



MEETING SUMMARY*
LEE VINING, FERC PROJECT NO. 1388
AQUATIC TECHNICAL WORKING GROUP
MAY 18, 2023, 1:00PM -2:45PM

**These meeting notes are documentation of general discussions from the meeting held on the above-noted date and focus on stakeholder questions and comments. These notes are not a verbatim account of proceedings and do not represent any final decisions or official documentation for the project or participating agencies.*

1.0 OBJECTIVE

- Information sharing of the operations model.
- Solicit stakeholder feedback.

2.0 ATTENDEES

Relicensing Team Members

Matt Woodhall, SCE
Martin Ostendorf, SCE
Seth Carr, SCE
Finlay Anderson, Kleinschmidt Associates
(KA)
Shannon Luoma, KA
Bret Hoffman, KA
Isha Deo, KA
Lauren Rosenkranz, KA
Heather Neff, Stillwater
Carissa Shoemaker, ERM

Technical Working Group Members

Chris Shutes, California Sportfishing
Protection Alliance (CSPA)
Greg Reis, Mono Lake Committee (MLC)
Sheila Irons, US Forest Service (USFS)
Michael Wiese, USFS
Chad Mellison, USFWS
Beth Lawson, California Department of Fish
and Wildlife (CDFW)
Amy Chandos, CDFW
Michael Tovar, CDFW
Adam Cohen, California State Waterboards
Bryan Muro, California State Waterboards
Rajaa Hassan, California State Waterboards
Ron Goode, North Fork Mono Tribe

3.0 COMPILED ACTION ITEMS

- Greg Reiss, MLC, will share additional remote sensing and model-based snow data products potentially relevant to the operations model. Greg will include California functional flow tools as well.
- The Team will review recommended data sources and consider which pieces will fit into the operations model. During the review, the Team will consider: seasons, water year types, reservoir elevations, target elevations, potential variables and prioritization of them, and the limitations of multiple constraints.
- The Team will integrate recommended data sources as functionality of the tool allows, and schedule another TWG meeting to share results.

4.0 WELCOME & INTRODUCTIONS

Shannon Luoma, the Relicensing Team (“Team”) Project Manager, welcomed TWG members to the meeting and provided a land acknowledgement. Finlay Anderson, The Team Technical Advisor, provided a safety moment around high temperatures. Matthew Woodhall introduced the SCE team, and Shannon introduced the consulting team. Shannon provided an overview of the meeting agenda and objectives.

5.0 OPERATIONS MODEL

Finlay reiterated the goals and objectives of the study plan, which are similar to a previous model created for SCE’s Bishop Creek Project. The goal for the Lee Vining Project (“Project”) Operations Model (“Model”) is to understand how Project operations interact with Lee Vining hydrology. Additionally, there is a specific nuance with Lee Vining Creek optimization at Poole Powerhouse, and SCE wants to accurately represent capacity for licensing efforts. Finlay compared the Lee Vining Model to the Bishop Creek model, and by contrast the Lee Vining Model is simpler.

Bret Hoffman, the Operations Model Lead, agreed that this is a simpler model. Bret discussed the methods used to represent characteristics of the Project hydrologic system, including constraints, inputs, and project impacts. Bret continued that the Model will provide a resource balance calculated on both a daily and annual basis. The Model will represent system operational targets and scenarios, and will consider baseline conditions and constraints.

Question (Q) Greg Reis (Mono Lake Committee [MLC]) – Regarding Snow Courses as a data source, how will the snow data be used in the model? Is forecasting data used in the model?

Response (R) Bret Hoffman (Kleinschmidt [KA]): Yes, forecasting year type is the primary use of Snow Courses data. For Bishop Creek, the data was also used to correlate information between flow and hydrologic inputs.

Comment (C) Greg Reis (MLC): There are lots of data sources available, in the future the Team should consider available data from remote sensing and other sources.

Q (Bret Hoffman, KA): Can the Team have access to these sources?

R (Greg Reis, MLC): Yes, we can provide some resources. Only sporadic data is available, but it could provide insight to the model. In its early stages, consider implementing this data when it becomes available.

Q (Bret Hoffman, KA): Is the available data useful for forecasting and how snow can impact hydrology?

R (Greg Reis, MLC): Yes, it is useful as a predictive tool. I will share links to the data.

Bret continued to discuss the methods of each model. Bret briefly discussed the baseline conditions and constraints based on SCE operational requirements and the current FERC license requirements.

Q (Chris Shutes, CSPA): What are the specific requirements at the reservoirs at the end of the year? Are there any targets or constraints for the reservoir level at Saddlebag Lake? The Team should consider dam safety with reservoir levels.

R (Matt Woodall, SCE): Saddlebag Lake does not have elevation requirements, but Ellery and Tioga do have them. Saddlebag Lake has an in-stream flow requirement.

R (Bret Hoffman, KA): We want to understand any potential changes to targets now.

R (Finlay Anderson, KA): Let's discuss whether or not to add that constraint based on management objectives and specific outcomes.

R (Bret Hoffman, KA): Agreed, the need to warrant any additional features and logic to the models, or incorporating more constraints into a modeling effort, should have a basis.

C (Greg Reis, MLC): One constraint that I'm interested in seeing added is how daily fluctuations limit the flow below Poole Powerhouse.

R (Bret Hoffman, KA): Yes, that is currently a consideration of the intra-day modeling effort. This may not impact operations as a whole, but may give us daily allocation flow data. That would be used to inform the broader model.

6.0 RESOURCE OPTIMIZATION ANALYSIS

Isha Deo described the methods used to perform the statistical intra-day analysis portion of the model. The first step after developing the algorithm was the calibration to the demand peaks. 78% of flow peaks correspond directly with demand peaks. This helps to validate that the data we're using corresponds with known operation. The operation change in 2016 did make a statistically significant difference on the frequency of peaks. Peaking likelihood is much higher post-operations shift. The Team is in the process of developing the hydraulic model for analyzing stage/velocity effects downstream due to optimization.

7.0 QUESTIONS

Q (Beth Lawson, CDFW): How does SCE plan to use the model? How do other stakeholders in the relicensing process intend to use the model?

R (Finlay Anderson, KA): The intent of the Model is to connect the operations of the Project with a correlation to stage, and to understand the potential effects of this mode of operations on downstream resources. The intent is to communicate that to stakeholders, and integrate with objectives and operations moving forward. We are analyzing multiple resource areas and having many conversations with stakeholders.

Q (Beth Lawson, CDFW): Are you able to correlate peaking and operations? How are you planning to use the output from operations modeling? Will it be used to look at new scenarios in the operations model?

R (Finlay Anderson, KA): It's a two-step process: 1) understand relationship and correlation; 2) understand impacts and how to manage them in the future. This will help agencies who may want to add operational structure in relation to how the model interacts with the grid.

R (Matthew Woodhall and Martin Ostendorf, SCE): What is the ultimate goal? We are looking for a license that will guide operations in the future, and guide conversations about what we've learned from optimization.

R (Matthew Woodhall, SCE): It's a simpler process, we came into this recognizing that optimization operation came into effect after the issuance of a previous license. Any change in operations will be presumed an optimization, a presumed change in hydrology. This effort is to clarify any changes in operations and correlate it with hydrology. Project effects is a requirement of licensing process, and the model will help optimize operations on ecological impacts, benefits, or restoration activities.

C (Beth Lawson, CDFW): I'm speaking for the needs of my resource agency; looking at peaking and resource optimization is great, but we want to ensure that it will be tied back to us and

making considerations regarding how we/you operate the project. We need a clear picture of how the models are being built. In order for us to analyze, we are interested in functional flows, peaking, and adding seasonal flows back into the creeks. There is a strong pressure to add seasonal flow back into river environments. We want to be able to use these tools. We want to understand peaking and how it returns to the river.

R (Matthew Woodhall, SCE): We may need to interject conditions into other study plans. Bret, will this Model be able to look at these varying flows? We're interested in understanding the relationship between species, other ecological decisions, and this Model.

R (Bret Hoffman, KA): Yes, that's a part of this Model. That's what I'm hoping to get out of this meeting is the agencies' needs and what needs to be added to the system. Currently we're using existing targets and constraints.

R (Isha Deo, KA): I just wanted to note that downstream effects will be easier to quantify once the hydraulic model is finished and operating. These models are specifically looking at downstream data.

C (Beth Lawson, CDFW): We want to build in the option to see seasonal variability, with our experience from the Bishop project. We would like to look at SCE's power generation in order to do a trade-off analysis, recognizing that there is sensitivity there.

R (Finlay Anderson, KA): The power generation piece is a larger issue that should be discussed between SCE and stakeholders. We understand the desire for it, but there needs to be some clear sideboards. Maybe we can get some direction to Bret, he can include seasonal inputs for sure. For the reaches below Saddlebag and Tioga, we want to be able to look at shoulder seasons. Bret will need enough guidance to begin putting constraints in his Model. Pausing on the power generation question for now.

C (Chris Shutes, CSPA): For the intra-day issue, there is immediate focus on the reach downstream of Poole Powerhouse. There should also be focus on reservoirs and daily streamflow fluctuations especially between Saddlebag and Ellery Lakes, and focus on the confluence with Tioga. Hydropower operations are going to pull from upstream. Depending on hydraulics and seasonality, is there some way to limit the degree of fluctuation by reducing the peak or bringing up the base, that would impact the drafting of the reservoirs? Warren Fork may help by bringing up the bases when you go into high flows at the powerhouse.

R (Matthew Woodhall, SCE): To clarify, there is no drafting of Saddlebag or Tioga Lake as it relates to hydro optimization. They do have an instream flow requirement and Tioga has to remain within a specified range of the spillway elevation for part of the year. Everything is managed from Ellery Lake, where there is an approximately 2-foot elevation change that we

can manage. We use that to optimize intra-day. There is no control at Saddlebag or Tioga under the current license.

R (Chris Shutes, CSPA): That's a helpful clarification. What's the volume of water in that 2-ft stage of Ellery Lake?

R (Matthew Woodhall, SCE): I'm unsure of the top of my head. Bret may know. However, we are not proposing operational changes above (note: Bret clarified that the 2-foot stage of Ellery Lake is 118 acre-feet).

Q (Chris Shutes, CSPA): How do you manage changes of conditions above?

R (Matthew Woodhall, SCE): Greg brought up that we'll be spilling Saddlebag this year. There is a prescribed in-stream flow release, we meet annually with USFS and USFWS and assess the water year and then decide on that year's instream flow cfs requirements. We can manage Saddlebag Lake from spilling pretty easily. Ellery Lake is the managing reservoir.

C (Greg Reis, MLC): I support what Beth was saying about functional flows, the California Environmental Flows Framework (CEFF) has this laid out well, they indicate the importance of flows and how to evaluate them. When I send the Snow Survey information, I will send that too. Saddlebag Lake stuff might help inform other resources but might miss something. With the functional flows, you assume that natural flows will support the ecosystem. The operational change in the recent years and the variance that USFS has given turns the natural hydrograph upside down, natural flows are higher in the summer than winter.

Q (Matthew Woodhall, SCE): Would you address the reach below Saddlebag, you want more flexibility there?

R (Greg Reis, MLC): Yes, if you want functional flows, what is happening here is largely different than what happens in a natural hydrograph.

Q (Matthew Woodhall, SCE): Which reaches are you saying this issue is relevant?

R (Greg Reis, MLC): Looking at a hydrograph would be helpful for seasonal variants. There is a difference from the natural hydrograph anywhere there is a shift from natural flow. This applies to all reaches.

C (Beth Lawson, CDFW): I would echo Greg's point; we are interested in looking at functional flows in all reaches. You should bring functional flow metrics into the operations Model. There are different pulses based on season. A mass-balance approach is worth discussing. I can post

the link to CEFF flow methodology. The point is not to replace studies but to work with existing methodologies to see where there are missing pieces.

Rajaa Hassan, California State Waterboards shared [eFlows](#) link in the chat.

Greg Reis, MLC shared [CEFF framework](#) link in the chat, which includes hydrograph modeling for different scenario conditions.

Bret will look into these recommended components and consider what pieces will fit into the Operations Model. Things to consider: seasons, water year types, reservoir elevations, target elevations, potential variables and prioritization of them, consider limitations of multiple constraints. Finlay summarized an action item for Bret to consider these data sources, but reiterated that we need to compare with management goals and objectives. Regarding the intra-day analysis, we can connect calibration with a HEC-RAS model which will provide a tool to look at multiple downstream scenarios and tie in with other studies. Bret what does the next iteration of the model look like?

C (Beth Lawson, CDFW): We are trying to balance operations (power generation) with maintaining as much of the natural hydrograph as possible. The collision is the whole reason why we make a model, so we don't break things in real life. We want to figure out what components you need so we can figure out how much we can push the system and how much we can put back into the creek.

C (Chris Shutes, CSPA): What is the maximum outlet capacity of Saddlebag and Tioga Lakes?

R (Bret Hoffman, KA): That isn't something I have found yet.

R (Greg Reis, MLC): I think Tioga was something like 40 cfs.

Q (Heather Neff, Stillwater): I have a question for Beth regarding functional flows. All of the fish species in Lee Vining Creek are non-native. How would we integrate CEFF for the non-native species?

R (Beth Lawson, CDFW): There are other important ecological components outside of fish species. Sediment, riparian vegetation, BMI species are all components of healthy ecosystem not tied specifically to native fish species.

Q (Heather Neff, Stillwater): Are all functional flow components necessary to look at since we are not focusing on the non-native trout species? Are there specific functional flow components to prioritize?

R (Beth Lawson, CDFW): Pulse flows, Winter higher flows, Summer base flows, and the Snowmelt hydrograph. Prioritize an amount of winter base flow, amount of summer base flow,

and some way to calculate snowmelt hydrograph. This is not specific to time, but water balance modeling.

R (Greg Reis, MLC): The fall pulse flow and wet season peak flow are also a part of CEFF.

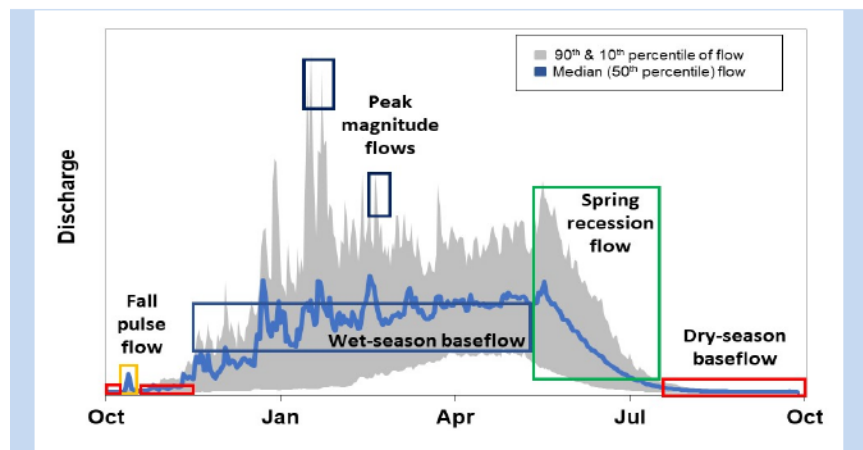
R (Beth Lawson, CDFW): The eFlows tool can be used with an unimpaired hydrograph, Rajaa posted that in the chat. That would help implement all of those flows.

C (Chris Shutes, CSPA): We are interested in all fish species, native or not, as they are a large part of recreation activities. We would not want to harm those species.

C (Martin Ostendorf, SCE): We are looking at the baseline project. We hear that there is a desire to go back to a natural hydrograph, but we need to understand the environmental impacts of the baseline project operations. The tradeoff is that SCE is not here to return the stream to the natural hydrograph. We need a balance between restoration and project impacts. This will come into consideration during PM&Es. This is our tool to help understand the baseline and develop that balance.

C (Beth Lawson, CDFW): This discussion to implement CEFF is happening across all FERC projects in California. In concept it sounds easy, but the goal is to look at the functional flow metrics and results of the studies and pair those together to see if there is a problem.

Rajaa Hassan, California State Waterboards posted a graph as an example in the chat.



C (Martin Ostendorf, SCE): I just don't want to be misleading that we will for sure be implementing functional flows.

C (Chris Shutes, CSPA): The unimpaired hydrograph may show you how big of an impact/impairment there is, there shouldn't be a lot of controversy on including the snowmelt runoff from the inflow creeks like Warren Fork. It would be good to know how much these side channels add to the stream.

C (Greg Reis, MLC): The peak flow study I had suggested can be looked at with these methods, and can be evaluated without any costs. It could possibly show that operations do not negatively impact ecosystem.

8.0 NEXT STEPS AND CLOSING

C (Martin Ostendorf, SCE): So, for next steps, Bret will look at the level of functionality in the tool and then we'll have a follow up meeting with the group to share results.

C (Finlay Anderson, KA): Let us know if you have questions.

No further stakeholder comments or questions.

The Relicensing Team adjourned the meeting.