COLUMBIA RIVER TECHNICAL MANAGEMENT TEAM
May 22, 2024
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/2024/ 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 facilitator's summary from the May 8 meeting. Facilitator's summary and official meeting minutes from the May 17 meeting, as well as minutes from May 1 and 8 will be reviewed at the next TMT meeting.

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

- **Hungry Horse**: inflows have been decreasing since last week, averaging 7 kcfs yesterday. Last week inflows were at 79% of average. Outflows today are 3 kcfs and are anticipated to increase later this week. Midnight elevation was 3,548.7 feet, and the project has filled 5.2 feet since last week (11.3 feet from full). Chris noted that the project will slow refill by increasing outflows to 4-5 kcfs later this week mainly due to above average precipitation for May. Streamflow at Columbia Falls was 18.2 kcfs. The Sėliš Ksanka Qĺispė (SKQ) project increased outflows above minimum flows earlier this week.
- **Grand Coulee**: inflows yesterday were at 111.1 kcfs and flows last week came in at 67% of average. Outflows yesterday were 127.7 kcfs and midnight elevation was 1,280.3 feet. The project is 9.7 feet from full and is operating to be no higher than 1,284 feet at the end of May (FRM target) and refill after the July 4 holiday weekend.

Chris reported that the current estimate for upper Snake River flow augmentation is 471 KAF. Some additional rentals could help totals reach closer to the target of 487 KAF. Flow augmentation is projected to start soon on the Boise and in early June on the Payette; flow augmentation past Milner is also projected for early June as coordinated with TMT.

Eric Chow, Corps, reported on Corps of Engineers projects:

- **Libby**: midnight elevation was 2,425.5 feet, with average inflows of 21.2 kcfs and outflows of 25 kcfs. The project plans to hold outflows at 25 kcfs for the sturgeon pulse operation through May 31.
- **Albeni Falls**: midnight elevation at the Hope gauge was 2,055.9 feet, with average inflows of 34 kcfs and outflows of 26 kcfs. The project plans to fill no higher than 2,057 feet on May 27.
- **Dworshak**: midnight elevation was 1,591.6 feet, with average inflows of 9 kcfs and outflows of 4.6 kcfs.
- **Lower Granite**: yesterday's average forebay elevation was 733.7 feet, with average inflows of 83.1 kcfs and outflows of 81.7 kcfs.
- **McNary**: yesterday's average forebay elevation was 338.9 feet, with average inflows of 208 kcfs and outflows of 212 kcfs.
- **Bonneville**: yesterday's average forebay elevation was 73.1 feet with average inflows of 229 kcfs and outflows of 231 kcfs.

Jonathan Ebel, ID, asked if the Corps had projections on refill at Albeni Falls given the project's maintenance operations. Eric emphasized the challenges with spill gate issues, reporting that the

approximate timeframe for full refill is the end of June (2-3 weeks later than last few years), although it will depend on runoff. It is highly unlikely that the project won't refill.

Doug Baus, Corps, reported on current juvenile transport operations at Lower Monumental Dam (LMN). As previously coordinated, the Corps resumed juvenile transportation at LMN on Saturday May 18, and plans to continue transport every other day through June 20. He reviewed recent data, highlighting Action Agency efforts to normalize project outflows to minimize flow fluctuations by increasing both generation and increasing spill during barge loading. He noted that due to unforeseen issues associated with the traverse and loading, on May 18 there was an adjustment to the spill level during loading down to approximately 50 kcfs; the Corps anticipates a spill level of around 50 kcfs during the every-other-day barge loading through the duration of the transport operation. Doug noted that, from the Corps' perspective, the goal of avoiding the need for an expanded 3-foot MOP operation at LMN and Ice Harbor (IHR), as well as minimizing flow fluctuations, has been achieved through the increase of generation and spill during barge loading.

Jay Hesse, Nez Perce Tribe, noted that from the Tribe's perspective based on hourly data, while within-day flow fluctuations are greatly reduced from the previous operation, they are not eliminated at LMN and IHR; there remains about a 35 kcfs swing. Doug emphasized that the Corps' intent was to make the situation better and acknowledged that the magnitude of change may not be what Salmon Managers had hoped for. Jonathan added that TMT members may not yet fully understand the impacts of different types and scale of flow fluctuation. Salmon Managers appreciated the Corps' efforts and conversation while highlighting their goal to ensure transport operations do not degrade in-river conditions for fish; while there has been an improvement, disappointment and concern remain that the cessation of transport will not be used to address the needs for fish.

For Salmon Managers present, concerns remain on transport operations at LMN impacting flow changes at subsequent projects like IHR; the conversation will continue as more data are analyzed, and the issue will be addressed at RIOG.

Salmon Managers posted the following links into the meeting chat:

- https://pweb.crohms.org/dd/nwdp/project_hourly/webexec/rep?r=lmn&ago=2
- https://pweb.crohms.org/dd/nwdp/project_hourly/webexec/rep?r=ihr&ago=2
- https://pweb.crohms.org/dd/common/dataquery/www/?s=eyJ0aW1lem9uZSI6IlBTVCIsImJhY2t3YXJkIjoiN2QiLCJ0aW1lc2VyaWVzTGlzdCI6WyJJSFIuRmxvdy1PdXQuQXZlLjFIb3VyLjFIb3VyLkNCVC1SRVYiLCJMTU4uRmxvdy1PdXQuQXZlLjFIb3VyLjFIb3VyLkNCVC1SRVYiXX0=

Water Quality: Dan Turner, Corps, reported a TDG increase at McNary (MCN), averaging 123% on May 15 and 16 (increased up to an hourly maximum of 124% TDG at 170 kcfs spill). This was a higher TDG level than projected and historical average at that spill level. Dan noted that as spill increased from 90 to 170 kcfs, spill bays 6 and 9 (on cranes) were unable to increase openings and lagged behind for about 24 hours, creating a bulkier spill pattern than what was designed at that spill level, which resulted in higher TDG. A higher tailwater also contributed. The situation has been resolved and the Corps does not expect to see the issue again unless there is a rapid increase in spill; any spill cap adjustments moving forward will account for this issue.

As flows picked up on the Snake, spill picked up at projects; Lower Granite (LWG), Little Goose (LGS), and LMN are all spilling at their spill caps. The spill cap at LWG was lowered from 82 kcfs to 80 kcfs to adjust for TDG criteria. Dan noted instances of minimum generation, spill the rest; LMN is nearly spilling at the spill cap and minimum generation.

Finally, Dan reported that the forebay temperature probes at LWG are not reporting. The situation is being addressed with the Corps Walla Walla District to get the probes back online as quickly as possible.

Fish: Jonathan provided the fish update. He reviewed some of the differences in juvenile passage from this year compared to passage timing from last year (passage index posted to the TMT website). He noted that passage index does not indicate abundance, rather it's an indicator of time. He emphasized that juvenile timing was a little different this year, trending towards an earlier peak in passage than normal.

For adults, passage is stabilizing as spring Chinook start to decline and shift to summer Chinook, who have yet to fully arrive at Bonneville (BON). Fish are moving fine through the lower Columbia, but the decline at BON seems to translate to a decrease from 3,000 to 1,000 at MCN. Counts of 635 at IHR and LMN on May 21 led Jonathan to hypothesize a potential correlation to flow fluctuations, as the pattern began in April. He noted that this anomaly in the counts could show up in the data from various tools when looking at potential delays in the future. Fish seem to be moving smoothly through LWG and LGS. Finally, he highlighted sockeye passage through the spillway versus the bypass at LWG, emphasizing that they move through in a pulse in a tight window.

Dave Swank, USFWS, reported mostly low to moderate numbers of juvenile lamprey at the projects, with an uptick yesterday at LGS; juveniles tend to trickle in over a long period of time. The adult run has started, with BON up from 3 to 40 yesterday, slightly under the 10-year average (still early on). Single digits at John Day and The Dalles to-date are most likely overwintering fish, which is typical.

Power System: Tony Norris, BPA reported heading into spring with seasonably average temperatures and wind on the system here and there.

Questions and Comments from Members of the Public – There were no questions or comments from members of the public.

The next scheduled TMT meeting is on May 29, 2024, at 9:00 AM.

Columbia River Regional Forum
Technical Management Team
OFFICIAL MINUTES
Wednesday, May 22, 2024
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 Emily Stranz, DS Consulting. A list of today's attendees is available at the end of these minutes.

1. Review Summaries and Minutes – May 8 Summaries

- Additional edits came in but had been posted.
- May 8 Summary – approved.
- Meeting minutes from May 1, May 8, and May 17 are still pending. Facilitator summary from May 17 still pending. These will be reviewed in the near future.

2. Operations Review

a. Reservoirs

Reclamation (May 22, 2024) – Chris Runyan

- Hungry Horse Dam
  - Inflows (May 21): 7 kcfs
    - Inflows have been decreasing since last week, we had a warmup.
    - Last week average inflows: 79% of average
  - Outflows (May 22): 3 kcfs
    - Anticipate increasing these later this week.
  - Midnight elevation: 3548.7 feet
    - Filled from last week: 5.2 ft.
    - Feet from full: 11.3 feet
  - Current operation: Slow down the reservoir fill by increasing outflows to 4 – 5 kcfs later this week. Mainly due to precipitation for the month of May.
    - Precipitation: 200% of average
    - Next ten days are wet as well, May will likely be above average precipitation.
  - Columbia Falls streamflow: 18.2 kcfs
  - Note: Seli'š Ksanka Qlispe' (SKQ) Dam increased their outflows above minimum flows earlier this week which highlights the improvement in water supply that we have seen this month.

- Grand Coulee Dam (at Lake Roosevelt)
  - Inflows: 111.1 kcfs
    - Weekly average inflows: 67% of average
  - Outflows: 127.7 kcfs
  - Midnight elevation: 1280.3 feet
    - Feet from full: 9.7 feet.
    - GCL is operated to be no higher than 1284 feet at the end of May (FRM Target).
    - GCL will refill after July 4 weekend.
- Flow Augmentation
  - Upper Snake
    - Current Estimate: 471 kaf
    - Has not changed over the last couple of months
    - May still get additional rentals to get to the upper target of 487 kaf, will have to wait and see if there are any additional willing sellers.
  - Boise
    - Flow Augmentation is projected to start soon as it is nearing its full reservoir contents.
  - Payette
    - Projecting that it will start in June.
  - Past Milner
    - Projecting that it will start in early-June.
    - Anna is coordinating with TMT.

Corps – Eric Chow

- Libby Dam
  - Midnight elevation: 2425.5 feet
  - Inflows: 21.2 kcfs
  - Outflows: 25 kcfs
  - Current Plan: Hold for sturgeon pulse through May 31
- Albeni Falls (Lake Pend Oreille)
  - Midnight elevation (Hope Gage): 2055.9 feet
  - Inflows: 34 kcfs
  - Outflows: 26 kcfs
  - Current Plan: Fill no higher than 2057 feet by Memorial Day, May 27.

- Dworshak Dam
  - Midnight elevation: 1591.6 feet
  - Average Inflow (May 21): 9 kcfs
  - Outflows: 4.6 kcfs
- Lower Granite Dam
  - Average Forebay elevation: 733.7 feet
  - Average Inflow: 83.1 kcfs
  - Average Outflow: 81.7 kcfs
- McNary Dam
  - Average Forebay elevation: 338.9 feet
  - Average Inflow: 208 kcfs
  - Average Outflow: 212 kcfs
- Bonneville Dam (May 21)
  - Average Forebay elevation: 73.1 feet
  - Average Inflow: 229 kcfs
  - Average Outflow: 231 kcfs

Jonathan Ebel, ID, said that for Albeni Falls the Corps is probably looking to, from what he has heard, might end up refilling a little later. He asked if Chow had a projection on when they are going to be full at the Hope gage based on some of the maintenance issues at Albeni Falls that have altered operations relative, a little bit relative to the past.

Chow said yeah, he can give, it is difficult this year with the spill gate issues but the end of June is an approximate time frame for full.

Ebel said that it is like two to three weeks later than at least the last few years.

Chow said yes, and that is all subject to change as, you know, the Corps is watching it every day and running models every day, so it all depends on hoe the runoff comes off.

Ebel said okay, and asked if there is there any chance they will not fill.

Chow said that he thinks that is highly unlikely.

b. Lower Monumental (LMN) Operations – *Doug Baus, Corps*

- As coordinated at the unscheduled TMT meeting on May 17, juvenile transportation resumed on Saturday, May 18.
  - Plan moving forward is to continue every other day transportation.
- Monday, May 20
  - Prior to Hour 18 generation flow was around 12 kcfs.

  - Hours 18, 19, and 20: While barge traverse generation flow increased during the loading of barge. Spill values also increased in an effort to normalize project outflows.

- Note: Plan did not go as expected, in the Friday coordination after coordination with the tow boat companies, we were under the understanding that during at 3 hour loading period, spill at LMN spill could return to the normal gas cap spill operation. The gas cap was ***97 kcfs*** on Friday. Over the weekend it increased to 100 kcfs. In real-time that did not work. They initially tried the 97 on Saturday, there was unforeseen wave issues associated with the traverse, they lowered the spill level down to a point which could be tolerable. That level was ***~50 kcfs***.
  - What TMT coordinated did not play out based on real time conditions. Looking forward the Corps anticipates spill levels ~50 kcfs during period (approximately 3 hours) when the barge is loading and that will be occurring every other day and that operation will continue through **June 20.**
- Note: Part of the intent of facilitating this operation by increasing generation and increasing spill during the loading operation was to minimize the need to go into the expanded 3-foot MOP operations at both LMN and Ice Harbor (IHR). This operation achieved that goal and objective. They were able to rescind the operational guidance to those projects which prior to this adjustment with the significant spill reduction during the traverse as well as the loading, they had to use the expanded MOP operations at both LMN and IHR, that is no longer necessary.

Jay Hesse, Nez Perce, asked if Baus could speak to the other objective of avoiding within day flow fluctuations at LMN and IHR.

Baus said that his perception on flow fluctuations was that when he walked through LMN data for example on May 20, when we had generation at hour seventeen down to 12.4 kcfs, and then by increasing it back up through both generation as well as spill, that did minimize the flow fluctuation that we would not have had prior to that. Where we would have maintained generation, for example, only at 12 kcfs, and then the spill levels would have been lower during the loading process. So, from Baus' perspective that normalized flow during those periods and therefor subsequently minimized flow fluctuations. He said Hesse was right, flow does fluctuate throughout the given day. He asked if Hesse had something more specific in mind or if he answered his question.

Hesse said in our discussions last Friday we talked about the within day flow changes at both LMN and IHR. Hesse said as he is looking at the data on an hourly basis, he is still seeing a ~35 kcfs swing in flows, kind of 15 – 20 kcfs up and 15 – 20 kcfs down below what the average flows for the day. Understanding that flows are dynamic and decreasing at this time but taking that into account it still seems like we are getting ~35 kcfs swing within the day. This is greatly reduced from the swings we were seeing under the previous operation but still not eliminating that within day flow change. He asked if that is a shared understanding at both the projects.

Baus said that he hears Hesse but does not understand. He said that the Corps tries to operate with MOP and then as far as fluctuations, as Hesse noted, flow fluctuations can and do occur at projects, so Baus said that he does see a flow fluctuation, and he does think that it has been minimized which from his perspective was their intent. It was not to

avoid or normalize across the entire day, for example, but it was to make the situation better, which he thinks from his perspective it accomplished that, but maybe the magnitude of differential that he and Hesse are having different perspectives on. He asked Hesse if that was fair.

Hesse said that it is fair that we have different perspectives and the use of *We* is specific to the Corps and not the Fisheries co-managers.

Ebel said that he appreciates the Corps efforts. When the Salmon Managers (SM) take a look at the hourly data, they are going to take a little closer look at a little bit higher resolution. Because all of these what we are looking at right now are hourly averages but what is occurring is also occurring at a finer scale, which is a different type of fluctuation that Ebel said that he does not think that we fully grasp its impacts. In general, the goal is to try to make sure that transport operations are not degrading in-river conditions for in-river fish, that has been a desire from the States for ~40 years. But thank you for all your efforts to the Corps and we will keep looking at it.

Charles Morrill, WA, told Baus thank you. He said that he appreciates what the Corps tried to do. He said that it did not fully address the concerns that were addressed by the Fish Managers. He said that is about all he can say right now to be respectful of the process. The way that it played out it may have wound up putting more fish through the powerhouse which was not out intent. He said that they understand the aspects of the water management and the Corps meeting the operation guidelines that they were following but Morrill said that he thinks the SM would expect disappointment that cessation of transport would have resolved all those issues. With that said that is enough.

Tom Iverson, Yakama Nation, said that this is an improvement over the conditions that caused the cessation of transport two weeks ago, but he is still seeing three hours of reduced spill and a 30% reduction or impact on flow. He said that this is much improved, but it still causes him much concern. He said the other question that he has that we do not have in front of us is this impact in flow attenuated when it hits IHR. He said that this kind of gets to Hesse's question. He asked if the Corps sees this same blip as the flow passes through IHR or by the time it gets to IHR does everything stay flat and normal.

Baus said that is wondering if he could phone a friend on that question. He said that he is reluctant to answer that question because hydropower systems are complex, we are taking a close look at one variable, which Baus completely acknowledge. He asked if Tony Norris or someone from BPA could take a look at it, as he did not want to misspeak. He said that in his interpretation he is not sure if we can make a linear relationship all the time accurately from a three-hour issue at LMN to immediate … He asked if BPA wanted to comment on this more effectively.

Tony Norris, BPA, said that he thinks that this operation significantly reduces the amount of water that we have to manipulate to accommodate the barge traverse, so that of course minimizes the fill above MOP and makes the flow changes much less severe. By the time we get past IHR it continues to attenuate even further. He asked if that answered Iverson's question.

Iverson said not quite. He said that he is curious, it is a 30% drop in flow, at hour 18, and then ramps back up. He said he is curious; do we see a 15% drop in flow by the time it hits IHF or are we seeing a 30% drop in flow, or if you even notice it.

Norris said they prepare for the operation, so they fill into IHR to prepare for the reduction in LMN outflow and draft LMN to prepare for the operation so that we have room to fill so that we can stay with in MOP with the current operation. Before they had to do the same thing but more severely because they were reducing the flow that much more severely and fill above MOP. They have cut the flow reduction essentially in half.

| *from Charles Morrill to everyone: 9:22 AM*

| *https://pweb.crohms.org/dd/nwdp/project_hourly/webexec/rep?r=lmn&ago=2*

| *from Jonathan Ebel to everyone: 9:28 AM*

| *https://pweb.crohms.org/dd/common/dataquery/www/?s=eyJ0aW1lem9uZSI6IlBTVCIsImJhY2t3YXJkIjoiN2QiLCJ0aW1lc2VyaWVzTGlzdCI6WyJJSFIuRmxvdy1PdXQuQXZlLjFIb3VyLjFIb3VyLkNCVC1SRVYiLCJMTU4uRmxvdy1PdXQuQXZlLjFIb3VyLjFIb3VyLkNCVC1SRVYiXX0=*

| *from Charles Morrill to everyone: 9:30 AM*

| *https://pweb.crohms.org/dd/nwdp/project_hourly/webexec/rep?r=ihr&ago=2*

Ebel said that he had put a link in the chat that shows at least the hourly average of the two projects on top of each other and you could see a blip. He said that he means you could see that it drops at IHR.

Morrill said that it is really faint.

Norris said it does reduce at IHR because they have to fill prior to the reduction in outflow from LMN so that they have enough water to keep from going through the bottom of the forebay operating range.

Ebel said that he is just showing the figure. That was Iverson's question, and we have the tools to at least too at it in an hourly level.

Morrill said that he also posted links. It shows the subject of drop at IHR with the flow there. In his opinion, that kind of answers Iverson's questions that yes there was a decline, there was an attenuation of flows – total discharge through IHR following the operation at LMN.

Stranz said that there is a lot of information to look at and this conversation will continue.

Hesse said that we probably should have started this conversation with a restatement of where we are at in the process that Friday's meeting resulted in positions of objection with the intent to elevate by multiple parties and that process is playing out. The operations that are being implemented are not eliminating the within day flow fluctuations, they are reducing that but not eliminating it. And there is additional water being routed through the powerhouse in the process and both of those issues were counter to objectives that Fish Managers had. So, the elevation process will play out. In the meantime, I think Ebel will show how fish are being impacted and how fish are

responding to these operations. He said that we should have highlighted as a reminder that there is a pending RIOG meeting to hash this up.

Stranz thanked Hesse for the reminder and asked if there are any other questions or comments for TMT recognizing that RIOG will address this.

c. Water Quality – *Daniel Turner, Corps*

- Water Quality Standards
  - McNary
    - Increase Dates: May 15 & 16
    - TDG Increase: 124% TDG Hourly
      - @ 170 kcfs spill
      - Higher TDG production than projected.
      - More TDG production than the historic average at that level.
    - As spill increased from ~90 kcfs to ~170 kcfs Spill Bays Six and Nine are on cranes and not on the hoist so they could not increase the openings at those gates, so those openings lagged behind.
      - For ~24-hours there was a different spill pattern than what was designed at 170 kcfs so it made the spill bulkier.
      - This caused higher TDG.
    - The tailwater was higher than previous days, still within ranges but it created a deeper tailwater so a little more TDG production.
    - Back at 170 kcfs.
      - On May 19 and 20 the average spill was above 170 kcfs with TDG generation back down at ~122% TDG.
    - Situation resolved unless we see a rapid increase in spill.
      - Now we are on the lookout for it and would not necessarily make a spill cap change knowing that the spill pattern will normalize over on that issue.
- Snake River
  - Last week spill picked up and spilling at the spill cap at Lower Granite, Little Goose, and Lower Monumental. The arrows indicate whether spill caps were increased or decreased on that specific day.
  - Lower Granite (blue dots)
    - Increase Dates: May 15 & 16
    - TDG Increase: 126% TDG
    - Spill Cap: Lowered from 82 kcfs to 80 kcfs
    - Temperature probes are not reporting. Turner has been working with Walla Walla District to get them back online as quickly as possible

- Green dots are indicative of situations where we are seeing minimum generation and spill the rest.
- Lower Monumental: right on the edge of the spill cap and minimum generation.

Erick VanDyke, OR, said that on the last graphic he noticed on May 21 when the spill cap was increased by 2 kcfs the relationship with the real water TDG also decreases. He asked if Turner had any interpretation on what factors are maybe at play there.

Turner asked if he was referring to Lower Granite on May 21.

Van Dyke said yeah, it is May 21, going to 82 kcfs and having a 12-hour average of 122% TDG which is a couple percent lower.

Turner said, yeah, flows right now are decreasing on the Snake River and we are at minimum generation spill the rest. So even though they raised the spill cap there was not enough water to get up to 82 kcfs, so you can see the daily average spill was only 70 kcfs. There is not enough flow to get up to 82 kcfs.

Van Dyke thanked Turner for pointing those details out.

d. Fish

Salmon – Jonathan Ebel, FPAC Vice Chair

- NMFS is not available to present the Salmon update so Ebel as FPAC Vice Chair gave the update. This update was different than typical as Ebel wanted to show the differences this year in terms of juvenile passage timing relative to 2023.
  - Ebel credited Morrill for stating that he thought we had reached peak passage. Ebel at the time said that he did not think so that he believed that there would be another wave of fish as flows came up. Looking at the linked document Morrill was right.
- Juvenile Salmonid Passage Index
  - Note: Passage Index is NOT a measure of abundance, it is a measure of timing.
  - Historic Proportion of the Run v. Index for a Given Date this Year.
  - Yearling Chinook
    - Primarily hatchery fish
    - Peak passage: Mid-April
    - Begun to decline rapidly over the last few weeks and is now a mixture of wild and some hatchery fish. Dropped off precipitously in the last few days.
  - Steelhead
    - Peak passage: Mid-April
    - Same pattern to Yearling Chinook. Steelhead moved significantly earlier than they have relative to the historical average.

        - Not quite as early as 2015.
    - Warning: For some of the projects like LMN and IHR for Sockeye.
        - Sockeye tend to move in a very rapid fashion.
    - Hatchery Sockeye
        - Moved past LGR 4 days ago, in a big block of fish.
        - There could be ~500,000 – 700,000 hatchery sockeye that could be at LMN and IHR in the next few days.
        - Should be at LGS today, May 22.
        - They are a constrained hatchery fish, that is their behavior.
    - Subyearling Chinook (hatchery)
        - Appear to be moving a little earlier than their historical average in terms of their arrival at LWG.
    - Reminder: Sockeye and Subyearling Chinook do not respond positively at all to being transported.
    - In the shift earlier between stocks from Yearling Chinook and Steelhead in the Snake River and the Subyearling Chinook and Sockeye. The Sockeye will be through the Snake River in short order.
    - McNary
        - Appears earlier but not as early.
        - Mixture of the Snake River and Upper Columbia River fish.
        - More normalized, closer to the historic average timing or Yearling Chinook and the same is true for Steelhead.
- Adults
    - Bonneville (YTD)
        - Decline or stabilization as we shift away from Spring and Summer Chinook have not fully arrived.
        - Expect to remain stable for a bit.
    - McNary
        - Fish are moving through the Lower Columbia
        - The decrease from BON is translated to MCN from ~3000 to ~1000 Chinook.
    - Ice Harbor
        - May 21: 635 Spring Chinook counted
    - Lower Monumental
        - May 21: 636 Spring Chinook counted\
        - Ebel wanted to point out the anomaly in the counts and see what the next couple days tell us. Ebel's hypothesized that this might be that this might be related to a further out effect of fluctuation of flows. It was a personal

hypothesis but something to be noted if TMT decides to look at delays and criteria this will show up in the data and various tools that are used or prescribed within the FOP.

- Lower Granite
  - Fish are moving by fairly smoothly
  - Bypass versus Lower Granite
    - Sockeye moved as a pulse. 8000 hatchery tags moved past the tags in a two-day period.

Baus asked for Ebel to repeat the adult Sockeye issue he had mentioned.

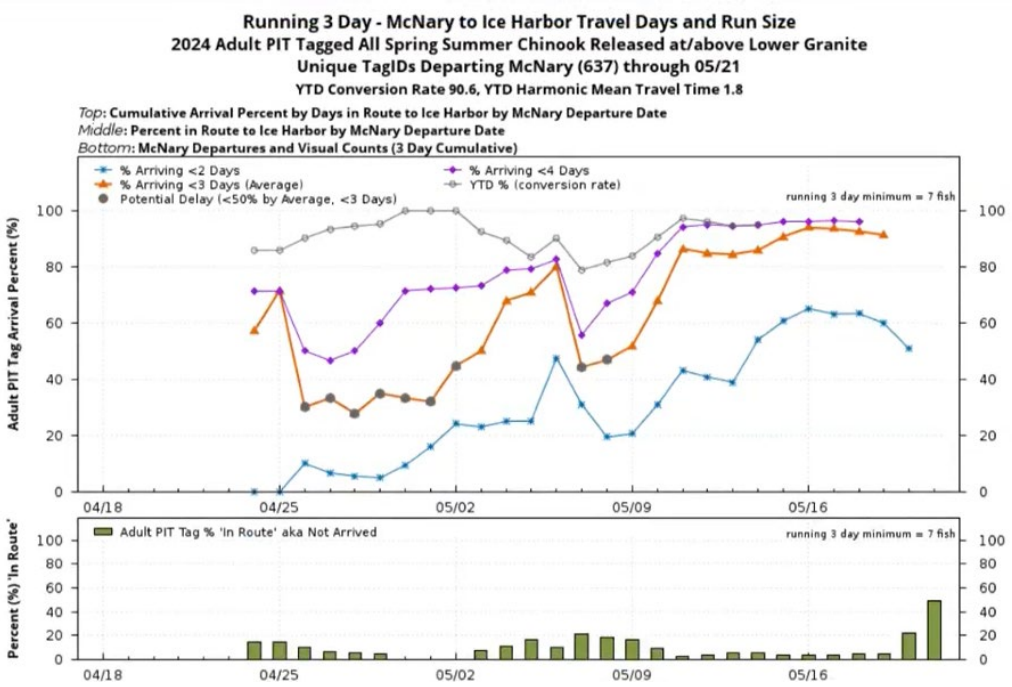
Ebel said that one point does not make a line, but it is curious the drop on May 21 at LMN and IHR.

Baus asked what Ebel was suggesting. He asked if we knew what is going on.

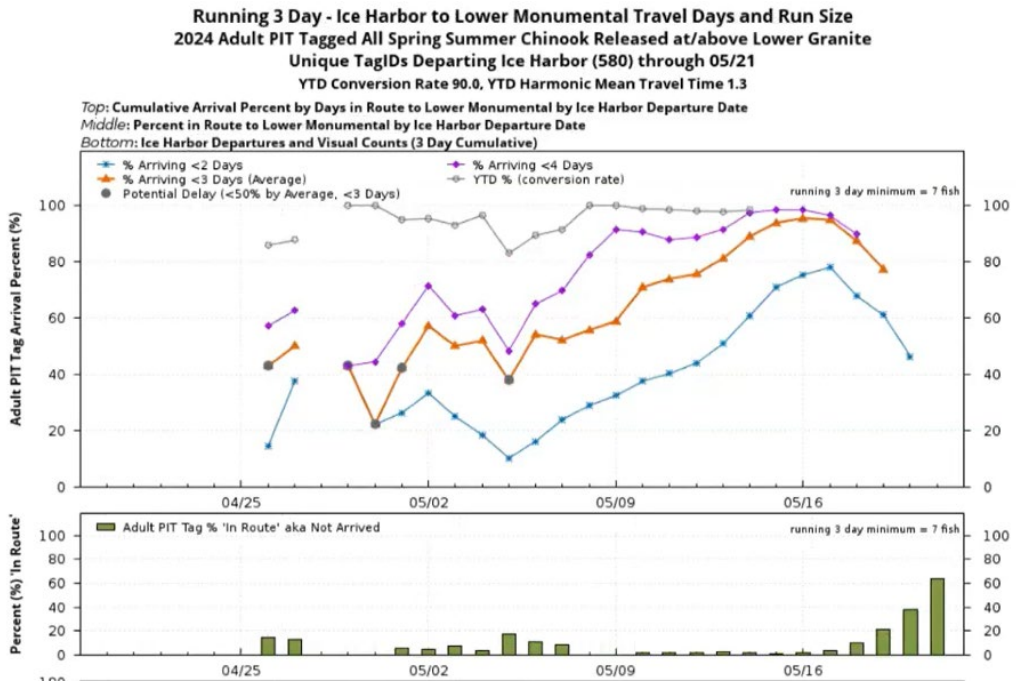
Ebel said no but he thinks that started to see that pattern in April. He said that it is his hypothesis, and it is very difficult to tell, is that when you have fluctuations in flow, the impact on adults is not just in the tailrace, that if you have a pulse of flow, it might actually alter their dynamics, their movements throughout the entire reservoir. So, you may have actually delayed effects on passage at a single dam. Ebel said that he is curious, and one point does not make a pattern, but it is intriguing that for whatever reason at those two dams and yesterday we had a substantial drop in counts suggesting something weird happened. Ebel said that he cannot put his finger on what unless we continue to see it and we start to see some coincident in space and time with operations type of relationship (he is not going to say causal).

Baus said thank you for that clarification. Baus said that he had been watching that in DART too and scratching his head too. He thanked Ebel for the update and clarification.

Hesse asked to look at DART passage indices for MCN to IHR and then IHR to LMN. He said graphically that shows the decrease in conversion rates and the slowing of those passage indices, but since the within day flow fluctuations restarted on Saturday but the discussion… He said that Baus' question and Ebel's response to that is addressing these so…



Hesse said that this is MCN to IHR and looking at the short blue line on the bottom is the quick turnaround time that would be indicative of conditions in the river since we reinitiated the transportation in the within day flow metrics. He said that there is no black dot in the orange, we are still high and seeing good conversion rates there but just the short term is starting to dip a bit and as Ebel said we do not know the exact mechanism but to just see that and then maybe refresh this with the IHR to LMN.



Hesse said that is even more of a drastic drop in all of those passive timings, but again no black dots yet, but a drop since we started that operation on Saturday.

Baus said if he was reading it right it was even before, so he guessed that he was confused. He said that he heard Hesse, he sees the lines going down but as far as the blue line goes it looks like on May 17, they resumed on the 18th. Baus asked if Hesse is saying the first dot after on the [Ebel said departure date] so the correlation is suggesting on May 17, the first downward trend is what Hesse is seeing as a concern.

Hesse said yes, it is the data, and the causation is not definitive but there is overlap with some of these dots with the change in operations. So they are trying not to… You know when they see declines and that kind of stuff, they watch them and Ebel pointed out that the drop in those daily counts take a while to show up in these dots and he wanted TMT to see the trends.

Baus told Hesse thank you for bringing it up so TMT could see this.

Ebel responded to Baus' question, when it peaked on May 17 that is the departure date. Those fish would have been moving, they would have crossed maybe on the 18th but since then any fish that has crossed IHR on the 18th or after the 17th seems to be slowing down. Ebel said that we always need to remember that when we look at this data, and TMT will be going further into this because of changes in the DART tool but not in this meeting, is that that is the departure date of a cohort and there is an experience over time of conditions upon departing a dam and arriving at the next dam. There will always be some type of lag.

Baus told Ebel he hears him and told Ebel and Hesse thank you for their updates. He said that he is glad that we are using this tool, it is helpful, and he looks forward to continued dialogue.

Lamprey – Swank, USFWS

- Juveniles
  - Low to moderate numbers at the projects.
  - There was an uptick at LGS yesterday (May 21).
  - Trickle over long period of time.

- Adults
  - Lamprey run has started.
  - BON
    - May 15: 3
    - May 22: 40
    - Running below the ten-year average, and quite a bit under last year's above average run. Still early.
  - JDA
    - TYD: 68
  - TDA

- TYD: 3
- Likely the overwintered lamprey that came in the previous migration season.

e. Power System – Tony Norris, BPA

- Headed into spring with seasonably average temperatures.
- Wind on the system here and there.

3. Public Comments: None

4. Set agenda for next meeting – May 29, 2024

Today's Attendees:

Agency	TMT Representative(s)
NOAA Fisheries	
Oregon	Erick Van Dyke
Washington	Charles Morrill
Kootenai Tribe	
Colville Tribe	Dennis Moore
Umatilla Tribe	Tom Lorz (CRITFC)
Yakama Nation	Keely Murdoch, Tom Iverson
Bureau of Reclamation	Chris Runyan
Army Corps of Engineers	Doug Baus (host), Lisa Wright
US Fish & Wildlife Service	Dave Swank
Idaho	Jonathan Ebel
Montana	
Spokane Tribe	
Nez Perce Tribe	Jay Hesse
Warm Springs Tribe	
CSKT	
Bonneville Power Administration	Tony Norris, Scott Bettin, Ben Hausmann

Other Attendees (non-TMT members):

COE – Dan Turner, Alexis Mills, Eric Chow

BOR – Eric Rothwell

BPA – Carolina Andes

Washington Ecology – Thomas Starkey

Oregon DEQ – David Gruen

Flathead County Commissioner– Randy Brodehl

DS Consulting – Emily Stranz (Facilitator), Colby Mills

CorSource – Andrea Ausmus (BPA note taker, Contractor)

Columbia Basin Bulletin – Mike O'Bryant

Northwest Power and Conservation Council – Kate Self

Energy Keepers – Eve James