



— BUREAU OF —  
RECLAMATION

## American River Group

**1:30 PM – 3:30 PM**

**Conference Line: +1 (321) 209-6143; Access Code: 780 506 355#**

**Webinar: [Join Microsoft Teams Meeting](#)**

Thursday, September 15, 2022

### Notes

#### 1. Action Items

- a. Thuy – Ask to receive the latest profile on 9/19/22 rather than 9/20/22
- b. Thuy – Look into anticipated Delta conditions and needs
- c. Cardno – Run proposed modeling scenarios
- d. Duane Linander – Look for examples of NOAA meteorological handouts from previous ARG meetings and send them to Thuy to include in future meeting materials

#### 2. Introductions:

- a. USBR: Melissa Vignau, Thuy Washburn, Spencer Marshall, Liz Kiteck, John Hannon, Zarela Guerrero, Carolyn Bragg, Michael Wright
- b. NMFS: Barb Byrne
- c. USFWS: Paul Cadrett
- d. CDFW: Crystal Rigby, Gary Novak, Tracy Grimes, Emily Fisher, Duane Linander, Jason Julianne, Chris McKibbin, Joel Craven
- e. SWRCB: Michael Macon, Reza Ghasemizadeh
- f. PCWA: Ben Barker
- g. EBMUD: I-Pei Hsiu
- h. SMUD: Ansel Lundberg

- i. City of Folsom:
- j. City of Sacramento: Brian Sanders, Brett Ewart, Anne Sanger
- k. San Juan Water District:
- l. Westlands:
- m. City of Roseville: Sean Bigley
- n. DWR: Mike Ford, Kevin Reece
- o. WAPA: Mike Prowatzke
- p. FishBio: Kirsten Selheim
- q. Water Forum: Jessica Law, Ashlee Casey, Erica Bishop, Chris Hammersmark
- r. Cardno: Craig Anderson, Vanessa Martinez
- s. CFS:
- t. PSMFC: Logan Day, Hunter Morris
- u. Shingle Springs Miwok Band:
- v. Kearns & West: Mia Schiappi, Karis Johnston, Rafi Silberblatt
- w. CSUS:
- x. Other: Rod Hall, Deanna Sereno

### 3. Announcements

- a. Stephen Maurano, NMFS, will be taking over for Page Vick.
- b. Hunter Morris is replacing Austin Galinat as the co-lead for PSFMC

### 4. Fisheries Update

- a. CDFW began September monitoring the week of 9/12 and have not observed any salmonids so far. Seining at Paradise Beach is not currently possible because the Army Corps of Engineers levee project is creating access issues. The high flows being released from Nimbus Dam have also created a safety issue and crews have been unable to monitor the Sunrise side channel.
- b. Redd and carcass surveys begin in October.
- c. Hatchery updates: Steelhead are in the outdoor raceways. There had been evidence of Columnaris, but the fish have been treated.

## Questions/Comments

- Do you have a comparison between this year's salmonid numbers in the seine surveys compared to years when summer water temperatures were less than 66 °F?
  - CDFW replied they do not have that information offhand and will follow up with NMFS offline.

### 5. Operations Forecast

- a. SMUD provided an update on its operations.
  - i. SMUDs combined storage total for Loon Lake, Ice House, and Union Valley reservoirs are at 789 TAF and 76% full (historically storage this time of year is 86% full).
  - ii. Flows over the last week have been high based on the need to generate power for the heat wave.
- b. PCWA provided an update on its operations.
  - i. PCWA storage is at 180 TAF and the End of September (EOS) target is 18 TAF lower than anticipated because of the conditions created from the Mosquito fire burning near their facilities.
    - PCWA lost transmission capabilities on 9/7/22 and have not been able to run water through the generation system since then. It is unknown when regular operations will restart.
    - To meet flow and consumptive requirements, release from the reservoirs are at 200 cfs. Accretion at the pump station at the bottom of the system going into Folsom are 300 cfs.
  - ii. It will take time to get the system back online when the fire is over. The data coming from the gauges are likely suspect based on current conditions.
  - iii. There is a maintenance outage scheduled for October.

### 6. Central Valley Project (CVP) Operations

- a. Current storage in Folsom Reservoir is 400 TAF. Storage peaked in June at 865 TAF. End-of-September storage is estimated to be about 340 TAF. Inflow has been averaging 1,500 cfs.
- b. Flows out of Folsom Dam were at 3,500 cfs at the beginning of the month to help with power generation during the heat wave. Current releases are 2,500 cfs and expected to decrease towards the end of the month.
- c. Water temperature is averaging 64.5 °F at the American River Fair Oaks (AFO) gauge.

- d. The Unit 3 bottom shutter was pulled on 9/7/22 to help with higher temperature caused by the heat wave. The coldest unit (Unit 3) is being blended with Unit 2. Unit 1 is out of operation for maintenance and will be back online in approximately a week. Unit 1's outage is not an issue because the water from Units 2 and 3 are controlling the temperature.

Questions/Comments:

- NMFS asked what the "O" meant on the Temperature slide under Unit 2.
  - USBR responded that "O" means "out of service."
- NMFS asked if there is a 90% hydrology this fall, how problematic is storage being at 238 TAF going to be at the end of December?
  - USBR responded that if storage is at 238 TAF at the end of December than they did not lower their releases enough during the fall.
- NMFS commented that calculations should be done to estimate next year's minimum release requirements (MRR) to help understanding what flows are needed.
  - Water Forum commented that they are willing to help NMFS calculate the MRR. They commented that for this year, the MRR for October through December of 1,326 TAF is based on the ARI being 1,811 TAF and the 50% Bulletin 120. By the May forecast, the MRR based on 50% versus 90% forecast should be similar since by May, much of the runoff for the season has been observed and the forecast for the rest of the water year should be similar in the 50% and 90% exceedance forecasts.
- CDFW asked USBR to begin including the NOAA meteorological air temperature and precipitation outlooks that were previously included in the meeting packets as they would be helpful for the bypass discussion.

7. Preliminary Discussion on Power Bypass

- a. NMFS explained that the fish agencies request that Reclamation implement a Power Bypass when there are concerns about water temperature in the Fall. Cooler water temperatures will benefit fall-run Chinook salmon (reducing pre-spawn mortality and egg mortality) and, depending on the timing, may improve rearing conditions for steelhead.
  - i. There will be a new Folsom Reservoir profile taken in mid-September to understand how much cold water is available.
  - ii. The ARG will discuss possible scenarios to model based on temperature targets and bypass timeframes.
  - iii. Cardno, on behalf of Water Forum, will run temperature models to get temperature outputs for the season.
  - iv. CDFW and NMFS will then run temperature outputs through an egg mortality model on SacPAS. This will help estimate the daily egg

mortality and seasonal egg mortality depending on the temperatures used in the model. The daily egg mortality information is important for gauging potential impacts to life history diversity (i.e., it is important to protect both early and late spawners). The most important impacts of the Power Bypass occur in the first few weeks (when water temperatures would be less suitable, absent the power bypass) to help protect early spawners. While not captured by the egg mortality model, improving water temperatures in October is also expected to reduce pre-spawn mortality.

- v. CDFW and NMFS will provide their model information to USBR around October 1 and ask for a decision within a couple weeks of receipt.
- vi. If the Power Bypass is approved, it usually begins at the end of October. In WY 2021 it began earlier to help decrease the pre-spawn mortality that was occurring, which may also be an issue this year.
- vii. When USBR-CVO receives the Power Bypass recommendation, they will send it to USBR-BDO to review.
- viii. USBR will discuss the recommendation with WAPA and may draft a modified recommendation based on data to share with the Regional Director for approval.

#### Questions/Comments

- NMFS commented that CDFW has put together a Power Bypass cost estimator that estimates the amount of foregone power generation that may occur using historical ISO energy pricing. When the scenarios are decided NMFS and CDFW will include this estimate in their proposal. This tool has been used in the past and has been roughly accurate.
  - USBR commented they will look at the proposal and determine the cost of foregone power and include power alternatives.
- NMFS commented that they are open to running different egg mortality models upon request, however they will not use the “USGS 2018” model because it assumes no egg mortality until water temperature exceeds 17°C (62.6°F) which NMFS deems unrealistic.
- USBR commented that the new profile will be completed on 9/20/22.

#### 8. Modeling

- a. Cardno presented temperature models for a target of 66° F at Hazel Avenue with both a power bypass and without a power bypass.
  - i. Currently, the coldest water is below the powerhouse units; however, there is slightly cooler water higher in the reservoir. As the season goes on the water above the penstock location becomes mixed.

- ii. There is cold water below the penstock that is accessible via the low-level outlets. When the flows are higher there will be a mix of warmer water from above and colder water from below the penstocks. During the summer higher flows are released and water does not warm up as quickly, but during the present transition time, higher flows do not cool down as fast and lower flows allow quicker cooling. This is a common theme in the models almost every year.
- iii. USBR highlighted that if there is a 500 cfs Power Bypass the water is going to mix with the normal warmer water releases. If they are below the MRR, the water will be cooler because the coldest water bypassed through the river outlets will represent a larger fraction of the total release out of Folsom.
- iv. USBR noted that initiating a Power Bypass slightly before November 1 would allow water to travel down to Lake Natoma and reach the Lower American River by November 1.
- v. Without a Power Bypass and assuming a starting temperature of 64° F at Hazel Avenue on November 1, over the course of a week water temperatures may get to 62° F and hold for a week, then slowly reduce from 62° F down to 58° F near the end of the month.
- vi. With a Power Bypass, temperatures would be able to decrease to 60° F by November 3 and stay cool through November 10. Temperatures would then decrease to 58° F over the next 10 days.

#### Questions/ Comments

- USBR already had to pull a bottom shutter due to the heat wave so 600 – 800 cfs is already being released from the bottom shutter of one unit. The model shows the lower shutters being pulled three weeks later and only releasing 250 cfs. It is likely there is less cold water now than the model assumed.
- Why do temperatures at Watt Avenue look cooler than those at Hazel Avenue?
  - Once air temperatures decrease, water temperatures will cool downstream.
- NMFS asked if current weather conditions are cooler than assumed in the model (which is based on 2014 meteorology), might that offset the shutter assumptions and put the projected fall water temperature back on track?
  - Cardno replied that it depends, and it will be important to model based on the next profile because it will give concrete answers based on the cold-water pool. They recommend that USBR slow down the amount of release from the bottom shutter as soon as possible.
  - USBR clarified that they are going to reduce flows from the bottom shutters to 7% by 9/16/22 which should help conserve the cooler water accessible through the bottom shutters.
- Cardno, asked when the temperature profile will be available?

- USBR responded that the profile should be available between 4pm -9pm on 9/19/22.
- Cardno commented it would be good to think of flow release as well and asked USBR to think about a model run with flows that are lower than MRR to gauge the effect it would have on the water temperature.
- USBR asked the group for feedback on what flows they would recommend if they could lower flows to either 900 cfs or 1,000 cfs?
  - Cardno commented that the amount of habitat needs to be considered as well and less flow means less habitat overall.
    - CDFW commented they expect stocks to look similar to 2019 and 2020.
  - Water Forum commented that the months that are already targeting the MRR are less than ideal.
  - NMFS commented that the Proposed Action operates to the 2017 FMS that is based on the 50% exceedance forecast, which was deviated from in the spring. If there is a deviation, there will likely need to be some type of conversation and documentation.
  - NMFS asked USBR about the likelihood of needing to adjust flow to meet Delta requirements.
    - USBR responded they will discuss with the BDO office and provide Cardno with the information so they can model as accurately as possible.
- NMFS asked if there is a ceiling for flows during a Power Bypass?
  - USBR responded the maximum flow through the River Valve is 500-700 cfs; however, they would not want to go any higher than 500 cfs because it would decrease the cold-water pool much quicker.
  - Cardno commented that they believe 50 TAF below the center line of the penstocks is represented in the models. In the past the volume of water released through the river outlets during a power bypass has been as high as 30-32 TAF as total value but is usually closer to 25 TAF.
- NMFS asked WAPA and SMUD to clarify whether there are power constraints that need to be considered when looking at options for the timing of the Power Bypass?
  - WAPA confirmed that there is more of a constraint earlier in the season. They clarified that it is less costly earlier in the day and later in the day because the prices do not fluctuate that much during those times, however there is always the chance for a late season heat wave.
  - SMUD commented that their resource adequacy planning time ends at the end of September but there are occasionally challenges at the beginning of October. By the end of October, they can manage because they are not leaning on individual resources as heavily.

- CDFW asked if there is a minimum flow needed to protect the Water Forum's habitat restoration projects?
  - Cardno will look into those numbers and provide them to ARG.

9. Modeling Scenarios

- a. The ARG proposed and discussed the different possible flow scenarios (four power bypass scenarios, and two no-bypass scenarios).

i. Scenario 1:

- Start the power bypass on 10/20/22 to get to Lake Natoma by 11/1/22
- Total Folsom releases of 1,300 cfs with 500 cfs Power Bypass
- 1,300 cfs in November

ii. Scenario 2:

- Start the power bypass on 10/29/22 to get to Lake Natoma by 11/1/22
- Releases of 1,300 cfs with 500 cfs Power Bypass
- 1,300 cfs in November

iii. Scenario 3:

- Start the power bypass on 10/20/22 to get to Lake Natoma by 11/1/22
- Total Folsom releases of 900 cfs with 500 cfs Power Bypass
- Reduce flows to 900 cfs 2-3 days after the beginning of the Power Bypass

iv. Scenario 4:

- Start the power bypass on 10/29/22 to get to Lake Natoma by 11/1/22
- Total Folsom releases of 900 cfs with 500 cfs Power Bypass
- Reduce flows to 900 cfs 2-3 days after the beginning of the Power Bypass

v. Scenario 5:



- No power bypass
- Total Folsom releases of 1,300 cfs

vi. Scenario 6:

- No power bypass
- Total Folsom releases of 900 cfs

Questions/Comments

- CDFW commented that they cannot operate their boat below 1,200 cfs and suggest operating at 1,150 cfs which is the 90% exceedance MRR for October through December.
  - USBR responded that they proposed 900 cfs for modeling purposes (i.e., to determine if there is a benefit of blending more cold water and to see the effects of the lower flow).
  - Cardno commented that having a model at lower flows is good to see how water temperatures respond.
- CDFW asked what is the maximum capacity of water that can run through the river outlets for Power Bypass?
  - USBR responded that it would be between 500 cfs and 700 cfs. However, they do not recommend anything higher than 500 cfs because it will use too much of the cold water pool volume.
- CDFW commented that they have concerns about lowering flows in November because there is the potential to dewater redds that are laid in late October/early November before the flows decrease. If part of the goal is to help egg survival, then it does not make sense to dewater the eggs.
  - Cardno asked if the river is at 64° F or 65° F degrees, how viable would the eggs be?
  - CDFW responded that one of the scenarios is to start the power bypass on October 20, which would reduce water temperatures enough for the incubating eggs.
- NMFS asked USBR if they can ramp down flows from 1,300 cfs to 900 cfs in one day?
  - USBR responded that it is possible.
- NMFS commented that dropping releases to less than the MRR is a deviation from the Proposed Action that would need further discussion. If it ends up staying dry next year, we will be glad we reduced, but if it doesn't then we will have cramped habitat unnecessarily. There will be documentation needed before dropping flows to 900 cfs.

They propose in the modeling to drop to November flows on the start date of the Power Bypass.

- Cardno commented that to see the biggest benefit of the Power Bypass they suggest lower flows concurrently.
- CDFW asked if there would be any issue for fish entering the hatchery via the rock channel at 900 cfs?
  - Water Forum commented that by this point they should have already pushed a bunch of spawning gravel in at Nimbus Hatchery and elevated the water surface above what it was last year, so that has fixed the low flow issues.
- NMFS expressed concern that the 900 cfs Bypass could lead to dewatering.
  - Cardno responded that it will depend on air temperatures. If the air temperature is cool, you would want lower flow so the water can cool down.
- NMFS asked if Cardno would need to do models under the assumption of no Power Bypass.
  - USBR responded that their Regional Director would like to see these.
- NMFS proposed to do a model that runs the 500 cfs until the water temperature reaches 56° F or until the cold water runs out.
  - Cardno commented that they will run this option for NMFS.
- NMFS asked Cardno when the temperature models will be ready if the profile is complete on 9/19/22 and would it be early enough for NMFS to do the egg mortality modeling?
  - Cardno commented that they would not have models done in time for egg mortality modeling by the September Ad-hoc meeting.
- Next Steps:
  - The scenarios will be run and ARG will discuss the results at the 9/26/22 Ad-hoc meeting.
  - Egg mortality modeling will happen with the data presented at the September Ad-hoc meeting. If there are any additional scenarios that would like to be run Cardno will run the models.
  - The ARG will meet at the 10/3/22 Ad-hoc meeting to discuss the results.

Next regularly scheduled meeting is on **Thursday, October 20, 1:30pm-3:30pm.**