

COLUMBIA RIVER TECHNICAL MANAGEMENT TEAM

August 30, 2017

Facilitator's Summary

Facilitator: Emily Stranz; Notes: Charles Wiggins, DS Consulting

The following Facilitator's Summary is intended to capture basic discussion, decisions and actions, as well as point out future actions or issues that may need further discussion at upcoming meetings. These notes are not intended to be the "record" of the meeting, only a reminder for TMT members. Official minutes can be found on the TMT website: <http://www.nwd-wc.usace.army.mil/tmt/agendas/2017/>

Meeting Minutes and Facilitator's Summary Notes

TMT minutes and notes for the August 16 and 23 TMT meetings were approved after small modifications to the August 16th Facilitator's Summary.

Dworshak Operations: Steve Hall, Corps, summarized operations at Dworshak. Reservoir elevation is currently at 1,539.3 feet, with inflows of 1.3 kcfs, and 9 kcfs discharge. TDG is 116% +/- 1 downstream, with higher levels in the afternoon because of high air temperature. TDG levels ranged from 102 to 103% in the hatchery collection channel. Water temperature at Lower Granite averaged 67 degrees, though there were three excursions above 68 degrees on August 26 and 29. The Lewiston weather forecast is for hot temperatures through the weekend, with some cooling after Labor Day.

The Corps developed two modelled scenarios showing the impact of Dworshak discharge on water temperatures in the Lower Granite tailrace. In the first model, the discharge was dropped to 7 kcfs on September 1; this model predicts water temperature rising above 68 degrees by the end of the modelled period. The second model shows 8 kcfs out beginning September 1; according to this model, water temperature remains below 68 degrees.

Steve's recommendation is to maintain discharge at 9 kcfs until September 1, then reduce to 8 kcfs until September 4. He estimates that the project will cross the 1,535ft elevation target at that point. Discussions are ongoing whether to drop discharge down to 7 kcfs on September 5, however, this is weather dependent. He noted that the Corps coordinated with the Nez Perce on this operation and Jay Hesse noted that the Nez Perce accept this plan.

Dave Swank, USFWS, reported on conditions at the hatchery. The Hatchery Health Report came out on August 28. Current TDG is 102.4% at the collection channel. Spring Chinook, steelhead, and Coho are showing gas bubbles in the gills, and some with gas bubbles in the lateral lines. Most of the bubbles are rank 1; however, some are rank 2. There was no observed GBD in fins or eyes. Dave confirmed that fish are growing at the expected rate in the hatchery, and are eating normally. In-river samples are not available. USFWS will continue to monitor the situation until there is no evidence of GBD.

Scott Bettin, BPA, questioned whether the region would like to retain the deep spill at Lower Granite instead of switching to the RSW on September 1st as coordinated through FPOM due to the juvenile bypass system being taken out of service for upgrades. He pointed to surface water temperatures of 71-72 degrees and 66-68 degrees deeper in the pool. TMT members discussed whether to spill warmer surface water through the RSW or to spill from deeper in the pool. FPAC did not discuss the issue this week, and although FPOM coordinated spill patterns extensively, they did not consider water temperature. Paul will check with other FPAC members and circle back to Doug before Friday, September 1. . Doug encouraged feedback on this operation to be routed through FPOM because a significant amount of coordination has been involved in this operation and most of those involved in the coordination are not at the TMT meeting today.

Operations Review

Reservoirs: Peter Cooper, BOR, reported on Bureau of Reclamation projects:

- Grand Coulee midnight elevation was 1,280.6 ft. He noted that per the BiOp, the BOR is operating to the Banks Lake 5-foot draft by the end of August.
- Hungry Horse midnight elevation was 3,551.2 ft., current inflows are 600cfs and discharge is 2 kcfs. The project is operating for minimum flows at Columbia Falls.
- Peter also noted that the Payette flow augmentation is wrapping up and they will have 487maf out by the end of August.

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

- Libby midnight elevation was 2,445.5 ft., current inflows are 5.2 kcfs, and discharge is 9 kcfs.
- Albeni Falls midnight elevation was 2,062.4 ft.; current inflows are 12 kcfs and outflows are 8.6 kcfs.
- Dworshak midnight elevation was 1,539.1 ft.; inflows are 1.1 kcfs and discharge is 9 kcfs.
- Lower Granite average daily outflows were 27.8 kcfs.
- McNary average daily outflows were 144 kcfs.
- Bonneville average daily outflows were 143.2 kcfs

Doug reported that as in previous year's operations the Action Agencies will make best efforts to return the Snake River reservoirs to MOP or as adjusted due to navigation constraints. Specifically, Little Goose, Lower Monumental, and Ice Harbor will return to MOP +1 due to navigation constraints. Additionally, due to navigation constraints, they will likely not be able to return Lower Granite to MOP. Doug reminded the TMT that spill season officially ends at midnight on August 31st. As coordinated with the FPOM spill associated with upgrades to the Lower Granite Dam juvenile bypass system will continue on September 1st.

Fish - Paul Wagner, NOAA, reported on fish. Sub-yearlings are diminishing; this lull is typical for this time of year, and will likely pick up in September/October as temperatures fall. However, the increase is not usually realized at the Lower Columbia projects.

Bonneville adult fall Chinook numbers are 44,196, or 60% of the ten-year average. Jacks are 6,577 (53%). Steelhead are 74,000 (30%). Wild steelhead are 26,000 (30%). Both steelhead numbers are low but better than forecasted. At Lower Granite, 679 Fall Chinook have been observed (46%), with Jacks at 44% of the 10-year. A total of 85 sockeye have been gathered at the Red Fish Lake trap and conversion is tracking fairly well. It is still too early in the season for Steelhead at Lower Granite.

Water Quality – Dan Turner, Corps, reported that TDG is below the state thresholds in the tailrace and forebays of the Corps projects. Snake River projects are operating at minimum generation.

Power Supply – Tony Norris, BPA, reported on the power supply. He showed TMT a graph of BPA's balancing authority, illustrating the wind, hydro, fossil fuel, and nuclear loads being utilized currently (link on TMT website). Tony noted that the graph is updated every 5 minutes. The graph shows the prominent role that hydropower plays in helping to meet the fluctuating daily energy needs. Fossil fuel and biomass stayed relatively flat throughout the period wind generation dropped to nearly zero for the majority of the period, which Tony said was due to warm weather and thus no wind. Nuclear power was not generated during the timeframe examined due to a safety shut down at the Columbia Generating Station (CGS). Tony said that there are a number of safety reasons that the plant could be tripped offline. It was pointed out that when wind generation drops, hydropower picks up the missing generation instantaneously. Oftentimes natural gas will also help pick up the load for loss of wind generation. Tony showed the group a number of other graphs, all of which are available at www.bpa.gov.

The next regular TMT meeting will be face-to-face meeting on August 30, at 9:00.

**Columbia River Regional Forum
TECHNICAL MANAGEMENT TEAM MEETING**

August 30, 2017
Minutes: Pat Vivian

1. Introduction

Representatives of Montana, BPA, the COE, NOAA, Washington, Nez Perce Tribe, USFWS, BOR and others participated in today's TMT meeting chaired by Doug Baus, COE, and facilitated by Emily Stranz, DS Consulting.

2. Review Meeting Minutes – August 9, 16 and 23

In the August 16 facilitator's notes and official minutes, the language describing walleye will be revised to correct the size of fish (6-8 inches) and population density. Also in the August 16 notes under Dworshak Operations, the USFWS description of fish health at the Dworshak National Hatchery will be revised to specify no "unusual" observed mortality. With these changes, the August 16 facilitator's notes and official minutes will be considered final.

3. Dworshak Operations

3a. Current Operations Data. Steve Hall, COE Walla Walla, reported. Dworshak has drafted down to elevation 1539.3 ft, discharging 9 kcfs. Inflows are 1.3 kcfs.

3b. TDG in Dworshak Tailrace. Total dissolved gas saturation levels have been over 116% in the afternoons, dropping below 116% at night.

3c. TDG at Dworshak Hatchery. Saturation levels at the hatchery have been 102-103% with increases in the past few days due to warmer weather.

3d. Hourly Snake and Clearwater River Temperatures. Water temperatures in the Lower Granite tailrace have been around 67 degrees F, with a few brief excursions above the 68 degree threshold due to high afternoon temperatures.

3e. Temperature Model Results. Hall presented two scenarios. The first shows Dworshak releases dropping from 9 to 7 kcfs on September 1. It indicates that temperatures would exceed 68 degrees F at the end of the forecast period. The second, more plausible, scenario shows Dworshak releases dropping to 8 kcfs on September 1, which doesn't forecast exceedance of the 68 degrees F threshold. After coordinating with the Nez Perce Tribe on these findings, the COE plans to hold 9 kcfs releases through August 31, then reduce to 8 kcfs on September 1 until the 1535 ft BiOp target for Dworshak is met, which the model indicates will happen on September 4.

At that point, based on the latest forecast, a decision will need to be made whether to reduce Dworshak discharges to 7 kcfs on September 5. The current model indicates that would barely avoid an exceedance of 68 degrees F at Lower Granite tailwater.

3f. Weather Forecast for Lewiston, ID. The weather forecast for Lewiston is hot, with a high of 96 degrees F today. There will be a brief respite, then temperatures are supposed to climb to 99-101 degrees F over the coming weekend. By Labor Day, temperatures should cool off.

3g. Hatchery Fish Health Report. Dave Swank, USFWS, gave a report based on the August 28 sampling results. In the hatchery collection channel, TDG saturation is currently 102.4%. Of the steelhead samples, 9 in 10 fish had Rank 1 bubbles in the gills. Bubbles in the lateral lines were all Rank 1, except for 2 fish with Rank 2 bubbles. There were no bubbles in fins or eyes. Of spring Chinook samples, 7 fish had Rank 1 bubbles in the gills and 4 fish had Rank 1 bubbles in the lateral lines. One fish had Rank 2 bubbles. There were no bubbles in fins or eyes. The fish are generally feeding well and growing at a normal rate.

Jay Hesse, Nez Perce, added that sampling will continue until no symptoms of GBT are seen, probably at least through September. Charles Morrill, Washington, asked if there was any in-river sampling; Hesse said not at this time of year.

Scott Bettin, BPA, asked, should the RSW at Lower Granite be turned on September 1, as coordinated through FPOM due to the juvenile bypass system being taken out of service for upgrades. Or should the spill be through the deep spillbays for the sake of temperature management? What about increases in adult fallback caused by the RSW?

FPAC discussed that tradeoff recently, Paul Wagner, NOAA, said. He will follow up with Tom Lorz, CRITFC, and Russ Kiefer, Idaho, who both expressed interest in the idea but weren't present today. The RSW pulls hot water off the surface, which is currently 70-72 degrees F, so opening it could cause temperatures to exceed 68 degrees F in the LWG tailwater, Hall warned. By contrast, deep spill would release 66-68 degrees F water.

Lisa Wright, COE, said FPOM has coordinated alternative spill patterns in relation to Lower Granite RSW operation. Next steps are defined in a Memo of Coordination (MOC), most likely 12 hours of spill a day at 4 stops through bays 6 and 8. Bettin noted that the FPOM process addressed construction issues, but not in season temperature management.

The Salmon Managers weighed in on this, although it was noted several key representatives were absent. Morrill and Hesse both wanted deep spill to continue until temperatures go down. At first, Swank was not convinced that surface spillways have much impact on temperature because it's hard to isolate the effects of the weir, but the fact that smolt passage numbers are low at present brought his approval of continuing deep spill. With consensus on that from the Salmon Managers present today (**NOAA, Washington, Nez Perce** and **USFWS**), Wagner said he will reach out to those absent and report back to the COE.

Baus encouraged everyone at this point to shift further Lower Granite spill coordination efforts to FPOM because a significant amount of time went into the current FPOM MOC. If the Salmon Managers reach consensus on a different operation than what is outlined in the MOC, Salmon Managers will coordinate with the COE via the FPOM.

4. Operations Review

4a. Reservoirs. Peter Cooper, BOR, and Lisa Wright, COE, reported.

Grand Coulee is at elevation 1280.6 ft, with Banks Lake on track to draft 5 ft out by end August per the BiOp. Hungry Horse is at 3551.2 ft elevation with inflows of 600 cfs and outflows of 2 kcfs, operating to meet Columbia Falls minimums. Flow augmentation on the Payette is wrapping up, and 487 kaf of flow augmentation from the Upper Snake basin above Brownlee will be released by August 31.

Libby is at elevation 2445.5 ft with inflows of 5.2 kcfs and outflows of 9 kcfs. Albeni Falls is at elevation 2062.4 ft with inflows of 12 kcfs and outflows of 8.6 kcfs. Dworshak is at elevation 1539.7 ft with inflows of 1.1 kcfs and outflows of 9 kcfs. Lower Granite outflows are 27.8 kcfs, McNary outflows are 144 kcfs, and Bonneville outflows are 143.2 kcfs.

Every year when the Nez Perce flow augmentation is complete, the lower Snake projects generally return to the MOP range, Baus said. However, ongoing navigation issues at Lower Granite this year will probably preclude a return to MOP, as TMT already discussed. Nevertheless, best efforts will be made to draft Lower Granite as much as possible in light of the navigation constraints. Little Goose, Lower Monumental and Ice Harbor will return to MOP+1 ft operation after Dworshak reservoir reaches 1520 ft. Spill ends at midnight August 31. As coordinated in FPOM Lower Granite will continue spill associated with ongoing upgrades to the juvenile bypass facility.

4c. Water Quality. Dan Turner reported that TDG levels are below state thresholds in the forebays and tailraces. Most of the Snake projects are operating at minimum generation and spilling the rest, and the lower Columbia projects are spilling at FOP targets.

4d. Power. Tony Norris, BPA, responded to an earlier request for additional information on BPA's operations by presenting a graph that shows the federal balance of load vs. wind, hydro, biomass and nuclear generation for the past 7 days, automatically updated every 5 minutes. The wind generation and load balance authority monitoring link is available on the TMT web page or the BPA web page at BPA.gov.

On August 27, the nuclear power plant, Columbia Generating Station (CGS), tripped offline for safety reasons, and sustained hot weather has meant little wind production in the region. BPA is nonetheless managing to meet heavy loads due to air conditioning. Norris explained that 4,782 MW of installed wind capacity in the region can spike or plunge at any moment by 4,000-5,000 MW above or below the forecast. During extreme hot or cold spells, it can be difficult to underwrite such wide swings with hydro system reserves. If no reserves are available, BPA is required to curtail wind generation and compensate the producers for their losses in order to keep TDG levels from exceeding BiOp requirements. The Dalles and John Day dams figure heavily in providing reserves. Wind curtailment comes into play when flows are robust and TDG levels at the projects are high.

4b. Fish. Juveniles: Subyearling numbers are diminishing, as is typical at end August before the weather cools and fall runs pick up, Wagner reported. Passage at the lower river projects appears to be on a downward trend, but this could be an effect of the reduced sampling protocol for hot weather.

Adults: Fall Chinook returns to Bonneville are 44,196 to date, which is 60% of the 10 year average. Fall Chinook jacks are following a similar trend at 6,577, which is 53% of the 10 year average. Steelhead returns to Bonneville are 74,000, which is better than the forecasted return of 60,000 but only 30% of the 10 year average. Wild steelhead returns are 26,000, also 30% of the 10 year average.

To date, 679 fall Chinook have returned to Lower Granite, which is 46% of the 10 year average. Jack returns to Granite are 44% of the 10 year average; the same goes for steelhead. To date, 227 adult sockeye have shown up at Granite and 5 made it to the Redfish Lake trap. Conversion rates are looking good for sockeye.

5. Next TMT Meeting

TMT will meet next in a September 6 conference call.

Name	Affiliation
Jim Litchfield	Montana
Scott Bettin	BPA
Aaron Marshall	COE
Lisa Wright	COE
Doug Baus	COE
Dan Turner	COE
Michelle Yuen	COE
Charles Wiggins	DSC
Tony Norris	BPA
Paul Wagner	NOAA
Phone:	
Charles Morrill	Washington
Jay Hesse	Nez Perce
Dave Swank	USFWS
Peter Cooper	BOR
Eric Chow	COE
Steve Hall	COE
Laura Berg	Clearing Up
Brian Zigler	Snohomish PUD
Michael Bryant	CBB