

COLUMBIA RIVER REGIONAL FORUM

TECHNICAL MANAGEMENT TEAM

March 9, 2011

FACILITATOR'S SUMMARY NOTES

Facilitator: Robin Gumpert

The following notes are a summary of issues that are intended to 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/Notes

TMT members reviewed the 2/23 Official Meeting Minutes and Facilitator's Notes. With no suggested changes, they were considered final.

Chum Emergence Model

Dennis Schwartz, COE, provided an overview and update on the development of a chum emergence model to support decision-making around chum operations in the spring and fall. He said he had shared the information at FPAC and that the model was being developed by SRWG and reviewed through the AFEP process. The following bullets reflect highlights of his presentation:

- The COE worked with PNNL on the predictive model.
- It focused on timing of emergence and the interface of emergence with spill at Bonneville.
- 2006-2007 data was used to develop the model and it has the capacity to be updated with real time data.
- 932 accumulated thermal units is the criterion for determining 50% emergence in the study area, the Ives Island channel. That number was determined based on lab emergence studies.
- Tests of the model so far have shown actuals to be within two weeks of the pre-season estimates for emergence.
- The COE is exploring the possibility of placing sensors in other spawning areas to capture a more complete spawning/emergence picture (as low as 9% of chum spawning occurred in the Ives Island mapped area).
- The COE also found that using an 11.5 feet tailwater elevation at Bonneville is sufficient to protect spawning chum this year – with 16 of 18 redds protected.
- Next steps with model development include an additional year of testing TDG levels in the lab to determine impacts of TDG exposure up to 130%. So far, tests have shown emerged chum to have considerable tolerance to elevated TDG levels.

Questions and comments:

- This tool will be most useful during low flow years.

- Is there an opportunity to tour the lab? Response: Dennis is willing to coordinate a field trip to the lab if there is interest. TMT members will discuss this off-line and work directly with Dennis on this.
- What is the applicability to other fish, in terms of the findings around tolerance to higher TDG levels? Response: These findings are specific to chum.
- Are you tracking temperatures during spill? Response: Yes, and, temperatures are not typically an issue of concern for the chum.

Water Supply Forecast

Steve Barton, COE, provided updated water supply forecast information, starting with RFC forecasts: Above Grand Coulee, the forecast showed 107% of normal for the water year; above Ice Harbor, 115% of normal; and above The Dalles, 107% of normal. All areas saw lower water supply for the first three weeks of February and a sharp increase later during the month.

The snow map showed increases in snow in Washington and Oregon in late February, bringing those areas of the basin back to near normal snow pack, along with the rest of the Columbia and Canadian basins.

Action: Steve said he would post the SNOTEL map on the TMT web page later today.

Steve went on to discuss the updated water supply forecasts – all showed normal to near normal precipitation with an assumed 110% of normal precipitation for the month of March.

Dworshak Operations

Steve Barton, Division COE and Steve Hall, Walla Walla District COE, shared an update on Dworshak operations. Based on the latest forecasts showing a water supply volume ranging between 2.7 and 3.3 MAF, the current flood control target for the end of March was currently 1445' (using the Principle Component forecast it is 3.3 MAF which is above the average of the various other forecasts). Walla Walla District submitted a deviation request to target 1479.9'. The deviation request and flood risk analysis were being discussed internally by the COE, and a March target elevation at the project would be determined soon. The COE planned to monitor and make decisions based on the forecasts, risk analysis, observed conditions and multiple needs of the system. Currently, the project was operating at 12.5 kcfs outflows which the COE said allows for flexibility to operate toward either flood control target elevation. And, Steve Barton acknowledged that a decision will need to be made soon.

Action/Next Steps: The COE will complete its risk analysis and internal discussions, and follow up with TMT via email as to the resulting decision about the target elevation and associated operation at Dworshak.

Question: Is the COE considering a flood control shift to Grand Coulee? Response: The risk analysis assumes no flood control shift in March. With the specific constraints on Grand Coulee due to drum gate maintenance, and given the above average water year, a

shift is not as desirable – though it is not necessarily off the table for later consideration once the risk analysis has been completed and a flood control target at Dworshak has been determined.

Fish Operations Plan

Dan Feil, COE, updated TMT that the draft Spring Fish Operations Plan (FOP) had received many comments since it had been posted for review, and that the COE was working to incorporate the comments. Given this, the final FOP would not be submitted to the court this Friday as had been previously thought; Dan suggested the final would be out and posted next week. Rick Kruger, Oregon, said they had submitted comments to the COE and requested that they be posted to the TMT page. He commented particularly that Oregon objected to the proposed spill plan at John Day.

Next Steps/Action: The final FOP will be posted to the TMT web page and included as Appendix E in the Fish Passage Plan. Comments from Oregon will be linked to today's agenda under the Fish Operations Plan agenda item. Oregon requested that the COE respond in writing directly to the comments rather than just via the final plan. Dan Feil acknowledged this request. TMT will revisit the final plan at their next meeting, scheduled for 3/23.

Operations Review

Reservoirs – John Roache, Reclamation, reported on projects: Grand Coulee was at elevation 1257.65' and drafting toward spring targets for flood control and drum gate maintenance. Hungry Horse was at elevation 3514.33', with 6.3 kcfs outflows. Steve Barton, COE, reported on projects: Libby was at elevation 2384.3', with 3 kcfs inflows and 16.3 kcfs outflows. Unit 5 is out due to a brake outage so the project is operating with 4 units and will continue as such over the next couple months. Given that, a mid-March flood control target deviation request has been submitted and the project will target instead an end of month elevation. It was noted that there is a disparity in the forecasts at Libby similar to what was seen at Dworshak and the COE was asked about their different approach for managing the disparity at this project. Steve Barton suggested that given the flexibility at this project, they were confident in the 2364' end of March target. Albeni Falls was operating at 24 kcfs inflows and 22.2 kcfs outflows, and was currently at elevation 2055.3'. Dworshak was at elevation 1492.8', with 3.8 kcfs inflows and 12.5 kcfs outflows. Lower Granite day average outflows were 50.9 kcfs/54.2 kcfs weekly average; Priest Rapids day average flows were 133.3 kcfs/142.5 kcfs week average; McNary day average outflows were 206.5 kcfs/209.9 kcfs week average; and Bonneville day average outflows were 216.2 kcfs/217.2 kcfs week average.

Fish – Paul Wagner, NOAA, reported that juvenile sampling had begun for the season at Bonneville and at the traps in Snake River tributaries. So far, a few yearling chinook and about 200 subyearling/day were being observed at Bonneville. Lamprey counts were being conducted for the first time at Bonneville and about 200/day were being observed at the project. Lamprey will be counted at other projects also. A question was asked about kelt, and Dennis Schwartz, COE, reported that one had been observed at Bonneville so

far. FPOM would be discussing the kelt study tomorrow (3/10) and would have a summary. Kelt operations will be captured in an appendix to the Fish Passage Plan.

Power system – Nothing to report at this time.

Water quality – Laura Hamilton, COE, reported that the fixed monitoring stations were coming on line at the Lower Granite forebay and at Camas/Washougal.

Next Meeting, March 23, 9:00 am

Agenda items include:

- Hanford Reach Update
- Water Supply Forecasts – Mid month updates
- Dworshak Operations
- Final Fish Operations Plan
- Spill Priority List
- BPA Emergency Action Plan List
- MOP Operations/Navigation Plan
- Maintenance Updates
- Operations Review
- Other?

Columbia River Regional Forum
TECHNICAL MANAGEMENT TEAM OFFICIAL MINUTES

March 9, 2011
Notes: Pat Vivian

1. Introduction

Today's TMT meeting was chaired by Steve Barton, COE, and facilitated by Robin Gumpert, DS Consulting. Representatives of USFWS, Washington, Oregon, Idaho, COE, NOAA, BPA, BOR, CRITFC, Umatilla Tribe, USFWS and others attended. This summary is an official record of the proceedings, not a verbatim transcript. Any questions or comments should be directed to the TMT chair.

2. Review Meeting Minutes for February 23, 2011

There were no comments today on either the facilitator's notes or the official minutes for February 23. The official minutes were posted yesterday; any comments should be presented at the next TMT meeting.

3. Chum Emergence Model

Dennis Schwartz, COE Portland fish passage team, gave a presentation on COE and SRWG joint development of a model for predicting chum emergence at Ives Island below Bonneville. Schwartz had previously given the presentation to FPAC on this new tool for making chum-related decisions.

The model uses a spatial pattern of riverbed temperatures over time to predict 10%, 50% and 90% emergence dates for when redds reach 932 temperature units, the point at which fry were assumed to emerge. The model is being tested by comparing the preseason estimates to actual emergence dates. In 2010, emergence happened about 2 weeks earlier than predicted, and it looks like the same phenomenon will recur this year. The study has found that cumulative ATU exposure is a consistently reliable predictor of emergence.

Another finding is that chum vary their spawning locations widely each year, meaning the model doesn't have data to predict emergence at some redd locations. Many of the GPS-mapped redds are in the hyporheic zone, where cooler river flows mix with warmer water upwelling in the riverbed. Chum are apparently good at finding such spring-fed locations to spawn. However in 2009 only about 50% of redds were laid down in the mapped study area, and in 2010 the rate was down to 16%. The study team might need to consider moving some of the sensors to new spawning grounds.

The chum spawning model can provide information to decision makers each year on the elevation at which river flows should be maintained to protect

chum redds until emergence, as well as the dates on which 10%, 50% and 90% emergence can be expected. This year, the predicted 50% emergence date was April 6. The actual date is expected to be about 2 weeks earlier due to cooler temperatures in the hyporheic zone. A tailwater elevation of 11.5 feet below Bonneville is estimated as sufficient for redd protection this fall. Schwartz showed TMT a graph of pre-season chum spawning estimates for 2010-11, attached to this item on today's agenda.

Questions and discussion: Rick Kruger, Oregon, asked what the temperature differential is across the Ives Island south channel. About 3-4 degrees C, Schwartz said.

Paul Wagner, NOAA, said the model will be an extremely useful tool in low-water years. This year it probably won't be needed because plenty of water is expected above elevation 11.5 feet, and depth compensation in April will likely protect fish from the TDG effects of spill. Schwartz said the final research for the chum emergence model is laboratory exposure to TDG levels up to 130% at various life stages. The first year of the study found chum are tolerant of TDG levels up to 125% on emergence. This year's experiment will study even higher levels such as 130%. There are clearly no problems for chum at 120% TDG, so there should be no problem with exceeding 105% in the Bonneville tailwater when the state water quality waivers take effect for spill season.

Charles Morrill, Washington, asked how deep the egg pockets are in laboratory exposures. Researchers have the ability to vary the pocket depth, Schwartz replied. For this study, fry are exposed to the average egg pocket depth found in the river. Ruth Burris, PGE, asked whether 120% TDG tolerance is limited to chum. It's very species-specific to chum at the sac fry emergence stage. Chinook and other species are not as tolerant of high gas levels.

Scott English, COE, asked whether researchers continue collecting temperatures after spill starts April 10. Yes, real-time sensors in the riverbed collect real-time data on gas and temperature exposures, Schwartz said. Once spill starts, river flows increase which also increases mixing in the hyporheic zone, where water gets forced into the gravel. At that point there could be an issue with gas levels, but temperature won't be a problem.

Wagner noted that adding depth to the river tends to extend incubation time. During spill there's typically enough depth compensation that TDG isn't a problem except in low flow years. There can be problems in low flow years with releases for the Spring Creek Hatchery and the Bonneville corner collector operation for kelts.

Schwartz offered to set up a tour of the chum laboratory in Richland if TMT members are interested. The COE will continue to input data into the chum

spawning model every year, and TMT will follow development of the model as it goes through SRWG and AFEP review.

4. Water Supply Forecast

Steve Barton, COE, gave an update on the latest water supply forecasts.

RFC forecasts: From the main TMT website, Barton went to the RFC site's water supply forecast page and clicked on "precipitation summary" to show TMT the weekly divisional precipitation summary for water year 2011 (last updated 2/22/11). Based on those data, precipitation forecasts for the water year are:

- Columbia basin – 107% of normal.
- Snake above Ice Harbor – 115% of normal
- Northern Idaho – 97-107% of normal
- Western Montana – 114-128% of normal, has good snowpack

COE forecasts: Barton gave TMT snowpack information from the latest SNOTEL map which will be posted to the TMT site after today's meeting. Snow in the Oregon and Washington Cascades was below normal in January but is back to normal now, with the exception of the central Washington Cascades at 70-80% of normal. British Columbia snowpack is near normal with the exception of the far north of the basin near Mica Dam, which has 85% of normal.

Barton and John Roache, BOR, gave the latest water supply forecasts for individual projects. The general theme is normal to slightly above normal conditions throughout the basin:

- Libby – 7.1 maf, April-August, 121% of normal
- Libby (RFC) – 25 maf, April-August, 105% of normal
- Dworshak – 3.3 maf (see next agenda item for further discussion)
- Lower Granite – 21.6 maf, April-July, 100% of normal
- Grand Coulee – 66.1 maf, April-September, 103% of normal
- The Dalles – 92.3 maf, April-August, 99% of normal
- Hungry Horse (BOR) – 2,534 kaf, March-July, 121% of normal

5. Dworshak Operations

Barton gave TMT an update. Dworshak is discharging 12.5 kcfs or full powerhouse flows. The strategy behind 12.5 kcfs releases is to provide flexibility in either direction without risking discharges in excess of 110% TDG. The COE uses the principal components forecast (i.e. the average of all water supply forecasts) for its flood control guidance. The principal components forecast for Dworshak is 124% of normal, Steve Hall, COE Walla Walla, reported – 3.3 maf (3,329 kaf). Other Dworshak forecasts are:

- ESP – 3,077 kaf.
- Walla Walla (regression) – 2,849 kaf
- NRCS – 2,719 kaf
- RFC – 2,900 kaf

Barton said the updated Dworshak principal components forecast will be posted to the TMT website tomorrow along with updated flood control guidance going forward. The current guidance for Dworshak is elevation 1,445 feet by end March. The COE is working with the Walla Walla district to flesh out its deviation request for a 1,479.9-foot elevation, or 39 feet above the end of March flood control. The deviation request is consistent with a water supply forecast of 2,970 kaf, Hall noted. The COE will monitor the water supply at Dworshak closely.

Tom Lorz, CRITFC, asked whether the COE is considering a flood control shift to Dworshak from Grand Coulee this year. No, Barton said, because the water must be returned per the rules of flood control shifting, and Coulee can't accept a return due to ongoing drum gate maintenance. The COE will investigate the potential for a shift on the basis of flexibility around its flood control risk analysis for Dworshak. By the end of this week or early next week, the COE will summarize the latest flood control information in an email to TMT members. TMT will revisit Dworshak operations at its next meeting March 23.

6. 2011 Fish Operations Plan

Dan Feil, COE, led a discussion. The COE received a number of comments on the draft FOP recently released. The number of comments means the COE won't be finished incorporating them into the FOP by March 11 as planned. The COE expects to release a revised draft next week. It will probably be a final version due to time constraints, and it will be posted to the TMT page as usual. The final FOP will also be posted to the Fish Passage Plan page as appendix E.

Rick Kruger, Oregon, stated that Oregon objected to the proposed 30% spill operation at John Day via RIOG. Oregon has submitted comments on the FOP and wants a response to the comments in writing. The comments cover a range of topics but the primary concern is John Day spill. Kruger requested that Oregon's comments be posted to the TMT web page as attachment A to this agenda item; Barton said he will post them as requested. TMT will revisit the FOP at its next meeting March 23.

7. Operations Review

a. Reservoirs. Grand Coulee is at elevation 1,257.65 feet. Wagner asked whether the COE has considered a Dworshak-Grand Coulee shift and Barton replied that it's not off the table. The COE is examining the effect drum gate maintenance will have on Grand Coulee's ability to accept a shift. Hall added that

a shift is generally not advisable in water years of 3 maf or greater such as this year. In high flow years, inflows are likely to exceed powerhouse capacity, making it difficult to draft the water back out according to the rules of the shift.

Libby is at elevation 2,384.3 feet, with 3.0 kcfs inflows and 16.3 kcfs discharges. The project is running on 4 units because unit 5 is out of service until the end of May due to brake failure. There is a deviation request for a flood control elevation of 2,364.3 feet by mid March. Instead, the COE will float the target for the end of March flood control elevation with the 4 units available. Wagner noted the COE forecasts for both Libby and Dworshak differ from other forecasts, and a deviation request is being made at Dworshak. Does that mean the COE is confident of its Libby forecast? Barton said yes, the only deviation now is the mid March flood control elevation, which is unreachable without full powerhouse capacity. In light of the situation, the COE has the flexibility to float over the mid-month target this year and aim for the end of March target of 2,364.3 feet, same as the mid-month target. The COE will continue to track all Libby forecasts closely, including the early bird and mid-month.

Hungry Horse is at elevation 3,414.33 feet. Albeni Falls is at elevation 2,055.3 feet with inflows of 24 kcfs and discharges of 22.2 kcfs. Dworshak is at elevation 1,492.8 feet with inflows of 3.8 kcfs and releases of 12.5 kcfs. Barton reminded TMT the Dworshak flood control curves are not up to date.

Lower Granite is releasing 50.9 kcfs; last week's average was 43.2 kcfs. Priest Rapids is releasing 133.3 kcfs; last week's average was 145.4 kcfs. McNary is releasing 206.5 kcfs; last week's average was 209.9 kcfs. Bonneville is releasing 216.2 kcfs; last week's average is 217.2 kcfs.

b. Fish. Bonneville is the only project sampling for fish at present, Wagner reported. Sampling began March 2 and a few yearling Chinook have been seen. Russ Kiefer added that Idaho is starting to put smolt monitoring traps in Snake River tributaries. Passage is minimal at this point except for subyearlings, which are passing Bonneville at a rate of a few hundred fish per day. This is the first year lamprey passage is being tracked. Lamprey juveniles are being observed at Bonneville at the rate of about 100 per day. As of March 4, one kelt had been observed. Charles Morrill, Washington, asked whether a written summary of kelt activity at Bonneville is available. Yes, in the decision matrix of appendix A to the FPP, Schwartz replied.

c. Power System. There was nothing to report today.

d. Water Quality. Fixed monitoring stations are beginning to come on line in preparation for spill season, beginning with Little Goose forebay and the Camas-Washougal gage, Laura Hamilton, COE, reported.

3. Next Meetings

The next TMT meeting will be on March 23. The agenda will cover Dworshak operations, the spill priority list, a Hanford update, the BPA emergency action plan, mid-month water supply forecasts, the final FOP, and a report on reopening the river for navigation. The following TMT meeting will delve into the specifics of MOP operations.

Subsequent TMT meetings were scheduled for alternate weeks with additional meetings or conference calls as needed. Regular meeting dates are April 6 and 20; May 4 and 18; and June 1, 15 and 29.

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Doug Baus	COE
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