

COLUMBIA RIVER TECHNICAL MANAGEMENT TEAM
June 12, 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/>.

Dworshak Operations

Steve Hall, Corps, provided the TMT with an update on current operations at Dworshak Dam. Forebay elevation was 1,599.3 feet, with inflows of 18 kcfs, and discharging 5.4 kcfs. TDG in the Dworshak tailrace is low, between 97-98%, and the DWR National Fish Hatchery is also in the 97% range. Inflows are forecasted to slowly recede with the increase with the warm weather (although there is a cooler period in the next 10 days). Lower Granite tailwater temperature is around 57.5 degrees F, Anatone is at 61 degrees F, and the Clearwater River at Orofino is 58 degrees F. The temperature model is running every couple of days, and the results will be shared with TMT when temperatures are consistently about 60 degrees F in the Lower Granite tailwater. About 7.5-8 inches of snow remains in the basin, which will melt down in the next couple of weeks and keep water temperatures down. Water temperatures are expected to rise at the start of July after the effects of the snowmelt. Steve reviewed an operational scenario using analog year 1993, reflecting a decrease in flows and holding the project at 5.4 kcfs to initiate summer augmentation around July 8 or 9. Steve expects that from mid-July the project will have an average discharge of 11 kcfs to get down to 1,535 feet by the end of August.

FOP Spring Spill

Dan Turner, Corps, reported on FOP spring spill operations, noting that the Corps continues to implement the Flex Spill Agreement to maintain 120% TDG in the tailrace at each project along the Snake and Columbia Rivers. Spill caps on the Snake River are being evaluated daily after a period of involuntary spill ended on June 6. Yesterday, Ice Harbor Dam operated at minimum generation for at least 6 hours and McNary Dam is also seeing periods of minimum generation. Summer spill starts on the Snake River on June 21.

On the Columbia River yesterday, TDG in the McNary Dam tailwater rose to 124%, due to the removal of the temporary spillway weirs (TSWs); 4 spill bays were closed in the TSW removal process, which bulked spill and caused an increase in TDG. Removal of the TSWs is taking longer than expected; therefore, the Corps had to lower the spill cap yesterday in order to decrease TDG levels. The Corps will continue to monitor the project and will adjust the spill cap again if necessary. Spring spill on the Columbia River ends on June 15.

The joint operation at John Day and The Dalles dams continues in an effort 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.

Over the last 10 days, John Day has not been able to hit 120% TDG in the tailwater. Dan emphasized the significant influence that environmental factors have on managing operations at both projects. On June 7 & 8, tailwater TDG at The Dalles decreased to 117% as a result of higher wind speeds in the Gorge on June 5, 6, & 7. When winds died down, The Dalles forebay saw TDG increase 8% over 12 hours. The decision was made not to raise spill caps on June 7 as with a 12-hour travel time between dams, full effects of the change in spill cap wouldn't be realized in time to react to forecasted wind changes. This morning, TDG was up to 121% in The Dalles tailwater, and the

project will likely exceed the 12-hour TDG metric today with calm winds and warm temperatures. Spill caps will not be adjusted, however, as winds are expected to pick up tomorrow.

Tony Norris, BPA, reported that flows have receded, and most projects are back to flex spilling except for The Dalles and Little Goose where other operations have been coordinated. BPA noted that if delay is no longer an issue it would be appreciated if the operation could return to the flexible spill operation to utilize afternoon power generation at Little Goose and suggested resuming the AM and PM blocks of 30% spill as defined in the Spill Agreement.

Little Goose Dam Operations

Doug Baus, Corps, reported on current operations to date at Little Goose Dam. He pointed TMT members to the summary document on TMT website for a detailed account of operations to date. The current operation (#5 in the above stated summary) is maintaining 30% for 8 hours/day (0400-1200), and operating above MOP if necessary while drafting water back out as necessary, with the addition on June 8 of changing the Adjustable Spillway Weir (ASW) from low crest to high crest daily from 0400-2000 hours. This operation was coordinated for implementation from June 5 to June 12, and the question remains how to maintain operations until the start of summer spill on June 21.

Doug reminded the group that the ASW operation in the Fish Passage Plan states when daily average project outflows and forecasted inflows are 85 kcfs or less, the project switches from low crest to high crest operation, and yesterday's average outflows were 86 kcfs. Current data show today's average outflows at the project of 77.4 kcfs with 30% spill from 0400-1200 hours. The RFC forecast shows decreasing inflows, and project outflows are expected to drop from 86 kcfs down to 54 kcfs by the end of the next 10-day period.

Claire McGrath, NOAA, reported that on June 8, after the change in ASW operations, there was a large uptick in Chinook adults passing Little Goose and the project has seen strong numbers passing as counts for new fish and backlogged fish are catching up. Fish counts at the project are higher since the change in ASW operation, however, changing flow conditions and temperatures may also be contributing factors. FPAC requested to continue the current operation of 30% spill for 8 hours/day (0400-1200) for another week to assist with fish passage, with a check-in on Monday June 17 to see if the passage backlog is cleared and the project can return to the Flex Spill operations in order to be responsive to power needs.

Tom Lorz, CRITFC, suggested leaving the ASW in the high crest position starting today, recognizing that the Fish Passage Plan criteria has not yet been met, however, is expected to be within the next day. TMT members were polled on the decision to leave the ASW in the high crest position starting today, with all supporting, except for Oregon who abstained (Kootenai, Spokane, Warm Springs Tribes were absent).

- **ACTION:** Continue current operations at Little Goose Dam to spill 30% 8 hours/day (0400-1200) through the end of spring spill on June 20 (unless otherwise coordinated to end earlier) and leaving the ASW at high crest starting today. NOAA will connect with Action Agencies on Monday by 2pm if Salmon Managers are satisfied with passage and okay with returning to the AM/PM flex spill operations (4/4 or 5/3 hours).

Lower Monumental Operating Range

Aaron Marshall, Corps, provided an update on the Lower Monumental forebay operating range. The project is operating within the 1.5-foot MOP range, between elevation 537.0– 538.5 feet. Over the past few days the project has found it challenging to remain within the MOP range while maintaining the Little Goose minimum tailwater elevation of 537 feet as flows decrease, and therefore will make an adjustment to raise the Lower Monumental MOP range. Effective today, the Corps and BPA will implement a 0.5-foot raised MOP operation, to 537.5 feet – 539.0 feet, in order to maintain the Little Goose minimum tailwater elevation for navigation safety as provided for in the FOP.

Upper Snake River Flow Augmentation

Peter Cooper, BOR, updated the group on flow augmentation in the Upper Snake River above Brownlee. BOR is targeting 487,000 acre-feet of flow augmentation this year. Flood control operations are starting to wind down, and BOR will be transitioning from flood control to flow augmentation operations over the next couple weeks. The Boise system is expected to have flow augmentation by the end of June or early July (down to 1,000 cfs), Payette by the end of August (down to 1,500 cfs), and the Upper Snake out by mid-July (3,500 cfs out of Milner).

Treaty Fishing

Finally, Aaron updated the TMT that CRITFC is expecting the summer treaty fishing season to begin next week, and the TMT can expect an SOR at the June 19 meeting.

The next scheduled TMT meeting is face-to-face on Wednesday, June 19, 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
June 12, 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. All meeting material and past meeting minutes are available on the TMT website. See the end of these minutes for a list of today's attendees.

2. Dworshak Operations – Steve Hall, Corps NWW

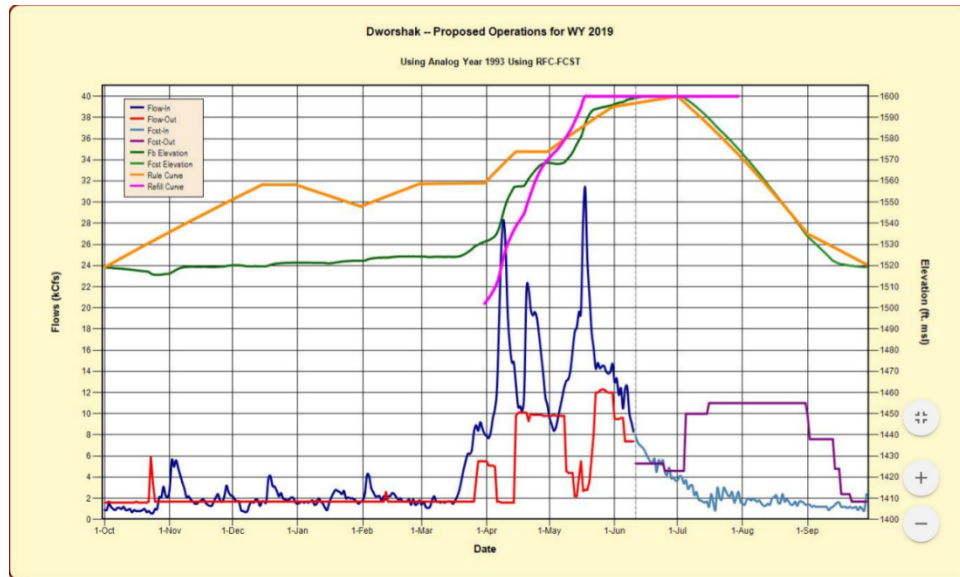
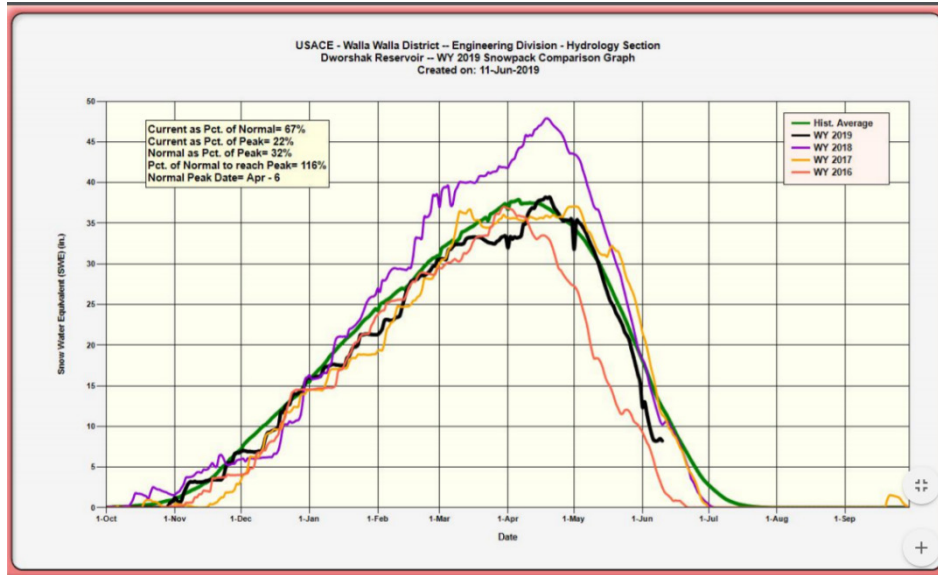
Steve Hall, Corps, reported on operations at Dworshak Dam. Midnight elevation was 1,599.3 ft. Inflows are ~8 kcfs; outflows are 5.4 kcfs. The 10-day inflow forecast shows inflows receding.

Temperature modeling began this week but the Corps is not confident of its accuracy because the water is still relatively cold. Typically, the Corps shows results to TMT as temperatures increase above 60 degrees Fahrenheit where the model is more accurate. The Lower Granite tailrace is about 57.5 degrees Fahrenheit right now so it is still fairly cool. Temperatures are 61 degrees Fahrenheit at Orofino and around 58 degrees Fahrenheit above Orofino. Hall said the Corps is running the model every few days. The temperatures will rise as the days get warmer. There is a cooler period predicted in the next 10-days.

Currently, TDG is 97-98% in the Dworshak tailrace and about 97% in the hatchery.

There are about 7.5-8 inches of snow left in the upper elevations of the Basin that will melt out in the next few weeks and provide some cool water to the system.

Hall showed a graph that illustrates this year's snowpack runoff compared to prior years and an operational scenario based on historical data using the analog year of 1993. The model shows a drop in project outflow down to 5.4 kcfs and holding that for a while. The Corps anticipates initiating summer flow augmentation around July 8-9. Under this scenario, the average discharge would be 11 kcfs to get down to 1,535 ft. by the end of August.



3. FOP Spring Spill

3a. Spill and TDG – Dan Turner, Corps

Dan Turner, Corps, reported on spring spill, noting that the Corps continues to implement the Flex Spill Agreement and evaluating spill caps on a daily basis to meet 120%.

Ice Harbor and McNary have been operating at minimum generation at times as flows drop. This will start to be the case with more projects as flows recede, said Turner.

Spring spill ends and summer spill begins on June 16 on the lower Columbia.

At McNary, TDG went up to 124% in the tailwater yesterday due to removal of the TSWs which shuts down 4 spill bays, bulks up spill, and increases TDG. The operation to remove the TSWs is taking longer than expected due to high winds and the spill cap had to be reduced yesterday.

The Corps is continuing to operate John Day and The Dalles in tandem 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.

Over the past 10 days, the John Day tailwater has been below 120%. On June 7 and 8, TDG at The Dalles went down to 117% due to some higher than forecasted wind in the area June 5-8. On June 7 winds were forecasted to drop off and did on June 9.

Charles Morrill, WA, asked how accurate the wind forecast for The Dalles has been. Turner reported that overall about 24 hours out the forecast has been a good indicator. There have been some instances where it is 10-15 mph off. He noted that the exact timing and the exact mph are difficult to get exactly right.

Scott Bettin, BPA, asked “If the goal was to implement 120% in the tailrace and 120% in the downstream forebay, would the Corps need to operate differently?”

Turner said the spill cap is more limited by the 12-hour travel time from John Day as well as the one spill cap change per day. It might not be possible to be at 120% in both The Dalles forebay and John Day tailrace.

Bettin wondered “if it was modified to be 120% anywhere in the river, how would that change operations?” Turner said he would have to think about that.

Right now, it looks like an 8% TDG increase in The Dalles forebay is causing a 3% increase in the tailwater.

Turner reported when the Corps was making spill decisions the morning of June 7, TDG was low in The Dalles tailrace but the forecast was for hot and calm (no wind) conditions. Based on that information, the Corps chose not to raise spill caps at The Dalles or John Day. If the Corps had raised the John Day spill cap, it would have gone into effect at 1600. Given a 12-hour travel time from John Day, the effects would not have been seen until the next day when winds were supposed to die off. Turner said this appears to be a good decision because wind did decrease and TDG did shoot up.

This morning The Dalles tailwater was 120%. It looks like the project will likely exceed the 12-hour standard today. Today wind should be calm and temperatures are expected to be warm. Tomorrow the wind should pick up. The spill caps should be good for tomorrow afternoon.

3b. Flexible Spill – Tony Norris, BPA

Tony Norris, BPA, reported on flex hours. BPA is flexing where it can. Flows have receded allowing for flex spill at most projects except The Dalles and Little Goose where other operations have been coordinated. Norris commented BPA would prefer to have the afternoon hours of flex spill back at Little Goose because BPA is missing out on some value opportunities. Bettin mentioned it would be helpful to move the 8-hour 30% operation to the afternoon.

4. Little Goose Dam Operations - Doug Baus, Corps NWD; Claire McGrath, NOAA, and Tony Norris, BPA

4a. Summary Document – Doug Baus, Corps

The TMT continues coordination on Little Goose operations in an effort to alleviate the delay of adult Chinook that has been ongoing since May 16 according to the DART and FPC tools. Baus walked TMT through a summary of the recent coordinated operations that is posted to today's agenda. The following changes were implemented since the last TMT:

Wednesday, June 5 – Wednesday, June 12: The Corps and BPA continued to maintain spill at 30% for 8 hours/day (0400-1200) with the additional request to change the Adjustable Spillway Weir (ASW) from low crest to high crest daily from 0400-2000 hours. Consensus (no objections) from FPAC received on Tuesday, June 4, and TMT on Wednesday, June 5.

Baus reported that the ASW high crest operation was delayed until June 6 at 1200 due to an equipment malfunction, then remained in high crest until June 7 at 2000 due to human error. Since then, the ASW has been adjusted to high crest daily from 0400-2000 then back to low crest from 2000-0400, as coordinated.

The current operation was coordinated to continue through today, June 12. Summer spill starts on June 21 at Little Goose and the other lower Snake River projects. Therefore, TMT will need to recommend whether or not to continue the operation after today or resume the spring flex spill operation of 4 AM hours/4 PM hours or 5 AM hours/3 PM hours.

4b. Hourly Project Data

Baus reported that current project outflows are 77.4 kcfs.

4c. Percent Spill

Baus reported that the project is spilling at 30% from 0400 to 1200. Percent spill has been increasing outside those hours when the project spills to the gas cap.

4d. NWRFC Little Goose Inflow Forecast

The forecast calls for decreasing inflows from yesterday's 86 kcfs to 54 kcfs at the end of 10-day period.

4e. 2019 Adult Salmon Counts

Claire McGrath, NOAA, reported that the first day the ASW was in high crest all day (June 7), there was a large uptick in adult Chinook passage (1,175). That was the result salmon managers had hoped for. McGrath said counts between Lower Monumental and Little Goose are catching up. Over the past week both "old fish" (fish with travel times over 5 days) and "new fish" (fish with travel times under 5 days) have recently passed Little Goose. About 10% of fish have travel times over 10 days, 5% have travel times over 14 days, and 2.3% have travel times over 18 days. This is higher than what has been observed historically.

McGrath said that while the results could be due to the ASW or any other operational changes, she would recommend sticking with the current operation. She did note that in response to Norris' earlier comment about power generation that the fish passage seems to be concentrated in the morning hours so she recommends maintaining 30% spill for 8 hours in the morning.

Bettin asked if other operations like 4 AM and 4 PM hours could be considered. McGrath pointed out the longer travel times. She said she would like to keep the trend in the direction it is going. At FPAC yesterday, salmon managers discussed if the current operation could be continued through the weekend and then go back to the flex spill operation (4/4 or 5/3). The consensus was that passage numbers are still lagging a little too much right now and salmon managers are not in favor of returning to a 4/4 or 5/3 yet.

McGrath asked if the power needs in the afternoon were due to the hot weather. Norris noted that the flex spill agreement was put in place to mitigate the cost of spilling at higher levels. He said now at Little Goose, BPA has lost the flexibility to capture the lost value of spilling at higher levels. He said that yes, BPA gets a greater value in afternoons on warmer days. Bettin mentioned that next year it might be worth discussing if all 8 hours of 30% spill could be moved to the afternoon. In early season loads are in the morning and later in the season they are in the afternoon.

Regarding the ASW operation, Tom Lorz, CRITFC/Umatilla, suggested leaving the ASW in high crest this afternoon instead of switching back to low crest since flows are nearly at

the trigger of 85 kcfs to make the switch to high crest defined in the Fish Passage Plan. Erick Van Dyke, OR, said that the FPP criteria have been designed to deal with the fish passage issues.

TMT members were polled on the operation to leave the ASW in high crest starting today. Poll results were as follows:

Army Corps of Engineers	Support
Bonneville Power Administration	Support
Bureau of Reclamation	Support TMT recommendation
NOAA Fisheries	No objections
US Fish & Wildlife Service	No objections
Washington	Support
Oregon	Abstain
Idaho	No objections
Montana	Support
Nez Perce Tribe	Support
Umatilla Tribe/CRITFC	No objections
Colville Tribe	No objections

Based on the poll results, the Corps will leave the ASW in high crest during all hours starting today. Currently, the ASW is in high crest (spilling 7.18 kcfs) and will stay that way. The previous operation would have resulted in switching to low crest (10.8 kcfs) at 2000 tonight then back to high crest tomorrow morning at 0400. However, the Corps will keep the ASW in high crest. Flows tomorrow will likely be below the trigger of 85 kcfs to operate the ASW in high crest so this operation makes that switch a few hours early. Also as recommended by salmon managers, the Corps and BPA will continue the 30% spill operation for 8 hours in the morning, 0400-1200, for the remainder of spring spill (through June 20), unless otherwise coordinated to end earlier.

5. Lower Monumental Dam Forebay Operations - Aaron Marshall, Corps NWD

Aaron Marshall, Corps, gave an update on the Lower Monumental Dam forebay minimum operating pool (MOP) range. This year, the Lower Monumental MOP range is 537.0-538.5 ft. Over the past few days as flows have receded, this range has resulted in the Little Goose tailwater approaching the minimum elevation of 537 ft. This happens each year as flows decrease. As of today, the Corps and BPA will raise the Lower Monumental MOP range by 0.5 ft. to 537.5-539.0 ft.

Bettin asked if other pools need to be raised. Marshall said not right now but yes as flows continue to decrease.

At Lower Granite, the Corps is operating in the 1.0-ft raised MOP range of 734.0-735.5 ft due to flows being in the range of 80-119 kcfs. Looking ahead, as flows drop below 80 kcfs (this

week or this weekend, most likely), the Corps will increase to a 1.5-ft raised MOP range of 734.5-736.0 ft.

6. Upper Snake Flow Augmentation – Peter Cooper, Reclamation

Reclamation is targeting 487,000 acre-feet of Upper Snake flow augmentation this year. Flood control operations are starting to wind down and augmentation will start in the next few weeks. Flow augmentation should start by the end of June or early July on the Boise. For the Payette, similar to past years, flow augmentation will be out by August. On the upper Snake, flow augmentation will start mid-July, most likely.

7. Next TMT

The next meeting will be face-to-face on June 19 at 9am at the Corps Northwestern Division office in Portland.

8. Today’s Attendees

Agency	TMT Representative
Army Corps of Engineers	Doug Baus (Chair), Julie Ammann, Lisa Wright
Bonneville Power Administration	Tony Norris, Scott Bettin
Bureau of Reclamation	Peter Cooper
NOAA Fisheries	Claire McGrath, Trevor Conder
US Fish & Wildlife Service	Steve Haeseker
Washington	Charles Morrill
Oregon	Erick Van Dyke
Idaho	Russ Kiefer
Montana	Jim Litchfield
Nez Perce Tribe	Jay Hesse
Umatilla Tribe/CRITFC	Tom Lorz
Colville Tribe	Sheri Sears
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, Heather Baxter, Laura Hamilton
 DS Consulting – Emily Stranz (Facilitator), Colby Mills
 FLUX Resources – Melissa Haskin (Note taker)
 Montana – Brian Marotz
 Oregon DEQ – Paula Calvert