

## COLUMBIA RIVER TECHNICAL MANAGEMENT TEAM

June 15, 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](mailto:colby@dsconsult.co).*

**Review Meeting Summaries & Minutes** – TMT Members finalized the facilitator's summary for the June 8 meeting. Official meeting minutes for the June 1, 8, and 10 meetings, as well as the facilitator's summary from June 10, will be reviewed at the next TMT meeting.

**Spill Operations Update** – Scott Bettin, BPA, provided an update on spill operations. Flows have been much higher than expected; BPA has been passing inflow and running all available turbines. Lower Snake River operations coordinated at the June 10 TMT meeting (posted to the TMT website), will be implemented once flows drop off to between the 160-180 kcfs range. Scott noted that Snake River flows were above 200,000 cfs.

There was inquiry regarding whether there was an increase in generation at Lower Granite on June 12 above the 1% operating range. Scott noted it may have been a reserve deployment. Trevor Conder, NOAA, asked about the reporting process for excursions outside of 1% (for TDG management or reserve deployment etc.). Scott confirmed that BPA tracks this as described in the FPP Appendix C and then compiles into the Annual Report sent to NOAA in September.

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

- **Hungry Horse**: the project is in active flood operations; currently targeting 15 feet at Columbia Falls (2 feet above flood stage) for the foreseeable future. The recent atmospheric river turned into a wrap-around storm, that dropped 2 inches of precipitation in the valleys and 4-7 inches of snow in the mountains. Rapid melt-off is a concern and snow accumulation can make the situation worse. The project is working to keep the stage at Columbia Falls below 16 feet heading into the weekend, with increasing temperatures and potentially another wrap-around storm on the way. Joel noted that although this much snow in June isn't unprecedented, it is rare.

In response to a query on the impacted reservoirs being near full, Joel noted that Kerr is within its top foot (on free flow) and slowly filling, Hungry Horse is within 8 feet of full. While trying to reduce flows from Horse, with 2 turbines, Joel was not sure how much the spill level is contributing to outflow numbers. He noted seeing TDG levels in the 113% range.

- **Grand Coulee**: midnight elevation was 1,279 feet, with average releases of 194,000 cfs, and average inflows of 260,000 cfs (peaked at 280 kcfs). Grand Coulee is being managed to help support The Corps' efforts to keep the Vancouver stage around 16 feet during this weather event. The project filled about 9 feet and should be within the top 5 feet in the next week.

The Boise system began flow augmentation last Friday; then the atmospheric river brought more precipitation than expected, which led to temporary flood control operations on Sunday. Volume for flow augmentation releases will be reset. In transitioning out of flood control over the past few days,

Reclamation is working to balance ramp down volumes with current releases, with the intent to have releases through the City of Boise down to 1,300-1,500 cfs by the July 4 weekend.

With the recent changes, flow augmentation prospects are unclear, and Reclamation expects between 320-380 kaf total throughout the whole upper Snake. The release of Palisades Powerhead water finished this morning, and the operation has ceased. Reclamation expects 40 kaf out of the Boise. Additional rentals are not expected, although there may be some from Anderson Powerhead. New accounting should come out today, and Reclamation is still working on volume totals.

Regarding reservoirs: The Payette is in active flood operations (controlling for refill); the lower system of Boise River system has filled; Anderson may miss refill. The upper Snake is doing much better, although Joel was not sure on summer projections. There is good storage in upper system (Palisades, Jackson). American Falls is drafting now for irrigation (typical operation pattern). Joel noted that Reclamation will have a better sense of projections in another 1 or 2 weeks as the weather systems move through.

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

- **Libby:** midnight elevation was 2,397.8 feet, with average inflows of 68.6 kcfs, and outflows of 13 kcfs;
- **Albeni Falls:** midnight elevation was 2,051.7 feet, with average inflows of 120.7 kcfs, and outflows of 97.5;
- **Dworshak:** midnight elevation was 1,597.2 feet, with average inflows of 29.8 kcfs, and outflows of 25 kcfs;
- **Lower Granite:** average outflows of 205.3 kcfs;
- **McNary:** average outflows of 421.3 kcfs; and
- **Bonneville:** average outflows of 436.5.

Aaron Marshall, Corps, provided an update on reservoir operations across the basin (see the Northwest River Forecast Center website for further details: <https://www.nwrfc.noaa.gov/rfc/>). He noted that the Corps has declared a system-wide flood emergency and is coordinating daily with regional partners (including BC Hydro). Forecasts are rapidly changing throughout the basin and more precipitation is expected, which will dictate many changes in flood risk management (FRM). High flows are expected to continue, and the Action Agencies are working to balance outflows and room for more incoming water; operations are dynamic across the basin.

Salmon Managers requested an update on snow flight surveys and any conclusions on what outflow projections.

*Water Quality:* Dan Turner, Corps, reported that high flows and changes in barometric pressure have led to increases in TDG. TDG has reached above 125% at McNary and John Day, and there has been forced spill on the system due to lack of turbine, lack of load, and deployment of reserves. Dan noted that the Bonneville tailwater gauge (Cascades Island) is not reporting due to a planned outage (the equipment is taken out of service during the high flows and will be reinstalled once flows drop).

In the Snake, there has also been forced spill due to lack of turbine, and TDGs have at times been higher than 125%; the highest reached 132% at Ice Harbor (12-hour average), with 1 value of 135% (1-hour average) downstream of Ice Harbor. Dan also reported that the Lower Granite tailwater gauge has been washed out due to the high flows. Walla Walla District Water Quality is working with a temporary set up to allow for data collection with incoming summer flow operations.

*Fish:* Trevor reported that juvenile yearling Chinook are still in the river, although they're decreasing at all projects. Sub-yearlings are increasing however, especially at Lower Granite. Coho are on the decline; steelhead are generally declining at Bonneville as expected; and sockeye are declining as well.

For adults: Bonneville is still seeing a lull between spring and summer Chinook (1,000-2,000 per day). The spring Chinook total was 147,000; jack counts are in the 20,000 range, which is 60% higher than the 10-year average. Ocean condition indicators estimate an increase from this year's count next year. Steelhead are starting to increase (3-digit number at Bonneville); Shad are increasing in huge numbers; and sockeye are showing good increasing numbers at Bonneville. Passage at McNary and Ice Harbor is low. Sockeye are moving through at Ice Harbor, as well as a few shad, with a similar trend in the Snake.

Trevor reported that the east fish ladder for adult Chinook at The Dalles is seeing 1,000-2,000 daily, while passage at the north ladder is very low, likely resulting from the current high flows. Similar issues appear at Ice Harbor due to the high levels of spill.

Dave Swank, USFWS, reported that juvenile lamprey collection numbers are high at McNary (65,000 on June 8), and some have made it down to Bonneville (over 1,000 on June 13 and 14). Good numbers at Little Goose a couple weeks ago have since come down. Adult lamprey numbers at Bonneville have bounced up and down over the last week; the total run looks similar to last year, although Dave noted it was too early for a total run size.

*Power System:* Scott reported that the system is running hard, and working to get load wherever possible. Prices are hovering around 0, and the nuclear power plant has been turned down to 40% as a result of the lack of load and to prioritize generation at the hydro-facilities to keep gas levels down. Scott was hopeful for more load soon as the region moves into air conditioning season.

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

**The next scheduled TMT meeting is on June 22, 2022 at 9:00 AM.**

## **Columbia River Regional Forum**

### **Technical Management Team**

### **OFFICIAL MINUTES**

**June 15, 2022**

**Minutes: Melissa Haskin, 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 of Meeting Summary**

The 6/8 facilitator's summary was approved with no additional edits.

#### **2. Spill Operations Update**

Scott Bettin, BPA, reported that flows have been higher than expected. BPA has been running all turbines and passing inflow and spilling. BPA will be able to spill at FOP levels when flows drop off to the 160-180 kcfs range. Bettin noted that Snake River flows have been over 200 kcfs.

Tom Lorz, Umatilla Tribe/CRITFC, asked if BPA had to operate turbines above the 1% range at Lower Granite. If so, he wondered what triggered it. Charles Morrill, WA, reported that the project hit 120% TDG and Lorz added that it was on June 12. Bettin replied that it may have been a reserve deployment.

Trevor Conder, NOAA, wondered what the process is for reporting excursions outside of 1%. Bettin noted that it is kept track of and that data are compiled into an annual report, which is provided to NOAA at the end of the year, as described in the FPP Appendix C.

#### **3. Operations Review**

##### ***3a. Reservoirs – Joel Fenolio, Reclamation; Lisa Wright, Corps***

##### **Reclamation projects:**

**Hungry Horse** – The project is in active flood operations. Targeting a Columbia Falls stage of 15 ft., which is 2 feet above flood stage. Reclamation will be operating to this point for the foreseeable future. It is trying to control releases to avoid surcharge. A surcharge request is being processed and would mean operating to 1-foot above the full pool of 3,560 ft. Fenolio reported that the atmospheric river turned into a wraparound storm and the valley saw about 2 inches of precipitation while the upper mountains received 4-7 inches of snow. Typically, there is a rapid melt off when snow accumulates and daytime air temperatures are around the 80s and 90s. Fenolio noted that Reclamation is approaching operations at Columbia Falls aggressively with the goal to keep the area below 16 ft. heading into the weekend. He shared that 16 feet is where you start to see potential flooding in low-lying structures. Brian Marotz, MT, added that at 14 feet groundwater begins to rise in the fields and at the current level, the parking lot at the old steel bridge is beginning to flood. This week, temperatures are expected to rise and another wraparound storm is predicted to hit the region later in the weekend. In the worst-case scenario, Columbia Falls could reach upwards of 18 feet.

Marotz asked Fenolio to put the severity and rareness of this event into context. Fenolio said this is absolutely unusual but not unprecedented as similar extreme events occurred in 2012, 2008, and 2002. Charles Morrill, WA, commented that the entire US as well as the world are seeing a lot more extreme events.

Questions and comments:

- Erick Van Dyke, OR, wondered how Canada was impacted from the storm. Aaron Marshall, Corps, noted that Queens Bay on Kootenay Lake is just below 1,752 ft., which is a point of concern as at that elevation minor flooding begins. It is forecasted to hit 1,752 ft. on or near June 20 before receding. Arrow is spilling at 14.4 kcfs and filling at about a foot per day. Previously, outflows of 20 kcfs were coordinated. However, this was adjusted to 25 kcfs.
- Van Dyke asked how refill is going. Fenolio answered that Kerr is within the top foot of the pool and is on free flow and slowly filling; Hungry Horse is within 8-feet of full.
- Marotz asked what is happening to spill given that Hungry Horse is operating on 2 turbines and reducing flow. Fenolio said it is hard to quantify how Hungry Horse is affecting spill because some is coming in at the South Fork gauge between the dams but that TDG at the project is 113% right now.

**Grand Coulee** – Midnight elevation 1,279 ft. Releases yesterday were about 194 kcfs and inflows have been averaging 260 kcfs, yesterday they peaked around 280 kcfs. The Corps is trying to keep the Vancouver, WA, stage at 16 feet. The Columbia River filled about 9 feet during the weather event and projections show it hitting within the top 5 feet in the next week.

**Boise System** – Flow augmentation started on the Boise system last week. The atmospheric river dropped more precipitation in the area than expected. On Sunday, flood control operations were activated for several days. This resets the flow augmentation water to baseline and Reclamation will start “re-releasing” the water. Flood control operations are no longer in effect. Reclamation transitioned out of them over the past few days. The July 4 weekend is approaching and Reclamation is aiming to have releases down to floating flows of ~13-15 kcfs in the city of Boise by that time. In terms of flow augmentation, Fenolio is estimating 320-380 kaf of flow. He does not foresee hitting 427 kaf. Palisades Powerhead releases were wrapped up this morning. That operation is now complete. Fenolio expects 40 kaf from the Boise for flow augmentation. Rentals are still not available likely due to the last few years of drought. Anderson Powerhead may be available. On the Payette, it is unclear as of yet how much water may be available for rent.

Questions and comments:

1. Van Dyke asked about the status of the reservoirs. Fenolio replied that the Payette is in active flood operations, which means it is controlling for refill. The lower system of the Boise is almost full. Refill may be missed at Anderson Ranch. On the Upper Snake, conditions are much better but Fenolio does not know the exact projections. American Falls is being drafted for irrigation.
2. Van Dyke wondered what the refill dates are on this system. In a dry year, the refill dates are in late May or early June, said Fenolio. Typically, refill dates are in late June.

**Corps Projects: Libby Dam** – Midnight elevation 2,397.8 ft., yesterday’s average inflows were 68.6 kcfs and outflows 13 kcfs. **Albeni Falls** – Midnight elevation 2,051.7 ft., inflows 120.7 kcfs and outflows 97.5 kcfs. **Dworshak Dam** – Midnight elevation 1,597.2 ft., inflows 29.8 kcfs, and outflows of 25 kcfs. **Lower Granite** – Yesterday’s average outflows were 205.3 kcfs. **McNary Dam** – Yesterday’s average outflows were 421.3 kcfs. **Bonneville Dam** – Yesterday’s average outflows were 436.5 kcfs.

Marshall added some additional detail on conditions and reservoir operations across the basin. **Marshall shared that the Corps has declared a system-wide flood emergency.** The Corps is coordinating daily with its partners, including BC Hydro.

At Flathead Lake, inflows are up substantially and expected to increase over the next 10 days with snowmelt as well as incoming precipitation. The project is on free flow and releasing as much water as possible. The reservoir is at 2892.5 ft. and potentially surcharging during the next 10 days. The Corps will continue to monitor the situation.

At Albeni Falls, inflows topped 120 kcfs yesterday. At Lake Pend Oreille, the reservoir is at 2,061.7 ft. Normal full pool is 2,062.5. Albeni Falls is on free flow, releasing as much as capacity will allow. The pool will continue to fill and may hit its normal full level by the end of the 10-day forecast. Outflows are averaging ~100 kcfs and may increase over the 10-day period.

At Libby Dam, outflows have been reduced. The project just wrapped up the sturgeon pulse operation. It had been at full powerhouse capacity of 24 kcfs before dropping down to 20 kcfs. It accelerated the ramp down and is at 13 kcfs, where it will stay for now. This is to control refill at Libby and is also meant to minimize impacts at Kootenay Lake and keep the Bonners Ferry gauge below flood stage. Bonners Ferry peaked at 1,762 ft. yesterday.

At Dworshak Dam, some inflow data are missing but the project has been averaging inflows of ~30 kcfs. Outflows have ramped up over the past few days to ~25 kcfs. The Corps will keep releases at 25 kcfs today before re-evaluating tomorrow. With additional precipitation in the forecast, including snow, the agency will need to manage space in the reservoir. Marshall believes there is a snow flight scheduled for tomorrow to evaluate the snow pack in that portion of the basin.

On the Lower Snake, inflows at Lower Granite were 203 kcfs yesterday. They peaked at 206 kcfs on Monday. The forecast shows flows receding, which will help with staging in the Lower Columbia as the agency works to keep Vancouver, WA at or below flood stage.

At John Day, inflows have been around 450 kcfs or higher over the past few days. The agency has had to fill into the flood risk management space at John Day. This means the project is above the minimum irrigation pool (262.5 ft. – 264.5 ft.). The project is at 265.3 ft. The Corps has the ability to fill up to 268 ft. at the project and may have to use some of that space in the next few days, depending on the incoming weather event. It will be drafted out as soon as the flood risk is diminished.

At Vancouver, the gauge is at 16.15 ft. The forecast shows receding flows but there are rapidly changing conditions in the basin. Marshall expects high flows to continue as the Corps moves water through the system.

Comments and questions:

1. Van Dyke asked Marshall to explain what surcharging is. Marshall explained that surcharging occurs when the reservoir elevation has gone above its normal full pool reservation for flood risk management purposes.
2. Marotz asked about the sturgeon pulse graph that Marshall showed, commenting that it did not seem like outflows slowed as much as he would have expected. Ammann noted that the Corps Seattle district likely ramped down more aggressively than normal due to possible flood conditions. Bettin noted that there are pictures available showing that there is plenty of water in the system. Marotz will ask Greg for pictures.
3. Ammann added that the building snowpack puts uncertainty in the flow forecast. There is a potential for reduction at Libby, she noted, but it is unclear right now if that will happen.
4. Dave Swank, USFWS, asked if high flows could be extended based on the data from the snow flights. Marshall said there is a potential for flows to remain at 25 kcfs at Dworshak Dam depending on what the flight reveals.
5. Swank noted that the Dworshak Dam nation fish hatchery has been trying to keep TDG levels in the hatchery down for fish that are on North Fork Clearwater river water.
6. Lorz asked if Dworshak Dam has the potential to surcharge. Marshall would need to check the water control manual.

***3b. Water Quality – Dan Turner, Corps***

Dan Turner, Corps, reported on water quality for the Corps. On the Columbia River, TDGs have increased above 125% at times at McNary and John Day dams. There has been forced spill on the system due to lack of load and lack of turbine and deployment of reserves. The Bonneville tailwater gauge has been removed due to high flows. The gauge will be reinstalled when there are lower flows on the system. Ice Harbor hit 132% TDG for a 12-hour average. The highest hourly average was 135%. The Lower Granite tailwater gauge was washed out due to flows. Tailwater elevations have been higher than normal due to high flows. That has been influencing TDG production. Additionally, barometric pressure has been changing. It has increased over the past few days, which has helped to lower TDG in some of the forebays. A low-pressure system is forecasted, which will raise TDG at some of the sites.

***3c. Fish***

**Juveniles:** Conder reported on fish for NOAA, sharing that juvenile yearling Chinook are still passing projects but decreasing in numbers at all projects. Subyearlings are increasing, especially at Lower Granite where 38,000 were observed on June 14. Coho are decreasing. Steelhead are on the decline at Bonneville; the passage index was 13,000 on June 13, but generally they are on the decline. Sockeye are on the decline but at Lower Granite there was a small bump in passage, which could be kokanee.

**Adults:** At Bonneville, there is a lull between spring and summer Chinook occurring. About 1,000-2,000 are passing per day. For the spring season, 147,000 were counted. Jack counts are in the ~20,000 range, which is higher than last year and ~60% higher than the 10-year average. There may be an increase next year as well, based on available jack data. Steelhead are increasing, and shad are passing at 100,000-200,000 per day with a YTD total of near 2 million. Sockeye are showing in good numbers.

At McNary, the report is similar to Bonneville but in smaller numbers. Shad have started to reach the project.

At Ice Harbor, there is an indication that fish are struggling to pass the project but are still motivated. Sockeye and shad are starting to pass the project.

Conder took the group through some ladder split reports, which show a differential between the ladder and spillway passage at two projects. At The Dalles, 1,000 to 2,000 adult Chinook consistently pass through the East ladder daily. Earlier in the season, passage on the North was good but during the recent high flows, adults stopped passing through that location. Conder said it is worth considering spilling water outside of the wall, but that would need to be decided in a different forum. A similar issue is occurring at Ice Harbor, he reported.

Swank reported on lamprey. Counts of juvenile lamprey have been high at McNary with 65,000 on June 8. Some have made it on to Bonneville. Counts were over 1,000 earlier this week. Numbers at Little Goose have declined. For adults, there is not much to report. The total run looks to be more similar to last year than the 10-year average, but it is too early to say for sure.

**3d. Power – Scott Bettin, BPA**

BPA is getting load when it can. Prices are hovering around \$0. The nuclear power plant is at 40% (when there is not enough load, BPA turns the nuclear plant down to put generation on the hydro facilities in an effort to keep gas levels down). Hopefully there will be more load, soon, said Bettin.

**Today’s Attendees:**

<b>Agency</b>	<b>TMT Representative</b>
Army Corps of Engineers	Doug Baus (Chair), Lisa Wright, Julie Ammann
Bonneville Power Administration	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	
Montana	Brian Marotz
Nez Perce Tribe	Jay Hesse
Umatilla Tribe/CRITFC	Tom Lorz
Colville Tribe	
Warm Springs Tribe	Jen Graham
Kootenai Tribe	
Spokane Tribe	

**Other Attendees (non-TMT members):**

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

TMT – June 15, 2022

DS Consulting – Emily Stranz (Facilitator), Colby Mills  
BPA – Melissa Haskin (Contractor with CorSource Technology Group)  
Columbia Basin Bulletin – Mike O’Bryant  
Chelan PUD – Jay Fintz, Kate von Reis Baron  
Oregon DEQ – David Gruen  
Clearing Up – K.C. Mehaffey  
FPC – Erin Cooper  
Portland General Electric – Ruth Burris  
Grant PUD – Peter Graf