (pulse flow could conflict with ACID install in future years) and other contractors re: any asks to hold diversions steady.

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

Meeting Objectives

1. Review presentation to SRTTG and Operations Plan

March 25 SRTTG Meeting Presentation

Reclamation presented the revised USSF presentation for the March 25 SRTTG meeting and subgroup members provided feedback.

Perspectives and questions shared by subgroup members included:

- NMFS suggested mentioning that once a spring pulse flow has been implemented, it will generate information on positive and negative impacts that can be used to refine future flows.
- Reclamation noted that people will be interested in changes in TDM and impacts to the cold water pool. Reclamation will look into what volume difference is required to make a temperature run comparison meaningful (e.g., a 50 TAF or 150 TAF pulse).
 - Reclamation suggested the group could run a TDM modeling exercise using historical data for the pulse flow scenarios in the future to narrow down the hindcast or calibration run.
 - NMFS discussed some previous TDM box plots generated by SWFSC that could be replicated with Reclamation's model.
 - Reclamation expressed interest in doing something similar.
 - USFWS asked if the plot could be updated to reflect more recent years.
 - NMFS said they would talk with SWFSC to see if they can produce updated box plots with new pulse information for several scenarios.
 - Reclamation noted that SWFSC has mentioned the possibility of quantifying uncertainty as a function of the forecast length to show how uncertainty increases over time. This might also help communicate that some things are noise at certain volumes.

- NMFS suggested SWFSC may be able to add a pulse flow toggle button to CVTemp so users can see results with or without a pulse flow; NMFS will talk to SWFSC about it.
- Kearns & West confirmed what the group wanted to share at the March 25 SRTTG meeting.
 - USFWS suggested that Reclamation add columns to the tables in the presentation that list the volume of water being used in each pulse scenario. SWFSC's box plots could also be included to conceptually demonstrate the kind of TDM analysis the USST is hoping to do in the future.

NMFS' Pulse Flow Scenarios Exercise Results

NMFS ran the suite of pulse flow scenarios through their survival model to compare to Reclamation's survival model results. NMFS concluded that although the percentage improvements differ between the two models, the ranking of the scenarios in terms of performance is largely the same.

Perspectives and questions shared by subgroup members included:

- Reclamation will include information about the outcomes of NMFS' modeling exercise in the presentation to the SRTTG.
- Kearns & West asked if the group would have the pulse flow scenarios run with 2021 data and the temperature and TDM impacts for the April 25 SRTTG meeting or just the pulse flow scenarios run with 2018 data.
 - Reclamation stated that using 2018 or 2021 data does not matter operationally.
 - NMFS suggested that 2018 was a good example of when a pulse flow should have been triggered, but there is value in using 2021 data and walking through the process real-time to identify if there are any major timeline issues or missing pieces of information.
 - USFWS agreed that using 2021 data would be valuable.
 - Reclamation will run the pulse flow scenarios with 2021 data. Reclamation also suggested receiving feedback from SWFSC in terms of what is needed from the USST in order to model TDM for 2021.
 - NMFS will ask SWFSC on the process for running TDM forecast for this season for the pulse scenarios.

April Operations Plan Development and Spring Pulse Flow Study Plan Finalization

Kearns & West solicited feedback from subgroup members on what should be included in the Sacramento River 2021 Spring Pulse Operations Plan. Kearns & West and subgroup members also discussed that the Spring Pulse Flow Study Plan should be considered "draft" until the end of the spring planning period; at that point, the subgroup should revise it based on lessons learned from this season.

Perspectives and questions shared by subgroup members included:

- USFWS suggested adding another column for actual volumes in the table in addition to the column that specifies pulses are less than 150 TAF.

- NMFS suggested adding information on the next steps for evaluating impacts on the cold water pool and TDM.
- USFWS asked what is negotiable in terms of considering pulse flows even with marginal storage; for instance, could they piggyback pulse flows off storm events? Some flow events would require a much lower release, resulting in less significant impacts to the cold water pool and benefits to fisheries. USFWS asked how that situation could be modeled to help support the conversation about how to make pulse flows more feasible and maximize their benefit to fisheries.
 - NMFS suggested that water costs are less when implementing a pulse flow during a storm event, with an added benefit of coinciding with many fishes' migration out from the tributaries. It would benefit operations and fisheries; Reclamation would just need to narrow their operations window.
 - USFWS suggested that this idea could be written into the Spring Pulse Flow Study Plan for a point of discussion.
- Reclamation suggested including the flow spreadsheet as an attachment to the Operations Plan. The Operations Plan could describe how it can be used as an assessment tool and could include the role of all of the tabs in the spreadsheet and how the data is or will be collected (e.g., Clear Creek, weather and diversions components, coordinating with SRSC to monitor diversions, etc.). Reclamation noted that they would use the CA/NV River Forecast Center's flow prediction to try to piggyback off of a storm event if there is one in May.
 - NMFS said that there are big snowmelt events that drive the hydrology at Mill Creek and Deer Creek, so there is still potential to sync up a pulse flow with big snowmelt events in May even if there are no storms.
 - Reclamation suggested that temperatures could also be tracked to monitor heat waves that would melt snow to add flow to system. Anything that adds or takes flow from the system should be monitored.
- Reclamation suggested adding coordination with the ACID installation to the Study Plan as the group might have to work around their installation in future years.
 - SRSC suggested that coordination with all contractors could be included separately from the diversion dam installation. The group will need to coordinate with diverters on the river if they need their assistance (e.g., holding divers steady) to see an increased release make it to Wilkins Slough.

Operations Update

Reclamation provided an update on operations.

- Keswick releases are still at 3,500 cfs; Reclamation has no plans to change releases.
- ACID will be installing their diversion structures on March 22 and should have no effect on operations.
- Demands on the system are fairly flat at the moment.
- May 1 storage is still around 2.5 MAF. The values entered for flow in the forecast model have gone decreased from February 1 to March 1 because conditions have gotten drier. The April forecast does not look good.

Perspectives and questions shared by subgroup members included:

- NMFS noted that the ACID installation seems early.
 - SRSC said that the ACID installation depends on the hydrology. If releases are high and there is a lot of flow, they cannot get in as early to do their installation, but if things are dry and flows are low, they can install their diversion structures earlier. Early April is usually the target because they like to start diverting mid-April.

Next Steps

- Kearns & West will cancel the subgroup meeting on March 25. The first full-group USST meeting is on April 7 and can be used to discuss what the subgroup has been working on with the larger group.
- Tom will validate what volume difference is required to make a temperature run comparison meaningful (e.g., a 50 TAF or 150 TAF pulse).
- Suzanne will run the scenarios using 2021 data.
- Reclamation will look at impacts on the cold water pool and TDM for winter-run (using the example box plots from SWFSC).
- Cyril will talk with SWFSC about the ability to add a pulse flow toggle to CVTemp (highest priority), updating the box plots with new pulse information for several scenarios, and the process for making a temperature change TDM prediction for this season without the pulse.

Next Meeting: Wednesday, March 31, 9:00-10:30 a.m.