

COLUMBIA RIVER TECHNICAL MANAGEMENT TEAM

July 18, 2018

Facilitator's Summary

Facilitator: Emily Stranz; Notes: Nancy Pionk, DS Consulting

The following Facilitator's Summary is intended to capture basic discussion, decisions and actions, as well as point out future actions or issues that may need further discussion at upcoming meetings. These notes are not intended to be the "record" of the meeting, only a reminder for TMT members. Official minutes can be found on the TMT website: <http://www.nwd-wc.usace.army.mil/tmt/agendas/2018/>

Meeting Minutes and Facilitators Summaries

TMT members reviewed and approved the meeting summaries and minutes for May 23, May 25, June 6, June 13, June 20, June 27 and July 11, 2018, subject to the edits identified below:

- July 11, 2018 Summary: delete "Charlie Morrill, WA" from the Adult Sockeye Report discussion.

Dworshak Dam Operations

Steve Hall, Corps, reported on current operations at Dworshak. Several supporting materials are posted to the agenda for today's meeting on the TMT website. Current reservoir elevation is 1,586.5 ft. Inflows are 2 kcfs and discharge is 12.9 kcfs, with 3.2 kcfs of spill. TDG levels in the tailrace have ranged between 109.7-109.9% during the hottest part of the day and reduced to 108.5% during the coolest part of the day. TDG levels in the hatchery have ranged from 100-101% with the average being 100.5%.

Steve reported on current temperatures in the Lower Granite tailwater and noted that temperatures reached 68.3 degrees F during the afternoon of 6/17/18 and the 12-hour average reached 68 degrees F for a couple of hours. He noted that the water temperature is peaking in the afternoon; however, temperatures are starting to cool off a bit, and the weather forecast for Lewiston is expected to be cooler for the next week. He noted that due to more heat inputs (warm weather and increased releases from Hells Canyon) the pool has heated up recently and the warm water is penetrating deeper into the pool: on July 15th the forebay temperature at the 10-meter level was 66 degrees F, whereas currently, the forebay temperature reaches 66 degrees F at the 20-meter level.

Steve noted that the Idaho Power releases from Hells Canyon do not track their projected outflow shape, which presents challenges for modeling (which uses the projected shapes/volumes). As a result, the Corps has chosen to conservatively model the Hells Canyon releases.

Steve reviewed three different model runs showing water temperature comparisons at discharges of 13, 10.6 and 9 kcfs. He noted that on 7/19/18, Unit 3 will be repaired and there will be a six-hour outage with a one-hour ramp down and one-hour ramp up, for a total outage of eight hours. The ramp down will start at 4 AM, and the repairs are expected to be complete by 11 AM, with a final ramp-up by 12 PM. This repair is to replace a part and fix a small oil leak and is not considered substantial. He expected more testing in the September and October.

TMT members supported dropping discharge down to 10.5 kcfs discharge after the Unit 3 repair is completed, at approximately 11 AM on July 19th. According to the model run, this will keep water temperature in the Lower Granite tailrace below 68 degrees. The Corps will be running the model on a daily basis and adjust out into the future as needed. If the temperature drops below 66 degrees and is forecast to stay below 66 degrees, the Corps will take action to conserve water and drop down to 9 kcfs outflows. If the temperature forecast to be above 66 degrees, the Corps will take action to increase the

discharge to maintain temperatures below 68 degrees. Steve noted that the Corps targets the model results to stay as close to 67 degrees as possible. The Corps intends to post modeling results that it has confidence in on the TMT website..

→ **ACTION:** Corps will operate Dworshak at 10.5 kcfs discharge after the repair to Unit 3 is completed on 7/19/2018. If the temperature drops below 66 degrees and is forecast to stay below 66 degrees, the Corps will take action to conserve water and drop down to 9 kcfs. If the water temperature holds at 67 degrees, they will hold the 10.5kcfs discharge.

Adult Sockeye Passage

Paul Wagner, NOAA and Russ Kiefer, ID, reported on adult sockeye passage. The year-to-date totals at Bonneville are 189,987 which is 60% of the 10-year average. The passage numbers are declining which is expected at this time in the run.

They noted that while 600 sockeye were counted at Ice Harbor, only 219 were counted at Lower Monumental. With regard to PIT-tag data, 110 PIT-tagged Upper Columbia sockeye were detected at Bonneville; and none were detected at Ice Harbor. Eight PIT-tagged Snake River sockeye were detected at Bonneville with five of these fish observed at Ice Harbor and Lower Granite. Russ observed that while the PIT-tag data shows those fish are on course, the count data raises questions about what happening with fish between Ice Harbor and Lower Monumental. Russ noted that a lot of sockeye were tagged at the Adult Fish Facility at Bonneville and the vast majority of those were mid-Columbia fish. Most of those fish have continued up the Columbia and only one was detected at Ice Harbor. He also noted that there is a low proportion of PIT-tagged Snake River sockeye, which makes the accuracy of estimations more uncertain; and that the estimates based on PIT tags appear to fit the counts at LOMO better than they fit the counts at ICH.

The group discussed possible reasons for the differences in the counts including whether there were errors in identifying the fish during counts (i.e. whether summer Chinook jacks were counted as sockeye?), whether these were mid-Columbia fish that were misdirected and whether a temperature differential in the fish ladder or a change in operations at Lower Monumental might impact fish movement.

Concern was expressed that the count difference between Ice Harbor and Lower Monumental may be an indication of delay of Snake River sockeye. Corps has asked the fish count contractor thru July 23 to observe whether fish are clipped or unclipped (the majority of Snake River fish are clipped and mid-Columbia fish are not clipped). This may help with the determination of whether some of the fish counted at Ice Harbor are mid-Columbia strays.

It was noted that Lower Monumental is not using the same unit and spill pattern as this time last year, which leads some to think that there current configuration could be creating unfavorable hydraulics for passage. Normally, Unit 1 would be operating and would push out any eddies that result from the RSW. This year Unit 1 is out of service, and Unit 2 is first priority, it is hydro-locked and operating at the lower 1 % and Unity 5 is second priority.

The group discussed a proposal for an interim two-day operation at Lower Monumental to assess whether the tailrace hydraulics are causing a passage delay of Snake River sockeye. The operation is as follows: from 4 AM to 2 PM on July 19 and 20, close the RSW and shift the spill pattern to a uniform, flat spill pattern to be determined at the Corps' discretion, while maintaining spill operation to 17 kcfs.

Fish managers raised concerns that closing the RSW may impact sub-yearling Chinook that are passing and that juvenile use of the RSW is considered the highest route of survival.

TMT Members were polled regarding their support for this proposal:

NOAA: Supports;

ID: Supports;

WA: Does not support, but does not object;

USFWS: Does not object;

Colville: Does not object;

BOR: Does not object;

Nez Perce: Does not object;

Corps: Supports;

Umatilla: Does not object;

BPA: Supports.

- **ACTION:** The Corps will implement the following operation from 4 AM to 2 PM on July 19 and 20: Close the RSW and shift the spill pattern to a uniform, flat spill pattern to be determined at the Corps' discretion, while maintaining spill operation to 17 kcfs. The Corps will post the pattern on the TMT website. The Corp will shift back to the current operation between 2 PM and 4 AM (RSW open, bulk spill, as outlined in the Fish Passage Plan).
- **ACTION:** TMT members will meet for an unscheduled conference call on Friday, July 20, 2018 at 3 PM to check-in on the operation and fish counts.

Little Goose to MOP+1.5

Aaron Marshall, Corps, reported that the Corps raised the Little Goose Dam forebay operating range to 1.5 feet above the Minimum Operating Pool (MOP) on Friday, July 13, 2018, for the purpose of navigation safety. TMT members were sent an email about this operational adjustment on July 13, 2018. He noted that, since July 1, the Lower Granite tailwater elevation has averaged 0.8 feet lower than the Little Goose forebay due to the hydraulic conditions in the Lower Granite tailrace during low flows. This operational adjustment was made to maintain the minimum depth at the downstream entrance to the navigation lock at Lower Granite Dam. This operation is discussed in greater detail in the 2018 Fish Operations Plan on page FOP-10 in section 4.6 Navigation Safety. He reviewed elevation levels between the Little Goose forebay and the Lower Granite tailwater with the group noting the difference between the two gages beginning in late June as lower Snake River inflows decreased below approximately 50 kcfs.

Operations Review

Reservoirs: Joel Fenolio, BOR, reported on Bureau of Reclamation projects:

- Hungry Horse midnight elevation was 3,559.68 ft. current discharge is 3.5 kcfs until July 20 and then discharge will be dropped to 3 kcfs. He noted that the maximum pool refill elevation is 3,559.9; thus, the pool is 99.9% full.
- Grand Coulee midnight elevation was 1,288.4 ft. Outflows are 133 kcfs and inflows are 120 kcfs.

Lisa Wright, Corps, reported on US Army Corps of Engineers projects:

- Libby midnight elevation was 2,447.5 ft., with 12.2 kcfs inflows and 9 kcfs outflow.
- Albeni Falls midnight elevation was 2,062.4 ft.; average inflow was 26 kcfs; outflows were 23.1 kcfs.
- Dworshak midnight elevation 1,586.9 ft.; inflows were .1 kcfs; outflows were 12.9 kcfs.
- Lower Granite average outflows were 42 kcfs.
- McNary average outflows were 185.1 kcfs.
- Bonneville average outflows were 186.3 kcfs.

Water Quality: Dan Turner, Corps, reported that the Corps is currently implementing Summer FOP spill and have generally been below state water quality standards for TDG. He noted that the Ice Harbor forebay exceeded the 115% standard for a couple of days that is likely due to a rapid increase in water temperatures. TDG has decreased to a more typical level and he is expecting it to stabilize at or below 115%. He noted that the Cascade Island gage has come back online and all gages are working.

Fish: Paul Wagner, NOAA, reported on Fish. Sockeye data is noted above. At Bonneville, summer

Chinook numbers are at 61% of the 10-year average, jacks counts are 19%, lamprey 188%, steelhead 44% and unclipped steelhead 44% of the 10-year average. At Lower Granite, summer Chinook numbers are at 42% of the 10-year average, jacks 12 % and sockeye 22% of the 10-year average. He noted that the lamprey counts are a success story and are well above the 10-year average. Shad are doing well with 6 million counted at Bonneville (which is potentially an all-time record in the world). Sub-yearlings are on the downtrend as the migration is winding down.

Power: Scott Bettin, BPA, shared there was nothing to report.

Sturgeon Update

Lynn Palensky, Northwest Power and Conservation Council, updated TMT members that Ann Setter with the Corps had been contacted by a fishing guide who observed 8-10 sturgeon, 7-10' feet in length (30+ years old) floating in the pool below McNary. It was hypothesized that the deaths are related to high temperatures. She requested that if found, people report sightings of any dead sturgeon to a biologist or enforcement officer. Olaf Langness at WDFW is tracking data on sturgeon deaths in the Basin and is only taking reports verified by a field biologist or an enforcement officer. Information that is helpful to provide: the number of fish, location, size, any tags, any obvious signs of cause of death and biological samples if possible. Olaf has distributed information on how to mark the fish to prevent double counting.

An unscheduled TMT call will be held on Friday, July 20, at 3:00 PM; this will be a check-in on Lower Monumental passage and operations.

The next regular TMT meeting will be a conference call on July 25, at 9:00 AM.

This summary was prepared by the impartial facilitation team of DS Consulting. Please send questions, comments or revisions to nancy@dsconsult.co

Columbia River Regional Forum
TECHNICAL MANAGEMENT TEAM OFFICIAL MINUTES
Wednesday, July 18, 2018
Minutes: Melissa Haskin, FLUX Resources

1. Introduction

Representatives of Nez Perce, Colville, Umatilla, USFWS, NOAA, WA, ID, BPA, Corps, Reclamation, and others participated in today’s TMT meeting chaired by Doug Baus, Corps, and facilitated by Emily Stranz, DS Consulting.

2. Review Meeting Minutes - 5/23, 5/25, 6/6, 6/13, 6/20, 6/27, and 7/11

TMT members reviewed and approved the meeting summaries and minutes for May 23, May 25, June 6, June 13, June 20, and June 27. The minutes for July 11 were approved with one edit to delete Charles Morrill from the fish update.

3. Dworshak Operations - Steve Hall, Corps (16:00)

Steve Hall, Corps, updated TMT on operations at Dworshak Dam. Several supporting materials are posted to today’s meeting agenda on the TMT website. Forebay elevation is 1,586.5 feet. Inflows have been about 2 kcfs, with outflows of 12.9 kcfs. TDG levels in the tailrace have ranged between 108.5-109.8%. There has been a pretty observable pattern of TDG rising during the day with the temperature and then subsiding at night down to about 108%. Hall estimated that TDG in the hatchery was running 100-101%.

Temperatures in the Lower Granite tailwater reached 68.2°F yesterday afternoon. The rolling 12-hour average hit 68°F several times. It is cooling off. Hall noted the temperature in the Lower Granite forebay on 7/15 was 66°F at 10 meters and 20 meters deep.

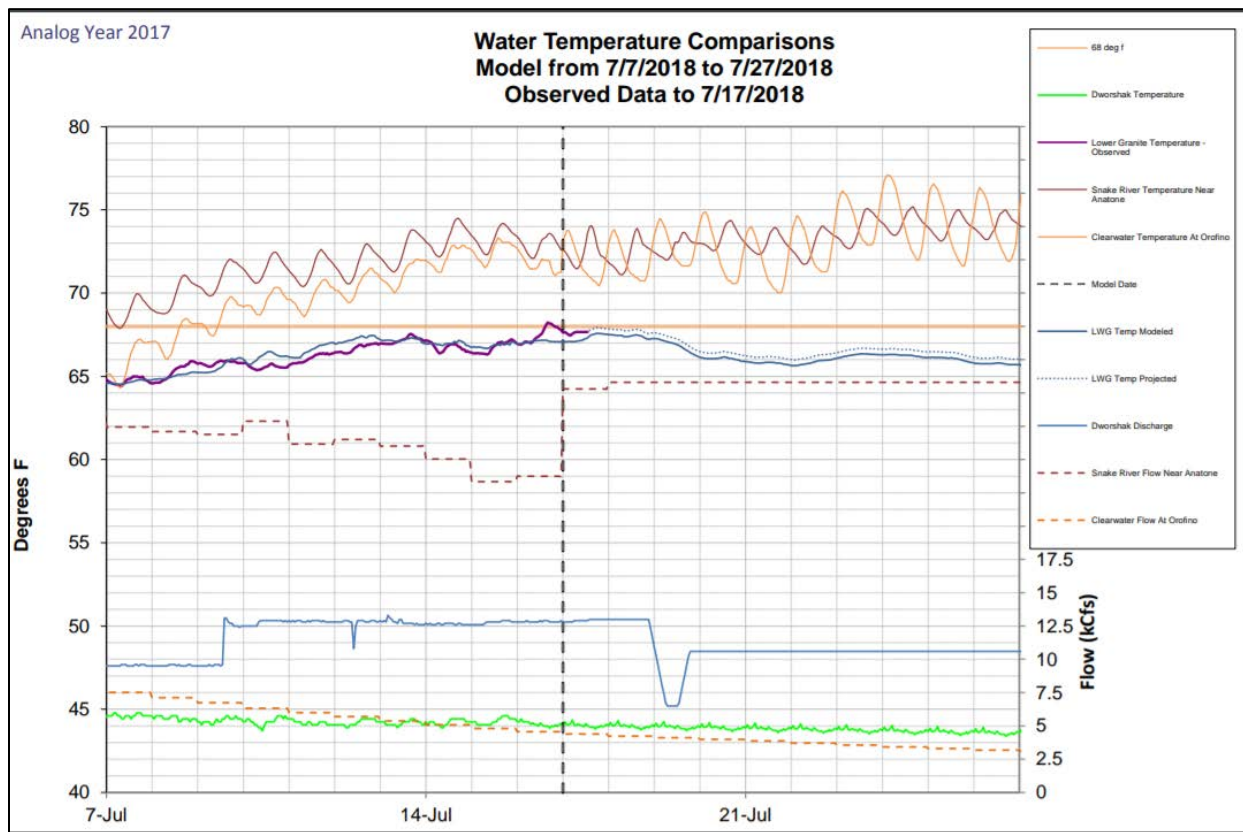
Hall directed TMT members to a graph of observed and forecasted Hells Canyon flows on the Idaho Power website:

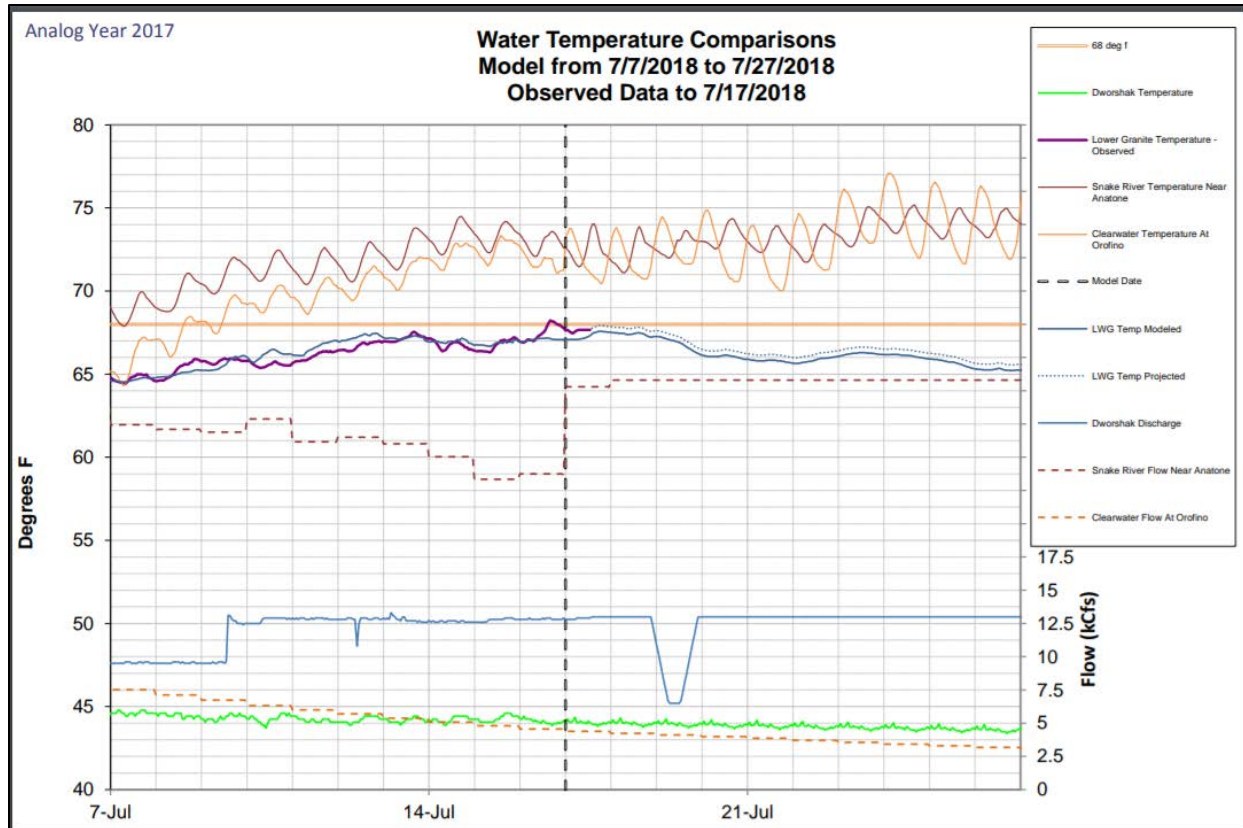


He noted that on July 16 and 17, temperatures were hot and Idaho Power released a large volume of water (20 kcfs on July 17). This caused temperatures in the Lower Granite pool to increase after about a 1-day travel time. Predicting how much water Idaho Power will release is a challenge.

The 7- and 10-day NWS weather forecasts for Lewiston indicate that temperatures are moderating and will remain below 93°F during the day and in the 50°F-60°F range overnight. The weather will help keep water temperatures lower, but could result in some lightning.

Hall shared model runs that show temperatures in the Lower Granite tailwater will stay at about 68°F today, then start to cool off. Increasing Dworshak outflows to 13 kcfs would create a “buffer” in the Lower Granite tailwater below the 68°F threshold.





Hall informed TMT of a scheduled outage at Dworshak on July 24, for approximately 8 hours (4am-11am) for minor maintenance and work on an oil leak. There will be additional testing in the fall, likely October or November. After the outage, Hall recommended returning Dworshak to 9 kcf, which is less than full powerhouse but will conserve water for later in the summer.

Charles Morrill, WA, asked if there would be any benefit from analyzing historical data from Idaho Power and using that information to predict flows from Hells Canyon. Hall said the Corps has reviewed historical data and that it appears to be somewhat random, due, in part, to Idaho’s power marketing.

Paul Wagner, NOAA, agreed with Hall saying that a Dworshak outflow of 9 kcf looked like a good option.

Russ Kiefer, ID, wondered if a 10.5 kcf release would be advisable to benefit adult Snake River Sockeye that are currently migrating upstream. He noted that it is a critical period for adult Sockeye migration. With the run low this year, it is important to provide them with reasonable conditions without jeopardizing cold water reserves at Dworshak that may be needed later. He said it might work to have higher releases now, then if Lower Granite temperatures drop below 66°F, reduce Dworshak to 9 kcf.

Wagner noted that Kiefer had a good point.

Hall expressed that if the Corps waited to reduce Dworshak outflows until temperatures at Lower Granite drop below 66°F, the change will be 3 days too late due to the travel time between projects. “Either you believe in the model or not. If you wait until something occurs, you’re chasing your tail.”

Kiefer replied it is best to remain protective until the model proves itself to be accurate.

Jay Hesse, Nez Perce, said he could be supportive of Kiefer and that there is merit in being conservative for adult Sockeye. However, he also shared that it is important to manage water for the entire summer period to draft Dworshak to 1,535 ft by August 31. In the short-term, he said, releases of 10.5 kcfs would be reasonable.

Dave Swank, USFWS, said he was fine with the higher releases now. He commented, “What did we save this cold water for? Sockeye is one of things we saved it for so let’s use it.”

Charles Morrill, WA, was also supportive of a more conservative approach for Sockeye, adding that it does not hurt to have a little more cool water.

Tom Lorz, Umatilla/CRITFC, was also supportive of increasing outflows to 10.5 kcfs now.

Sheri Sears, Colville, was also supportive, saying that with lower adult Sockeye numbers it is a good idea to provide them with a little “boost.”

Tony Norris, BPA, supported increased Dworshak outflows, and noted that the models being reviewed in the decision-making process were single-trace data from an analog year, meaning a range of outcomes is possible and real results are affected by actual stream flows and operations. Hall added that weather in the forecasts past about 5 days is based on analog data, not the forecast, since the rate of error in weather forecasting increases further out.

- ➔ ACTION: The Corps will return Dworshak outflows to 10.5 kcfs on July 24 after the scheduled outage. If Lower Granite tailrace temperatures drop below 66°F, the Corps will reduce Dworshak outflows to 9 kcfs to conserve water. If, as forecasted, temperatures in the Lower Granite tailwater return to 67°F, the Corps will hold Dworshak at 10.5 kcfs.

4. Adult Sockeye Passage – Paul Wagner, NOAA, and Russ Kiefer, IDFG

At Bonneville, adult sockeye counts are at 189,987 thus far this season, which is about 60% of the 10-year average. Passage is falling off as is expected this time of year.

In the Snake River, the year-to-date adult Sockeye count is 600 at Ice Harbor and 229 at Lower Monumental, leading salmon managers to wonder: were these Snake River sockeye or Columbia River sockeye that made a wrong turn?

Dave Benner, Fish Passage Center, observed that the count of summer Chinook jacks at Ice Harbor is lower than at Lower Monumental, so maybe the counters at Ice Harbor are misidentifying and counting them as sockeye instead.

Wagner noted that of the 110 PIT-tagged Upper Columbia adult sockeye detected at Bonneville Dam, none have been detected at Ice Harbor, indicating that Upper Columbia sockeye aren't straying into the Snake River. Of the 8 PIT-tagged Snake River sockeye detected at Bonneville, 5 have been detected at Ice Harbor, all of which made it to Lower Granite. It's the count data that says something may be amiss, said Wagner. Is there something awry at Lower Monumental?

Russ Kiefer, ID, noted that the Lower Monumental adult Sockeye count seems to be more accurate than Ice Harbor. However, there is still a lot of uncertainty, he said.

With this observation, the Action Agencies and NOAA reviewed the potential causes for the difference in counts and options for operational changes to address the issue. Wagner noted turbine operations at Lower Monumental this year are different than in the past. Unit 1 has been out of service for over a year for rehabilitation, which makes Unit 2 first priority. What's different this year is that Units, 2, 3, and 4 have fixed blades and restricted operating capabilities. Unit 2 is fixed in the lower 1% range so can't pass as much water as it did last year. Since Units 3 and 4 are fixed and can't be flipped on and off, Unit 5 is operated as second priority, as defined in the Fish Passage Plan. Therefore, under current flows, Unit 2 is operating in the lower 1% (approximately 12 kcfs) and Unit 5 is operated as needed to pick up extra inflow. This is a fundamentally different unit operation than in the past. Since there are no other turbine operations that could be run, the only option to modify operations is to close the RSW and switch to a more uniform spill pattern to see if that improves adult passage.

Tom Lorz, Umatilla, warned: "little tweaks can have a much bigger effect than we think – you could make things worse for adults."

Dave Swank, USFWS, commented that the agencies are suggesting taking action on something that they do not even know is an issue for sure. He said he understood the desire to try something different; he just had a lot of questions. It could even be a temperature issue, he noted.

Ann Setter, Corps, noted that the spill pattern with no RSW in the Fish Passage Plan has spill bulked through a few bays rather than uniformly distributed. She suggested a modified uniform pattern with no RSW, similar to what was in the FPP in 2006 prior to the RSW being installed. Therefore, the operation would be to close the RSW and switch to the modified uniform pattern from 4am-2pm for two days, July 19-20. TMT would then convene Friday, July 20, to discuss the data and any changes in operations. TMT members were polled on their support for the operation:

- Paul Wagner, NOAA: support
- Charles Morrill, WA: does not support but will not object

- Sheri Sears, Colville: neutral but will see what it does, no objection
- Tom Lorz, Umatilla/CRITFC: no objection
- Joel Fenolio, Reclamation: no objection
- Doug Baus, Corps: support
- Dave Swank, USFWS: no objection though lots of uncertainty. Since there might be delay, it's worth trying.
- Russ Kiefer, ID: support
- Jay Hesse, Nez Perce: officially no objection but leaning toward support
- Scott Bettin, BPA: support

➔ **ACTION:** The Corps will implement an operation at Lower Monumental tomorrow, Thursday, July 19, and Friday, July 20, to close the RSW and switch to a modified uniform pattern from 4am through 2pm both days. Outside of those hours, the RSW will be re-opened and spill per the FPP bulk pattern. TMT will reconvene on Friday, July 20, at 3pm, to review data and discuss the operation. The Corps will post the modified uniform spill pattern to the agenda.

5. Little Goose to MOP+1.5 - Aaron Marshall, Corps NWD

Aaron Marshall, Corps, provided an update on MOP operations at Little Goose. For navigational safety, the Corps raised the Little Goose Dam forebay operating range to MOP+1.5 on July 13 to keep the Lower Granite tailrace navigation entrance at or above the required minimum of 633 ft. Below are the email notifications from Marshall to TMT on July 13:

“Beginning today, July 13, the Corps raised the Little Goose Dam forebay operating range to 1.5 feet above the Minimum Operating Pool (MOP) for the purpose of navigation safety. This operational adjustment was made to maintain the minimum depth at the downstream entrance to the navigation lock at Lower Granite Dam. This operation is discussed in greater detail in the 2018 Fish Operations Plan on page FOP-10 in section 4.6 Navigation Safety. The Corps will provide an update to the TMT on this operation at the next meeting which is scheduled for Wednesday, July 18.”

6. Operations Review

a. Reservoirs – Joel Fenolio, Reclamation; Lisa Wright, Corps

Hungry Horse: elevation 3,559.9 ft (99.9% full), releasing 3.5 kcfs. Plan is to hold that until Friday, then drop down to 3 kcfs through the end of July.

Grand Coulee: elevation 1,288.4 ft, inflows 120,000 cfs, releases 133 kcfs.

Libby: elevation 2,447.5 ft, inflows 12.2 kcfs, outflows 9.0 kcfs (bull trout minimum).

Albeni Falls: elevation 2,624 ft, inflows 26 kcfs, outflows 23.1 kcfs.

Dworshak: elevation of 1,586.9 ft., inflows 0.1 kcfs, outflows 12.9 kcfs.

Lower Granite: outflows 42 kcfs.

McNary: outflows 185.1 kcfs.

Bonneville: outflows 186.3 kcfs.

b. Water Quality – Dan Turner, Corps

Projects are spilling per the Summer FOP, which is resulting in TDG below state water quality standards. The Bonneville tailrace gauge at Cascades Island came back online July 11. Ice Harbor's forebay has experienced a couple of exceedances, most likely due to rapid increases in temperatures on the Snake River that drove TDG up. Turner is expecting TDG in the Ice Harbor forebay to stabilize at or below 115%.

c. Fish – Paul Wagner, NOAA

Adults: Sockeye at Bonneville are close to 190,000, which is about 60% of the 10-year average, and summer Chinook are at 56,561, which is about 61% of the 10-year average. Meanwhile, Chinook jacks are at 3,790, a troubling 19% of the 10-year average.

Lamprey are at 32,620, which is 188% of 10-year average. It is less than last year, but doing well compared to recent history.

Steelhead are at 19,368, or 44% of the 10-year average. Of those, 9,000 are unclipped, which is 44% of the 10-year average. At Lower Granite, summer Chinook are at 6,453, or 42% of the 10-year average. Jack Chinook are 719, or 12% of the 10-year average. Sockeye are 167, or 22% of the 10-year average.

Lamprey at Lower Granite are showing up in numbers higher than seen in some time, with a count of 55.

Over 6 million Shad have been counted at Bonneville – a record.

Juveniles: Subyearling Chinook are dropping off, with 2,000-4,000 passing per day at Lower Granite and Little Goose. Counts in the Lower Columbia are still relatively high, with 68,000 at McNary. There is similar trend John Day and Bonneville.

d. Power – Scott Bettin, BPA

Nothing to report.

e. Other – Lynn Palensky, NPCC

Lynn Palensky, Northwest Power and Conservation Council (NPCC), informed TMT that there have been reports of adult sturgeon mortalities in the McNary pool. In all, 8-10 adult female sturgeon have been found dead. At 7-10 feet long, these fish could be about 30 years old. State

biologists are investigating the cause. She encouraged folks to report sightings of any sturgeon mortalities to the respective state fish and wildlife agency.

7. Next TMT

The next TMT meeting is an unscheduled conference call Friday, July 20 at 3 p.m to discuss the operation to close the Lower Monumental RSW. There will be a regularly scheduled conference call next Wednesday, July 25.

Today's Attendees:

TMT Members:

Corps	Doug Baus (Chair), Julie Ammann, Lisa Wright
BPA	Tony Norris, Scott Bettin
Reclamation	Joel Fenolio
NOAA Fisheries	Paul Wagner
US Fish & Wildlife	Dave Swank
Washington	Charles Morrill
Oregon	N/A
Idaho	Russ Kiefer
Montana	N/A
Nez Perce Tribe	Jay Hesse
Umatilla Tribe	Tom Lorz (CRITFC)
Colville Tribe	Sheri Sears
Warm Springs Tribe	N/A
Kootenai Tribe	N/A
Spokane Tribe	N/A

Other Attendees:

Corps – Dan Turner, Aaron Marshall, Laura Hamilton, Ann Setter, Chuck Barnes, Steve Hall, Alfredo Rodriguez, John Heitstuman, Jonathan Roberts

Reclamation – Chris Runyon

Yakama Nation – Tom Iverson

NPCC – Lynn Palensky

Fish Passage Center – Dave Benner

Snohomish PUD – Scott Richards

Columbia Basin Bulletin – Mike O'Bryant

DS Consulting – Emily Stranz (Facilitator), Nancy Pionk

FLUX Resources – Melissa Haskin (Notetaker)