COLUMBIA RIVER TECHNICAL MANAGEMENT TEAM
April 19, 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 Summaries

The Official meeting Minutes and Facilitator's Summaries for the April 5th and 12th TMT meetings were approved with no additional edits.

Juvenile Transport
Doug Baus, Corps, reported that the 2017 Fish Operations Plan (FOP) calls for fish transport to commence May 1st unless otherwise coordinated at TMT. Paul Wagner, NOAA, reported that FPAC did not recommend a change. He noted that NOAA suggested an earlier start date to gather more information; however, there was not much traction on the idea.

- **ACTION:** The Corps will commence fish collection at Lower Monumental, Little Goose and Lower Granite Dams on May 1st and beginning transporting on May 2nd.

Lower Monumental Dam Barge Dock
Anne Setter, Corps, announced that the Corps plans to award a contract today to authorize repairs to the fish barge dock floating mooring bits at the Juvenile Fish Facility at Lower Monumental Dam. In order to do the work, there will be periods of spill outage as a work barge carries materials across the spillway tailrace to the fish mooring area, consistent with routine operations to ensure safe navigation conditions in the tailrace, as described in the FOP. Work is scheduled to begin on April 20th, and will be completed by April 30th. This is a temporary fix that will be made permanent during the next in-water work season. A memo describing the work is on the TMT web site

Operations Review
Reservoirs -- The BOR and the Corps presented on reservoir conditions. Mary Mellema, (BOR), presented on Bureau of Reclamation projects:

- Hungry Horse: 3,530.7 ft. elevation, with 5.2 kcfs inflow and 8.8 kcfs discharge.
- Grand Coulee: 1,232.6 ft. elevation, with 170 kcfs outflow, 4.8 kcfs spill, and 116% TDG downstream.

Mary noted that at the request of the Washington Department of Emergency Services, BOR will maintain the Grand Coulee reservoir at an elevation of 1,232-1,233ft through noon on Saturday, April 22nd in order to maintain Inchelium Ferry operations. During that time, the County will continue with road re-routing to prepare for when the Coulee draft continues and the ferry is out of service.

Lisa Wright, Corps, presented on Corps projects:

- Libby: 2,368.9 ft. midnight elevation, with 11.1 kcfs inflow and 22.5 kcfs discharge
- Albeni Falls: 2,056.2 ft. midnight elevation, with 54.8 kcfs inflow and 56.6 kcfs discharge
- Dworshak: 1,508.1 ft. midnight elevation, with 15.6 kcfs inflow and 7.5 kcfs discharge
- Lower Granite: average inflows were 124.6 kcfs

- McNary: average inflows were 363.3 kcfs
- Bonneville: average inflows were 379.3 kcfs

Fish—Paul Wagner reported on fish. He noted that adult spring Chinook numbers are low at Bonneville, at 581, or 6% of the ten-year average of 9,349. It was noted that the high flows may be causing a delay. Winter steelhead are wrapping up, with 2,233 for the season, or 69% of the ten-year average. Juvenile passage is underway at Lower Granite, Little Goose (146,000), Lower Monumental and Bonneville (27,000). The Spring Creek release of sub-yearling Chinook was noticed at Bonneville, with 756,000 past. Much of the "sockeye" activity noted in the Snake is likely Kokanee that passed Dworshak during the high rates of spill. Russ Kiefer, ID, reported that IDFG began releasing sockeye smolts yesterday at the Redfish Lake weir and will continue releasing sockeye smolts through next week. Based upon past travel times, IDFG expects to see them showing up at Lower Granite within a week to 10 days after release. Lamprey are doing relatively well, with 400 at Little Goose and a high of 2,760 at John Day.

Paul also reported on gas bubble trauma (GBT). April 10th results at Bonneville were in the 1-3% range, but one fish showed Rank 4 trauma. On April 18th, 31% of fish at the Rock Island Dam site showed symptoms, probably attributable to the shallow water that fish are held in after collection.

Water Quality – Dan Turner, Corps, reported on water quality. He noted that there were data transfer issues, however, the Corps will be uploading the previously missed data. Both Ice Harbor and Little Goose are currently transitioning from involuntary to voluntary spill. All other projects have involuntary spill. The flow forecast calls for an increase in the next few days, and the Corps will be monitoring TDG levels closely.

Power Supply – Tony Norris, BPA, reported there is nothing to report on the power supply.

Chum Research

Todd Hillson, WDFW, gave a presentation on the Department's chum monitoring and evaluation activities. He shared the methodology used to collect and assess data and estimate the chum population in the Columbia River and its tributaries. He reported data showing that last year was "a banner year" for chum, with 45,000 chum returning.

The next TMT meeting will be a conference call on April 26, 2017.

Columbia River Regional Forum
TECHNICAL MANAGEMENT TEAM OFFICIAL MINUTES

April 19, 2017
Minutes: Pat Vivian

1. Introduction

Representatives of NOAA, the COE, BPA, Idaho, Washington, CRITFC/Umatilla, BOR, Nez Perce Tribe, ODEQ and others participated in today's TMT meeting. Doug Baus, COE, served as chair and Emily Stranz, DS Consulting, facilitated the meeting.

2. Review Meeting Minutes – April 5 and 12

The meeting minutes and facilitator's summaries for both dates were approved as final.

3. Juvenile Transport

Paul Wagner, NOAA, reported that FPAC members did not support an earlier start date than May 1 for transporting juveniles on the Snake River, so May 1 is the start date by default. The COE will begin collecting juvenile fish for transport on May 1 at Lower Granite, Little Goose and Lower Monumental, Baus said, unless otherwise coordinated at TMT. Smolt collection will begin at 0700 hours on May 1, with daily barge transport operations starting May 2 at the three Snake projects.

4. Lower Monumental Dam Barge Dock

Ann Setter, COE, reported. Repairs to the fish barge mooring area now in progress may involve barge excursions across the river. This work will take place until April 30, followed by the installation of two temporary mooring bits until a permanent fix can be installed during the next in-water work window. Setter asked if there are any questions or concerns about this work which is required for navigation safety. FPAC's only concern was whether it would result in an extended spill outage, Wagner said. Setter replied that the mooring bits might be transported in one trip across the river, or they might require more than one trip.

5. Population Estimates for Chum

Todd Hillson, WDFW, gave a presentation in response to a TMT request in January for more information on why Ives Island chum survey counts don't match population estimates via carcass surveys in some years. There are various methods for estimating chum populations. Survey counts are impacted by river and weather conditions, visibility and timing (things that effect observer efficiency), mark/ recapture methods have shown a higher degree of accuracy in terms of chum population estimates.

Monitoring the Ives chum spawning area is part of a larger RM&E monitoring program for Columbia River chum populations below Bonneville Dam. The goal is to generate precise and unbiased population estimates, with precision rates (CVs) of 0.15 or less.

The most common methods for estimating the chum salmon population include surveys of live/dead chum and redd counts, peak count expansion, and mark and recapture estimates. The main reason chum numbers don't match up is poor visibility during surveys, due to turbidity or bad weather. Survey life, also known as residence time, needs to be known or derived from other populations or years. Paul Wagner NOAA, asked how the data are corrected for environmental factors. Residence time can be calibrated after the fact, Hillson replied. The data from surveys only represent fish that can be seen. Calibration of these data requires a paired study to establish rates of annual apparent observer efficiency.

Hillson showed TMT several examples of chum survey estimates vs. tagging and capture estimates. (1) The year 2004 was a good one at Ives Island, with a residence time of 8 days. (2) There were data collection issues in 2005 at Hamilton Creek. (3) The same kind of study in 2003 at Hamilton Creek included survey counts and carcass tagging. The year 2003 was a challenging one, with only 20% observer efficiency during chum spawning surveys.

Hillson noted that (4) Ives Island is an especially challenging area for getting an accurate population estimates via mark/recapture methods because many fish just pass through and don't spawn. They may be captured and tagged there, but they don't contribute to the spawning population at Ives. The area is subject to flushing flows at night due to reverse loading, which means few carcasses can be recovered. A similar issue occurs in Hamilton Springs channel, carcasses leave the area before being accounted for. Since 2013, a carcass weir at the bottom end of the channel traps all carcasses for counting and tag recovery, which has led to better population estimates. (5) Hamilton Springs definitely has more chum spawners in recent years.

TMT members asked Hillson several questions. Scott Bettin asked whether the estimate of 42,000 chum spawners for the overall Columbia River population last year is accurate. It's likely actually closer to 45,000, Hillson replied, with almost 80% of those being 4-year fish. For reasons unknown at this time, 2012 was a phenomenally good year for chum spawning and survival. Oregon coastal areas also reported the biggest chum returns seen in 40 years. Bettin asked whether chum might be delisted as threatened; Hillson said populations would need to be more stable for that. Tony Norris asked whether broodstock collection is still necessary; Hillson said it is needed for reintroduction of chum in other areas. Bettin asked whether WDFW plans to remove the trap at Duncan Creek; Hillson said that's likely in future. Natural returns and hatchery returns have rebounded since the mid-2000s, which were a very bad time for chum.

One challenge in getting accurate SARs has been geothermal activity in the Ives Island area, which can place thermal marks on adults if there's a temperature change of 4 degrees C or more. This natural marking was making it difficult to establish project origin, so WDFW switched to Parental Brood Tagging (PBT) to establish origin. That resolved the issue. Another challenge in getting accurate project origin SARs is low carcass recovery rates at mainstem spawning areas. To counter this, tissue samples are collected from live adults captured during

mark/recapture seining for genotyping and inclusion in the BPT analysis. This resulted in increased annual sample sizes for origin determination and detection of project origin adults.

Doug Baus asked whether Hillson had any recommendations for improving the chum operation at Bonneville. A steady flow through the Ives Island area may be better than peak flows, Hillson advised. He noted that a Bonneville tailwater elevation of 15 ft could put chum in less desirable (lower productivity) spawning habitat than an 11.5 ft elevation. This issue needs to be addressed.

6. Operations Review

6a. Reservoirs. Mary Mellema, BOR, and Lisa Wright, COE, reported.

Grand Coulee is at 1232.6 ft elevation, discharging 170 kcfs, of which 4.8 kcfs is spill. TDG levels downstream are 116% saturation. Coulee is operating to maintain elevation 1232-1233 ft to keep the Inchelium Ferry in service at the request of Washington state emergency disaster services. Coulee will remain at elevation 1232-1233 ft through noon April 22, after which a draft rate of 0.8 ft/day will resume.

Charles Morrill, Washington, asked what the prospects are for keeping the ferry in service beyond April 22. Mellema said the ferry is being kept in service to maintain access to communities cut-off by recent road washouts. On April 22, a road detour is anticipated to be complete.

Hungry Horse is at 3530.7 ft elevation with inflows of 5.2 ft kcfs and discharges of 8.8 kcfs. Libby is at elevation 2368.9 ft, with inflows of 11.1 kcfs and releases of 22.5 kcfs. Albeni Falls is at elevation 2056.2 ft with inflows of 54.8 kcfs and releases of 56.6 kcfs. Dworshak is at elevation 1508.1 ft with inflows of 15.6 kcfs and releases of 7.5 kcfs. Lower Granite average releases are 124.6 kcfs. McNary average releases are 363.3 kcfs. Bonneville average releases are 379.3 kcfs.

6b. Fish. Paul Wagner reported.

Adults*:* The spring Chinook count at Bonneville to date is 581 fish, only 6% of the 10-year average. Winter steelhead returns are 2,233 to date, 69% of the 10-year average.

Juveniles: Yearling Chinook passage is underway on the Snake, with index counts of 100,000 per day at both Lower Granite and Lower Monumental, and 146,000 per day at Little Goose. Bonneville is seeing daily counts ranging from 20,000-50,000. Subyearling Chinook passage at Bonneville peaked at 735,000 due to the Spring Creek Hatchery release.

Steelhead are following the same trend as yearling Chinook, with peak passage of 80,000 at Bonneville on April 15. The next day, peak steelhead passage at Little Goose was 149,000, and at Lower Monumental 60,000. The same trend for steelhead is evident at John Day and Bonneville.

At Lower Granite, yearling Chinook passage is above the 10-year average, and at Rock Island, steelhead passage is above the 10-year average. The same pattern holds true at Lower Monumental, John Day and other sites throughout the hydro system.

Russ Kiefer, Idaho, noted that adult Chinook passage at BON can be delayed by high spring flows, so actual counts might be higher than they seem. He reported that IDFG started its Snake River sockeye smolt release April 18, at Redfish Lake, to continue for the next week to 8 days.

Lamprey passage at Little Goose is 400 to date, Wagner reported. According to the DART website, project outflows have been phenomenal for March and early April, with spill levels well above the 10-year average at all federal hydro projects on the Columbia and Snake rivers.

Total dissolved gas: Effects from TDG on juvenile fish are tracked by routine monitoring for gas bubble trauma (GBT) once a week on the Snake River projects except Ice Harbor, and twice a week at McNary and Bonneville dams on the lower Columbia River. TDG readings at Bonneville tailwater have been in the range of 123%. Wagner reported the percentages of fish with GBT symptoms at Bonneville and the lower Snake projects have ranged from zero to 3%. However, 31% of the fish passing Rock Island Dam were found to have GBT symptoms, which is probably a result of spill at Grand Coulee producing 135% TDG levels downstream. Also, Rock Island fish are collected in shallow water, which affects the results.

6c. Water Quality. Dan Turner, COE, reported that three of the water quality measuring sites had missing data on April 15, so the COE was not able to reduce spill caps that day. Currently, Little Goose and Ice Harbor are transitioning between voluntary and involuntary spill, while all other projects in the basin are spilling involuntarily. There has been a slight decrease in TDG levels on the Snake River, but the flow forecast is increasing over the next 10 days and the COE continues to do daily spill review.

Russ Kiefer asked why the spill is high at Ice Harbor. The project has different operations for day and night, with spill cap of 93 kcfs at night and 45 kcfs during the day, Turner said. For awhile, the project has been spilling involuntarily over its nighttime spill cap.

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

6e. Other. Jay Hesse, Nez Perce Tribe, reported on the tribe's coordination with Idaho Power to reduce flows out of the Hells Canyon complex to 50 kcfs for two hours, possibly today or tomorrow, to allow installation of pumps at the Pittsburgh Landing acclimation site. The work needs to be finished by May 4.

7. Next TMT Meeting

TMT will meet next in an April 26 conference call.

Name	***Affiliation***
Paul Wagner	NOAA
Julie Ammann	COE
Dan Turner	COE
Tony Norris	BPA
Russ Kiefer	Idaho
Todd Hillson	WDFW
Charles Morrill	Washington
Aaron Marshall	COE
Lisa Wright	COE
Doug Baus	COE
Michelle Yuen	COE
Laura Hamilton	COE
Ron Thomason	COE
Steve Barton	COE
Charles Wiggins	DSC
Colby Mills	DSC
Scott Bettin	BPA
Tom Lorz	CRITFC/Umatilla
Phone:	
Mary Mellema	BOR
Jay Hesse	Nez Perce
Paula Calvert	ODEQ
Ann Setter	COE
Wayne Jousma	COE
Scott Richardson	Snohomish PUD
Michael Bryant	CBB
Laura Berg	Clearing Up
Shane Scott	PPC