COLUMBIA RIVER TECHNICAL MANAGEMENT TEAM
October 5, 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.

Preliminary Survival Estimates
Paul Wagner, NOAA, shared the 2016 preliminary survival estimates for the passage of spring-migrating juvenile salmonids through the Snake and Columbia Rivers. He noted that these are preliminary estimates and the NW Fisheries Science Center will provide final survival estimates in their report expected to be released in February/March. Paul then highlighted data from Tables 1-7 found in the memorandum on the TMT website. He noted that the confidence intervals for 2016 are better than in recent years.

Spring Chinook hatchery survival to Lower Granite was high compared to the previous ten years. While Dworshak survival rates dipped compared to 2014, other hatcheries in the basin fared well. Paul noted that it was surprising to see survival estimates decline from McNary to John Day; since 2007 survival has been 86% or higher; but survival fell to 72% in 2015 and 79% in 2016. Hatchery and wild steelhead saw declines in 2016 between John Day and Bonneville, at 71%, compared to 84% or higher since 2012. Steelhead numbers were above average for the entire Snake River system, while trap-Bonneville was near average. Steelhead estimates for the mid and lower Columbia were overall below average, while yearling Chinook salmon survival estimates were more in line with the 17-year average. For Snake River sockeye, survival estimates were expected to be below average due observed fungus on the fish at Lower Granite. The Lower Granite to Bonneville survival estimate of 11% is the second lowest survival estimate in the 20-year sample.

Paul noted that in 2016 the hydro-system experienced early runoff due to snowmelt: peak runoff occurred around May 15th and again around May 20th. Typically, rapid snowmelt occurs in mid-June or later, but in 2016 fish in the system experienced high flows early on in the spring and low flows during the early summer months. Water temperatures in 2016 were warmer than the average, but cooler than temperatures in 2015. Spill volume was near average until May 15th, but fell below average with declining flows. However, spill as a percentage of flow increased in late May. Smolt passage at the projects was earlier than the average and by May 1st, the peak of yearling Chinook and steelhead passage at Lower Granite had occurred.

Transport of yearling Chinook (22%) and steelhead (22-23%) was higher in 2016 than in 2015, but still below prior years. The increase in transport was largely due to the early migration (before May 1st) of both Chinook and steelhead. Additionally, overall travel times were faster in 2016 compared to prior years. For both steelhead and spring Chinook, travel times were influenced by the high flows early in the season, however, times increased as flows decreased towards the end of May. Paul pointed to the use of RSW and 24-hour spill as contributing to the faster travel time. In general, the Columbia experienced similar trends to the Snake River, with flows peaking in mid-April and above average water temperatures.

Tom Lorz, Umatilla, noted that year survival estimates are calculated using weekly cohorts. He asked if the NW Science Center weights the cohort given that the majority of fish, steelhead in this case, have passed by May 1st. Paul stated that the final report will provide more information on data analysis, including weekly breakdowns. Laura Hamilton, COE, asked if report findings would influence future river operations. Paul noted that this information provides insight on past river conditions and lessons learned regarding how the system was managed for those conditions. Charles Morrill, WA, suggested that the report include an appendix with additional tables that recalculate averages based on a 10-year average (2007-present). He noted that this data would highlight recent improvements in spill and passage.

- **ACTION:** Paul will circle back to TMT with the final NW Science Center survival estimates report when it is available. Paul will also pass TMT member's data analysis recommendations to the Science Center for consideration.

Water Management Plan

Doug Baus, COE, reminded TMT that the first draft Water Management Plan is available on the TMT website (posted September 30th). Suggested edits, provided in "tracked changes", are to be submitted to Mary Mellema, Scott Bettin, Tony Norris, and Doug Baus by October 31st. A second draft will be posted to the website by November 16th. Please see the TMT website for more detail on when to submit comments. Tony Norris, BPA, noted that two corrections will be made to the current draft: it will be clarified that Grand Coulee drumgate maintenance occurred in 2015 and 2016; there will also be clarifications around the dry water year treaty storage water use in 2016 and 2017.

- **ACTION:** TMT members should provide suggested edits to the 2017 Draft Water Management Plan via "tracked changes" by October 31st. Edits should be sent to Mary Mellema, Scott Bettin, Tony Norris, and Doug Baus. The second draft will be posted on November 16th.

The next TMT meeting will be a face to face meeting on October 19th.

Columbia River Regional Forum
TECHNICAL MANAGEMENT TEAM MEETING OFFICIAL MINUTES

October 5, 2016
Minutes: Pat Vivian

1. Introduction

Representatives of the Colville Tribe, Washington, Idaho, Warm Springs Tribe, BOR, BPA, NOAA, COE, Umatilla Tribe, Yakama Nation and others participated in today's TMT conference call. Doug Baus, COE, chaired the meeting with facilitation by Emily Plummer, DS Consulting.

2. Preliminary Survival Estimates

Paul Wagner, NOAA, led TMT through the NMFS Science Center's initial findings of how juvenile salmonids fared during 2016 passage season, summarized in a memo linked to today's agenda. Wagner focused his presentation on the tables in the middle section of the memo. The Science Center will publish a final report in February or March 2017 with more accurate estimates than these preliminary findings:

- Table 1. Estimated survival rates for yearling chinook – This table gives survival estimates for yearlings from various hatcheries throughout the upper Snake basin. Survival rates are based on arrival from the hatchery to Lower Granite, with lower survival generally reflective of longer distances traveled. The poorest rate was from Catherine Creek at 37% (in 2014 only 26% survived). In general, hatchery survival to LGR was high this year relative to the past 10 years.

- Table 2. Survival probability estimates for yearling chinook – Survival to the Snake projects was good this year relative to last year and the 18 year historical average. Survival rates for various reaches were 91% from LGS to LMN in 2016 vs. 92% for the 18 year average. From MCN to JDA, however, 79% survived vs 87% for the 18 year average. This was a departure from high survival rates in 2007 (92%), 2008 (100%) and 2010 (95%). From JDA to BON, 87% survived, more than the 18 year average

- Table 3. System survival estimates for spring chinook – The reach of highest interest is LGR to BON, where survival was 50% vs. 52% for the 18 year average.

- Table 4. Survival probability estimates for steelhead – Only steelhead survival from the trap to LGR approached 100% (the 18 year average was 95%). Survival through the Snake was high relative to the 18 year

average. From MCN to JDA survival was 92% in 2016 vs 82% for the 18 year average. However, survival from JDA to BON was only 70% which is less than the 18 year average and in recent years (100% in 2013 and 90% in 2014).

- Table 5. System survival estimates for steelhead – This table gives estimated survival rates for steelhead throughout the whole basin. From LGR to BON, 40% of steelhead survived vs 46% for the 18 year average. In 2014 steelhead survival was 75% and in recent years the expected rate has been around 60%. This year steelhead survival from the trap to BON was just 44% which is close to the 18 year average but less than in recent years (e.g. 77% in 2014).

- Table 6. Upper Columbia survival estimates to BON for chinook and steelhead – This looks at survival from various hatcheries upstream of MCN. The average survival rate for yearling chinook was 61% vs. the historic average of 55%. Survival from MCN to JDA was 85.7% which is below the historic average of 90%. From MCN to BON it was 80%, the same as the 18 year average. For steelhead, the survival rate of 41% was almost identical to the 18 year average. From MCN to JDA the survival rate was 77%, down from the 18 year average of 89% and considerably lower than the past 6 years. From JDA to BON, 63% of steelhead survived vs the 18 year average of 82.7%. From MCN to BON 48% of steelhead survived vs 73% for the 18 year average.

- Table 7. Sockeye survival from LGR to BON – Sockeye arrived at LGR with fungus this year, apparently due to problems with truck transport. From LGR to MCN survival was 52% vs. 63% for the 18 year average. From MCN to BON it was 22% vs 55% for the 18 year average. From LGR to BON only 11.9% of sockeye survived, one of the lowest rates seen and well below the 18 year average of 30%. However, upper Columbia sockeye did somewhat better. From Rock Island to MCN survival was 80%, an improvement over the 18 year average of 67%. From MCN to BON survival was 54%, less than the 18 year average of 73%. From Rock Island to BON survival was 44% vs. 50% for the 18 year average.

Confidence intervals for these preliminary findings were much better in 2016 than recent years, particularly in 2015 when confidence was low. Flows peaked in April 2016, with the next peak occurring May 15. Water supplies dwindled rapidly after May 20 as a result of lower snowmelt than expected. So fish experienced high flows early in the season, with low flows starting in June. Temperatures in 2016 were warmer than the 10 year average throughout most of juvenile migration, and considerably warmer after June 1, but not as warm as in 2015. Spill this year was average until about May 15, when flows began to decline. Smolt passage happened early, with most fish having passed LGR by

May 1 when transport started. This is similar to last year, when runoff and migration also occurred earlier than usual. It resulted in low percentages of transport on the Snake in 2016 – only 20% of yearling chinook and 22%-23% of steelhead were transported. Travel times were faster than usual this year, but slowed when flows began to drop on May 22. Two influences were responsible for faster travel times this year than historically: high flows early in the season, and RSW passage.

When FPAC discussed the Science Center memo, concern was raised as to whether the same trend occurred on the Columbia. Wagner turned to the Dart page which showed that flows in 2016 followed a similar pattern, peaking in mid-April and declining to the 200 kcfs range by June 1. Temperatures on the Columbia were similar to those on the Snake, remaining above the 10 year average from mid-April through July. The tendency of flows to decrease after June affected steelhead passage in particular.

Tom Lorz, Umatilla, asked about the tagging and counting of weekly cohorts in light of early passage timing; Wagner said passage timing will be addressed on a weekly basis in the Science Center's final report, which will be posted on the TMT website. Laura Hamilton, COE, asked whether these Science Center survival data are used to guide river operations. We're out of step with the forecast, Wagner replied; hopefully that will be remedied in future with revised inflow forecasts alongside efforts to shape spring flows as closely as possible to the historic pattern. Charles Morrill, Washington, asked for a separate summary that shows median flows and timing from 2007 to 2016; Wagner will convey that request to the Science Center.

3. 2017 Draft Water Management Plan

The draft 2017 WMP is posted to the TMT page for comments, Baus announced. TMT members were invited to comment in track changes, with comments on the first draft due October 31. A second draft with revisions will be posted November 16.

Tony Norris, BPA, highlighted two changes that will appear in the November 16 draft: (1) Drum gate maintenance was done in spring 2015 and again in 2016, not just 2015 as this draft says; and (2) The last two sentences in Section 9 regarding dry year operations and nontreaty storage will be deleted after "previous year" because the Action Agencies did exercise dry year storage rights in 2016. The Action Agencies have FERC release rights if 2017 turns out to be another dry year. These nuances will be clarified in the next draft.

4. Next TMT Meeting

TMT will meet next in person October 19. Topics on the agenda include an update on Dworshak Dam operations with unit 3 out of service, and upcoming challenges in planning the chum spawning operation at Bonneville.

Name	***Affiliation***
Sheri Sears	Colville Tribe
Charles Morrill	Washington
Russ Kiefer	Idaho
Jen Graham	Warm Springs
Peter Cooper	BOR
Tony Norris	BPA
Paul Wagner	NOAA
Doug Baus	COE
Laura Hamilton	COE
Lisa Wright	COE
Dave Benner	FPC
Tory Hines	DSC
Tom Lorz	CRITFC/Umatilla
XX	Yakama Nation