COLUMBIA RIVER TECHNICAL MANAGEMENT TEAM
January 31, 2018
DRAFT 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/

Dworshak Operations
Steve Hall, Corps, reported on Dworshak operations and conditions. The current forebay elevation is 1,529.2 feet. Outflows have been about 4 kcfs until noon on 1/30/18, when the project increased outflows to 6 kcfs. The increase was in response to NWRFC forecasted inflows, which changed, showing a dramatic increase expected within 4-10 days. From its previous prediction of a modest inflow event at the weekend, peaking at 23kcfs, the forecast now suggests heavier rainfall, which increases the forecasted inflow to 44kcfs.

Ambient temperatures are predicted to stay low until Sunday, when a substantial increase is forecast. Basin freezing level is forecast to be 8,000 to 9,000 feet, which will allow for snow accumulation in the higher elevations, however, runoff in the lower. It is also expected that there could be a rain on snow event. Steve noted that conditions are being influenced by the atmospheric river, much like 2017. The precipitation and temperature forecasts show disparity between the short and longer term, with the 8-14 day showing below average precipitation and above average temperatures and the 30 and 60 day forecasts showing below average temperatures and above average precipitation.

Steve shared that Unit 2 is expected to return to service from annual maintenance on February 9, and at this point the plan is to increase outflows to ~11kcfs in order to meet flood control targets. These projections however, do not account for the 44kcfs inflows.

The increase to 6kcfs out has affected TDG levels. In-river TDG levels as of 1/30/18 were below 110%, but increased to 114.5 after the increase in flow. Dave Swank, USFWS, reported that hatchery TDG levels had increased from about 99% to 101% after increased flow. Jay Hesse, Nez Perce, predicted that increased flows to 11kcfs would raise TDG levels in the river to 118%, and in the hatchery to 103%. Steve noted that much depends on temperature and pressure, however, the project is attempting to operate in a way that keeps TDG levels near 100%. Both Jay and Steve noted that moving this water out earlier is preferred, as temperatures will only increase as the season passes, causing increase to TDG.

Steve also reported there will be a possible delay in bringing Unit 3 back to service. Unfortunately, approximately 300 of the 500 stator bars have been installed incorrectly and need to be removed and reinstalled. The removal process is difficult and may damage the bars, and the project has only 15 spare. If more than 15 bars are damaged it will take about 4 months to fabricate new ones, which would add that time to anticipated project completion. The Corps will keep TMT informed on this situation as they receive more information.

- ***ACTION***: The Corps will hold 6 kcfs outflow at Dworshak until February 8th, at which point Unit 2 is expected to return to service and they will increase to around 11kcfs out.

Snake and Clearwater Rivers Confluence Surveys
Steve Hall informed TMT that the annual Clearwater and Snake Rivers confluence survey data has been posted on the Corps website. Survey results will be discussed at TMT at a future meeting.

The next TMT meeting will be a conference call on February 7 at 9:00.

Columbia River Regional Forum
TECHNICAL MANAGEMENT TEAM OFFICIAL MINUTES

January 31, 2018
Minutes: Pat Vivian

1. Introduction

Representatives of the Nez Perce and Colville tribes, BPA, USFWS, BOR, Montana, NOAA, the COE, CRITFC/Umatilla, Yakama, NPCC, Idaho, Oregon and others participated in today's TMT conference call facilitated by Emily Stranz, DS Consulting, and chaired by Doug Baus, COE.

2. Dworshak Operations

2a. Hourly Data. Steve Hall, COE Walla Walla, reported. Dworshak reservoir is at 1529.2 ft elevation, discharging inflows of 6 kcfs which keeps the pool elevation steady. Discharges were increased yesterday due to a predicted increase in inflows from 6 kcfs to 44 kcfs.

2b. Total Dissolved Gas Report. Yesterday TDG values downstream of Dworshak were below the 110%, but when releases were bumped up to 6 kcfs at noon, TDG saturation went from around 99% saturation to the current reading of 114.5%.

2c. DWR National Fish Hatchery Collection Channel Total Dissolved Gas. Dave Swank, USFWS, reported that TDG levels in the hatchery are at 101.6% saturation, up from 99.5%. Last year, hatchery procedures were able to keep TDG levels in the raceways below 100% saturation when DWQI was at or below 115%, which would be desirable at present, Hall said. The COE will look into this.

2d. NWRFC Dworshak Dam Inflow Forecast. The RFC's quantitative precipitation forecast is showing 2 inches of rain, with inflows peaking around 44 kcfs on February 4-5. This is why the COE increased DWR discharges at noon yesterday. According to the forecast, an atmospheric river is coming through the basin, which could cause snow at 8,000-9,000 ft elevation to melt. Low elevation runoff similar to that of March 2017 is likely. The COE is watching the situation closely and feels it's prudent to move as much water as possible now. Atmospheric rivers are unstable, so the situation could change.

2e. Anticipated Dworshak January-March Operations. A plot of Dworshak operations for the next three months is linked to today's agenda to illustrate the COE strategy for short-term and long-term operation of Dworshak. With unit 2 out of service for annual maintenance, outflows of 6 kcfs will continue through February 8. When unit 2 returns to service on February 9, Dworshak will probably shift to 11-12 kcfs out for the foreseeable

future, in order to meet the flood control targets for the end of February and March, and April 15.

However, the modeling didn't take into account the predicted 44 kcfs inflow spike and will be revised accordingly. The reservoir will probably fill for a bit as a result of the inflow spike.

Russ Kiefer, Idaho, asked whether there's an end of February elevation target for DWR. Based on the early bird forecast for February, the end of month elevation range will be around 1523 ft, and the end of March target around 1510 ft. The modeling uses 1983 inflows of 2.7 maf, similar to inflow projections of 2.7-2.9 maf for 2018.

There's a great deal of uncertainty in the long range forecast, Hall emphasized. The COE RCC inflow forecast is 80% of the RFC's prediction. The RFC 6-10 and 8-14 day climate forecasts are showing a higher probability of below normal precipitation and above normal temperatures. But the one month and three month forecasts call for the opposite – above normal precipitation and below normal temperatures. So the COE believes it's prudent to move as much water as possible before TDG levels have much of an impact.

Dave Swank, USFWS, asked why the COE used 80% of the 10 day forecast to run the model. The Corps forecast was 80% of what was shown in yesterday's NWRFC10 day forecast, according to a trend seen in recent peaks. Hall noted the 44 kcfs inflow prediction isn't reflected in this model.

Jay Hesse, Nez Perce, asked what TDG levels in the hatchery are likely to be after the February 9 increase to 11 kcfs out, given that current releases are creating levels of 101-102% TDG saturation in hatchery raceways (Hesse anticipates levels of 103-104%). Theoretically TDG levels should remain the same with double the powerhouse capacity, Hall replied. TDG is heavily dependent on temperature. The COE is watching this closely. Hesse asked whether TDG levels are being tracked at the Peck gage; Hall said he will get that started as soon as possible.

Ruth Burris, PGE, asked how much water will pass through the generators when DWR unit 2 comes back on line; Hall said about 4.6 kcfs. Charles Morrill asked whether the RCC will use its 80% forecast of 44 kcfs inflows; Hall said yes, but this time of year is particularly challenging in terms of predicting runoff and inflows.

Erick Van Dyke, Oregon, asked when DWR unit 3 is expected to return to service. There's some bad news in that the contractor has installed 300 of the stator bars backward, which means they will have to be reinstalled, Hall replied. If more than 15 of the bars are damaged during reinstallation, the contractor will need to manufacture more bars, which could push the return to service date out another 4 months. Hall will keep TMT updated on this.

Meanwhile, the Dworshak operation moving forward is 6 kcfs outflows, producing about 115% TDG in river, through the end of the day on February 8. Once unit 2 is back in service, outflows will increase to about 11 kcfs.

3. Snake and Clearwater Rivers Confluence Surveys

Hall showed TMT annual survey data collected at the confluence of the Snake and Clearwater rivers and other key points in the Snake. The data are posted to today's agenda (click the Confluence of the Clearwater and Snake tab under 2017 Channel Hydrographics).

The data indicate when a critical water depth of 14 ft was available at the confluence, according to a channel survey done when Lower Granite was at 733 ft minimum operating pool. The COE is reviewing the data and is not yet ready to form conclusions; sometime in February this topic will be added to TMT's agenda. In the meantime, the data are available for TMT members to peruse.

Next TMT Meeting

TMT will meet next in a conference call February 7.

Name	***Affiliation***
Jay Hesse	Nez Perce
Sheri Sears	Colville
Scott Bettin	BPA
Dave Swank	USFWS
Peter Cooper	BOR
Jim Litchfield	Montana
Paul Wagner	NOAA
Doug Baus	COE
Julie Ammann	COE
Tom Lorz	CRITFC/Umatilla
Charles Wiggins	DSC
Steve Hall	COE Walla Walla
Wayne Jousma	COE Walla Walla
Alfredo Rodriguez	COE Walla Walla
Michael Bryant	CBB
Dan Turner	COE
Dave Benner	FPC
Tom Iverson	Yakama
Laura Hamilton	COE
Eric Chow	COE
Lynn Palensky	NPCC
Russ Kiefer	Idaho
Erick Van Dyke	Oregon
Ruth Burris	PGE