

COLUMBIA RIVER TECHNICAL MANAGEMENT TEAM

April 24, 2019

DRAFT Facilitator's Summary

Facilitator: Emily Stranz; Notes: Donna Silverberg, 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

Jon Roberts, Corps Walla Walla, reported that Dworshak is currently discharging around 10 kcfs, with inflows dropping off; current reservoir elevation is 1,564 feet. He noted that inflows at Orofino are also coming down, although they remain high at Lower Granite. In addition, snow is starting to melt at all elevations, tracking with average water years and comparing most closely (right now) to 2003. A Snotel flight is planned for the first part of June and will help inform refill decisions.

At this point, if inflows permit, the Corps plans to hold 10 kcfs discharge until May 9th, when they will step down to 2.4 kcfs as a result of unit outages for maintenance. Once all three units are available in late May, the Corps expects to return to full powerhouse. Jon noted that the April-July forecast is on the high end, with 2.4 MAF predicted. The current STP shows some spill will be needed to meet FRM requirements by May 30th, but Jon indicated that is still up in the air depending on actual runoff conditions. However they proceed in May, they will coordinate with TMT to be least impactful for fish. Next week's May 1st forecast will be an important look to see how the region is tracking.

- **ACTION:** The Corps plans to continue with 10 kcfs out at Dworshak until May 9th when the unit outages begin. They will provide an early bird forecast for FPAC before the next TMT meeting.

FOP Spring Spill

Dan Turner, Corps NWD, noted that involuntary spill is occurring at Snake River projects and there have been some TDG exceedances as a result. For the Columbia, they began to nudge the spill caps up in the past few days. McNary is coming off min gen and Bonneville has been steady, however, the Corps coordinated to bump up the spill cap today. Regarding The Dalles and John Day, last week, at TMT, the Corps spoke about whether or not they should operate John Day and The Dalles Dams in tandem for improved TDG management at those projects. To reduce TDG levels, they began reducing spill at The Dalles while holding John Day steady because of impacts of TDG in the tailwater. The Dalles is no longer exceeding 120%, so the Corps is feeling good about increasing spill at John Day.

Dan went on to note that The Dalles is different than the other 7 projects and thus it may be helpful to think about managing it differently. He took the group through slides showing a comparison of spill rates and observed TDG in the tailrace. The Corps has been varying spill caps and not seeing the expected or desired impacts. They started this season with TDG in The Dalles tailrace lower than 120%, so made spill cap changes in reaction using last year's methodologies. Yet, between April 13th and 20th, they saw TDG go above the 120%. As an alternative, Dan looked at spill as a proportion of total outflow and it seems TDG started exceeding 120% when spill was above approximately 51% of outflow.

Given what they have seen and calculated, the Corps proposed to set spill caps as a percentage of total outflow to try and meet but not exceed the 120% TDG target. The spill rate likely will be changing every hour as inflow fluctuates.

Erick Van Dyke, OR, clarified that TDG was exceeded on a 24-hour average from April 13-19, however, that does not mean that TDG was exceeded on an hourly basis. Dan affirmed that TDG was ranging from 115-125% throughout that period; however, daily averages were all above 120% and the state standards were exceeded. Erick asked whether the Corps had looked into why April 17th TDG was at 120% for a 6-hour period, however, it was bracketed by higher TDG. Dan noted that he looked into the spill patterns, wind, etc., and was not sure why that occurred. Erick suggested that may be a measurement error that could be making implementation more complicated.

Emily reported that Jay Hesse, Nez Perce, who couldn't make today's call, wanted to let the group know that from his perspective it is most important to continue meeting the objective of the spill agreement to meet, but not exceed, the 120% standard, using the most accurate method to do so. He also noted interest in getting John Day back up to 120% now that The Dalles is lower. Given some caution signs he has seen, Erick agrees mostly with Jay, and wanted to be sure that the management change is well thought through from all angles and that TMT has considered all issues. He expressed openness to using this as a learning moment to see whether it is possible to do better at The Dalles. He also noted that the status of spillbay repairs at The Dalles seem to have impacted the "flat" pattern possibilities and wondered if any planned changes at bays 9, 12 and 14 might help? Julie noted that this is an O&M action that is being discussed through FPOM. She noted that the COE's water managers are tasked with managing the projects they currently have in play on a day-to-day basis. Also, Dan clarified that de-gas studies done in the 90s showed that the patterns at The Dalles didn't have much impact on TDG production in the tailrace, because it really is so different from other projects.

Julie added that they plan to continue inching up the spill cap at John Day to get closer to 120% TDG and then working to manage the two projects together. If there is not an improvement with the change in calculating spill caps at The Dalles as a percentage of outflow, then they will return to the previous method for setting the spill cap as a fixed daily rate. The COE plans to discuss and evaluate the information generated by the operation with TMT next week.

Salmon managers expressed appreciation for the explanation for why the change is needed and what the COE is seeking to do to help predict and manage TDG downstream. The Corps appreciated the willingness of TMT to try and learn from this new approach.

- **ACTION:** The Corps' will set the spill cap at The Dalles as a percentage of outflow starting tomorrow, 4/25 at 1600 hours. If no improvement is seen or if something goes awry, the Corps will send TMT notification of corrective changes they plan to implement. Otherwise they will report out to TMT at the next meeting.

There were no comments from members of the public.

The next TMT meeting is a face to face on May 1st at 9:00am.

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
April 24, 2019
Minutes: Melissa Haskin, FLUX Resources

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.

1. Dworshak Operations – *Jon Roberts, Corps Walla Walla*

Jon Roberts, Corps, reported on operations at Dworshak Dam. Currently, the project is discharging 10 kcfs and inflows are dropping off from 20 kcfs. The project's midnight elevation was 1,564 ft. The Corps is continuing to fill the reservoir. Inflows will decline which will likely mean that the pool will need to be held level or drafted, depending on what the May 1 FRM elevation is set at.

The RFC forecast shows inflows coming down but still in the high-range at Lower Granite in the 10-day forecast.

Based on the current runoff, the historical water year most similar to this year is 2003. However, a lot can change before the May water supply forecast is issued. The current RFC water supply forecast shows runoff for April-July at 2.7 MAF. This would potentially require spill to meet the May 30 FRM refill target. The Corps will report back to TMT. The official May water supply forecast will be issued next week and there will be an early bird forecast available for next week's TMT on Wednesday, May 1.

The Corps plans to continue to release 10 kcfs until May 9 when a 2-unit outage is scheduled to begin. Unit 3 will be out of service from May 9-24 and powerhouse outflows will be limited to 4.8 kcfs. When Unit 2 is taken offline, discharge will be dropped to 2.4 kcfs. Flows will be increased once Unit 2 is returned to service. When Unit 3 comes back online, the plan is to return to full powerhouse.

ID and NOAA agreed that the plan to release 10 kcfs until May 9 seems reasonable.

Charles Morrill, WA, asked when the Corps will complete its first snow flight of the season. Steve Hall, Corps NWW, said they are planning to do one during the first part of June to inform final refill.

2. FOP Spring Spill - Dan Turner, Corps

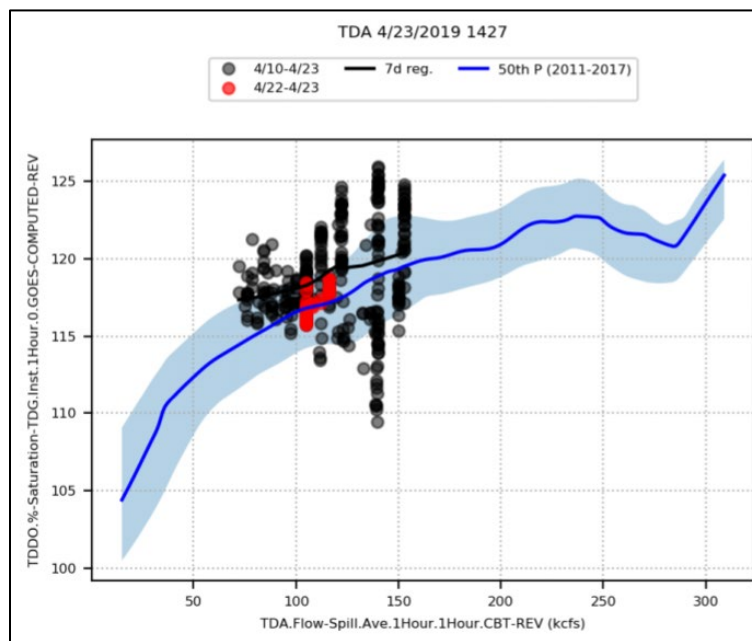
Dan Turner reported on spring spill. Currently, the Snake River is in involuntary spill and TDG is above 120%.

McNary has come off of minimum generation and flows are sufficient to achieve the spill cap. Yesterday the Corps made adjustments to get the tailwater up to 120%.

Bonneville Dam has held steady at 120% TDG in the tailwater. The Corps slightly increased the spill cap recently to maintain 120%.

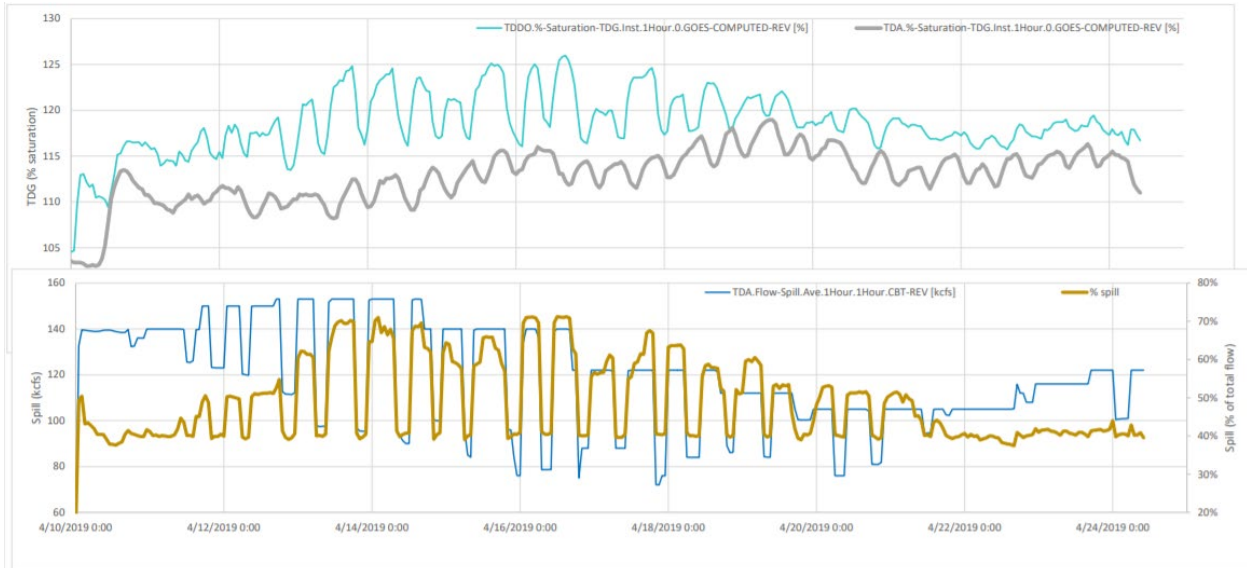
At last week's TMT, members discussed how John Day TDG can influence The Dalles and the Corps described their plan to operate the two projects in tandem to best manage TDG below The Dalles. Given this, the Corps held spill at John Day steady due to TDG levels above 120% at The Dalles April 13-19. The Corps reduced spill at The Dalles in an attempt to lower TDG. The Dalles is no longer exceeding 120% TDG. The Corps is now raising spill at John Day to try to get the tailwater up to 120%.

Dan gave a special presentation on The Dalles. He reported that TDG at The Dalles is reacting differently than at the other 7 Columbia and Snake River projects. He told TMT that because The Dalles is acting differently, it may need to be managed differently. He showed TMT a few graphs to illustrate his point:

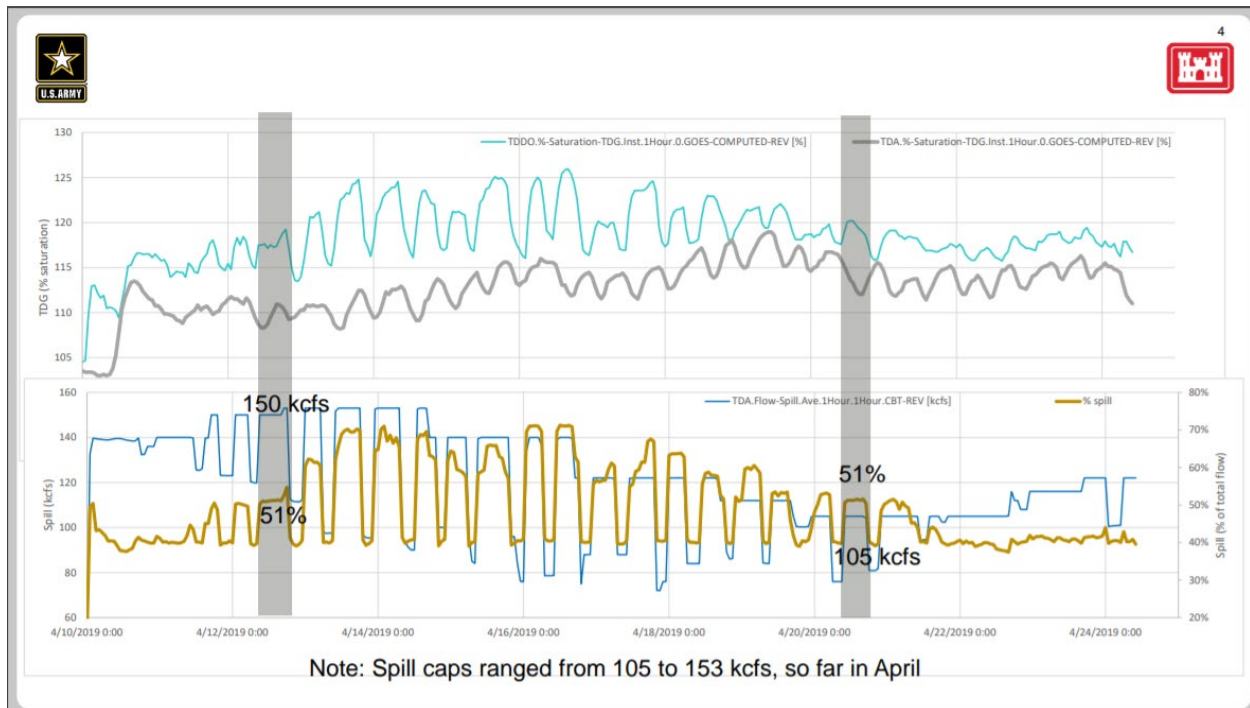


He mentioned that the above graph shows that when spill is held at 140 kcfs, TDG can range between 110-125%.

The spill cap range at The Dalles has been 105 kcfs-153 kcfs so far this year, which is a much larger range than any of the other projects. The Corps has noticed that varying spill does not affect TDG as much as one would hope at The Dalles.



He shared that at the start of this season, TDG was below 120%. Thus, the Corps made spill cap increases. However, April 13-20, TDG went above 120%. The Corps decreased the spill cap.



The graph above shows that on April 13, spill of 150 kcf was generating under 120% TDG. Yet, on April 20, spill of 105 kcf was generating 120%. Dan reminded TMT that the TDG in The Dalles tailrace is a function of TDG in the upstream forebay, spill flow, powerhouse flow, travel time, wind speed, water temperature, barometric pressure, and dispersion. In addition to this, The Dalles also has interesting hydraulics due to its geological features, which include

deep canyons and bedrock shelf. These features affect how TDG is generated and mixed downstream.

Based on the data from the last few weeks, the Corps plans to switch the methodology for calculating the spill cap at The Dalles. The Corps recommended a trial period to evaluate using spill caps as a percentage of total flow. It would still target 120% TDG in the tailwater and would still adjust and evaluate the data each day. The Corps thinks this approach, which adjusts automatically with the hydrograph on an hourly basis, will not require as many dramatic changes in daily spill caps. The spill percentage method would be based on hourly total flow and thus gas cap spill changes would occur hourly.

While the spill cap could vary anywhere between 40% and 60%, Dan thinks most spill caps will be between 43-50%. The Corps would still implement the flex spill agreement, meaning there would be 16 hours of gas cap spill per day. It would just be in a percentage by hour based on the total flow through the project at that hour. The question the Corps is seeking to answer is: *“is this a better way to manage to 120% TDG at The Dalles?”*

Questions and Comments:

Paul Wagner, NOAA, asked why The Dalles tailrace gauge was moved after 2011. Dan said he would report back.

Jay Hesse, Nez Perce, was unable to attend today’s TMT meeting but asked Emily to pass on his thoughts. He said that the 120% gas cap standard is important and essential to operate towards, but that the method is not important to him as long as it is accurate. With TDG at TDA below the gas cap, he believes that if the new method is to be used, it is important to resume spilling at John Day to meet but not exceed 120%.

Erick Van Dyke, OR, commented that he wants to make sure that the requirements at all projects are being met, not just a few. He said it seems like that is currently the case. He voiced concern that changing methodology tends to create wrinkles in overall datasets. However, he was understanding of the proposed trial and said he would not object to the trial as described by the Corps as long as there would be “heavy eyes on it”.

Tom Lorz, Umatilla/CRITFC, mentioned that he was fine with trying it and evaluating at next week’s TMT.

ACTION → The Corps will implement a new methodology for calculating spill caps at The Dalles to meet but not exceed 120% TDG tomorrow afternoon at 1600 (when spill caps go into effect). In the operation, spill caps will be set as a percentage of total project outflow. If the operation does not have the intended results, the Corps will resume the previous methodology and will notify TMT members.

3. Next TMT

The next meeting will be face-to-face at the Corps Northwestern Division office in Portland on May 1, 2019, at 9 a.m.

4. 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	N/A
NOAA Fisheries	Paul Wagner, Claire McGrath
US Fish & Wildlife Service	Dave Swank
Washington	Charles Morrill
Oregon	Erick Van Dyke
Idaho	Russ Kiefer
Montana	Jim Litchfield
Nez Perce Tribe	N/A
Umatilla Tribe/CRITFC	Tom Lorz
Colville Tribe	N/A
Warm Springs Tribe	N/A
Kootenai Tribe	N/A
Spokane Tribe	N/A

Other Attendees (non-TMT members):

Corps – Dan Turner, Steve Hall, Aaron Marshall, Alexis Mills, Jon Roberts, Heather Baxter, Catherine Dudgeon, Alfredo Rodriguez

DS Consulting – Emily Stranz (Facilitator), Donna Silverberg

Oregon DEQ – Paula Calvert

John Chandler – Puget Sound Energy