

COLUMBIA RIVER TECHNICAL MANAGEMENT TEAM

April 2, 2025

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: <https://pweb.crohms.org/tmt/agendas/2025/>. Suggested edits for the summary are welcome and can be sent to Colby at colby@dsconsult.co.

Review Meeting Summaries & Minutes – TMT Members approved the official meeting minutes and facilitator's summary from the March 19 TMT meeting.

Chum Operation - Doug Baus, Corps, provided the last update for chum, with the operation ending April 9 at midnight and spring spill starting April 10 at Bonneville (BON). Complete operation details are posted to the TMT website. BON at 0700 hours this morning had a tailwater elevation of 19.0 feet with a total outflow of 222 kcfs. The RFC inflow forecast over the next 10-days shows a low of approximately 220 kcfs and a high of 250 kcfs at the end of the period.

Kelsey Swieca, NOAA, reported just over 500 chum fry at BON; NOAA will continue to monitor over the coming months. Charles Morrill, WA, added that peak migration from Hamilton Springs is expected this coming week and should continue through end of the month or early May.

Spill Priority List (SPL) – Dan Turner, Corps, reviewed the draft 2025 spring SPL, as presented at the last TMT meeting, providing opportunity for input from Salmon Mangers. Erick Van Dyke, FPAC Chair, noted that Fish Managers appreciated the time to review the SPL and are generally comfortable with the list as described by Kelsey. They recommended a shift of The Dalles (TDA) down below McNary (MCN) in Levels 2 and 3. The recommended shift is due to structural concerns raised by the Corps affecting spill patterns that could negatively affect downstream fish passage at the project. FPAC also recommended an extension to the language in footnote 2,

"In Level 1, spill at The Dalles Dam is limited to the lesser of 169 kcfs or 125% TDG. The position of The Dalles Dam in Levels 2 and 3 is largely influenced by structural and maintenance issues at the project, which require a non-optimum spill pattern for fish (i.e., spill at bays farthest from the spill wall)."

The suggested change for TDA and the additional footnote language will be implemented by the Corps for the SPL going out later today.

April Flood Risk Management (FRM) Shift Estimates – Jon Roberts, Corps, provided an update on April FRM shifts at Dworshak Dam (DWR). Currently the project is operating at full powerhouse capacity and is anticipated to continue through at least the next fish release from the downstream hatchery, likely April 10 or 11.

The April 1 RFC forecast for April to July is about 89% of average. A unique spike in inflows last week caused an adjustment in FRM values. With the forecast returning to the 89-90% of average range, operations have been readjusted to meet revised FRM targets. At this point, the Corps has no concerns around meeting refill for spring flow augmentation.

With the transition from spring draft into the refill curve, there is an opportunity to shift some system flood control space to Grand Coulee (GCL), in coordination with Corps Division and Reclamation. The shift aims to support operational flexibility (local hatchery and overall system flood control), while avoiding excess spill during early April, especially when fish are at the downstream hatcheries.

[Facilitator's Note for reference: 6.8.2 in FPP, shifting space in low or under average years.]

Jon estimated the shift to be around 200 kaf, allowing for a more averaged outflow throughout the month. The transition to refill curve in the later part of April or early May, is typically 5-7 kcfs by end of May. In response to a query regarding a predicted flows in May and a potential drop to minimum flows, Jon clarified that there is typically a reduction in May based on overall system and flood control curves to allow for flexibility in weather conditions; the Corps does not anticipate a direct drop to 2 kcfs and will plan a stepped-down transition. The Corps also clarified that the official April FRM will be released next week with a more updated estimate. Reclamation added that this year shows the wide range in benefits that can be obtained by allowing FRM shifts. For example, earlier in the year the DWR shift had the potential to increase reservoir refill in a drying forecast scenario and increase spring flows on the Snake, while the current DWR shift is being utilized to minimize the potential of spill. Based on the current storage in GCL, accepting the shift for both scenarios had minimal impacts to resources at Lake Roosevelt.

The Corps confirmed that they will look into adding the TMT Members distribution list to the FRM distribution list so Salmon Managers can be notified about updated FRM guidance. Salmon Managers appreciated the Corps' efforts in weekly monitoring and reporting.

Grand Coulee Dam Flood Risk Management – Chris provided an update on GCL FRM, noting the changing conditions and resulting GCL operations through the end of March. The month ended up with good precipitation and snowpack building, with the overall region coming in at 132% of average (varied throughout the basin). On March 31, following revised guidance, forecasts for TDA and above GCL went up about 6% and 10% respectively. The updated April 30 FRM elevation was revised to 1,266.7 feet due to the increased forecasts. Reclamation is monitoring closely, and a revised FRM will come out this week.

The Corps clarified that the official early March FRM requirements were based off water supply forecasts (WSF) at different points in the basin, of which TDA is a major influence. The Corps reissued FRM guidance on March 26 based on the changing WSF, which had significant increases throughout the month. On March 31, the Corps reissued FRM requirements based on significant decreases in The Dalles WSF. The next FRM requirements will be issued in early April based on the April 3 WSF volumes; the STP forecast on April 7 will reflect the official April WSF and corresponding FRM requirements. The Corps is closely monitoring conditions and will adjust FRM requirements as necessary.

In response to a query, the Corps clarified that the NWRFC publishes the STP on their website in graphical form, and the Corps post-processes that data into a tabular format for distribution; the 120-day STP trace is a streamflow forecast, not a seasonal WSF volume. NOAA asked for more details regarding Footnote 3 on Table 2 of the FRM requirements, "Per the recommendation of the CRT Hydrometeorological Committee, the NWRFC 15-day HEFS forecast was used for TDA." The Corps confirmed that this footnote is included on an as-needed basis and does not imply mid-month forecasts and FRM elevations. The Corps will use their best professional judgement when the WSF changes to determine the need for updating FRM requirements; the April official will be using the 10-day QPF WSF volumes. Finally, Reclamation added that although staff at GCL had started conversations around drum gate maintenance, drum gate is not a factor this year. The following link was posted for TMT Members' reference: https://public.crohms.org/tmt/agendas/2023/1206_NWRFC_Presentation_for_TMT_King.pdf

Operations Review – Reservoirs: Chris reported on Bureau of Reclamation projects:

- **Hungry Horse (HGH):** the project experienced its first warm-up of the season, with about six-tenths of an inch precipitation. The 10-day forecast calls for precipitation today and tomorrow, with dry conditions and warmer than average temperatures by the end of the week. March precipitation was 137% of average in the South Fork with 111% snowpack (80% in the Middle Fork) Inflows yesterday were 5.1 kcfs, with outflows of 0.86 kcfs and a midnight elevation of 3,514.6 feet (45.5 feet from full). The reservoir began filling last week, increasing by about 5 feet, and storage is about 108% of average for this time of year. HGH continues to operate to minimum flows, currently below the dam on the South Fork. Refill is looking better than all year and should have flood control with controlling refill.
- **GCL:** inflows yesterday were 92.1 kcfs; 98% of average last week. Outflows yesterday were 103.9 kcfs, with a midnight elevation of 1,276.1 feet (13.9 feet from full). The project drafted about 0.2 feet since last week, and storage is about 147% of average, managing storage for a deeper April 30 draft. Precipitation for March was 132% of average for the whole PCNW region based on NRCS SNOTEL sights, far higher than previous months.

Leah Hamilton, Corps, reported on Corps projects:

- **Libby (LIB):** midnight elevation was 2,405.9 feet, with inflows yesterday of 5.2 kcfs and current outflows of 4.0 kcfs; these will hold until the project starts to refill.
 - In response to a query regarding the white sturgeon operation, USFWS clarified that FPIP has a planning meeting in about 2 weeks, no decisions have been made yet.
- **Albeni Falls (ALF):** midnight elevation was 2,052.7 feet, with inflows yesterday of 32.5 kcfs and current outflows of 25.0 kcfs; the project declared refill a couple days ago.
- **DWR:** midnight elevation was 1,551.72 feet, with inflows yesterday of 14.0 kcfs and current outflows of 10.0 kcfs.
- **Lower Granite (LWG):** midnight elevation was 733.9 feet, with inflows yesterday of 80 kcfs and outflows of 84.8 kcfs; the project will start MOP next week.
- **MCN:** midnight elevation was 338.5 feet, with inflows yesterday of 221.0 kcfs and current outflows of 204 kcfs. The project looks to open spill gates 1 and 2, with final determination based on the official April WSF and first runs of the STP and ESP on Monday.
- **BON:** midnight elevation was 73.0 feet, with inflows and outflows yesterday of 243.0 kcfs.

Chris reported the current estimate (will be revised) for upper Snake River flow augmentations at 469 kaf. It's still too early for release timing, he estimated June for the Boise and Payette and May/June for volume passed Milner. Reclamation will update their estimate with the official April WSF.

Water Quality – Dan noted that the highest TDG reported yesterday was downstream of MCN, at 115%, due to forced spill conditions from lack of turbine. Projects on the lower Snake River will move into spring spill at midnight tonight.

Fish – Kelsey reported that all juvenile traps and projects are sampling, but some sampling at the traps has been intermittent due to higher flows; regular sampling will start at MCN in a few weeks. The smolt index is showing reasonably high, with increasing numbers of yearling and sub-yearling Chinook and steelhead throughout the system. Good numbers of chum fry have passed BON, with 524 over the past two weeks; this will slow after a couple weeks.

For adults, spring Chinook are arriving at BON and TDA, although not in the Snake River yet; this is expected to pick up in the coming days. There are low numbers of steelhead at most of the projects, including the lower Columbia and Snake Rivers. At LWG yesterday, 98 adult steelhead had passed downstream via the RSW since the start of the overshoot operation this fall.

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Dave Swank, USFWS, reported no adult lamprey passage yet, with small numbers of juveniles at BON; nothing too unusual for this time of year.

Power System – Tony reported BPA is preparing for the start of spring spill tonight.

Questions or Comments from Non-TMT Members – Noah Campbell asked the following question via chat: “I am hoping to understand the mid-month Flood Control Elevation update process better. Was the March 27 FRM update based on the March 27 ESP values, or from earlier days (possibly March 25 when most forecasts hit their maximum)? Did these mid-month updates use ESP/HEFS forecasts from their release day or from a previous day?” The Corps clarified that the March 26 FRM requirements issued were based on the March 26 WSF volumes using the HEFS 15-day forecast. Any time the Corps issues FRM requirements they are tied to the same day WSF volumes.

The next scheduled TMT meeting will be on April 9, 2025, at 9:00 AM.

**Columbia River Regional Forum
Technical Management Team
OFFICIAL MINUTES
Wednesday, April 2, 2025
Minutes: Andrea Ausmus, BPA (contractor, CorSource Technology Group)**

Today's TMT meeting was held via conference call and webinar, chaired by Doug Baus, Corps, and facilitated by Donna Silverberg, DS Consulting. A list of today's attendees is available at the end of these minutes.

1. Review Summary and Minutes

a. March 19 Summary and Minutes

- Approved.

2. Final Chum Operation Update - Tony Norris, BPA; Chris Runyan, BOR; Kelsey Swieca, NOAA; Charles Morrill, WA; Doug Baus, Corps-NWD

- TMT Coordinated Chum Incubation at the December 18 meeting
- Incubation Start Date: December 19 @ 1:00 pm
- Incubation End Date: April 9 @ midnight
- Spring Spill @ BON: April 10

a. Bonneville Dam (BON) – Hourly Data – *Baus*

- Tailwater Elevation (Hour 0700): 19 feet
- Outflow: 222 kcfs

b. NWRFC – BON Inflow Forecast (10 day) – *Baus*

- BON Inflow Forecasted:
 - Low: 220 kcfs
 - High: 250 kcfs

c. NOAA Update – *Swieca*

- Just over 500 chum fry have been seen at Bonneville Dam.

d. Washington Update – *Morrill*

- Internal database for Chum Fry trapping at Hamilton Springs showed that there should be the peak of immigration or trapping this coming week.

- Immigration from Hamilton Springs continues and will continue through the end of the month and into early May before it totally ceases.

3. Spill Priority List – *Dan Turner, Swieca*

https://public.crohms.org/tmt/documents/spill-priority/Spill-Priority-List_2025_0403_0621_SPRING.pdf

a. Spring 2025

- Turner had given an update about the Spring Spill list for 2025 at the last TMT meeting. He had heard that there might be some suggestions from the Fish Managers (FM). He opened up the conversation for them to provide input.
- Swieca shared that NMFS offered a recommendation in the FPAC forum that had received a level of comfort with all of the FM.
 - Bump TDA down in Level 2 and Level 3
 - The FM agreed to bump it down below MCN
 - Reason: primarily due to structural concern at TDA.
 - FM had heard that there was an issue where if spill were to occur outside of the spillwall at TDA it would be shunted over to the far side of the spillway.
 - Not ideal passage conditions for downstream migrating salmon and steelhead.
 - FM want to deprioritize TDA in Level 2 and Level 3 and add a footnote describing the reasoning being due to the structural concern raised by the Corps through FPOM.
- Footnote language:
 - Extension of Footnote 2, “169 kcfs is the maximum flow rate for spill entirely from Bays 1 – 8, i.e., inside the spillwall (Fish Passage Plan, Table TDA-7). In Level 1, spill at The Dalles Dam is limited to the lesser of 169 kcfs or 125% TDG.”
 - Include, “The position of The Dalles Dam in Levels 2 and 3 is largely influenced by structural and maintenance issues at the project, which require a non-optimum spill pattern for fish (i.e., spill at bays farthest from the spillwall).”

Stranz asked other FPAC members if there was anything they wanted to add, any perspectives or suggested changes, or if they were all behind this recommendation.

Erick Van Dyke, OR, said as FPAC chair the group was fine with the issue and supportive of the language.

Stranz said that she thought she heard Turner say that the suggested change at TDA for Levels 2 and 3 and the suggested language to the footnote would work okay from the Corps perspective.

Turner said that he appreciated the suggestions and thought the Corps could implement that for the Spill Priority List they were sending out on April 2.

Morrill added a clarification for the discussion of the concerns for TDA came from Study Work Review Group and AFEB, with Lori Edner sharing her concerns of the structural integrity of the wall with water undercutting it. He said in talking with Jake McDonald, Morrill said that as he understood it, Lori, before her retirement, drafted the memo internally to share her concerns with Corps – Division. He said that there is something coming at some point in time to clarify that. He said that as FM, they are concerned with both the structural integrity and the impact on fish as well.

4. April Flood Risk Management Shift Estimates – Jon Roberts, Corps-NWW

a. Corps-NWW Restructuring Update

- Combined Reservoir Operation and Water Quality groups together under one section.
- Jon Roberts moved into the new position of Supervisor for the two groups for Real-Time.

b. Dworshak (DWR) FRM

- Some different guidance has come out over the last week for flood risk requirement draft elevations.
- Changed some of the operations out of DWR.
 - Stabilized for the month of April.
- Current Operation:
 - Currently DWR is operating at its full powerhouse capacity.
 - Continue to run at least through next fish release from the hatchery downstream.
- RFC April – July Forecast
 - Percent of Average: 89%
 - Where it has been for the majority of the year with the exception of a unique spike last week.
 - Caused the FRM values to be adjusted.
 - It would have required the Corps spilling out of DWR even while shifting the flood control space as much as possible.
 - Local curve requirements would have required DWR to draft steeply.
 - Forecast returned to where it was for the majority of the year.
 - Back to 89 – 90% of average.
 - DWR was able to adjust to the updated FRM requirements for April.
 - Allow DWR to pass inflow for Apr to meet FRM targets and there would be no concern for refill moving into May and June for the Spring Flow Augmentation.
- April Transition

- As DWR transitions into the Spring draft for DWR's refill curve there is an opportunity for DWR to shift some of the system flood control space over the Grand Coulee (GCL) in coordination with the Corps Division office and BOR.
 - Provide more opportunities and support different operations within the overall system while doing operations both locally for the hatchery as well as when looking to do so for the overall system flood control.
 - Example: This year looking for the flexibility to not draft in April, particularly when there are fish still on station at the downstream hatcheries which could require DWR to exceed TDG requirements. In some exceptionally high years, it would still be unavoidable but in average years the shift allows moving some of the flood control space out to at least April 30. Providing a longer period of time to allow more average outflow which can be more beneficial, especially early or later in the month without providing large amounts of water earlier in the month.
- What is being done now at DWR:
 - Able to average out the outflow.
 - Running the powerhouse and anticipate to being able to run close to the powerhouse for the second half of April to allow DWR to avoid excess spills as is outlined in the WMP (Section 6.8.2, DWR Plan), where it talks about shifting space in low/average years.
 - Anything under 2.9 maf or 2900 kaf at a forecast at DWR the Corps considers moving the space to get better operations to support both Spring Flow Augmentation as well as try to avoid excess spill at DWR when there are fish still in station.
 - Forecast for April 2 is 2200 or about 700 kaf below where the Corps would consider the shift for the upcoming FRM targets in April.
- Future Operation
 - Transition to the refill curve in coordination with Division when the ICF is set, and Projects are released for refill in the later half of April or first part of May.
 - At this point DWR would be on the refill curve, which typically for an under 100%, would typically run to about 5 – 7 k for the month of May

Swieca asked if Roberts had an estimate of what the volume of the shift might be.

Roberts said for this month it would be a better question for the Division office. He said that off the top of his head, they are planning on shifting ~200 kaf but that is still in coordination. For a more accurate number it might be better question for Division.

Swieca said that the estimate was sufficient.

He said that was somewhere in that timeframe, that way they are not spilling an extra 200 kaf in the first 15 days of April. Then they can put that _ . Essentially, they still have to utilize that flood control space. They are still required to get it by April 30 but that allows the Corps to send the 200 kaf in the second half of April instead of all of it in the first half of April, so it would be beneficial.

Tom Lorz, Umatilla/CRITFC, said he appreciated the update, and it sounded good. He asked about the latest STP. He asked if the Corps was still projecting on May 1 that they would still have to go back down to minimums, like 2-something, or if they were planning to feather it in. He said looking at the May STP is like asking his kids was they are going to do in two days.

Roberts said that there is typically a reduction in May, based on how the overall system and flood control curves work, from an overall perspective. He said that it was there to provide the flexibility in case snowpack or a cold snap comes back in where we have the ability to go back up as well as if there is Spring rain and in for instance this specific year, based on our current snowpack we are looking like probably around the 5 k range and maybe if we get some Spring rain we would be able to bump it back up to the 7 k range. It gives them some flexibility. He said that he was not looking at exactly straight down to 2 k right on transitioning from April 30 to May 1. He said even if they did need to go down that far they would ramp it down within the current schedule or anticipated ramping rates where they would drop a couple thousand each day. He said that he is still not looking at 2 k yet.

Lorz said the STP got them excited.

Roberts said that they would try to ease it in as much as possible and they are not anticipating doing a direct drop.

Lorz said that he appreciated them and said he knew that they are looking at this weekly and are modifying as necessary because March and April can always be fun months to try to figure out what is happening.

Leah Hamilton, Corps-NWD, gave TMT a heads up, the STP on Monday was issued before the updated FRM guidance came out on Monday evening. She said that it was already fairly outdated because of the changes that TMT had been seeing. She asked that TMT kept that in mind as they looked at this week's STP. She said that Monday it would have the Official April FRM implemented so that would hopefully be a better estimate of what will see in April and May.

Swieca responded to what Hamilton had said. She said that it would be helpful if there was a way to notify the FM if there was an updated FRM guidance posted to the site, an email from RCC or something like that would be sufficient. She said that just a notification to the FM to have them look at it and see if there were any off-schedule updates. The FM do not track it as closely as some of the other data that comes in. She said that it would be helpful for a quick notification saying that guidance had been updates and to have a look at the website if possible.

Aaron Marshall, Corps, said that he thought that Division could look at the TMT member distribution list and likely add it to the FRM distribution list. He would follow up on that.

Morrill said that he wanted to share his appreciation for Roberts and his team on this and the quick response to the unexpected spike and then the downturn and the Corps' flexibility in readjusting the FRM levels and the shift.

Runyan also commented on the shift. He said this year we have seen the full spectrum. He said that earlier in the year we talked about shifts helping Projects out if conditions

dried out and they would potentially let DWR refill higher and now we are seeing how a shift can actually help Projects maybe not spill and get down to a revised FRM from wet weather conditions. He said that we have essentially seen both sides of the coin and hopefully now we all understand the benefit there – as long as it works out for GCL, which in this year it does. It was not all in one direction this year. In January we assumed that a shift would not even come into play or have any benefits, but we actually sought potentially having benefits both ways. He said that he appreciated everyone having good conversations this year and continuing them. He said that he has learned a lot this year and hoped that others had as well.

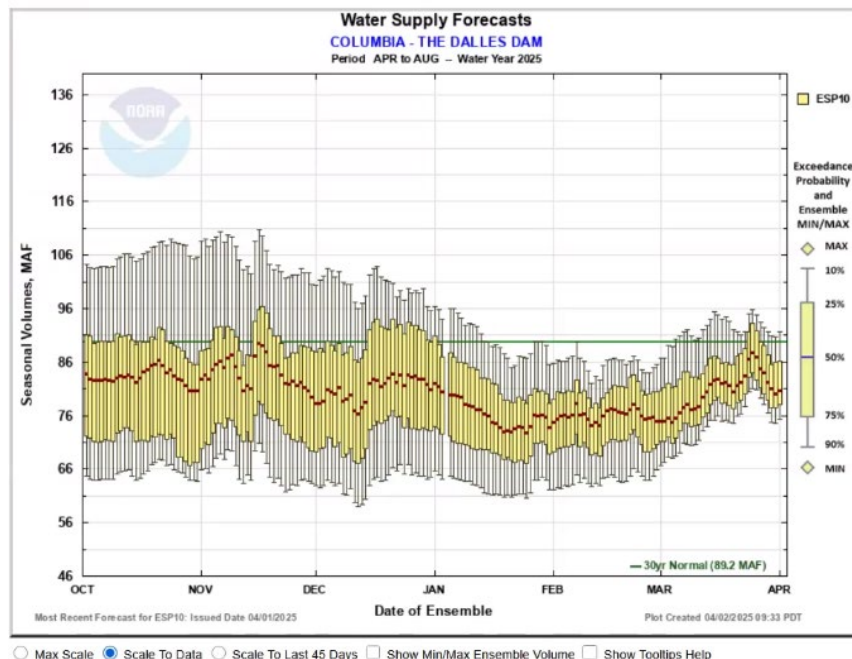
5. Grand Coulee Dam Flood Risk Management – *Chris Runyan, BOR; Aaron Marshall, Corps*

a. Current Conditions

- Changing conditions in the last part of March.
 - Great for water supply.

b. Start of March

- TDA March Forecast
 - Volume: 75 maf
 - Percent of Average: 84%
 - GCL FRM elevation: 1282 feet
- March was a good month with regards to precipitation and snowpack building.
 - Precipitation: 132% of median
 - Some parts of S Idaho have setting record snowpack.
- March 31 TDA forecast
 - There was revised guidance
 - Forecast: +5.8 maf
 - Percent of Average: 90%
 - 6% increase
- Forecast above GCL
 - 10% increase (Canada)
- New forecast gave a revised April
 - GCL FRM Elevation: 1266.7 ft. (revised)
 - Deeper
 - BOR have been watching closely
- Seasonal WSF



- February was flat
- March started off slowly, but the last bump was a large increase.
 - Certain parts of PNW there was major snow.
 - Some of the forecasts did not play right because they are looking at a ten-day forecast.
 - When a forecast does not play out the water is no longer there and then the forecast adapts.

c. Revised FRM – *Marshall*

- Official Early March FRM requirements are based off the WSF at different points throughout the Basin.
 - TDA is a major driver in early March.
 - April – August WSF: 75 maf
- The Corps was tracking the evolution of the WSF and the increases across the month of March and came to March 25 when they saw the 10-day QPF WSF estimate.
 - QPF Median trace: 84 maf
 - Significant growth over the month of March was driven by the weather and precipitation forecasts in the ten-day window.
 - March 26 it was recognized that there was significant effects on reservoir operations in the Basin and looking ahead to April 10, trying to meet GCL reservoir requirements.
- Corps reissued FRM guidance on March 26.

- In the following days there was a downward correction to the WSF runoff volume for the April – August period.
- On March 31, once the Corps received the WSF update, the Corps reissued FRM requirements to course correct as they were seeing WSF adjustments.
- STP Forecast and March 31 FRM requirements
 - STP came out before the FRM requirements.
 - The timing did not line up in an ideal way.
 - Official April FRM requirements
 - Friday, April 4
 - Official WSF
 - Thursday, Apr 3
 - STP forecast
 - Monday, Apr 7
 - Will reflect the April Official.

Van Dyke thanked Marshall and Runyan for sharing the more broad look at things. He said that one thing that stood out is that the information that the SM had been getting was more than just the ten-day outlook. He asked Marshall how the NOAA 120-day STP line up with the Corps' STP. He asked if they were different.

Marshall said that they have the STP product and the NWRFC publishes that product on their website in a graphical form. He said that you can also download the tabular data, but the Corps post-processes that data from the NWRFC and provides it in tabular format in the Excel spreadsheets that they send out following their preparation of the STP forecast. He said that it is a combined effort between the Corps, the reservoir control center and the NWRFC. Looking at the NWRFC map, the option in the legend, under river and hydrology, for 120-day forecast (as shown below) is the Corps' STP provided in a graphical interface.

Stranz added that in the 2023 Year End Review, there was a presentation from RFC on exactly what Van Dyke had asked. She said that it might be worth poking back to see if he could find the presentation slides on the TMT website.

Van Dyke said that Marshall's explanation was helpful. He said that what he thought he was hearing was that the 10-day forecast is what was being focused on primarily by this group. He said that he was more curious about how the 120-day integrates with the planning knowing that these conversations usually point out that it is never perfect, and it is always wrong because it is a forecast. He said that those details and trying to work out how the changes appear occasionally are something of interest. He said that there was quite a wide swing of what we were seeing ten days ago from the ten days prior to that and now we are ten days after those things are standing out as a point of interest to just help us stay in line on what to expect and what recommendations TMT can provide to help with operations. He said that he thought it was helpful to go there.

Norris said that he thought the confusion was that the 120-day STP shown above is not a WSF, but it is a streamflow forecast. The references on the WSF were based on the initializations of the ESP volume forecast with ten days of initialization, or ten days of deterministic temperature and precipitation initializing the antecedent snow and water and soil moisture conditions.. The ten days of QPF is just initializing the ESP volume traces for the volume forecast.

VanDyke said that it helped him that level was exactly what he was trying to get straight in his head. He said that he thought that he was in the right space on how to interpret the tools differently. He restated what he said earlier that we are not only wondering about what is happening now, but they are trying to pay attention to what they expect we will get later. He said that they are trying to be good partners and keep attention to what is there and what information is available. He said if the Action Agencies (AA) could help with that it would be appreciated.

Swieca asked generally about the WSF. She said that on the FRM forecasts there was an addition of a footnote in Table 2, which defines the WSF. She said that the footnote appeared around mid-month, this month about the Hydromet Committee and their recommendation. She asked if the AA were able to comment. She said that she had heard rumblings that it might be coming into play, but she had not heard that it was finalized. She said that it seemed like since it is being incorporated into the official WSF on the FRM page that the recommendation has been finalized. She said that she was curious if the Corps could comment on what it is and how the region might expect it to impact WSF and subsequently FRM issuance.

Table 2. Water Supply Forecasts (Kaf)

| Project | Forecast Period | Jan | Feb | Mar | Apr | May | Jun | Jul | Current month Forecast % of Normal |
|--------------------|-----------------|-------|-------|-------|-------|-----|-----|-----|------------------------------------|
| MCDB ¹ | Apr-Aug | 10686 | 8596 | 9614 | 9614 | | | | 86% |
| ARDB ¹ | Apr-Aug | 21797 | 19071 | 19113 | 19113 | | | | 86% |
| DCDB ¹ | Apr-Aug | 1915 | 1729 | 1741 | 1741 | | | | 85% |
| LIB | Apr-Aug | 5871 | 4728 | 5004 | 5004 | | | | 82% |
| HGH | May-Sep | 1675 | 1409 | 1388 | 1388 | | | | 78% |
| SKQ ² | Apr-Jul | 5076 | 4521 | 4396 | 4396 | | | | 72% |
| ALF ² | Apr-Jul | 9829 | 8323 | 8246 | 8246 | | | | 71% |
| GCL ^{2,4} | Apr-Aug | 50979 | 47103 | 46836 | 52058 | | | | 89% |
| BRN ^{2,4} | Apr-Jul | 5032 | 6009 | 5681 | 5759 | | | | 112% |
| DWR ^{2,4} | Apr-Jul | 2154 | 2214 | 2194 | 2203 | | | | 89% |
| TDA ^{3,5} | Apr-Aug | 79356 | 75228 | 75123 | 80820 | | | | 91% |

Notes:

1. Official water supply forecasts for MCDB, ARDB, and DCDB are provided by BC Hydro on official forecast days.
2. Official water supply forecasts for SKQ, ALF, GCL, BRN, and DWR are the ESP 10-day-QPF median values is published by the NWRFC on the official forecast days for 2025. For this submittal, an early WSF was used to provide projects time to respond to changing conditions.
3. Per the recommendation of the CRT Hydrometeorological Committee, the NWRFC 15-day HEFS forecast was used for TDA.
4. RFC 31 March 10-day QPF.
5. RFC 31 March 15-day EQPF.

Marshall said that the 10-day QPF is the official. He said that the Columbia River Treaty Operating Committee (CROTC) has delegated authority to the Columbia River Treaty Hydromet Committee the opportunity to use their judgement if they see something going awry with the WSF. The Hydromet Committee recommended using the 15 HEFS Forecast for TDA at this time. He said that it was as they were watching over the course of the month, the evolution of the WSF, the HEFS was a little less volatile, a little less sensitive to the 10-day quantitative precipitation forecast. He said rather than following the 10-day QPF WSF to the extremes that it was fluctuating. The HEFS forecast was a

little more subdued in its volatility, so the Hydromet Committee decided to use the HEFS forecast in this particular case for both March 26 and March 31 FRM requirements.

Swieca said that this footnote is included on an “as needed” basis, it does not necessarily imply that we will continue to receive mid-month forecasts and mid-month FRM elevations.

Marshall said that was correct, but the Corps will use judgement when they see the WSF changing significantly and take a closer look at that. In this particular case this is an as needed basis. He said for the April official they will be using the ten-day QPF WSF volumes. He said that this is their critical time for reservoir operations and flood risk management so they will be looking at this on a daily basis and it is possible as we go into the refill season, we may see more frequent issuance of FRM requirements as they try and help those Projects up _ space.

Morrill thanked Marshall for the explanation. He said that his takeaway from what he heard is that if the Corps is going to look at what TDA supplies and maybe make adjustments to the FRM reflecting those viewpoints. Although we have an official, the Corps will be following that very closely thought this month and may adjust that. He said the thing that they had struggled with at FPAC was the assumed GCL would go down to a level that would support drum gate maintenance, be scheduled and perhaps impact flows. He said that what he was hearing was that Marshall said is that they are looking at the flexibility to what is going on and to adjust that FRM as need be.

Marshall said that was correct. He said that they are not necessarily locked into only looking at the FRM requirements on those official monthly dates. He said that they do track it across the course of the season, especially this time of year, on a daily basis.

Norris said that drum gate maintenance trigger is based on the February WSF, not on any subsequent forecast. He said that it is possible in the future that if there was some large increase that took FRM elevations down there soon enough Reclamation might get some maintenance done but it would not be something that would impact operations. He said certainly in April it is too late in the game to get down far enough, long enough to implement any significant amount of drum gate maintenance.

Morrill thanked Norris but said that the concern from an FPAC viewpoint was potentially low flows and McNary not meeting the flow objective of 220 kcfs. He said that they really appreciate the flexibility and getting a better understanding of the FRM and how the Corps and BOR are looking at that and monitoring it.

Runyan added more about drum gate. He said when they got the earlier FRM guidance from the spike in the TDA forecast he said that was projected to be potentially down near to 1255 feet. As soon as GCL staff saw that they asked if they could do drum gate, because they all know where we are at and we all know where we are at, which is we are in a drum gate next year. He said that the staff asked the question, so that is probably why. Runyan had responded asking how much time do they need. He said they usually need 8 weeks and that got the conversation of if they could get it done faster. Runyan said that they would not draft GCL for drum gate at this point, it was only to maybe take advantage of the opportunity because they all know where we are at and if we could have done it that would be great. He said that there are a million moving parts and as Norris

had said how it is done is they do the February forecast and that gives time to plan and to be down there. He said that he wanted to say that he thought that it is great that GCL staff keyed in on that stuff and asked the question, they are all trying to get the work done. He said that drum gate is not going to be a factor this year unfortunately.

Van Dyke said that was helpful. He said that the drum gate issue stands out as a conversation piece each year, understanding all of the details, sometimes it needs to be revisited. He said that Runyan's explanation was helpful, and he appreciated that Norris and Morrill helped to get TMT there. He said, as FPAC chair, that the other aspect that was brought up was how often we see these forecast updates. He said that one thing that he heard from several people was that if we do mid-month forecasting that it is repeated throughout the entire period that we are tracking these forecasts. He said that he knew that was not necessarily what Marshall described earlier when Swieca pulled up the document to look at a point. He said that he wanted to share that there was an interest with several of the FM in FPAC.

Marshall said that one thing he should add is that the Hydromet Committee is currently researching adjusting the Corps' official process to make WSF and FRM requirements issued twice a month, particularly this time of year. He said that is something that the Corps will have to study a little bit to incorporate as part of the formal and official process, but it is something that is being undertaken right now. He said in the meantime the Corps has the flexibility to be able to reissue FRM requirements when they see significant changes in the WSF estimates.

Van Dyke said that if FPAC could be of use with the details that they have expertise on they would appreciate helping with that.

6. Operations Review

a. Reservoirs

Reclamation – Chris Runyan

- Hungry Horse Dam
 - Last Week Conditions:
 - Over the last week HGH experienced first warm up of the year.
 - Received ~0.6 inch of precipitation causing inflows into the reservoir to increase as well as at other tributaries in the basin.
 - Kalispell set a new record of 71°F on March 26.
 - Future Conditions:
 - Ten-day forecast is calling for precipitation today and tomorrow. Then transition to a high-pressure system that will bring dry conditions and then slightly warmer than average temperatures by the end of next week.
 - March Precipitation (S. Fork): 137% of median
 - Snowpack (S. Fork of Flathead): 111% of median

- Snowpack (Middle Fork) 80% of median
 - HGH shares a divide with this tributary.
- Inflows (4/1): 5.1 kcfs
- Outflows: 0.86 kcfs
- Midnight elevation: 3514.6 feet
 - From Full: 45.4 feet
 - Reservoir began filling last week.
 - Filled: 5.0 feet last week.
- Storage: 108% of Average
- Operations:
 - HGH continues to operate to minimum flows.
 - Currently the minimum flows are below the dam S. Fork.
 - Up until this point HGH had been operating to Columbia Falls but they were able to back those off because of tributary inflow.
- Refill is looking better than it has been all year.
 - Should have flood control this year as BOR controls refill.
- Grand Coulee Dam
 - Inflows (4/1): 92.1 kcfs
 - Last week inflows were 98% of average
 - Outflows: 103.9 kcfs
 - Midnight elevation: 1276.1 feet
 - Feet from Full: 13.9 feet
 - Drafted: ~0.2 foot since last week
 - Lake Roosevelt Storage: 147% of Average
 - Operations:
 - GCL is managing storage in preparation of a deeper April 30 draft.
 - March Precipitation (PNW region): 132% of median

Van Dyke asked what the precipitation of median was for last month. He said that he felt like it was quite a bit lower.

Runyan said that value is precipitation for the whole PNW region for the month of March based on NRCS snow tail sites. He said last month was an above average month. He said that the prior months have been far less.

Van Dyke said that was helpful and thanked Runyan for reminding him. He said that he thought it was the case, but he wanted to make sure that he was tracking it correctly.

Runyan said that he had wanted to highlight that the month of March was better than that of the proceeding months.

- Upper Snake Flow Augmentation
 - Current Estimate: 469 kaf
 - Expect revision.
 - It is still too early to know specific timing of when this will start being released because most projects are in active FRM operations right now.
 - Potential/Guess:
 - Boise/Payette: June
 - Volume past Milner: May/June
 - Once April WSF are done, Runyan can report in a couple weeks.

Corps – Leah Hamilton, Corps

- Libby Dam (Lake Koocanusa)
 - Midnight Elevation: 2405.9 feet
 - Inflows: 5.2 kcfs
 - Outflows: 4 kcfs
 - Operations: Holding outflows for a little longer until they start to refill.
- Albeni Falls (Lake Pend Oreille)
 - Midnight Elevation: 2052.7 feet
 - Inflows: 32.5 kcfs
 - Daily Average Outflows: 25 kcfs
 - Operations: Albeni will be releasing 28 kcfs for next while.
 - Refill:
 - There was a bunch of snow and rain over the last week, so they declared refill a couple of days ago.
 - Just above their winter band when they declared refill.
- Dworshak Dam
 - Midnight Elevation: 5051.72 feet
 - Inflows: ~14 kcfs
 - Outflows: ~10 kcfs
 - Operations: Ramping down.
- Lower Granite Dam
 - Average Elevation (4/1): 733.9 feet
 - Inflows: 80 kcfs
 - Outflows: 84.8 kcfs
 - Operations:
 - Getting ready to start MOP.

- They have been having higher outflows than inflows.
 - MOP start next week
- McNary Dam
 - Midnight Elevation: 338.5 feet
 - Inflows: 221 kcfs
 - Outflows: 204 kcfs
 - Operations:
 - Looking like they will be able to open 2 gates.
 - Determination will be made with the official WSF and the first run STP and the ESP on Monday.
 - MCN will send out a notification about that early next week.

Brian Marotz, MT, said that he recognized that we had locked in the white sturgeon tiered flow in May. He asked if the Hamilton heard any thoughts on the white sturgeon operation this year so far. He asked if the FPIP meetings had begun.

Marshall said that there was nothing new to update at this point in time.

Dave Swank, USFWS, said that he had heard on Monday that they were having an FPIP planning meeting in about 2 weeks. He said that they have started the planning process. He said that he did not think that any decisions had been made.

- Bonneville Dam
 - Midnight Elevation: 73 feet
 - Inflows: 243 kcfs
 - Outflows: 243 kcfs

b. Water Quality – *Dan Turner, Corps*

- TDG
 - Highest was downstream of MCN at 115% TDG.
 - Forced spill due to lack of turbine on the system.
 - Cause for the slightly higher elevated total dissolved gases.
- Spring Spill
 - Moving into Spring Spill tonight on the Lower Snake River.

c. Fish

Salmon – Kelsey Swieca, NOAA

- Juveniles
 - All traps and projects are sampling.

- Some sampling has been intermittent.
- At the traps due to the system experiencing high flows.
- Sampling at MCN is only being conducted as associated with the PNNL acoustic tag study and the regular sampling will start in a few weeks. Swieca expects the values to come in more regularly at that point in time.
- Smolt Index is registering high and generally increasing numbers of both yearling and Subyearling chinook and steelhead throughout most of the System.
- Bonneville
 - Chum Fry
 - 524 fry to date
 - Expect those to keep trickling down and then slow after the next couple of weeks.
- Adult Salmon Counts
 - Bonneville and The Dalles (Lower Columbia):
 - Spring Chinook
 - Showing up
 - Ice Harbor
 - No Spring Chinook yet.
 - Expect the numbers to pick up in the coming days.
 - Most Projects
 - Low numbers of Steelhead at most of the Projects, including those in the Lower Columbia and the Snake River.
 - Lower Granite (Lower Snake River):
 - Steelhead (yesterday)
 - 98 Adult Steelhead that have passed downstream via the RSW since the start of the overshoot operations this Fall.

Lamprey – Dave Swank, USFWS

- Juveniles
 - Small numbers detected at BON
- Adults
 - No adults yet, too early

Washington Fish Update

- Morrill posted a link on the presentation for forecasting for those that are interested.

| *from Charles Morrill to everyone: 9:41 AM*
| https://public.crohms.org/tmt/agendas/2023/1206_NWRFC_Presentation_for_TMT_King.pdf

d. Power System – *Tony Norris, BPA*

- Getting ready for Spring Spill to start tonight.

7. Public Questions

| *from Noah Campbell to everyone: 10:11 AM*

| *I am hoping to understand the mid-month Flood Control Elevation update process better. Was the March 27 FRM update was based on the March 27 ESP values, or from earlier days (possibly March 25 when most forecasts hit their maximum)? Did these mid-month updates use ESP/HEFS forecasts from their release day or from a previous day?*

Marshall said that he thought he had covered this question earlier. He said that the March 26 FRM requirements that were issued were based on the March 26 WSF volumes using the HEFS 15-day forecast. He said that anytime the Corps issue the FRM requirements they are tied to that same day of the WSF volumes.

8. Set agenda for next meeting – April 9, 2025

Meeting Location: Webex

- a. Official Water Supply Forecasts
- b. April FRM Shift Estimates

Marotz requested that as soon as things start rolling with the White Sturgeon tiered flows, he would like to see something on the agenda since there have been some personnel changes of the Tribes of Idaho. He said as soon as that can practically be scheduled, he would like to see something about the Kootenai White Sturgeon tiered flows.

Stranz said maybe not next week, but the following might be good timing.

Marotz said that it gets locked in in May so he might be jumping the gun. He said as soon as we know more from FPIP he would like to hear it on the agenda.

Swank said that he suspects that they would not have anything for a couple of weeks. He said that we are planning to have the presentation of the full plan once it is set and approved, even though there will not be the SOR this year. He said that it sounds like Marotz was looking for an update as soon as they have something. He said that he was not quite sure what Marotz was looking for.

Marotz said that was it, he just wanted to make sure that it was teed up for as soon as FPIP has something to present, or Kootenai Tribe of Idaho.

Stranz asked to clarify. She asked if when Marotz said as soon as they have something to present, did that mean as soon as they have their final decision to present.

Marotz said that would be the most practical way to pursue this.

Stranz repeated that once FPIP had had their conversation then a presentation at TMT, similar to how it was done in the past even though it would not be an SOR this year.

Marotz asked why there would not be a SOR this year.

Swank said that TMT may have missed that conversation, but they have been talking about getting rid of the SOR for some time. He said that it is mostly because the proposed action in the BiOp for White Sturgeon already includes the flow pulse and typically SORs are designed for a circumstance where we are deviating from the plan. He said that they decided that it was redundant, but we are going to keep the presentation. He said that Greg Hoffman. is planning to make a detailed presentation on the actual plan.

Marotz said that was understandable because it is routine and not something out of the routine.

Stranz said that she heard from Swank that Greg Hoffman was already planning to present. She asked if Swank could help to make sure that Greg know that there is an interest in that and then TMT will get him on the calendar for that presentation.

Swank said that he could do that.

Today's Attendees:

| Agency | TMT Representative(s) |
|---------------------------------------------|-----------------------------------|
| NOAA Fisheries | Kelsey Swieca |
| Oregon | Erick Van Dyke |
| Washington | Charles Morrill |
| Kootenai Tribe | |
| Confederated Tribes of Colville Reservation | |
| Umatilla Tribe (CRITFC) | Tom Lorz, Pete McHugh |
| Yakama Nation | Keely Murdoch |
| Bureau of Reclamation | Chris Runyan, Eric Rothwell |
| Army Corps of Engineers | Doug Baus (Chair), Aaron Marshall |
| US Fish & Wildlife Service | Dave Swank |
| Idaho | Jonathan Ebel |
| Montana | Brian Marotz |
| Spokane Tribe | |
| Nez Perce Tribe | |
| Warm Springs Tribe | |
| Confederated Salish and Kootenai Tribes | Tom McDonald |
| Bonneville Power Administration | Tony Norris |

Other Attendees (non-TMT members):

COE – Jessika Solleder, Chris Peery, Tom Conning, Tiffany Stoeckig-Dixon, Leah Hamilton, Dan Turner, Elizabeth Holdren, Jon Roberts, Michelle Yuen

BPA – Tammy Mackey, Carolina Andes

Oregon DEQ – David Gruen

Washington Ecology – Thomas Starkey

TMT – April 2, 2025

DS Consulting – Emily Stranz (Facilitator), Colby Mills

CorSource – Andrea Ausmus (BPA note taker, Contractor)

Avista – Mike Dillon, Patrick Maher, Ryan Ericksen, Patrick Maher

Chelan PUD – Lance Beyer, Jay Fintz, Cal Bertilson, Kate von Reis Baron

EKI – Eve James

Douglas County PUD – Andrew Gingerich

Energy EPS – Joshua Rasmussen

Vitol – Ryan Russell

PGE – Phil DeVol

Snohomish PUD – Scott Richards

Columbia Basin Bulletin – Mike O’Bryant

NPCC – Kate Self

Constellation – Jesse Adamski

Noah Campbell