

COLUMBIA RIVER TECHNICAL MANAGEMENT TEAM

December 20, 2023

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/2023/>. Suggested edits for the summary are welcome and can be sent to Colby at colby@dsconsult.co.

Review Meeting Summaries & Minutes – TMT Members approved the official meeting minutes and facilitator's summary from the November 29 TMT meeting. Official minutes and facilitator's summary from the TMT Year End Review will be reviewed in January, 2024.

Chum Operations – Doug Baus, Corps, updated the TMT on the current chum spawning operation (posted to the TMT website). The Bonneville Dam tailwater elevation at 0600 hours this morning was 11.3 feet, at the bottom of chum spawning range (11.3-13.0 feet). Total outflows were 116 kcfs.

RFC inflow forecasts at Bonneville Dam over the next 10 days show a range from 121-124 kcfs. The 10-day meteorological forecast shows a mix of precipitation: starting with light precipitation in the upper Columbia Basin and high snow levels, then a drop in forecasted snow levels. The end of the 10-day forecast calls for a warming trend. Doug noted that although precipitation is forecasted, the 10-day QPF is expected to be well below average precipitation throughout the basin. The 5-day shows warm temperatures and below average precipitation. Monthly average precipitation is above average in parts of the basin, but temperatures have also been above average, limiting snowpack. Doug pointed out that it is early in the season and there is time to catch-up.

Climate forecasts for the next 6-10 days (and 8-14 days) show a probability of above average temperatures, and a variability of precipitation: a probability of above average in the western portion of the basin, near normal in the central, and below average in the east. The 30-day outlook shows a probability of above average temperatures and a probability of above average precipitation.

Tony Norris, BPA, provided an update on redd data collected from November 30 (slides posted to the TMT website), noting that monitoring crews have not been able to collect data since then due to weather conditions and poor visibility. With the period of significant precipitation after November 30, daytime tailwater has been up to 13 feet, likely with more fish moving in. Redds have been observed in the usual places: Woodard and McCord Creeks, the Breaks, Ives Channel and Pocket (more after rains), and Strawberry (not many observed as previous years). Redds measured on November 30 were generally deep and would likely be inundated at a lower tailwater (10.5 feet) as well. BPA is not seeing significant streamflow response to the recent precipitation and expects to be running Grand Coulee close to chum while continuing to recover the pool from when the project drafted to 1,277 feet the last week of November prior to stream flow responses. Grand Coulee is currently passing inflow at about 1,285 to support chum, and a few more feet of fill is likely through December and moving into an uncertain January-March period. BPA expects to preserve as much water as possible heading into a potential dry year through emergence.

TMT discussed setting date and elevation for the incubation phase of the chum operation. Tony shared input from Charles Morrill, WDFW, who was not present, however, pre-coordinated that WDFW would prefer setting an 11.5 foot minimum during the incubation phase. TMT members present expressed interest in conserving water by keeping the 11.3 foot minimum tailwater and noted a need for more information regarding redds and conditions. Kelsey Swieca, NOAA, reiterated that survey crews have not

been able to get on site to determine the appropriate elevation level due to weather conditions. NOAA recommended transitioning to the incubation phase on December 31, with a tailwater elevation of 11.5 feet until more information is available to inform the operation. If conditions warrant, the operation can and will be modified.

- **ACTION:** NOAA, WDFW, and BPA will continue to gather information and coordinate adjustments as needed.
- **ACTION:** Unless otherwise coordinated, the Action Agencies will transition from the chum spawning to incubation phase on December 31, with a minimum elevation of 11.5 feet.
- **ACTION:** NOAA will notify AAs/The Corps via email by COB December 29, either to continue the operation as coordinated today or to make an adjustment.

Zero Generation – Tony reported on usage of zero generation to-date (details and statistics on hours used at each project posted to the TMT website), and noted that the powerhouse outage at Lower Granite has precluded use there. Zero generation was used at Little Goose Dam 3 times on consecutive days, for the last 4 days at Lower Monumental Dam and a few days earlier in the season, and 5 or 6 times at Ice Harbor Dam. Tony noted that this season’s use is consistent with historical use of these operations; he will continue to provide zero generation updates at TMT. In response to a continued concern expressed by some salmon managers regarding consecutive day use, Tony noted that the operation is only used when needed, and was included in the consultation in the 2020 BiOp.

Water Management Plan – Doug reported an updated schedule for the Water Management Plan (WMP), after receiving a request from a TMT member to modify the current schedule. The request was based on the recent issuance of the Stay Agreement and MOU, and allowing enough time to review the draft WMP. Rather than posting the final draft on December 31, Draft 3 will be updated to reference the Stay Agreement and will be posted for further comment. Additional comments on Draft 3 can be sent via email in tracked changes to agency POCs by January 9. The final will be posted on January 16. Kelsey noted the importance of providing extra opportunity for people to offer input and appreciated the Corps’ flexibility.

Operations Review – Joel Fenolio, Reclamation, reported on Bureau of Reclamation projects:

- **Hungry Horse:** midnight elevation was 3,536.76 feet, and the project has been operating to South Fork minimum flows for the last 2 weeks following the atmospheric rivers at the beginning of December that bumped up north of Middle Fork. This is good news for holding pool or slightly filling into Hungry Horse given snow pack conditions. The project should be transitioning to target Columbia Falls minimums today or tomorrow, increasing releases slightly. In response to a query, Joel noted that the project is still operating to BiOp established ramping rates, although they can adjust for emergency scenarios.
- **Grand Coulee:** Midnight elevation was 1,284.9 feet, and the project is averaging inflows of 79,000 cfs and outflows of 80,000 cfs; passing inflow to target the Bonneville tailwater elevations downstream.

Lisa reported on Corps of Engineers projects:

- **Libby:** midnight elevation was 2,428.2 feet, average inflows of 2.8 kcfs, outflows of 23.2 kcfs;
- **Albeni Falls:** midnight elevation was 2,051.3 feet, average inflows of 14.8 kcfs, outflows of 17 kcfs;
- **Dworshak:** midnight elevation was 1,515.9 feet, average inflows of 1.8 kcfs, outflows of 1.7 kcfs;
- **Lower Granite:** average outflows of 22.4 kcfs;
- **McNary:** average outflows of 118.6 kcfs; and,
- **Bonneville:** average outflows of 122.8 kcfs.

Tom Lorz, Confederated Tribes of the Umatilla Indian Reservation, voiced concern about what from his perspective seems to be aggressive drafting out of Libby Dam. He asked if there was any ability to take a more cautious approach to ensure that the project does not draft too much heading into a projected dry year, noting specifically the STP forecast. Leon Basdekas, Corps, noted that while the year is starting out on the dry side and the project is drafting to an end of month elevation flood risk management (FRM) target of 2,421.3 feet (not in the STP), it is not drafting deep in terms of storage reservation as there has been significant rain. The project is load shaping for BPA, while drafting to the end of month FRM target, and will adjust releases as inflows change, especially coming off weather events.

Leon reviewed January early bird water supply forecasts that assume average and dry precipitation conditions for the remainder of December, and noted that this remains speculation and conditions can change with one storm. The Corps is confident that they are in a good place for operations at this time of year. Leon provided an example scenario that if the project were to hold more water back (requires an operations deviation request) and more precipitation comes later in the water year, they could be forced to release more and spill through sluiceways to meet flood risk management elevations which would increase TDG in the river. From the Corps' perspective, the incremental drawdown over the months is a good balance between meeting FRM and minimally impacting ecological resources by avoiding the need to spill to meet FRM targets. Jonathan Ebel, IDFG, understood The Corps' limitations in flexibility, and noted concern that this could lead to a similar situation as last year of drafting deep early on and then needing to stick with minimums.

Leon clarified the current release schedule (which could change): load shape through December 23, down to 16,000 cfs through December 26, down to 15,000 cfs through Dec 27, drop to 10,000 on December 28, and gradually ramp down to 4,000 cfs on January 1 to meet the FRM target. FRM elevation remains the priority operation for the Corps, with BPA load shaping (same volume of water) when possible. He emphasized that from the Corps' perspective, the project is not heading to an overdraft situation.

Water Quality: Dan Turner, Corps, reported exceedances of 110% TDG criteria downstream of Lower Granite and Little Goose Dams. These TDG exceedances resulted from speed-no-load operations in the powerhouse. Spill through 2 gates coordinated during the Lower Granite speed-no-load operation is effectively reducing TDG at the tailrace gauge.

Fish: Kelsey reported that adult steelhead are passing in single digits at most projects in the Columbia, with a couple more in the Snake, which is not unusual for this time of year. There was nothing for juveniles.

Power System: Tony noted things have been quiet in terms of variable energy resources. The high-pressure system has minimized wind generation on the power system; this is set to change with a small upcoming weather front.

Questions and Comments from Members of the Public – There were no questions or comments from members of the public.

The next scheduled TMT meeting is on January 10, 2024, at 9:00 AM.

**Columbia River Regional Forum
Technical Management Team
OFFICIAL MINUTES
Wednesday, December 20, 2023
Minutes: Andrea Ausmus, BPA (contractor, CorSource Technology Group)**

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 Summaries and Minutes – November 29

- Summaries and Minutes approved.

2. Chum Operations – Doug Baus, Corps; Tony Norris, BPA; Joel Fenolio, BOR; Charles Morrill, Washington; and Kelsey Swieca, NOAA Fisheries

a. Bonneville Dam – Hour ending 0500 – *Baus*

- Tailwater elevation: 11.3 feet
 - Reflects the bottom of the range of the chum spawning.
- Total Outflows: 116 kcfs

b. NWRFC - Inflow Forecast – *Baus*

- RFC Inflow Forecast (Ten-Day)
 - High: 124 kcfs
 - Low: 121 kcfs

c. NWRFC 10-Day Meteorological Forecast – *Baus*

There is a mix of precipitation coming in over the next ten-day period. The forecasted snow levels are high but there is a decrease in freezing level coupled with precipitation over December 23 and 24. There is a warming trend after, and the snow level will increase after Day 6.

d. RFC Forecasted Precipitation Summary – *Baus*

- 10-day QPF (Percent of Climatology) -- as it relates to percent of average
 - Well below average precipitation throughout entire basin.
- 5-day QPF (Percent of Climatology)
 - Well below average precipitation throughout the entire basin.

e. Current Month Summary – *Baus*

[Water Supply - Water Year Summary \(noaa.gov\)](https://www.noaa.gov/water-supply-water-year-summary)

- Well above average amounts of precipitation in areas through the basin.
- Temperature departures have been well above average.
 - Precipitation has been in the form of rain and not building snowpack.

f. Snow Percent of Average – *Baus*

[Northwest River Forecast Center – Snow \(noaa.gov\)](https://www.noaa.gov)

Baus showed this interactive map to highlight that the precipitation that we have gotten so far has not accumulated as snowfall, but we are early in the water year.

g. NWRFC Climate Forecast – *Baus*

- 6 – 10 Day Outlook:
 - Temperature – Above Average
 - Precipitation – Variability
 - Western Columbia – Above Average
 - Central Columbia – Near Normal
 - Eastern Columbia – Below Normal
- 8 – 14 Day Outlook:
 - Temperature – Above Average
 - Precipitation – Variability
 - Western Columbia – Above Average
 - Central Columbia – Near Normal
 - Eastern Columbia – Below Normal
- 30 Day Outlook:
 - Temperature – Above
 - Precipitation – Above

h. November 30, 2023, Redd Survey Update - Norris

Norris provided an update of the redd locations based on the survey data collected on November 30, 2023, before the rise on the Willamette. Norris caveated that this survey was taken prior to the period of significant precipitation and the Willamette came up pushing the daytime tailwater up to 13.0 ft. There are likely more redds deposited higher up that they are unaware of, but weather and visibility has made it difficult to survey their locations.

The fish moved in early in November and were not as spread out as much as has been seen in the past. They also were deeper than typical. Redds were found in McCord Creek, The Breaks, Ives Channel and Pocket, and some in Strawberry.

Norris said moving forward we are on the backside of the precipitation event, and we are not seeing a lot of streamflow response. He said that we expect to run Grand Coulee close to chum as we try to recover the pool. Prior to the precipitation event Grand Coulee was drafted to elevation 1277 feet. The streamflow responses during the event allowed Grand Coulee to recover to elevation 1285 feet. We currently are passing inflow to support chum.

Norris said that there is a hope to see a few more feet of fill into January but there is a lot of uncertainty January through March. Through emergence we hope to expect to preserve as much water as possible as we hedge toward a potential dry year.

Norris said that this meeting was to set the determine the end of the chum spawning phase of the operation. He said that the crews have not been able to get on the water due

to high winds this week so far, so we do not have great information about chum presence. Absent that information, Norris said, that TMT could tentatively set the end of the spawning phase at the end of the month with the potential that Washington Dept. of Fish and Wildlife could inform NOAA of any new information that could modify this date. Norris said that his proposed protection level is 11.3', but Charles Morrill, WA, believes that it should be 11.5'. Norris did not think that was the best, he said that he is sure that Morrill wants to hedge on the side of a few extra tenths. We want to set up the winter with a protection level that can preserve as much water as possible.

Stranz asked Norris, given that not all of the TMT members are available if he has been able to chat with other TMT members.

Norris said that he would let Swieca chime in, but Morrill is out of pocket right now. Norris and he spoke last week, and they have been texting back and forth regarding this. Morrill prefers a 11.5', but we can revise that again. Norris said that his conversation with Rick Heitz, PSMFC, was that they were going to throw some colored rocks on any new redds since November 30 and next then on January 4, 2024, they will get out there with the surveyors and measure them. This will give a handle on where those redds are and what protection level might be required. It is possible that we could readjust the protection level after we get that data as we are expecting to see a water limited winter.

i. Ives/Pierce Spawning Surveys– *Swieca*

Swieca provided a similar update that the survey crews could not get out to determine protection because of the conditions. Her proposed path moving forward is to set a not later than end date of December 31, 2023, as is laid out in the Water Management Plan. If the survey crews determined that date should be moved earlier, then NMFS will communicate with the Salmon Managers and that written update will be provided through email by NMFS.

Swieca proposed waiting on the protection level until closer to December 31 when the survey crews may be able to provide more information. She was not sure whether that would work process-wise and asked for guidance.

Baus said that the process part makes it a little challenging. He said he was not sure that they could provide the project with a 'no later than' date messaging. He said that they generally do not do that. They usually do 'on this date, at this time, do this'.

Norris said that instead of considering it as a 'no later than' date, we would just set it as December 31, 2023, and then revise it if there was new information.

Baus said that sounded great. He said that there was some draft language on the agenda today. He said that they would clarify, update, and then post that. They would target December 31. He asked what was settled on for the elevation, 11.5' or 11.3'.

Stranz said that was not settled yet, she said that Swieca was saying to hold off on making that decision until there is more information.

Norris said that the current bottom for the current operating range is 11.3', he said that it seemed appropriate to set it at the current level because we have been operating to that now. He said that Morrill did respond that he prefers an 11.5'. Norris said that he will defer to NOAA on that based on Morrill's response.

Stranz said that all of TMT should have an opportunity to weigh in. She asked if anyone had a perspective to provide on the tail water elevation.

Jonathan Ebel, ID, asked what amount of discharge equates to two-tenths of a foot.

Norris said that at this point in December every increment makes a difference but the bottom is the bottom. He said that we try not to go through the bottom so, 11.5' is actually 11.7', because it is a very difficult operation to manage downstream of BON. The incremental change from 11.3 to 11.5 adds up anywhere from 2 – 5 kcfs, depending on conditions, probably closer to 2 if you are considering a stable condition without a lot of variability. He said whatever is chosen, we will be stuck with that until April 10, which is a lot of days. Norris said that we have been operating to 11.3' as the bottom, it seems to Norris that 11.3' is appropriate, but he said that we need to recognize Morrill's insistence on 11.5'.

Stranz asked if FPAC was able to talk about this and whether anything came out of those conversations.

Swieca said that they were not, Morrill was not able to attend the FPAC call either, so they have not been able to communicate about that as a group.

Stranz asked if Swieca could add a little more about her thinking about holding off on setting the tailwater minimum until there was more information, Baus mentioned that process-wise that is tough. She asked Swieca if she could share more about what she is hoping for.

Swieca said that without Morrill being on the call and not having the survey data to be able to be able to inform whether 11.3' or 11.5' is appropriate it is difficult to make the call. She said that typically this decision would be deferred to WDFW's position as has historically been done because they are the ones who are out in the field and have the experience and the data on hand to understand what is needed. She caveated that we are moving into a water year that looking quite dry which creates the need to be conservative with our usage of water out of GCL. She said that she thinks if it is acceptable to everyone, understanding that it is very likely that this will change. Baus had mentioned that it is possible for it to change we just need to assign a value today for planning purposes. She said that she thinks that we should move forward with an 11.5' on December 31, in respect to WDFW until they have an opportunity to weigh in a little bit more themselves and recognizing that is likely to change and may be dropped to an 11.3' pending some survey data which will come in soon. She asked if that would be acceptable to everyone.

Ebel asked if it would be operating to 11.3 then moving up to 11.5 on December 31.

Swieca said that is correct.

Hopefully the crews can identify any of the new redds that were set after November 30. Then those can be measured and maybe make an adjustment to the minimum tailwater after we have collected that information.

Stranz asked Norris if he had said that the hope is to get the surveyors out there on January 4.

Norris said at a minimum, but potentially sooner than that. He said that we will see, it will come down to weather and if the monitoring crews are able to identify where any additional redds may have been set. He said that he will have to hear from the crews to see if that is even viable, if it is turbid, they cannot see, and you cannot measure what you cannot see. He said that they want to make sure that they are making sure that they are getting the best representation of what is out there.

Stranz said that the next meeting is scheduled for January 10. She said that if they are able to get out and do the survey earlier and it would be helpful to check in on the 3rd, we could pencil in a session to check in.

Norris said that on January 10 we will have Water Supply, FRM Computations, and outlooks on how our winter is shaping up.

Ebel said it seems to him that maintaining 11.3' through January 10 is more logical given the lack of information. He said that if there is information that comes in before then, instead of moving it up and then potentially dropping it back down.

Stranz said that it is hard because Morrill did not provide his rationale other than we are hearing that he wanted 11.5'. She said that we are not hearing the why so much, which makes it tough. She asked if Norris or Swieca could provide any more about what they had heard about what Morrill was thinking.

Norris said Morrill reaffirmed 11.5', but they have not had a chance to talk about what the water year is shaping up like. Norris said that what TMT has heard from Swieca and himself is what they have heard from Morrill.

Swieca said that with the holidays and travel they have not been able to get a firm justification out of Morrill's selection for 11.5'. She said that if they get that information, they will provide it or they will ask him to provide it if he will be available at some point over the holidays, but she cannot guarantee that. All that she knew is that he had reaffirmed multiple times that WDFW would prefer 11.5'.

Joel Fenolio, BOR, said that he agrees with Ebel. He said that we should ride it out at 11.3' right now given the El Niño conditions and the potential dry setup. Save water for later on.

Tom Lorz, Umatilla/CRITFC, said that we are without some additional information. He said that he thought what Morrill was thinking was they were wanting to do the 11.5' incase some chum spawned at those higher elevations after the big rain event and since they have not been able to go out and verify that he is being cautious. Lorz said that until we find out from Morrill or get field information it is a real hard guess for what we should do, being cautious, 11.3' makes a lot of sense. He said that he would like for Swieca to reach out to Morrill and see if she could get more information from him and report back by email. Ideally if TMT would be able to get some field information back this week that would help her better inform TMT of the 11.5' versus 11.3'.

Marotz agreed that given the long-term forecast, the 11.3' for the time being is more logical until TMT knows more.

Swieca reiterated that the decision of December 31 at 11.5 feet is primarily being made just for the Corps' planning purposes and it is highly likely that it will be modified prior to implementation. She said that she wanted everyone to be aware that this decision is being made to cover WDFW's bases and their preferred elevation, but continued conversations are going to occur, and it is possible that it may be modified.

Stranz asked for clarification on the process.

➤ **As of December 20:**

- Incubation Phase begins on December 31, 2023.
- Minimum tailwater: 11.5 feet
- As more information comes in and conversations are had between NOAA, BPA, and WDFW there may be changes to the operation.
 - NOAA will communicate any of these changes to TMT via email by December 29, 2023.

3. Zero Generation – *Tony Norris, BPA; Kelsey Swieca, NOAA Fisheries; and Doug Baus, Corps-NWD*

a. Usage to Date

- Lower Granite: 0 times
 - Powerhouse outage at LWG precluded use.
- Little Goose: 3 times
 - Three times to date on consecutive days.
- Lower Monumental:
 - Last four days and a few days earlier in the season.
- Ice Harbor: 5/6 times
- Zero generation associated with whatever was going on at the project, like switching.

Erick Van Dyke, OR, said in 2020, when this was proposed, there was a conversation about details of implementation. An issue with those in the region was consecutive day use and it was a topic that went to RIOG. Van Dyke said that he was curious if the consecutive day use is going to continue or if it was an oversight or if it was planned.

Norris said that the operation was consistent with what was consulted on in the CRSO, in 2020. The guidance in the CRSO was reflective of a long-term average of use. He said that their historical use, as he had presented before would consist of periods of consecutive days of use but on average over the season it was about a third of the time on average over several years of how much that got used. He said it gets used when it is useful to BPA for reliability and meeting power needs and then there are times when it is not and so they do not need to use it. BPA only uses it when necessary. This is consistent with our historical use.

Stranz confirmed; yes, it was planned and yes, it will continue.

4. Water Management Plan – Doug Baus, Corps-NWD

a. [2024 WMP Website](#)

b. Review Schedule

- Previously had, as routine, had the ‘Final’ version of the WMP on December 31.
- Baus received a request to modify the current schedule:
 - Based on the issuance on the Stay Agreement
 - Memorandum of Understanding (MOU): December 14, 2023
 - Additional Draft #3 reflecting changes: December 31, 2023
 - The Action Agencies (AA) will post this but do not plan on making any significant changes to any operations.
 - TMT submit track changes: January 9, 2023
 - Email to AA POCs.
 - AA will adjust and post Final: January 16, 2023

Baus asked Swieca for NOAA’s perspective. He said that this is a product that is contained in the BA and ensuing BiOp. He said that the production of the WMP is associated with those documents, so he wanted to make sure that people were aware of those changes. He asked if Swieca had any comments regarding the adjustment.

Swieca said that she did not have very many comments. She said that she did think that it is important to provide that extra opportunity for people to comment who may have been very busy prior to the MOU who could not allocate the time to provide their feedback on that document. Swieca said that she thought that this is a good change and appreciated Baus’ ability to be flexible with this schedule. She said that she thinks that we will have some good input from those members who may not have previously been able to comment.

Ebel asked if Draft #3 would be posted close of business of the day, December 20.

Baus said that they are currently reviewing. He said that this was a late breaking issue on December 14 so they are just digesting it. Baus said that he does not have anything posted yet but the goal is to have something posted by December 31. He said that they are only going to be posting the updates to the MOU, they are not making any significant changes to the operations in the WMP.

Julie Ammann, Corps, said that most of the changes in the MOU would be captured in other documents, like the FOP. She said that there was not a lot that would need to be added to this plan.

Ebel said that was his understanding as well.

5. Operations Review

c. Reservoirs

Reclamation – Joel Fenolio

- Hungry Horse Dam
 - Midnight elevation: 3536.76 ft.
 - Operating to S. Fork minimum flows for last two weeks.
 - Should be transitioning to targeting Columbia Falls minimums between 3500 – 3700 cfs tomorrow or depending on the recession.

Brian Marotz, MT, was looking at the Flat Head Electric Coop light reading document. He said that there was a nice spread on HGH celebrating 71 years of hydroelectric. He asked if they are still operating to the established ramping rates because he saw a pull sentence that Bill Dykes was quoted saying that “unlike other forms of renewable energy generation hydropower can respond almost instantly to the needs of the grid and can ramp up or ramp down each unit’s full range within 15 seconds when help is needed”. Marotz said that he thought that it could be done physically but asked if it can be done and still maintain the ramping rates. He said that it led to some confusion to him.

Fenolio said that they are still operating to the established ramping rates, or to the BiOp established minimum flows. He said that there may be emergency cases where like Flood Risk Management where they may not, but outside of emergency situations they are still operating to those minimum flows. Fenolio said that he thought that it might have been a general overall statement in terms of hydropower and not to get too worried about it.

Marotz said that he just wanted to clarify and thank you.

- Grand Coulee Dam
 - Midnight elevation: 1284.9 ft.
 - Inflows: 79 kcfs
 - Average Outflows: 80 kcfs
 - Targeting BON tailwater elevations downstream.

Corps – Lisa Wright

- Libby Dam
 - Midnight elevation: 2428.2 ft.
 - Inflows: 2.8 kcfs
 - Outflows: 23.2 kcfs
- Albeni Falls (at the Hope gage)
 - Midnight elevation: 2051.3 ft.
 - Inflows: 14.8 kcfs
 - Average Outflows: 17 kcfs
- Dworshak Dam
 - Midnight elevation: 1515.9 ft.
 - Inflows: 1.8 kcfs
 - Outflows: 1.7 kcfs

- Lower Granite average outflows: 22.4 kcfs
- McNary average outflows: 118.6 kcfs
- Bonneville average outflows: 122.8 kcfs

Lorz said at LIB given the forecast you have to be over 5.6 and then you draft down to this elevation and then look at the STP. He said it looked like we are drafting fairly aggressively and considering the concerns that people are having about flows, snowpacks and other stuff Lorz asked if there is any ability to slow the draft on that to ensure that too much is not drafted given that we think that we are going to be in a dry year.

Leon Basdekas, Corps, said for LIB the year in terms of snowpack started on the dry side, they are drafting toward their end of month elevation target of 2421.3 ft. and on the LIB draft schedule they have a bookend where they have to linearly interpolate and that is where they are. That are not drafting very deep in terms of where they are on that Storage Reservation Diagram, they have lots of rain in terms of precipitation, not a lot of snowpack. In December the forecast looks predominantly at precipitation at four stations to set that. Basdekas said that they are right in there, and they are pretty high in terms of elevations. He also added that it is early in the year in terms of drafting, it is not looking like they are overly aggressive in their draft, though it may seem like it in terms of the releases that are going on now, but they are load shaping for BPA. He said they plan to meet their elevation target of 2421.3 and are not planning to go below that. If they do it would only be based on operational realities of what comes in for inflows, they will adjust releases as inflows change. Basdekas said that is where they are generally, if there is something specific that Lorz would like to look at he could try to answer that.

Lorz said that looking at the STP, the STP had a different number and that was part of the thing that caught their eye.

Basdekas said that he understood, and that what was in the STP was not what they were targeting for the end of December elevation.

Lorz said that was part of the concern, and also the fact that the Corps' trigger to draft the below the extra 5 ft. is by 5.6 maf and looking at all the estimates of water supply for this year are barely 5.6 maf. Lorz said that when he looked at them that December was the month that was supposed to be over average but looking at December it is not looking like we will be as above average as we had hoped in the forecast. He said that we have conversations all year about being conservative and being cautious and this year he is listening to all the people saying they are trying to be cautious everywhere, so he was hoping that the Corps would also share some of that level of caution at LIB.

Ammann asked Basdekas to talk about the position of risk looking into January based on a dry or low inflow January forecast.

Basdekas said that they had run an Early Bird forecast yesterday:

- Average Conditions
 - April to August Forecast: 5.78 maf
 - Elevation: 2412.8 feet

- Additional draft: 8.5 feet
- Dry Scenario (25% of average monthly precipitation for the remainder of month)
 - Elevation: 2417.8 feet
 - Additional draft: 3.5 feet
- No Precipitation
 - A flat release of minimum flows for the month of January.

Basdekas said that it is speculation and things can change in one swarm. Looking at diagrams he thinks they are squarely in where they need to be for operations at this time of year. He said to also remember that, with a big if, because they would need a deviation request from their water control manual to go to something other than what the forecast gives them, if they were to hold more water back and then they get wetter in the year as the winter progressed then they would be forced to release more water and they would have to spill through the sluice gates to meet their FRM elevations. This would increase the TDG in the river which is not good. The incremental, or gradual, drawdown over the months in the is a good balance between meeting their FRM and having minimal impact on ecological resources by avoiding the need to spill to meet their FRM targets.

Lorz said not to belabor the point, but inflows right now were 4s or 5s and the Corps has 23 kcfs out. He asked if there was anyway to smooth that out a little bit because it seems like a pretty aggressive draft. If the STP is completely wrong. He asked if they could hold off on the aggressive spill until January 10 and if things are looking dry then they would be well positioned, if it looks wetter then they could increase their flows though January back up. He said that by doing that he thinks they would still be able to easily meet their needs. Lorz said that he is one for caution but if the Corps feel they are fine then they are fine. He just hopes they are right.

Ebel said the way that he is looking at the operation is that the Corps set the end of December elevation based on the forecast, the Corps forecast came in higher than the RFC. The RFC on the date that the forecast was set was something like 1 kaf over the limit and in a sense dropped. Since that elevation was set under the WMP it appears there was a rain on snow event that blew off what water was there. Ebel said that it feels prudent to him to go back to the low water year elevation instead of drafting an extra 5 feet during December. He said that he understands that the Corps is limited in their flexibility, but things are changing rapidly and as Lorz had said if we are trying to be cautious everywhere else in the system and it seems like we are setting ourselves up for the situation that occurred last year where we drafted deep too early and needing to stick to minimums.

Stranz said that she is hearing that Basdekas' partners are asking for a more cautious.

Basdekas said that it is a misconception about their current release schedule right now. They are releasing around 25 kcfs, on daily average around 23 kcfs. They are load-shaping for BPA and after Christmas will be tapering that down to a flat flow rate and then further ramping down toward minimum by the end of the month to meet that FRM target of 2421.3 feet. They have a certain volume of water that they shape every BPA

when they can, like they are doing now, but just because they released 23 kcfs does not mean that they are going to head into an overdraft situation, they just reissued a CBT because it did dry up on the ESPs. They have a new release schedule that was released today, it is a little different, but it is still targeting at 2412.3 and they will continue to update those flow schedules as needed. He also added that the RFC forecast looking at it midmonth has come up and we, on the average and medium forecasts, are within 320 kaf and for the dry version are within 136 kaf. The RFC and Corps official water supply forecasts are coming closer together.

Swieca said that Basdekas had mentioned that there was an update to the flow schedule. She asked if he knew what it had for flat flows after Christmas time.

Basdekas said that they will:

- Through December 23: Load Shape
- Sunday, December 24 – Tuesday, December 26: 16 kcfs
- Through December 27: 15 kcfs
- Through December 28: 10 kcfs
- Through January 1 (gradual ramp down): 4 kcfs

This is the current plan, but things could change.

Van Dyke asked about the prioritization being used to justify the operation. He said that it sounds like it is load following over of FRM.

Basdekas said that he needed to correct that, he said that it is not. He said that FRM is the priority, they are load-shaping when they can.

Van Dyke said that as it has been described it has been hard to track realities of prioritization for taking this some kind of recommendation or having that informed conversation about it. He said that he appreciates that Basdekas is sharing what he is using to make decisions. They are trying to understand it better.

Basdekas said that they have their Water Supply Forecast in December, and it sets their end of month elevation targets, so they have a certain volume of water that they need to move to meet that target. If they have the ability to do load-shaping they will do that to evacuate that same volume of water, whether it is a flat flow, for example 18 cfs, they could release that flat until the end of the month or they could shape it like they are doing now releasing a full powerhouse at certain times and then dropping down lower and stair stepping it down. Basdekas said that they are doing the latter. He said that it is the same volume of water, but FRM is the priority operation.

Fenolio said that they do the same at HGH, if they have a FRM draft, they will start coordinating with BPA on how to shape that throughout the month. He said that it exactly what Basdekas is doing. He said that it is the same at HGH, here is a volume of water, and we need to get it out by the end of the month. As stream flow projections change over the month, that volume will change and we will adjust, but the priority is to target that elevation end of month.

Stranz said that what she is hearing from the Fish Managers was a desire to change the end of month target and not go quite as low.

Lorz said that he thinks it was more just like considering that things have dried up some. Right now, if you are over 5.6 maf you go to the 2421 ft, if you are above that, it would be ~5 ft higher. He said that he was saying that we consider that we may be in more of a dry flow condition and we do not draft all the way to 2421 ft. If in January when the Early Bird comes out and it is looking promising again, LIB has the capabilities, they are running 25 kcfs right now, so it seems like they easily have the capability to catch up those extra feet. He added that he would caution that if we can save a few feet now that we do not have to be at minimums or find that we over drafted later. He said that he is one to be cautious if possible and use whatever flexibility we have, if the Corps feels that they do not need that that is their call.

d. Water Quality – *Dan Turner, Corps*

- Exceedances downstream of Lower Granite (LGR) and Little Goose (LGS)
 - Speed No Load (SNL) operations causing high TDG.
 - LGW is interesting because they continued with what was learned last year and they have opened 2 gates during the operation. Minimal spill during SNL operation can help lower TDG.
 - Last year during similar operation LGR got up to 141% TDG versus the high of 123% TDG of this year.

e. Fish

Salmon – Swieca, NOAA

- Juvenile
 - No data for this time of year
- Adults
 - Steelhead passing a most of the projects.
 - Columbia: 10 - 15
 - Snake: Couple more

f. Power System – *Tony Norris, BPA*

- Quiet from variable energy resource standpoint, High pressure system has minimized the amount of wind generation on the system but with the new system coming through that is set to change.

6. Public Comments:

7. Set agenda for next meeting – January 10, 2023

- a. Zero Gen Update
- b. Chum Update

Today's Attendees:

Agency	TMT Representative(s)
Army Corps of Engineers	Doug Baus, Julie Ammann, Lisa Wright, Aaron Marshall
Bonneville Power Administration	Tony Norris
Bureau of Reclamation	Joel Fenolio, Chris Runyan
NOAA Fisheries	Kelsey Swieca
US Fish & Wildlife Service	Dave Swank
Washington	
Oregon	Erick Van Dyke
Idaho	Jonathan Ebel
Montana	Brian Marotz
Nez Perce Tribe	
Umatilla Tribe	Tom Lorz (CRITFC)
Colville Tribe	
Warm Springs Tribe	
Kootenai Tribe	
Spokane Tribe	

Other Attendees (non-TMT members):

COE – Dan Turner, Alexis Mills, Leon Basdekas, David Doll

Washington Ecology – Thomas Starkey

DS Consulting – Emily Stranz (Facilitator), Colby Mills

CorSource – Andrea Ausmus (BPA note taker, Contractor)

Portland General Electric – Ruth Burris

Clearing Up – K.C. Mehaffey

Snohomish PUD – Kevin Costello

Avista – Patrick Maher