

COLUMBIA RIVER TECHNICAL MANAGEMENT TEAM

May 11, 2022

Facilitator's Summary

Facilitation Team: Emily Stranz & Colby Mills, 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; it is not intended to be the "record" of the meeting. Official minutes can be found on the TMT website: <http://pweb.crohms.org/tmt/agendas/2022/>. Suggested edits for the summary are welcome and can be sent to Colby at colby@dsconsult.co.

Review Meeting Summaries & Minutes - TMT Members finalized the official meeting minutes and facilitator's summaries from the April 20 and 27 meetings. Minutes and summaries from May 4 and 6 will be reviewed at the next TMT meeting.

Official Water Supply Forecasts - Joel Fenolio, BOR, reported the official May residual water supply forecast for Hungry Horse Dam. May through July is 106% of average, which is higher than previously predicted for the Flathead Basin; May through September also increased, from 91% up to 108% of average. Colder temperatures, more precipitation, and continuing snow build in the north has improved supply and delayed spring runoff. In the Upper Snake, the May residual forecast has gone from 65% up to 76% of average. Joel noted that conditions are improving, but concerns regarding water supply are not completely resolved.

Doug Baus, Corps, reported official May water supply forecasts for Corps of Engineers projects:

- **The Dalles:** NWRFC April to August volume forecast is 83 maf, or 93% of average;
- **Lower Granite:** NWRFC April to July volume forecast is 16 maf, or 79% average;
- **Libby:** Corps NWS runoff forecast April to August is 6,740 kaf, or 111% of average; and
- **Dworshak:** Corps NWW runoff forecast April to July is 2,399 kaf, or 97% of average.

Joel speculated that robust weather patterns are not yet captured in the forecast average for The Dalles, and that percent of averages should increase in the next week or so. In response to a query from Kirk Truscott, Colville Tribes, Doug noted that the Grand Coulee Dam April to August forecast is 58 maf, or 101% of average. Additionally, Charles Morrill, WA, noted that forecasts for the eastern Cascades are all well over 100%.

Adult 2022 Libby Dam Releases for Sturgeon and Bull Trout Flows - Dave Swank, USFWS, reported on the annual SOR (FWS #1) for Libby Dam releases for Kootenai River white sturgeon and bull trout flows (posted to the TMT website). It is part of the proposed action from the 2020 BiOp. The operation aims to provide a peak river stage/flow during the spring freshet to cue sturgeon to spawn upstream of Bonners Ferry, provide connectivity to the floodplain and partially inundate Nimz Ranch habitat, and to concurrently provide a stable to rising thermograph in the river as the operation concludes.

For further background context and updates, Kristian Mickelson and Greg Hoffman, Corps, presented on 2022 Libby Dam Sturgeon Operations (posted on the TMT website). Kristian also reviewed the May water supply forecast, BiOp objectives, and a summary of planned refill operations for the project. The sturgeon augmentation flow is planned to start on May 16, ramping up discharges from Libby to 25 kcfs (powerhouse capacity) and maintain the pulse for approximately 22 days, followed by

a period at 20 kcfs. Discharge will decrease after the pulse to summer flat flow following the BiOp ramping rates.

In response to a query, Sean Wilson, Idaho Department of Fish and Game, noted there are a little over 100 sturgeon with active tags, although it's not known how many of those will make spawning migration yet; about 8 have been detected above Shorty's Island so far.

TMT Members were polled on the SOR, with some providing additional rationale for their responses:

TMT Member	Polling Response	Rationale (optional)
NOAA	Supports	NOAA appreciated the efforts to support sturgeon spawning.
Oregon	Supports	No additional comments.
Washington	Supports	Washington agreed with NOAA's statement.
Kootenai Tribe of Idaho	Supports	Kootenai Tribe greatly appreciated everyone's support for resident fish in the upper basin.
Confederated Tribes of the Colville Reservation	No Objection	No additional comments.
Confederated Tribes of the Umatilla Indian Reservation	No Objection	Umatilla Tribes wished the operation good luck and success.
Reclamation	Support	No additional comments.
Corps	Support	The Corps expressed thanks to all parties.
USFWS	Support	USFWS thanked all parties for their continued support of the SOR and operation.
Idaho	Support	No additional comments.
Montana	Support	MT was happy with the repetitive experimenting ramping down to elicit spawning.
Nez Perce Tribe	Support	No additional comments.
Confederated Tribes of Warm Springs	Support	No additional comments.
Bonneville	Support	No additional comments.
<i>The Spokane Tribe of Indians was not present to register a polling response.</i>		

Action Agencies Decision - The Action Agencies plan on implementing the SOR as described and presented today, and look forward to the results of the operation.

Lower Monumental Dam – Chris Peery, Corps, provided an update on spill bay repairs at Lower Monumental Dam: 3 of the 4 spill bays that were taken out of service are repaired and operational, and when repairs are not ongoing on bay 1, a total of 7 bays will be in operation (as occurred last night). Today is the second day of repairs on bay 1; it is projected to be completed and in operation within another day or so (weather permitting). Charlie expressed appreciation on behalf of Fish Managers for the Corps' efforts to get spill bays in operation.

Adult Passage - Jonathan Ebel, ID, reported on adult passage, noting significant increase in passage at Lower Monumental Dam as a result of the increase in flows, water temperatures, and additional spill bays in operation. He noted that the online passage tools are not currently communicating with the PIT-tag database and there are missing PIT-tag data from yesterday.

Passage at Bonneville looks good and there was a quick uptick in the conversion rate from Ice Harbor to Lower Monumental. Passage at Little Goose can be problematic this time of year, although it does not seem to be an issue now; good numbers are passing at Lower Granite. Counts have caught up to the 10-year averages.

Chris added that based on hourly counts for Lower Monumental, the highest peaks of passage were during performance standard spill. Passage at the project has improved while operating 7 bays and with higher flows. There also appears to be a smaller afternoon peak occurring, and it was speculated that this is from fish hanging around the fishway entrance before ascending the ladder. Trevor Conder, NOAA, agreed that high flows and spill patterns are having a big impact on passage, although the fish ladder on the south side seems to be underperforming this year, and repairs for spill bays 1 & 2 may be contributing to that.

Scott St. John, Corps, reported on collection and transport at the Walla Walla transport projects. Collection has been much higher in 2022 than 2021 (mainly occurring in the last week with higher flows) although collection and transport are still less than the 10-year average. There haven't been collection numbers like this since April 24, 2019, since the flex spill operation implementation. Scott noted that the Corps did not anticipate flows to be as high as they have been.

Flow Augmentation Prospects - Joel provided an update on 2022 flow augmentation prospects. He noted that Reclamation still expects to miss 427 kaf and is instead projecting around 280 kaf of flow augmentation for this year (still under speculation). With the improving water supply forecasts, the Payette and Boise systems are seeing gains, although it will take a while to stabilize, and the Palisades Powerhead is the only significant prospect available in the Upper Snake system. Outside of an SOR or other coordinated operation, Reclamation plans to release 1,500-2,000 cfs from Palisades Powerhead starting May 23. Joel noted that soil moisture is pretty good, as well as in northern Oregon, and Reclamation does not anticipate any issues with soil moisture this year.

Lower Snake River Fixed Block / Lack of Load Decision Criteria - Tony Norris, BPA, presented criteria BPA will use to maximize the ability to provide 8 hours of performance standard spill at Little Goose, Lower Granite, and Lower Monumental dams during lack of market spill conditions (posted to the TMT website). These criteria were coordinated with FPAC a few weeks ago, however, one area of difference is that if BPA can't provide all 8 hours of performance spill in the morning hours, they will carry into the afternoon. If the block starts after 1200 hours, they will be a minimum of 2 consecutive hours; with no performance spill later than 2000 hours. The Spill Priority List (as coordinated with the TMT) will be used to avoid impacting lack of load spill best as possible during those hours to maximize the likelihood of achieving the performance standard spill blocks.

Fish Managers shared concern that language in the criteria did not accurately reflect language from the SPL. Tony clarified that utilizing flexible spill is one of the first tools used to reduce generation. Shane Mosier, BPA, confirmed that revising the criteria language to clarify a switch from level 1 to level 2, as well as the flexibility to use JDA flexible spill could be helpful.

→ **Action:** Shane will seek to clarify the criteria language to ensure that the intent of the SPL is clear for implementation.

Operations Review – Reservoirs: Joel reported on Bureau of Reclamation projects:

- **Hungry Horse:** midnight elevation was 3,530.86 feet, currently releasing 7.6 kcfs (almost VarQ flow); the project will hold for another week or so to manage refill and the increasing water supply. The project will reevaluate at the end of this week.
- **Grand Coulee:** refill is up to 1,254.3 feet, with flows averaging 127,000 cfs. Releases for the last 5 days have averaged 87 cfs. The project is holding below 1,260 feet through May 16, until scaffolding is removed from drumgate maintenance. Drumgate maintenance finished a couple days early with no issues.

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

- **Libby:** midnight elevation was 2,374.3 feet, with average inflows of 18.5 kcfs, and outflows of 12.3 kcfs;
- **Albeni Falls:** midnight elevation was 2,057.1 feet, with average inflows of 49.1 kcfs, and outflows of 43.1 kcfs;
- **Dworshak:** midnight elevation was 1,551.2 feet, with average inflows of 17.7 kcfs, and outflows of 1.6 kcfs;
- **Lower Granite:** average outflows of 85.5 kcfs;
- **McNary:** average outflows of 224.3 kcfs; and
- **Bonneville:** average outflows of 232.0 kcfs.

Aaron Marshall, Corps, provided an update on minimum operating pool adjustments at Lower Snake River projects:

- **Lower Granite:** operating in a 2-foot raised MOP range for inflows ranging from 50-80 kcfs, (range of 735-736.5 feet). High flows this weekend reached a peak of 117 kcfs on Sunday, below 80 kcfs today, and will recede down to 60 kcfs by the end of this week. This operation will continue at Lower Granite until inflows are outside of the 50-80 kcfs range.
- **Little Goose:** operating in a 1-foot raised MOP range (634-635.5 feet). This is 2 feet lower than in April, and Aaron noted that as a result of a floating guide wall bracket that is still encroaching into navigation safety depth, it is necessary to continue a 1-foot raised MOP operating range this season. The Corps has plans for a contractor to resolve the issue during the next navigation lock outage in February 2023, and will have a full operating range at Little Goose after that.
- **Lower Monumental:** operating in a 0.5-foot raised MOP range (537.5-539 feet). This adjustment is needed to maintain the minimum tailwater elevation at Little Goose.

Water Quality: Dan Turner, Corps, reported an uptick in flows over the weekend. He also noted a glitch in the data stream means there are no TDG values for yesterday (although available elsewhere). Snake River flows came up enough to spill up to the gas cap at some projects, resulting in spill cap changes; increased at Lower Granite, and decreased at Lower Monumental. A couple days did exceed the water quality criteria of 125%. When spill bay 1 at Lower Monumental comes back online, the spill cap will depend on how TDG reacts to the next increase in flows.

Fish: Trevor reported that adult spring Chinook passage over Bonneville has been better than predicted; to date this year passage is 93,000 (higher than 10-year average). He noted that pretty much every project is showing higher passage than last year, and higher than the 10-year average, except for Little Goose and Lower Granite where conversion rates are starting to catch up. Overall, adult spring Chinook counts are looking good.

He noted that at Willamette Falls on the Willamette River, which enters the Columbia below Bonneville Dam, passage is currently well below the 10-year average. He hypothesized that this does not provide strong evidence for much improved ocean conditions. The above average returns to Bonneville that have exceeded predictions could indicate some improvements from increased spill in the Columbia and Snake rivers, but it is still too early to tell, and NOAA will continue to watch and monitor as passage continues.

Juveniles are also moving through the system, with reports of wild and hatchery fish moving through. Yearling Chinook and transport are increasing, and Trevor noted that it would be prudent to use increased incoming flows to assist in passage. Sub-yearlings are also starting to move through the system, with a good pulse at Lower Granite (fall Chinook releases); Coho, hatchery fish, steelhead, and a few sockeye, are moving through the system (counts are higher than normal at Salmon River trap for sockeye).

Dave reported an increase in lamprey passage over the last 2-3 days, probably due to the bump up in flows. Jay Hesse, Nez Perce Tribe, highlighted the positive news of runs coming in stronger than forecasted, and also noted that the 10-year averages referenced are still way below recovery goals.

Power System: Tony reported a volatile spring period, with below average cool temperatures which has helped bring load in otherwise lack of load conditions. He showed a recent example of where flexible spill was not implemented at John Day Dam to avoid using the SPL. Last weekend BPA made adjustments to manage load but did not have to move down the SPL. There are no issues on the power system now, with operations adjusting to the quickly changing conditions to river flow and wind energy on the system. Charles noted that SWE at many sites is still climbing, with more freezing temperatures at higher elevations, which could create a significantly later peak in flows.

Questions or Comments from Members of the Public - There were no questions or comments from members of the public

May 18 TMT Meeting Agenda Topics - IDFG will present an SOR focused on flow augmentation for the Snake River above Milner Dam.

The next scheduled TMT meeting is on May 18 at 9:00 AM.

Columbia River Regional Forum
Technical Management Team
OFFICIAL MINUTES
May 11, 2022
Minutes: Melissa Haskin, BPA (contractor, CorSource)

Today's TMT meeting was held via conference call and webinar, chaired by Doug Baus, Corps, and facilitated by Emily Stranz, DS Consulting. A list of today's attendees is available at the end of these minutes.

1. Review of Meeting Minutes and Summaries

The 4/20 and 4/27 meeting minutes and summaries were approved with no additional edits.

2. Water Supply Forecast

Doug Baus, Corps, and Joel Fenolio, Reclamation, updated the TMT on the official May water supply forecast, which was released on May 4 (the 3rd workday of the month). The forecasts are as follows:

- Hungry Horse: The forecast has improved due to colder temperatures, precipitation, and an increasing snowpack. May-July: 1,780 kaf (106% of average) and May-September 1,910 kaf (108% of average).
- Upper Snake: The Heise forecast has increased from 65% of average to 76% of average.
- The Dalles Dam: April-August, 83 maf (93% of average)
- Lower Granite: April-July, 16 maf (79%)
- Libby Dam: April-August: 6,740 kaf (111%)
- Dworshak Dam: April-July: 2,399 kaf (97% of average)

Charles Morrill, WA, wondered why The Dalles forecast did not increase more, as he had expected with all the recent precipitation and building snowpack. Baus said it is a good observation. He does not know why the RFC forecast is showing the way it is with the cold and precipitation the region has recently seen. Fenolio said forecast averages may increase in the next week or two, as data may still be updating in the forecast from the last few weeks.

Kirk Truscott, Colville Tribe, asked for a water supply forecast for the Upper Columbia. While it is not used for water management purposes, Baus shared that at Grand Coulee, the April-August forecast is for 58.5 maf, which is 101% of average.

3. SOR Libby Dam Releases for Sturgeon and Bull Trout

Dave Swank, USFWS, and Kristian Mickelson, Corps, presented an SOR for this year's sturgeon pulse operation at Libby Dam. The SOR is available in full on the TMT website. The operation would include:

1. Starting sturgeon augmentation flow operations on May 16, 2022.
2. Increasing to full powerhouse capacity for ~22 days, then stepping down to 20,000 cfs for ~7 days, and lastly, 9 days of reducing flows to 9,000 cfs.

Since this year is classified as a “Tier 4” year, the operational plan calls for a volume of 1.18 maf to be released. The operation would allow for flows of 30,000 cfs at Bonners Ferry for ~ 30 days.

Greg Hoffman, Corps, shared some historical facts regarding the pulse, which began in 2006. Since then, data have been collected to determine the best conditions for the fish, resulting in the plan presented today.

Mickelson shared additional operational data, noting that spring refill began on April 27. The minimum reservoir elevation occurred March 1 at 2,363.5 ft. The VarQ flow has been 12.3 kcfs.

The water supply forecast calls for above average conditions with the April-August inflow forecast coming in around 111% of average. The sturgeon volume is 1.18 maf and the bull trout minimum flows following the Sturgeon Pulse through Aug 31 are 9 kcfs, based on the forecast. The Corps’ target reservoir elevation for September 30 is 2,449 ft. (10 feet from full) dependent upon inflows to the reservoir. Mickelson added that snowpack is above average in the mountains in the eastern basin. Some areas are at 120% of average for this time of year.

TMT members and representatives had no questions regarding the operation.

Emily Stranz, DS Consulting, polled TMT members on the SOR. For information on available polling responses and their meaning, see the official TMT guidelines, available on the TMT website. The results are as follows:

Agency	TMT Representative	
Army Corps of Engineers	Doug Baus	Support
Bonneville Power Administration	Tony Norris	Support
Bureau of Reclamation	Joel Fenolio	Support
NOAA Fisheries	Trevor Conder	Support
US Fish & Wildlife Service	Dave Swank	Support
Washington	Charles Morrill	Support
Oregon	Erick Van Dyke	Support
Idaho	Jonathan Ebel	Support
Montana	Brian Marotz	Support
Nez Perce Tribe	Jay Hesse	Support
Umatilla Tribe/CRITFC	Tom Lorz	No objection
Colville Tribe	Kirk Truscott	No objection
Warm Springs Tribe	Jen Graham	Support
Kootenai Tribe	Shawn Young	Support
Spokane Tribe	Absent	

Following polling, comments and clarifications were stated for the official record:

1. NOAA, WA, USFWS, and the Kootenai Tribe expressed appreciation for the efforts to support sturgeon spawning.
2. Brian Marotz, MT, shared that he is excited that the Corps plans to experiment with ramping down this year to elicit spawning.

The Corps will implement the SOR as available on the TMT website and as presented today.

Following this decision, a question was raised regarding how many sturgeon are actively tagged and trackable this year. Sean Wilson, ID, responded that there are about 100 active tags, but it is hard to know how many of those sturgeon will make a spawning migration. Right now, there are 8 above Shorty's Island, which is the point where sturgeon are considered to have made the migration.

4. Lower Monumental Operations

Chris Peery, Corps, shared an update on Lower Monumental Dam spillbay repairs. He shared that 3 of the 4 bays that need to be repaired have been repaired and returned to operation. Bay 1 is still being repaired and he is hopeful that the work will be completed and the bay returned to service in the next day or two. Once that bay is returned to service, all 8 bays will be available for use.

5. Adult Fish Passage

Jonathan Ebel, ID, reported that adult passage has improved, as expected with the increasing flows. Fish are still passing Bonneville and have made it to Lower Granite, where they are showing in satisfactory numbers. As the Lower Monumental spillbays came back online all fish passage indicators (FPC, DART, fish counts), showed a drastic increase at Lower Monumental. Travel times have decreased from Ice Harbor to Lower Monumental, as well. This time of year, passage at Little Goose can be an issue, noted Ebel. However, there does not appear to be an issue yet this year.

Gabe Scheer, FPC, put together a chart showing “one day lagged ICH to LMN count based conversion rates compared by year on 05/09 from 1991-2022.” On May 2, conversion rates were 0.3 below average. However, conversion is now near the long-term average.

Peery added that over the past 10 days, as flows picked up, so did hourly counts of Chinook at Lower Monumental. The highest peaks in passage were during performance standard spill at the project. Peery also commented that there seems to be both a morning and an afternoon peak. Group members helped piece together the puzzle, noting that this has been seen historically with one theory being that the fish reach the ladder and then take a break before ascending the ladder and reaching the count window.

Trevor Conder, NOAA, commented that the south ladder has been underperforming more than usual this year. He is curious to see if this will change once bays 1 and 2 are returned to service.

Scott St. John, Corps, provided an update on juvenile transport. He shared a chart that summarized transportation and collection rates at Lower Granite, Little Goose, and Lower Monumental from 2018 to 2022. He noted that collection this year has been higher than it was in 2021 but prior to last week, was below the 10-year average. He shared that passage picked up over the last week as flows increased, pushing passage to levels above the 10-year average. He says collections have not been like this since April of 2019.

6. Snake River Flow Augmentation

As Fenolio has previously noted, Reclamation will likely be unable to hit ~427 kaf for flow augmentation this year. Projected flow augmentation volumes have improved slightly from last month. There will likely be 280 kaf available this year. On the Upper Snake, the only available rentals are from the Shoshone-Bannock Tribes and Palisades. Flow augmentation will begin on May 23 with 1.5-2.5 kcfs from Palisades. Fenolio mentioned that some of the flow augmentation volume is still speculative.

Morrill asked if Reclamation expects to lose some flow augmentation to the soil since conditions were dry last year. Fenolio commented that it is moist.

7. Lower Snake River Fixed Block / Lack of Load Decision Criteria

Tony Norris, BPA, shared a document, available on the TMT website that outlines Lower Snake River fixed block/lack of load decision criteria. The criteria are meant to maximize the likelihood of getting the performance standard spill (PSS) at Lower Granite, Little Goose, and Lower Monumental dams during lack of market conditions. The document outlines that if BPA is unable to reach 8 consecutive hours of PSS, that available hours will be carried into the afternoon in blocks of at least 2 hours. PSS will occur no later than 2000 hours. BPA will use the spill priority list to avoid impacting projects that are a priority for adult fish passage.

Several TMT members asked Norris if this document is in alignment with the spill priority list. Norris and the fish managers delved into the specifics and intent of the language. Following the discussion, Shane Mosier, BPA, agreed to revise language in the Lower Snake River fixed block/lack of load decision criteria document.

Specifically, Ebel called out the following language:

- *To maximize the likelihood of achieving PSS operations in the AM hours, the spill priority list order would be modified as follows:*
 - *Increased spill starting at CHJ, GCL and DWR up to 110%, then increase JDA, TDA, LWG, LMN, and LGS*
 - *IHR, MCN and BON are not included since these projects cannot further increase spill within the state water quality standards given the level of spill (up to 125% all hours) included in the 2022 FOP*
 - *Operations must be consistent with state water quality standards at each project*

He commented that it makes it seem like Chief Joseph is at the top of the spill priority list, when it is not. In Ebel's view, the language above is not consistent with the spill priority list. Norris reminded the group that the first level in the spill priority list is the FOP levels of spill, which includes the PSS block hours. Norris noted that the levels in the list will be dictated by what hour of the day it is. He added details in an example about how after reaching the end of level 1 in the spill priority list, BPA stops implementing PSS spill at John Day before interrupting planned spill. There are other tools available, too, such as increasing load at Banks Lake. Historically, Chief Joseph, Grand Coulee, and Dworshak have been spilling to within the gas cap prior to exceeding the gas caps downstream. Under this guidance, these projects would be spilled to their water quality standard before interrupting the PSS blocks at LWG, LMN and LGS. Ebel understands what Norris is saying but would like clarification on the wording in the document.

Conder also advocated for a change in the wording. Mosier understands the confusion but thinks Norris did a good job of explaining that BPA always uses PSS hours (or chooses not to) prior to moving to the spill priority list. He will edit the document to add detail to steps that will be taken prior to using the spill priority list. To summarize, FOP spill will be implemented before increasing spill at Chief Joseph, Grand Coulee, and Dworshak to their water quality standard (110% TDG). Performance standard spill would not occur at John Day during that time.

Conder added he thinks it is worth looking into increasing spill at The Dalles prior to increasing Dworshak to 110% TDG. He thinks this could help with load. Norris noted this has not been done historically, but The Dalles is in the spill priority list spilling above the FOP level (40%) prior to interrupting the PSS blocks at LWG, LMN, and LGS. Norris also added that BPA may not spill up to the 125% gas cap because the project may be at minimum generation before hitting the 270 kcfs spill. This would require a total river flow of 320 kcfs.

Erick Van Dyke, OR, commented that he did not have enough time to review the document. He may provide comments after reviewing it.

8. Operations Review

8a. Reservoirs – Joel Fenolio, Reclamation; Lisa Wright, Corps

Reclamation projects:

Hungry Horse – Midnight elevation 3,530.86 ft.; releasing 7.6 kcfs and holding that through the next week or so. Water supply has improved. **Grand Coulee** – Refilling from 1,249 ft. on April 30. Midnight elevation 1,254.3 ft. Releases averaged ~87 kcfs over the past 5 days but increased to 132 kcfs and inflows averaging ~127 kcfs. Holding below 1,260 ft. for the next 5 days to remove scaffolding from drum gate maintenance, which was completed a few days early.

Corps Projects: Libby Dam – Midnight elevation 2,374.3 ft., yesterday's average inflows 18.5 and outflows 12.3 kcfs. **Albeni Falls** – Midnight elevation 2,057.1 ft., inflows 49.1 kcfs and outflows 43.1 kcfs. **Dworshak Dam** – Midnight elevation 1,551.2 ft., inflows 17.7 kcfs, and outflows of 1.6 kcfs. **Lower Granite** – Yesterday's average outflows were 85.5 kcfs. **McNary Dam** – Yesterday's average outflows were 224.3 kcfs. **Bonneville Dam** – Yesterday's average outflows were 232 kcfs.

Aaron Marshall, Corps, provided an update on minimum operating pool (MOP) adjustments at Lower Snake River projects.

- Lower Granite is operating in a 2-foot raised MOP range (735-736.5 ft.) for inflows ranging from 50-80 kcfs. This past weekend, flows were high and peaked at 117 kcfs on Sunday, after which they dropped off below 80 kcfs today. Flows will drop further to 60 kcfs by the end of this week based on current forecasts. The Corps will continue to operate in this range until inflows are outside of the 50-80 kcfs range.
- Little Goose is operating in a 1-foot raised MOP range (634-635.5 ft.). In April, there was a 3-ft. raised MOP for navigation safety due to a hazard in the forebay. The contractor was able to cut off most of the bracket; however, what is left is still encroaching on navigation safety by about a foot. For the remainder of the season, the project will need to be operated in a 1-ft. raised MOP. The Corps has scheduled a contractor to resolve the

issue during the next maintenance outage in February 2023. Once it is resolved, the full operating range will be available.

- Lower Monumental is operating in a 0.5-foot raised MOP range (537.5-539 feet) to maintain the minimum tailwater elevation at Little Goose Dam.

Morrill is surprised that the Little Goose work will not be completed until winter. Marshall noted that there was a major obstruction and that a contractor worked to cut off the bracket, which allowed the project to move to a 1-ft. raised MOP as opposed to the 3-ft. raised MOP it was operating at when there was a full obstruction.

8b. Water Quality

Dan Turner, Corps, reported on water quality. He noted that in today's tables a glitch resulted in yesterday's TDG data not being posted. With flows at higher levels, the Corps was able to spill to the gas cap at several of the Snake River projects. The spill cap was increased at Lower Granite and decreased at Lower Monumental. There were a few days where TDG exceeded the water quality criteria of 125% at Lower Monumental (average 126% on 5/7 and 5/8).

Jay Hesse, Nez Perce, asked if the reduced spill cap at Lower Monumental will be increased when spillbay 1 is returned to service. Turner said he would have to look at TDG values before commenting. He said it is a possibility.

8c. Fish

Adults: Conder reported that adult spring Chinook passage has been better than predicted at Bonneville to date with YTD totals at 94,000. Last year at this time, only 37,000 had passed Bonneville Dam.

Conder noted that overall passage at all projects is higher than last year at this time. He added that most projects, except Little Goose and Lower Granite, are showing counts above 10-year averages. He expects both projects to catch up given recent conditions.

At Willamette Falls (below Bonneville Dam), counts are below the 10-year average. He theorized that lower than average counts in the Willamette may indicate that ocean conditions were not as much of a driving factor behind the above average counts being observed in the lower Columbia and lower Snake this year.

Following today's report, Hesse commented that while adult passage is better than it has been, it is still significantly below recovery goals for both hatchery and natural origin fish.

Juveniles: Fish are moving through the system and passage is good. Wild fish are passing. Yearling Chinook numbers are increasing. Transport is increasing. Subyearlings are starting their migration as well, though some of the numbers could be due to a hatchery release. Hesse noted that there were both scheduled and unscheduled releases of fall Chinook subyearlings over the past week. Coho and steelhead are passing projects and a few sockeye are moving through the system. Higher than normal numbers of sockeye are being reported at the Salmon River trap.

Morrill reported that smolts and steelhead are moving through the Snake River and showing at Lower Granite Dam.

Lamprey: Swank reported that lamprey passage has improved over the past few days compared to previous weeks. He noted this is likely related to the increase in flows.

8e. Power – Tony Norris, BPA

Tony Norris, BPA, showed the graph of BPA Balancing Authority Load and Total VER, Hydro, Fossil/Biomass, Nuclear Generation, and Net Interchange, Near-Real-Time. Spring is a volatile time of year with variable energy resources due to weather systems. Below average temperatures have helped with loads where there may have otherwise been lack of load conditions. Last weekend, lack of load conditions occurred. Norris showed the hourly data for John Day that demonstrated that BPA did not implement performance standard spill at John Day to reduce generation so that they did not have to move down the spill priority list. There are currently no issues to report.

Today’s Attendees:

Agency	TMT Representative
Army Corps of Engineers	Doug Baus (Chair), Lisa Wright
Bonneville Power Administration	Tony Norris, Scott Bettin
Bureau of Reclamation	Joel Fenolio,
NOAA Fisheries	Trevor Conder, Kelsey Swieca
US Fish & Wildlife Service	Dave Swank
Washington	Charles Morrill
Oregon	Erick Van Dyke
Idaho	Jonathan Ebel
Montana	Brian Marotz
Nez Perce Tribe	Jay Hesse
Umatilla Tribe/CRITFC	Tom Lorz
Colville Tribe	Kirk Truscott
Warm Springs Tribe	Jen Graham
Kootenai Tribe	Shawn Young
Spokane Tribe	

Other Attendees (non-TMT members):

Corps – Kristian Mickelson, Greg Hoffman, Chris Peery, Scott St. John, Aaron Marshall, Dan Turner, Alexis Mills, Elizabeth Holdren

DS Consulting – Emily Stranz (Facilitator), Colby Mills

Reclamation – Lanie Paquin, Mike Hilliard, Brian Stevens, Jen Johnson, Eric Rothwell

ID – Sean Wilson

Oregon DEQ – David Gruen

Clearing Up – K.C. Mehaffey

Yakama Nation Fisheries – Tom Iverson