

COLUMBIA RIVER TECHNICAL MANAGEMENT TEAM

May 29, 2019

DRAFT Facilitator's Summary

Facilitator: Emily Stranz; Notes: 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. 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.nwdwc.usace.army.mil/tmt/agendas/2019/>.

Review Meeting Minutes

The group approved minutes and facilitator's summaries for the December 2018 Year End Review, and 4/24, 5/1, and 5/8 TMT meetings. Approval of the 5/10, 5/15, 5/22 minutes and summaries will be requested at the meeting on June 5.

Dworshak Operations

Steve Hall, Corps, provided the TMT with an update on current operations at Dworshak Dam. Forebay elevation was 1,595.27 feet, with inflows of 14 kcfs and discharging 12 kcfs. Inflows are forecasted to drop off by the end of the month with relatively cool and dry conditions as snowpack recedes. The Northwest River Forecast Center is showing inflows in the Clearwater River at Orofino in the 30 kcfs range and anticipated to drop down to 20 kcfs in early June. The 5-day QPF shows the region dryer than normal, with the 10-day forecast showing ¼ inch of precipitation across the basin.

TDG in the Dworshak tailrace reached 100% today and yesterday, with periods up to 103% over the weekend. The DWR National Fish Hatchery has stayed mostly below 100% TDG, despite the project spilling water to manage pool elevation.

Steve reviewed two potential operational scenarios. The first using analog year 2003 reflecting the forecasted lack of precipitation, for which, the project will hold spill through the end of May to remain at 4 feet from full, then transition to fill the pool after the beginning of June. The second scenario uses analog year 2004 and shows a potential operation if flows bump up, requiring continuing spill for an additional 5 days. Water temperatures are cold and well below the need for augmentation. Steve noted that there is a snow flight scheduled for June 3 or 4 to monitor remaining snow cover.

FOP Spring Spill

Dan Turner, Corps, reported on FOP spring spill operations, noting that the Corps continues to implement the Flex Spill Agreement. In the Snake River, all project tailwaters have been averaging 120% TDG for the past couple days. He informed the group that TDG increased last night at Little Goose when spillbay 7 went out, resulting in a spill cap decrease of 3 kcfs starting later today. The project is evaluating to see what repairs are needed to the spillbay. Dan noted that Little Goose will remain at the bottom of the spill priority list until the end of spring spill season unless otherwise recommended by the TMT.

On the Columbia River, conditions have been steady at John Day and The Dalles. The joint operation at both dams continue efforts to meet the following 3 goals coordinated at TMT (while prioritizing the first 2):

1. 120% TDG in The Dalles tailwater,
2. Spill cap of greater than or equal to 40% at The Dalles,
3. 120% TDG in the John Day tailwater, if possible.

Tony Norris, BPA, reported that projects are flexing where possible. The Dalles spill cap and performance standard are both at 40%, which precludes any capacity to flex there. Operations at Little

Goose are adjusting for adult passage [Facilitator’s note: it was clarified via summary edits that the operation at LGS is to maintain spill at 30% for 6 hours in the morning and 2 hours in the evening (as flows allow), as coordinated with TMT last week].

Little Goose Dam Operations

Doug Baus, Corps, updated the group on the adult fish conversion from Lower Monumental Dam to Little Goose Dam. The DART Lower Monumental to Little Goose reach distribution shows 11 continuous days of delay, and the FPC tool also shows counts below the expected at Little Goose. Data from May 28 shows the problem persists, with a year-to-date count of 11,608 at Little Goose, and 16,605 at Lower Monumental. Doug recapped operations coordinated to date at TMT, starting with the flex spill agreement operations of 30% spill split into 4 AM hours and 4 PM hours or 5 AM hours and 3 PM hours, then switching to 6 AM hours and 2 PM hours (evening hours only as flows allow).

Yesterday a recommendation was received from FPAC to implement 8 consecutive hours of 30% spill at Little Goose Dam, starting at 0400 hours through 1200 hours, to assist adult fish passage. Consensus was reached on this recommendation with support from Nez Perce Tribe, IDFG, WA, NOAA, USFWS, Colville Tribes, and with no objection from OR. The operation was implemented today at 0400 hours and will continue for 1 week with a check in at the next TMT meeting on June 5. Forecasts show increasing inflows that will peak at 145 kcfs on June 3 and will decrease to 115 kcfs by the end of the 10-day period. Julie Ammann, Corps, reported that if the higher flows come in as forecasted, the project may not be able to hold 30% for 8 hours and maintain the pool within MOP. The current plan, as coordinated, would be to decrease the duration of 30% and maintain the MOP operation.

Emily reminded the group of the process set up by the TMT should Salmon Managers wish to make an operational change: any suggestions from FPAC regarding flex spill operations at Little Goose will be funneled through the FPAC chair to the Corps and BPA, the Corps and BPA will provide a response, and the chair will inform FPAC.

Operations Review

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

- **Hungry Horse:** is releasing 4,000 cfs with a midnight elevation of 3,545.2 feet, with inflows coming up from last week (11.5 kcfs). Releases might pick up early next week to help refill to 10-12 feet from full.
- **Grand Coulee:** midnight elevation of 1,277.8 feet and releasing 125 kcfs with inflows between 140 kcfs – 150 kcfs.

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

- **Libby:** midnight elevation was 2,415.5 feet, with average inflows of 22 kcfs and outflows of 18 kcfs. The sturgeon pulse began today, with project outflow of 20 kcfs;
- **Albeni Falls:** midnight elevation was 2,059.6 feet, with average inflows of 53.4 kcfs and outflows of 46.4 kcfs;
- **Dworshak:** midnight elevation was 1,595.2 feet, with average inflows of 14 kcfs and outflows of 12.1 kcfs;
- **Lower Granite:** average outflows were 126.5 kcfs;
- **McNary:** average outflows were 295.8 kcfs; and
- **Bonneville:** average outflows were 299.3 kcfs.

Water Quality: Dan Turner, Corps, had nothing further to report.

Fish: Paul Wagner, NOAA, reported that adult spring Chinook counts are still relatively low. Fish are passing at Bonneville, with 52,497 adult spring Chinook and 6,258 jacks to date, a little over 30% of the 10-year average for both. A total of 2 sockeye have passed Bonneville. In the Snake River, the passage conversion between Lower Monumental and Little Goose is low. Counts show 10,188 have passed Lower Granite which is closer to 25% of 10-year average.

Some juvenile fish traps are still operating, although most yearling Chinook are done. Numbers are falling quickly at the projects, signaling that most juveniles have passed at this point. Sub-yearling Chinook are picking up with a passage index of 10,000 or greater for several days. Steelhead numbers are still in the several thousand index and falling. Sockeye have mostly passed through the Snake River, with fish in the Upper Columbia still migrating. Lamprey are still showing at most sites, with juveniles on their way out.

Power System: Tony reported that wind generation is picking up with weather fronts, and spring loads are characteristically low.

The next scheduled TMT meeting is face-to-face on Wednesday, June 5, 2019, at 9:00 AM.

This summary is respectfully submitted by the DS Consulting Facilitation Team. Suggested edits are welcome and can be sent to Colby at colby@dsconsult.co.

Columbia River Regional Forum
Technical Management Team OFFICIAL MINUTES
May 29, 2019
Minutes: Melissa Haskin, FLUX Resources

1. Welcome and Introductions

Today's TMT meeting was chaired by Doug Baus, Corps, and facilitated by Emily Stranz, DS Consulting. See the end of these minutes for a list of today's attendees.

2. Minutes

Emily Stranz, DS Consulting, will reach out to individual members later this week for approval of YER minutes. Minutes for 4/24, 5/1 and 5/8 were approved. Minutes for 5/10 and 5/15 will be delayed until the next face-to-face meeting on 6/5 to allow time for review.

3. Dworshak Operations – Steve Hall, Corps NWW

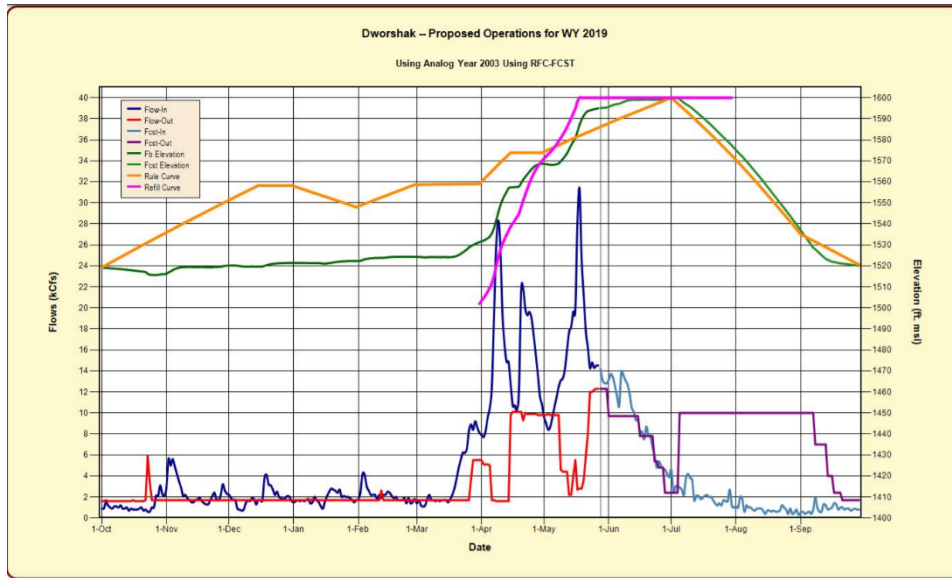
Steve Hall, Corps, reported on operations at Dworshak Dam. The reservoir's midnight elevation was 1,595.27 ft. Inflows are ~14 kcfs, outflows are ~12 kcfs. Through the end of the month, inflows are forecasted to remain around 14 kcfs. Moving into June the forecast calls for decreases in inflow. It should be cool and dry. Additionally, the snowpack is receding. A snow flight is scheduled for June 3 or June 4.

The forecast for the Clearwater River at Orofino shows flows at 30 kcfs and dropping off toward 20 kcfs moving into and during the first half of June.

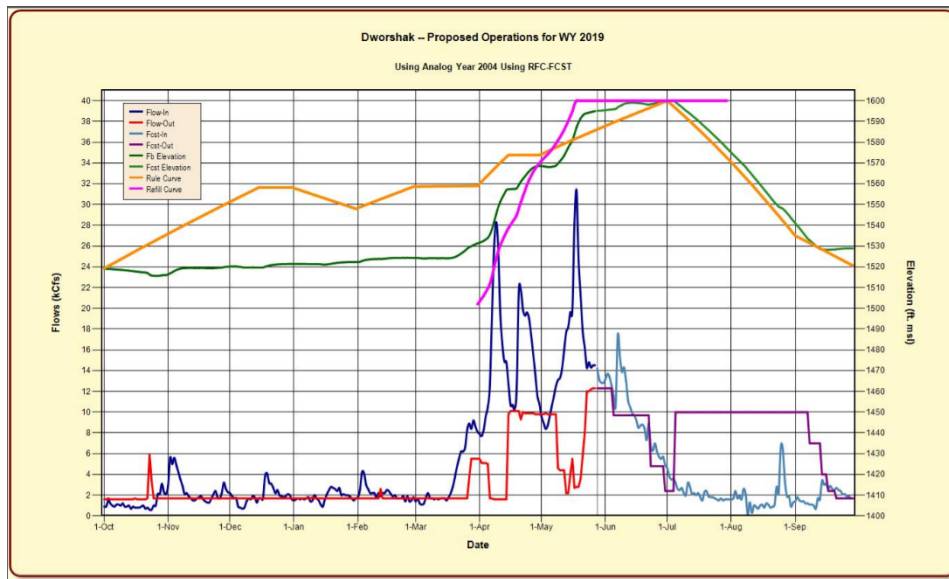
The 5 and 10-day NWRFC weather forecast calls for lower than average precipitation. The 10-day forecast indicates a possibility of about ¼ inch of rain, which is below the historical normal for this time of year of about 1 inch.

TDG levels right now in the Dworshak Dam tailrace are 100%. Over the weekend, the tailrace hit 103% TDG. There is a link on the TMT agenda that shows the TDG levels in the DWR tailrace (DWQI) and DWR National Fish Hatchery (DHCI). For the most part TDG has been below 100% in the hatchery, consistent with the request from Jay Hesse, Nez Perce.

Hall showed two operational scenarios based on analog years 2003 and 2004. If the forecast for below average precipitation proves to be accurate, similar to 2003, there will be a declining inflow hydrograph, which will require spill through the end of the month to keep the Dworshak Dam forebay 4 feet from full. In this scenario, the Corps would transition to full powerhouse after June 1.



Hall showed a second operational scenario based on analog year 2004 which illustrates what could happen if a significant storm came through, contrary to what the current forecast is predicting. In this scenario, spill would continue for an additional 4-5 days.



In either scenario the pool should be full by mid-June. The Corps NWW is preparing to run temperature models, which will resume mid-June this year. Right now river temperatures are cold and there is no need for augmentation, but that will likely change in mid-June.

Charles Morrill, WA, asked about the functionality of the recently installed Lower Granite weather station. Hall said he believes everything is working fine this year. He noted the data are probably only available through the Corps’ data query website. He will double-check

and report back to Morrill. He also noted he does not believe the information from the weather station is included in the Corps' modelling yet since it typically takes several years of data.

4. FOP Spring Spill

4a. Spill & TDG – Dan Turner, Corps

Dan Turner, Corps, said there is not much to report this week. The Corps is implementing the flex spill agreement. Little Goose spillbay 7 went out of service last night, which resulted in a 1-2% increase in TDG. In response, the Corps reduced the Little Goose spill cap by 3 kcfs that will go into effect later today. The Corps is investigating the cause of the outage as well as a fix.

Turner said that unless otherwise coordinated, Little Goose will remain at the bottom of the spill priority list during spring spill, per last Friday's TMT coordination.

The Corps is continuing to operate John Day and The Dalles to achieve the following objectives:

1. 120% TDG in The Dalles tailwater;
2. Spill cap of at least 40% at The Dalles;
3. And, if possible, 120% TDG in the John Day tailwater.

The Dalles spill cap is currently at 40%, which is producing 120% TDG in The Dalles tailwater. At John Day, TDG is hovering at ~119%.

4b. Flex Spill Implementation – Tony Norris, BPA

Tony Norris, BPA, reported on flex hours. BPA is flexing at all projects where possible. The 40% spill cap at The Dalles precludes any change there since it's the same as the performance standard spill level. At Little Goose, BPA is implementing the request for 30% spill in the morning as recommended by salmon managers.

5. Little Goose Dam Operations - Doug Baus, Corps NWD; Paul Wagner, NOAA, and; Tony Norris, BPA

Doug Baus, Corps, reported that, as discussed in the last few TMT meetings, there is a delay in adult passage between Lower Monumental and Little Goose. Currently the YTD Chinook adult count at Little Goose is 11,608, which is significantly lower than Lower Monumental counts of 16,605.

Baus summarized the operations implemented thus far to increase passage:

1. 4 hours of 30% spill in the morning and 4 hours of 30% spill in the afternoon.
2. 5 hours of 30% spill in the morning and 3 hours of 30% spill in the afternoon.
3. 6 hours of 30% spill in the morning and 2 hours of 30% spill in the afternoon.

Recently, FPAC submitted a request to the Corps and BPA to try 8 consecutive hours of 30% spill at Little Goose from 0400 to 1200 each day. This was a consensus recommendation with support from the Nez Perce Tribe, ID, WA, NOAA, USFWS, and the Colville Tribe. OR did not object. The Corps and BPA implemented the request starting today and will continue the operation for one week. TMT will revisit this operation at the next meeting on June 5 to determine whether any modifications are necessary.

Baus pulled up the DART tool which showed 11 consecutive days of delay. The FPC tool also indicates Little Goose adult passage is below what would be expected.

The inflow forecast is increasing over the next 10 days, peaking on June 3 at 145 kcfs then dropping to 115 kcfs by the end of the 10-day period.

Charles Morrill, WA, asked about the hydraulic capacity at the project. Baus said it is about 18 kcfs per generator, so with 5 available units that would be a powerhouse capacity of roughly 90 kcfs. Looking at recent hourly data, powerhouse flow has been as high as 87.2 kcfs. Total hydraulic capacity depends on which spill operation is in effect, 30% or the spill cap (currently 54 kcfs). Inflows above powerhouse capacity plus the target spill rate would be additional (involuntary) spill unless stored in the forebay.

Jim Litchfield, MT, asked if inflows increase to 140-145 kcfs as forecasted, will the Corps be able to maintain 30% spill for 8 consecutive hours.

Baus and Julie Ammann, Corps, replied that it will be close and would require using the full 1.5-ft MOP range (633.0-634.5 feet). There is some uncertainty in the forecast. This would be pushing the upper limit. Norris also pointed out that the RFC forecasts seem to be coming in higher than actual inflows.

Morrill asked about the potential for ponding, or storing additional inflow in the forebay above MOP if necessary to hold spill at 30% for 8 hours when flows are above hydraulic capacity (powerhouse capacity + 30% spill), as was done last year for adult delay. Morrill said it was a question for everyone to consider and that he did not have a recommendation at this time about whether or not to fill above MOP in order to maintain 30% spill. This is outside of the FPAC recommendation that was coordinated yesterday and implemented starting today, so would need to be coordinated with FPAC then routed to the Corps and BPA through the FPAC Chair, Paul Wagner, or vice-Chair, Tom Lorz. If salmon managers want something different implemented, it should be coordinated and recommended from FPAC. There is another FPAC meeting tomorrow.

Baus reminded TMT that the same operation to hold spill at 30% and store additional flow in the forebay above MOP was coordinated last year and successfully moved fish. Details regarding the operation are in the minutes for the May 29, 2018, TMT meeting.

6. Operations Update

6a. Reservoirs – Joel Fenolio, Reclamation, and Lisa Wright, Corps

Hungry Horse – Midnight elevation 3,545.2 feet and outflows of 4,000 cfs. Inflows have come up from last week and the pool is 11.5 feet from full. Columbia Falls is at 21,000 cfs.

Grand Coulee – Midnight elevation 1,277.8 feet and outflows of 125 kcfs. Inflows have been around 140-150 kcfs. Refill should be 1,280 feet by the end of the month.

Libby – Midnight elevation 2,415.5 feet, inflows 22 kcfs, outflows 18 kcfs. The sturgeon operation started today with a project outflow of 20 kcfs.

Albeni Falls – Midnight elevation 2,059.6 feet, inflows 53.4 kcfs, outflows 46.4 kcfs.

Dworshak Dam – Midnight elevation 1,595.2 feet, inflows 14 kcfs, outflows 12.1 kcfs.

Lower Granite – Yesterday's average outflows were 126.5 kcfs.

McNary Dam – Yesterday's average outflows were 295.8 kcfs.

Bonneville – Yesterday's average outflows were 299.3 kcfs.

6b. Water Quality

Nothing further to report.

6c. Fish – Paul Wagner, NOAA

Adults: Passage is low. At Bonneville, spring Chinook are still passing with year-to-date counts of 52,497 adults and 6,25 jacks. This year's counts are lower than last year for adults and about the same as last year for jacks, but both are significantly below the 10-year average.

In the Snake River, the year-to-date adult spring Chinook count is 16,600 at Lower Monumental and 10,188 at Lower Granite, which is down from last year's 12,335 and well below the 10-year average of 44,000.

Adult sockeye are just beginning and 2 have been counted at Bonneville so far.

Juveniles: Most fish traps are still operating, but Lewiston is out for the year. Most yearling Chinook have passed. Subyearlings are starting to pick up. Sockeye have already passed the Snake for the most part. Lamprey are still showing at most of the sites.

6d. Power – Tony Norris, BPA

Wind has picked up and since it is spring, loads are low and generation is high.

7. Next TMT -

The next TMT meeting will be face-to-face on June 5 at the Corps Northwestern Division office in Portland at 9:00.

8. Today's Attendees

Agency	TMT Representative
Army Corps of Engineers	Doug Baus (Chair), Julie Ammann, Lisa Wright
Bonneville Power Administration	Tony Norris
Bureau of Reclamation	Joel Fenolio
NOAA Fisheries	Paul Wagner, Claire McGrath
US Fish & Wildlife Service	Dave Swank
Washington	Charles Morrill
Oregon	Erick Van Dyke
Idaho	N/A
Montana	Jim Litchfield
Nez Perce Tribe	Jay Hesse
Umatilla Tribe/CRITFC	N/A
Colville Tribe	N/A
Warm Springs Tribe	N/A
Kootenai Tribe	N/A
Spokane Tribe	N/A

Other Attendees (non-TMT members):

Army Corps of Engineers – Dan Turner, Steve Hall, Jon Roberts, Alfredo Rodriguez, Alexis Mills, Aaron Marshall, Eric Hockersmith
DS Consulting – Emily Stranz (Facilitator), Colby Mills
FLUX Resources – Melissa Haskin (Note taker)
Clearing Up – K.C. Mehaffey
Columbia Basin Bulletin – Mike O’Bryant
Public Power Council – Shane Scott