

COLUMBIA RIVER TECHNICAL MANAGEMENT TEAM

August 16, 2017

Facilitator's Summary

Facilitator: Emily Stranz; Notes: Charles Wiggins, DS Consulting

The following Facilitator's Summary is intended to capture basic discussion, decisions and actions, as well as point out future actions or issues that may need further discussion at upcoming meetings. These notes are not intended to be the "record" of the meeting, only a reminder for TMT members. Official minutes can be found on the TMT website: <http://www.nwd-wc.usace.army.mil/tmt/agendas/2017/>

Meeting Minutes and Facilitator's Summary Notes

The official TMT minutes and meeting summary for the August 2 TMT meeting were adopted without modification. Approval of minutes and summary for the August 9 meeting was deferred until the next TMT meeting.

Dworshak Operations and Hatchery Update

Steve Hall, Corps, summarized operations at Dworshak. Reservoir elevation is currently at 1,554 feet, with inflows less than 2 kcfs, and 9.1 to 9.2 kcfs discharge. TDG is ranging from 115 to 117% at the dam, and from 102.6 to 103% in the hatchery collection channel. Snake River temperatures in the Lower Granite tailwater have been at 66 degrees F since August 13. The air temperature forecast at Lewiston is for reasonably cool, with temperatures in the low 90s through the end of the forecast period, with some warming predicted for next Tuesday and Wednesday (mid-90s).

The Corps reported that per TMT coordination last week, they dropped project outflows to 10 kcfs on the 9th, and then further reduced to 9 kcfs outflow due to a decrease in water temperatures that allowed for lower discharge needed to maintain temperatures below 67 degrees. The Corps developed two modeled scenarios showing the impact of Dworshak outflows on water temperatures in the Lower Granite tailwater: one looked at holding 9 kcfs through the forecast period, the other considered dropping down to 8 kcfs. Given the forecast, if held at 9 kcfs temperatures would be below 67 degrees F. If outflow were reduced to 8 kcfs today, temperatures are expected to remain below 68 degrees F through the forecast period and would not exceed the temperature threshold. Steve also noted both of these scenarios would result in reservoir elevations that are higher than the end of August BiOp elevation target of 1,535 feet.

Dave Swank, USFWS, and Jay Hesse, Nez Perce, reported that fish are doing reasonably well at the hatchery, given their long term exposure to high TDG levels. There are Rank 1 gas bubbles in the gills of both spring Chinook and steelhead, and Rank 3 in Coho. Some had empty stomachs, but unusual levels of mortality were not observed. A new parasite was observed, but was not necessarily related to TDG exposure. All these conditions may be the residual effects of chronic exposure to high TDG levels. Russ Kiefer, ID, noted that most sockeye have passed Lower Granite Dam and are appearing in the basin.

Jay explained that the ID and Nez Perce TDG waiver sought to minimize the impact of TDG and did not assume that the project would hit 1,535ft by the end of August. He pointed out that water temperatures could be maintained below 68 degrees if flows were dropped down to 8 kcfs and that a drop in discharge would help relieve fish downstream. He recommended a reduction in flow to 8 kcfs.

Discussion followed. Paul Wagner, NOAA, stated that a straight reduction in flow should not affect transit time or passage, as there is a lull in fish numbers currently and there will be more fish in the system when water is released in September. He also noted that in the past there had been a couple of high water years in which the end of August elevation exceeded 1,535ft. Dave Statler, Nez Perce, commented that the BiOp also provided a target elevation of 1,520 by the end of September, which Steve Hall, said the Corps would have no problem meeting. It was noted that lower flows will impact the 18 kcfs target for Lower Granite, however, there will still be near 50% spill. Erick Van Dyke, Oregon, stated that a reduction in flow at Dworshak will affect fish passage, as more will need to pass

through the powerhouse, as there will be less flow over the spillway. He shared that he would not object because the TDG needs in the hatchery are also important. Charles Morrill, Washington, asked whether Idaho Power might send 1 kcfs more flow downriver to help compensate for reduced flow at Dworshak. After the discussion, TMT approved by consensus:

- **ACTION:** The TMT agreed to coordinate a reduction of discharge at Dworshak to 8 kcfs, effective immediately, and to continue at that rate until further notice. If water temperatures at Lower Granite go higher than 67 degrees F, discharge will be increased to maintain the temperature threshold of below 68 degrees F.

TMT also noted that this action will likely result in an end of August reservoir elevation above 1,535ft, but that this excess water would be discharged from the reservoir in September.

Operations Review

Reservoirs: Mary Mellema, BOR, reported on Bureau of Reclamation projects:

- Hungry Horse midnight elevation was 3,552.9 ft., current discharge is 2 kcfs.
- Grand Coulee midnight elevation was 1,283.4 ft.

Lisa Wright, Corps, reported on US Army Corps of Engineers projects:

- Libby midnight elevation was 2,447.6 ft., current inflows are 7 kcfs, and discharge is 9 kcfs.
- Albeni Falls midnight elevation was 2,062.3 ft.; yesterday's average inflow was 8.6 kcfs and outflows were 8.1 kcfs.
- Dworshak midnight elevation was 1,554.2 ft.; inflow yesterday was 1.8 kcfs and discharge was 9.2 kcfs.
- Lower Granite average outflows were 30.5 kcfs.
- McNary average outflows were 144.8 kcfs.
- Bonneville average outflows were 141.8 kcfs

Doug Baus, Corps, noted that while implementing the recent SOR 2017-2, the AAs were able to maintain the FOP spill of 18 kcfs at Lower Granite. The project will return to MOP soon, and is only 0.1 ft. higher than MOP now. Erick thanked the project staff for getting Unit 3 online quickly.

Doug reminded TMT that MOP operations will end at the end of August at all Snake River projects.

Fish: Paul Wagner, NOAA, reported on fish. Juveniles are on the downswing. With the Lower Granite bypass out, only 1,000 are recorded passing Little Goose per day. Passage at Lower Monumental is also low. The lower Columbia River projects have reduced sampling and shows reduced passage numbers.

Bonneville adult fall Chinook numbers are 5,252, or 48% of the ten-year average. Steelhead are 38,574 or 21% of the 10-year average. Wild steelhead are 17,797 or 24% of the 10-year average. Lamprey counts are high when compared to the 10-year average and conversion between projects looks good.

It was noted that the walleye population has increased dramatically in the Lower Monumental pool, and this week some were found eating salmon in the dam's bypass separator. They were flushed, captured, and removed. Russ reported that half the PIT tag sockeye that passed Lower Granite have been detected in the Stanley Basin. As of Monday, they had trapped a total of 47 in the Basin.

Water Quality: Dan Turner, Corps, reported that TDG levels are below State standard thresholds at all projects.

Power Supply: Tony Norris, BPA, reported there was nothing to report.

The next regular TMT meeting will be a conference call on August 23, at 9:00 AM.

Columbia River Regional Forum
TECHNICAL MANAGEMENT TEAM OFFICIAL MINUTES

August 16, 2017
Minutes: Pat Vivian

1. Introduction

Representatives of USFWS, the COE, Nez Perce, BOR, BPA, Washington, Montana, NOAA, Oregon, Warm Springs, CRITFC, Idaho 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 2 and 9

The facilitator's summary and official minutes for August 2 were approved as final. The summary and minutes for August 9 will be reviewed at the next TMT meeting.

3. Dworshak Operations

3a. Current Operations Data. Steve Hall, COE, reported. Dworshak reservoir is at elevation 1554 ft, with inflows of less than 2 kcfs and discharging 9.1-9.2 kcfs.

3b. TDG Report. The most recent TDG readings below Dworshak Dam are 116-117% saturation yesterday and 115-116% today.

3c. Snake and Clearwater River Temperatures. Lower Granite tailwater temperatures are around 66 degrees F, where they have been since August 13.

3d. Temperature Model Results. As coordinated in last week's TMT conference call, the Action Agencies reduced Dworshak discharges to 10 kcfs flat flows starting at midnight August 11. On August 14, discharges were further reduced to 9 kcfs because temperatures turned out to be lower than forecasted. Discharges remain at 9 kcfs.

Going forward, Hall walked TMT through the modeling results for two options. The first graph shows Dworshak holding 9 kcfs discharges through the end of the forecast period. Temperatures would probably remain below 67 degrees F at Lower Granite, approaching 67 degrees F toward the end of the forecast period.

The second graph shows the effects of dropping Dworshak discharges to 8 kcfs after today's meeting as requested by the Nez Perce Tribe. It indicates that temperatures at Granite would remain below the 68 degrees F threshold throughout the forecast period.

Hall said the graphs don't address the effects on the ability to draft Dworshak reservoir to 1535 ft by the end of August. TMT discussed the relevance of this BiOp target later in today's meeting.

3e. Weather Forecast for Lewiston, ID. The longer term forecast says discharges of 9 kcfs are advisable through the end of the forecast period. Temperatures should remain relatively cool until August 21-22. Temperatures at night have been dropping to 60 degrees F.

3f. Hatchery TDG Data. The graph attached to today's agenda shows the reduction in hatchery TDG levels as a result of reducing Dworshak discharges from 10 to 9 kcfs on August 14. On August 12-13 before the change, hatchery levels were 103-104% saturation. Now they're 102.6-103%. The recent drop in water temperatures also helped reduce TDG levels.

4. Hatchery Update

Spring Chinook and steelhead smolts are doing well despite continued exposure to relatively high TDG levels, Dave Swank, USFWS, reported. Survey crews have found a few gas bubbles in gills but nothing critical. Of greater concern is a finding that 4 out of 10 coho had less than 100% full stomachs. While none of these findings are indicative of gas bubble trauma, it is unknown how the fish will respond to long term TDG exposure. Will there be residual effects? Swank will keep TMT updated with weekly fish health reports.

When Dworshak discharges dropped from 10 to 9 kcfs, fewer gas bubbles were found in the gills in all fish groups, Jay Hesse, Nez Perce Tribe, reported. However, bubbles in the lateral lines have persisted for all groups, especially coho. While it is good news that lower discharges resulted in fewer bubbles in the gills, the fish are still showing signs of chronic TDG exposure. The reported lack of mortalities doesn't necessarily minimize the long term risks associated with exposing fish to chronic stress, Charles Morrill, Washington, noted.

5. Next Steps at Dworshak

Based on the latest STP inflow projections, if Dworshak continues to release 9 kcfs through August 18, discharges will need to increase to 10.5 kcfs in order to reach the 1535 ft BiOp elevation target for August 31, Hall said. He offered two alternatives:

1. Hold discharges to 9 kcfs until August 19, then increase to 10 kcfs. This would put Dworshak reservoir at 1535.8 ft elevation on August 31, 0.8 ft above its BiOp target.

2. Hold discharges to 9 kcfs through August 23, then 11 kcfs through August 31. This would put Dworshak reservoir at 1537 ft by the end of August, 2.0 ft above its BiOp target.

Hesse pointed out that the water quality waiver the Nez Perce granted to the Action Agencies for spill season expressly acknowledged that 1535 ft elevation at Dworshak might not be attainable, and it was not an expectation when the waiver was signed.

In response to a question about which is worse for fish, sustained or concentrated TDG exposure, Swank said the Dworshak National Fish Hatchery doesn't have any study results to answer that question. Hesse said changes in TDG levels are undesirable, and if fish must be exposed to high levels, the dose should be kept as constant as possible.

If it's possible to manage temperatures at Lower Granite while reducing Dworshak releases to 8 kcfs over the next week, that would be the **Nez Perce** preference, Hesse said. Meeting the 1535 ft BiOp flow target on August 31 is not the tribe's main objective; there will be plenty of time to release that augmentation water in September. Hall confirmed there should be no problem drafting Dworshak to 1520 ft by mid or end September.

Yesterday FPAC discussed the fact that reducing flow augmentation out of Dworshak for TDG management might also mean not having enough flow to achieve the 18 kcfs FOP spill target, Wagner said. That fact needs to be part of the discussion.

The COE is obligated to operate to the terms of the BiOp as well as the water quality waiver agreements with the Nez Perce Tribe and Idaho, Baus said. Any departure from BiOp terms would require Salmon Manager consensus.

If Dworshak discharges continue at 9 kcfs through August 18, then go to flat 8 kcfs for the rest of the month, Hall said, the reservoir will land at approximately 1538.5 ft elevation on August 31, or 3.5 ft above its BiOp target.

If 9 kcfs releases continue through the end of this week, then 8 kcfs for the remainder of August, the reservoir elevation would be 1.5 ft above its BiOp target. The COE will only implement such an operation if the Salmon Managers reach consensus. In high flow years, it's not unusual for Dworshak to miss its 1535 ft elevation goal – it's happened several times in the last decade, Wagner noted.

Discharging 8 kcfs through the end of August is expected to keep Lower Granite tailwater temperatures below 68 degrees F, Hall said. Currently Lower Granite is running unit 3 as the priority unit. The reservoir elevation is 0.1 ft above MOP, drafting down after last week's SOR to accommodate cruise ship docking at the Port of Clarkston. Granite will continue to operate at MOP through August 31.

The Salmon Managers considered whether to caucus re: Dworshak operations and decided that a caucus was not needed. Erick Van Dyke said **Oregon** did not object to operating Dworshak in accordance with hatchery concerns, though it means passing more fish through the Lower Granite powerhouse. Charles Morrill suggested the Action Agencies negotiate with Idaho Power to provide more water over the next two weeks to achieve 18 kcfs spill at Lower Granite. He said **Washington** supports the operation proposed by the Nez Perce. Jim Litchfield, **Montana**, did not object, adding that hard elevation targets have been difficult to implement at other reservoirs.

The Salmon Managers present reached consensus on reducing Dworshak discharges from 9 kcfs to 8 kcfs as soon as possible after today's meeting. So the **Action Agencies** will continue to release 8 kcfs flat flows from Dworshak until further notice, with the understanding the reservoir might not draft to 1535 ft by August 31. Any flow augmentation volume not drafted out of the reservoir in August will be drafted in September. Temperatures are expected to drop August 17-21 and rise again after that. If temperatures downstream exceed the 68 degrees F trigger, Dworshak discharges will be increased.

6. Operations Review

6a. Reservoirs. Mary Mellema, BOR, and Lisa Wright, COE, reported. Hungry Horse is at elevation 3552.9 ft, discharging 2 kcfs. Grand Coulee is at elevation 1282.4 ft. Libby is at elevation 2447.6 ft, with inflows of 7 kcfs and discharges of 9 kcfs. Albeni Falls is at elevation 2062.3 ft, with inflows of 8.6 kcfs and discharges of 8.1 kcfs. Dworshak is at elevation 1554.2 ft, with inflows of 1.8 kcfs and discharges of 9.2 kcfs. Lower Granite is discharging 30.5 kcfs, McNary is discharging 144.8 kcfs, and Bonneville is discharging 141.8 kcfs.

Baus thanked everyone for last week's coordination to implement the Port of Clarkston's request for 11 hours of MOP+1 operation at Lower Granite yesterday. The operation went well, the cruise ship landed without incident, and FOP spill of 18 kcfs was maintained throughout. At present the project is only a tenth of a foot away from drafting back to MOP. Oregon and Washington expressed appreciation to the COE for getting Lower Granite unit 3 back on line in time for this operation.

Baus reminded everyone that MOP requirements at the lower Snake projects will end August 31.

6b. Fish. Paul Wagner reported.

Juveniles: Migration is winding down. The Lower Granite bypass went out of service on August 2. Passage at Little Goose is close to 1,000 smolts a day. Passage numbers at Lower Monumental are low. With temperatures high and counts dwindling, Bonneville, The Dalles and John Day are all on reduced sampling protocol.

Adults: Fall Chinook returns to Bonneville are 5,252 to date, which is about 48% of the 10 year average. Steelhead returns are 38,574, which is 21% of the 10 year average. Wild steelhead returns are 17,797, which is 24% of the 10 year average. Lamprey numbers continue to abound. According to DART data, hatchery steelhead returns are 20% of the 10 year average, and wild adult returns follow the same trend. Chinook passage to date is 47% of the 10 year average, but that's not for the whole year. Sockeye returns are around 20% of the 10 year average at most projects. Jack Chinook returns are 50% of the 10 year average or better, depending on the project.

A recent invasion of 6-8 inch walleye into the Lower Monumental bypass resulted in some bleeding smolts before project staff discovered and removed most or all of the predators. The walleye population in LMN pool has increased in recent years, Tom Lorz, CRITFC, noted.

Russ Kiefer, Idaho, gave an update on Snake River sockeye passage. Half of the pit tagged adults that passed Granite have been detected upstream on their way to Stanley basin. It appears that the few returning fish this year have moved through the hydro system within the normal range, even with unit 3 out of service at Dworshak. This implies the lower Snake hydro system has been well managed.

6c. Water Quality. Dan Turner, COE, reported. TDG levels are below State water quality standard thresholds at all projects.

6d. Power. There was nothing to report today.

7. Next TMT Meeting

TMT will meet next in an August 23 conference call.

Name	Affiliation
Dave Swank	USFWS
Dan Turner	COE
Jay Hesse	Nez Perce
Mary Mellema	BOR
Tony Norris	BPA
Lisa Wright	COE
Charles Morrill	Washington
Jim Litchfield	Montana
Doug Baus	COE
Paul Wagner	NOAA
Makary Hutson	BPA
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Russ Kiefer

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