

COLUMBIA RIVER TECHNICAL MANAGEMENT TEAM

September 21, 2016

Facilitator's Summary

Facilitator, Emily Plummer; Notes, Tory Hines, 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.

Review Meeting Minutes

The official TMT Minutes and the Facilitator's Summaries for the August 31st and September 7th meeting were reviewed and approved by TMT members.

Dworshak Dam

Oil Spill Update

Steve Hall, COE-Walla Walla, updated TMT on the oil spill that occurred at the Dworshak Dam on September 19th. He noted that the oil spill was the result of procedural error, and the contractor working on the overhaul of Unit 3 is liable for the damages. Another contractor has been hired to help clean up the spilled oil. Oil spilled inside the turbine, draft tube, sump pump and scroll case. The Corps estimates that 290 gallons were spilled and approximately 20 gallons went into the Clearwater River. Furthermore, the Corps expects that some additional oil will be released in to the river as they attempt to clean up the spill. Containment booms have been employed to intercept and sift oil off the water's surface. The oil is petroleum-based and is used as a turbine lubricant oil.

Unit 3 Outage

Steve provided the current expected timeline for the Unit 3 overhaul, noting that these are the anticipated milestones, however the schedule is subject to change:

- September 19, 2016 generator disassembly began.
- October 11, 2016 rotor will be removed.
- October 29, 2016 winding removal will be complete.
- November 5, 2016 stator core removal will be complete.
- December 8, 2016 stator core installation will be complete.
- January 24, 2017 rotor work will be complete.
- March 11, 2017 winding installation will be complete.
- April 5, 2017 unit reassembly will be complete.
- May 15, 2017 special field tests will be complete.
- July 1, 2017 model validation testing will be complete.

At this point, the Corps expects Unit 3 to be back in service by May 1st. Paul Wagner, NOAA, asked if the turbine unit will remain in place while the generator is being serviced, to which Steve noted that the turbine unit will stay in place and the contractor will replace bearings on an as needed basis. Steve noted that if bearings can be replaced and the head-cover is in good condition, there will not be a need to proceed with phase two (tentatively planned to take place a couple of years after the current overhaul). Dave Swank., USFWS, asked if the unit would be able to handle maximum flows by May 1st given the above timeline. Steve wasn't entirely sure, but thought that they could expect Unit 3 to have full capacity by May 15th.

The Corps began generator disassembly on Unit 3 at Dworshak on September 19th. The project was halted due to the oil spill and will resume once the spill is cleaned up. The next step in the scheduled maintenance, rotor removal, is expected to be complete on October 11, 2016. The Corps will continue to update TMT on the overhaul progress.

State of Idaho Priorities for Operational Objectives

Paul reported that FPAC is still reviewing Idaho's priorities for operational objectives for Dworshak Dam and Salmon Managers have requested additional information to help inform potential recommendations. Paul shared that Nez Perce raised concerns over potential effects to wild fish in the Clearwater, as well as hatchery fish. Tom Lorz, CRITFC, stated that Salmon Managers are evaluating where there is flexibility in operations to manage water quality and meet refill. Nez Perce is reviewing spawning and emergence times to define periods of susceptibility to higher gas levels. Paul requested that Steve Hall provide operational scenarios for TDG levels of 110%, 115%, and 120%.

- **ACTION:** Salmon Managers will continue to discuss potential recommendations for Dworshak operational objectives and the Corps will provide TDG modeling scenarios to FPAC at their next meeting.

Hatchery Cohort Timing

Dave Swank provided TMT with Dworshak hatchery cohort timings. The only gap in time, where no fish are kept on river water, is during the second half of April. This range may vary depending on the growth rate of fish and forecast fluctuations. Doug Baus, COE-NWD, asked if the dates in April, when no fish will be on river water, could be further clarified so that the Corps can put a finer point on the flexibility and options. Scott Bettin, BPA, noted that past teletypes would indicate when the project released additional flow to flush out the hatchery releases, and these dates could help clarify the potential timing. Scott also noted it may be possible to make changes in temperature operations to increase the growth rate so that they can release fish earlier. Doug recommended adding in-river timing to the table that Dave provided so they can see the relative tradeoffs between hatchery impacts and in-river impacts.

- **ACTION:** Dave Swank will review historical release data for April to develop a range describing when there are no fish in the hatchery. He will also add in-river timing to the table. This information will be provided at the next TMT meeting.

NOAA Fisheries BiOp RPA Table

Doug reviewed RPA 4, Table 1 of the 2008 BiOp and noted that the Action Agencies will default to the RPA guidance during the overhaul of Unit 3 at Dworshak. He noted that the ID recommendations are consistent with the RPA and if the region would like other options to be explored, it will take additional coordination. The pertinent RPA guidance states:

- When not operating to minimum flows, operate to reaching the upper flood control rule curve on or about April 10 (the exact date to be determined during in-season management) to increase flows for spring flow management.
- Maximum project discharge for salmon flow augmentation to be within Idaho State Total Dissolved Gas (TDG) water quality standard of 110%.
- Refill by about June 30.

Erick Van Dyke, OR, noted that the 2014 supplemental BiOp RPA table 1 is not the same as what Doug was referencing. Doug clarified that RPA 4, table 1 is carried over from the 2008 BiOp.

2017 Water Management Plan

The Corps will post the draft 2017 Water Management Plan to the TMT website by October 1st. The first round of comments are due by October 31st and should be submitted to Mary Mellema (BOR), Tony Norris and Scott Bettin (BPA) and Doug Baus (Corps). A second draft will be posted on November 16th and additional comments will be due by November 20th. Comments should be provided in "tracked changes". Doug recommended TMT members review the Seasonal Update document which provides a summary of the last year's operations.

- **ACTION:** The Corps will post the draft 2017 Water Management Plan to the TMT website by October 1st. Comments to the first draft are due on October 31st and can be submitted to Mary, Tony, Scott, and

Doug. The second draft will be posted on November 16th and further comments are due on November 20th. The final 2017 Water Management Plan will be posted by December 31st.

Operations Review

Reservoir Operations

Chris Runyan, BOR, reported on Reclamation projects:

- Grand Coulee midnight elevation was at 1,280.7ft, with inflows of 88.9kcfs and outflows of 78.7kcfs; the project is increasing flows to meet the end of September target of 1,283ft.
- Hungry Horse midnight elevation was at 3,551.3ft, with minimal inflows (600cfs) and outflows of 2kcfs. BOR is monitoring the upcoming system moving through in the next 1-3 days. BOR plans to maintain outflows at 2kcfs and will draft 10ft by either September 30th or October 2nd or 3rd.

Lisa Wright, COE-NWD, reported on Corps projects:

- Libby midnight elevation was 2,445.5ft, with 6.5kcfs outflow and 5.4kcfs inflow.
- Albeni Falls midnight elevation was 2,062.2ft, with 10.8kcfs inflow and 9.4kcfs outflow.
- Dworshak midnight elevation was 1,520.05ft, with 1kcfs inflow and 1.6kcfs outflow.
- Lower Granite average outflow was 17.8kcfs.
- McNary average outflow was 104.7kcfs.
- Bonneville average outflow was 111.0kcfs

Tony Norris, BPA, noted that the Lower Snake projects returned to MOP operations on September 20th. Joel Fenolio, COE-Seattle, noted that Albeni Falls drafted today and is being held at 2,062ft, which is a foot above the target elevation.

Fish

Paul provided an update on fish. Steelhead are lagging at Bonneville, 156,000 have passed (49% of the 10-year average). The graphs show an increase at up-stream projects which is likely due to cooler temperatures encouraging migration. McNary and Ice Harbor have also seen slight increases of hatchery and wild Steelhead. At Lower Granite, 17,536 Steelhead have passed (42% of the 10-year average and 47% of 10-year average for wilds). The low Steelhead numbers are seen throughout the system extending from the mid-Columbia to the Upper Columbia River. At Rock Island roughly 4,200 have passed (33% of the 10-year average.) Poor Steelhead passage numbers are likely due to the low flow river conditions in 2015 as well as the ocean blob. For Chinook, 384,000 have passed through the system (98% of the 10-year average). At Lower Granite, 24,500 have passed (136% of the 10-year average). For Jack Chinook, numbers are weaker, likely due to poor ocean conditions experienced in 2015. Overall, counts are 78% of the 10-year average and at Lower Granite passage is 89% of the 10-year average. For Coho, passage numbers are also lagging. At Bonneville counts are 40% of the 10-year average. Lamprey continue to do well, overall counts are around 52,000 at Bonneville, which is 230% of the 10-year average.

Russ Kiefer, ID, provided an update on sockeye. He noted that 499 sockeye were collected in the basin. Conversion rates are good, with over 800 detected over Lower Granite.

For juveniles, passage is winding down. At Lower Granite 10 fish were counted, and at Little Goose 500 fish were counted. For Columbia projects passage numbers remain very low as the season comes to a close.

Water Quality

Laura Hamilton, COE-NWD, stated that the removal of the seasonal gauges from service began on September 7th

and was completed on September 16. Gauges are now set to the winter time arrangement.

Power Systems

Tony Norris, BPA, reported that there is nothing to report.

The next TMT meeting will be a conference call on Wednesday, October 5th at 9:00am.

Columbia River Regional Forum
TECHNICAL MANAGEMENT TEAM MEETING

September 21, 2016

Minutes: Pat Vivian

1. Introduction

Representatives of the COE, NOAA, BPA, USFWS, Washington, Idaho, BOR, Montana, Oregon, Umatilla Tribe and others participated in today's TMT meeting chaired by Doug Baus, COE, and facilitated by Emily Plummer, DS Consulting.

2. Review Meeting Minutes – August 31 and September 7

Minutes and facilitator's summaries for both meetings were approved as final.

3. Dworshak Dam

The September 7 TMT conference call raised several operational issues related to the Dworshak Unit 3 maintenance outage for follow-up today. In addition to those concerns, the contractor performing the work on Unit 3 has spilled an estimated 10-20 gallons of oil into the North Fork Clearwater River.

3a. Oil spill update. Steve Hall reported. On September 19, the first day of work on Unit 3, the contractor, Andritz, began unbolting a flange to the guide bearing system without first performing oil containment procedures the COE had previously explained, and approximately 291 gallons of oil was discharged. After the spill, the oil (which is analogous to car motor oil) could be seen on the surface of the North Fork Clearwater River downstream to the hatchery. Containment booms were installed near the mouth of the North Fork and at the dam, and most of the oil (around 260 gallons) has been recovered or absorbed. However, an estimated 10-20 gallons leaked into the Clearwater. Unfortunately, further release of oil into the river may be unavoidable. The cleanup is 100% the contractor's responsibility. An abatement firm, NRC Environmental, is performing the cleanup.

3b. Forthcoming unit 3 outage schedule. A generic diagram of a turbine unit and the Unit 3 outage schedule is linked to this item on today's agenda. Milestones in the Unit 3 work at Dworshak will be:

- Generator Disassembly Start 19 Sept 2016
- Rotor Removed 11 Oct 2016
- Winding Removal Complete 29 Oct 2016
- Stator Core Removal Complete 05 Nov 2016

- Install Stator Core Complete 08 Dec 2016
- Rotor Work Complete 24 Jan 2017
- Winding Install Complete 11 Mar 2017
- Unit Reassembly Complete 05 Apr 2017
- U3 RTS 01 May 2017.
- Special Field Tests Complete 15 May 2017
- Model Validation Testing completion 01 July 2017.

In response to questions from TMT, Hall explained that returning the unit to service on May 1 doesn't necessarily mean the unit will be fully operational the first day. Field testing and electrical testing will require temporary special operations for a few weeks. This schedule represents phase 1 of Unit 3 rehabilitation. According to the project manager, the second phase – if it happens – will depend on inspections of the turbine runner, as well as the head cover, which has been welded shut to prevent leakage. If there is a phase 2, the work won't start until 2020 or beyond.

Once unit 3 is up and running again, there's a chance it will be rated for a different MW load. Model validation testing will reveal how many MW the refurbished unit is capable of generating. It might take a few days to figure out what the unit's maximum capacity is, Scott Bettin, BPA, said. Dave Swank, USFWS, asked whether Unit 3 would be able to handle maximum flows if necessary when it returns to service May 1. It probably won't have the immediate capacity to handle maximum flows continuously on May 1, but likely could by May 15, Hall replied.

3c. State of Idaho priorities for Unit 3 outage. The last TMT conference call on September 7 focused on Idaho's priorities for Dworshak operation while Unit 3 is out of service. Several of the Salmon Managers raised concerns to be addressed before they could endorse Idaho's priorities. Wagner reported that FPAC is still reviewing the situation, and questions have arisen that will require additional information. It was noted that the Nez Perce Tribe, which has a stake in Dworshak operations, has not been able to participate in these discussions. Since last week's TMT call, Wagner conferred with the tribe and reported they have two primary concerns: TDG effects on the hatchery and on the Clearwater itself. Detailed analysis of historic data on river temperatures and spawning and emergence times is needed to correlate with the hatchery schedule and identify times when fish will be less susceptible to higher TDG levels. The goal is to find a window when it would be possible to spill without harming hatchery or in-river fish. Meanwhile the conversation about 110/115/120% TDG levels continues, with the question being whether a limit of 115% or 120% would allow more operational flexibility during migration season.

Scott Bettin asked whether hatchery practices could be modified so smolts are ready for release earlier in April; Wagner said that's part of the analysis. The Salmon Managers want to avoid the dilemma of having to choose between refill and spring

augmentation flows, Tom Lorz, CRITFC/Umatilla, said. To help address these concerns, the Nez Perce Tribe plans to look at historic emergence times and identify periods when higher TDG levels might be acceptable. The COE is doing a similar analysis of TDG tolerance scenarios, Wagner noted. TMT members should stay tuned for more details that will inform the decision making ahead.

3d. Dworshak hatchery cohort timing. Dave Swank, USFWS, provided a hatchery cohort table (linked to today's agenda) that identifies months from January 2017 to May 2018 when steelhead, spring Chinook and coho will be present in the hatchery, particularly those reared in river water. Cohorts that are present in the hatchery at any time during a month are flagged with an X in the column for that month. A separate table for April would be needed to clarify when specifically in April is the safest time to spill to higher TDG levels. The spill test at Dworshak this past spring was scheduled during the last two months of April for this reason. Swank offered to create such a table if people are interested.

Scott Bettin asked whether it would be beneficial for the project to release warmer water to speed up fish growth in the hatchery so they could be released earlier. The time to alter rearing practices would be soon, while fish are very young. Swank said he will investigate this. Reviewing old teletypes for flow increases for the hatchery releases would be an easy way to identify when various cohorts of smolts were released, Bettin suggested. Baus said the COE would like to see timing of in-river species added to the hatchery timing in order to identify when impacts on hatchery and river fish are most likely to occur. In response to this request, Swank said he will add life stages of wild fish to the hatchery cohort table.

3e. 2008 NOAA Fisheries FCRPS BiOp RPA table. Baus added this item to today's agenda (see attachment 3e) to clarify it is the Corps' understanding to date the current Dworshak operation that is being coordinated is consistent with the 2008 NOAA Fisheries FCRPS BiOp (BiOp) RPA 4 regarding Dworshak operations identified in Table 1. If a TMT member would like the Corps to operate outside the provisions identified in the BiOp RPA, then the TMT member would need to make this recommendation at a future meeting because this would be a modification to BiOp operations and would require a significant amount of coordination. The "State of Idaho Priorities for Operational Objectives for Dworshak Dam" (dated 9/2/2016) are consistent with the BiOp and with the Corps' planned Dworshak Dam operations during the unit 3 outage that are specifically identified below:

1. *"When not operating to minimum flows, operate to reaching the upper flood control rule curve on or about April 10 (the exact date to be determined during in-season management) to increase flows for spring flow management."*
2. *"Maximum project discharge for salmon flow augmentation to be within state of Idaho TDG water quality standards of 110%." Idaho's recommendation that Dworshak operate to the Idaho state water quality standard of 110% TDG below the project is in accordance with RPA 4. The Action Agencies would need*

to do more coordination before requesting to raise the state of Idaho's TDG limit to 115% as has been discussed by other TMT members.

3. "Refill by about June 30." Idaho recommends keeping this high priority, and the Action Agencies are still operating Dworshak in accordance with RPA 4 specifications.

TMT will revisit Dworshak operations at its next meeting October 5.

4. 2017 Water Management Plan Draft

The Action Agencies are preparing a draft of the 2017 Water Management Plan (WMP), Baus reported. It will be posted to the TMT website by October 1, as required by the BiOp.

The 2017 WMP review schedule is as follows:

- October 1 – Draft 1 Corps posts to website
- October 31 – Draft 1 TMT comments due
- November 16 – Draft 2 Corps posts to website
- November 20 – Draft 2 Final TMT comments due

The short turn-around time on the second draft was noted. Baus encouraged TMT members to read the seasonal updates for a concise summary of water management operations during a particular season.

5. Operations Review

5a. Reservoirs. Grand Coulee is at elevation 1280.7 ft, headed toward 1283 ft by end September. Inflows are 88.9 kcfs and releases are 78.7 kcfs. Hungry Horse is at elevation 3551.3 ft with inflows of just 600 cfs, drafting out 10 ft by end September as required by the BiOp. Releases are a constant 2 kcfs, and inflows are projected to increase when a storm hits over the next 1-3 days. If the forecast drops, the 10 ft draft will be completed by September 30; if it rises, the 10 ft will be drafted out by October 2-3.

Libby is at elevation 2445.5 ft with inflows of 5.4 kcfs, discharging minimum flows of 6.5 kcfs. Albeni Falls is at elevation 2062.2 ft with inflows of 10.8 kcfs, discharging 9.4 kcfs. Dworshak is at elevation 1520.05 ft with inflows of 1 kcfs, discharging 1.6 kcfs. Lower Granite is discharging 17.8 kcfs, McNary 104.7 kcfs, and Bonneville 111.0 kcfs.

The lower Snake projects returned to the MOP range yesterday, Tony Norris, BPA, reported. Albeni Falls is targeting 2061 ft at the end of the month to

accommodate BNNF Railroad bridge construction, Joel Fenolio, COE, reported. The winter flood control elevation at ALF will be 2051 ft this year.

5b. Fish. Adults: It hasn't been a good year for steelhead, with returns well below the 10 year average all season, Paul Wagner reported. Returns to Bonneville are 156,000 to date, 49% of the 10 year average. Hatchery steelhead returns to Ice Harbor and McNary are 17,536 to date, 42% of the 10 year average. Wild steelhead returns are 47% of the 10 year average. Rock Island Dam has had 42,229 steelhead returns to date, 33% of the 10 year average. This year's low steelhead counts reflect last year's poor river and ocean conditions. Adult fall Chinook, by contrast, are doing well with 384,000 returns to Bonneville, 98% of the 10 year average. Lower Granite has seen 24,500 chinook returns to date, 136% of the 10 year average. Jack chinook aren't faring so well, however. Jack returns to Bonneville are 78% of the 10 year average, and to Lower Granite, 9% of the 10 year average. Coho returns are lagging like steelhead returns this year. The good news is lamprey returns with 52,000 adults arriving at Bonneville to date – nearly 200% of the 10 year average.

As of September 20, IDFG had trapped 499 adult sockeye at Redfish Lake for its broodstock program, Russ Kiefer reported. Conversion rates from Lower Granite to the upper Salmon River are around 65% this year, which is considered good.

Juveniles: Passage is winding down at all projects. Most of the Snake projects are passing around 10 fish a day, while Little Goose continues to pass around 500 fish a day. Juvenile passage counts at the lower Columbia dams are down because the season is ending.

5c. Water quality. Laura Hamilton, COE, reported. The gages that monitor water quality during spill season were taken off line September 28 for the winter arrangement.

5d. Power. There was nothing to report today.

6. Next TMT Meeting

TMT will meet next in an October 5 conference call, with the draft Water Management Plan and a Dworshak update on the agenda.

| Name | Affiliation |
|-----------------|--------------------|
| Steve Hall | COE |
| Paul Wagner | NOAA |
| Tony Norris | BPA |
| Lisa Wright | COE |
| Dave Swank | USFWS |
| Doug Baus | COE |
| Laura Hamilton | COE |
| Charles Wiggins | DSC |

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|-----------------|------------|
| Charles Morrill | Washington |
| Tory Hines | DSC |
| Scott Bettin | BPA |
| Michele Yuen | COE |

Phone:

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|----------------|------------------|
| Russ Kiefer | Idaho |
| Chris Runyan | BOR |
| Matt Foyer | Montana |
| Erick Van Dyke | Oregon |
| Tom Lorz | CRITFC/Umatilla |
| Steve Burl | COE |
| Wayne Jousma | COE |
| Joel Fenolio | COE |
| Shane Scott | PPC |
| Michael Bryant | CBB |
| Laura Berg | Energy News Data |