# COLUMBIA RIVER REGIONAL FORUM
# TECHNICAL MANAGEMENT TEAM
June 16, 2010

FACILITATOR'S SUMMARY NOTES
Facilitator: Erin Halton
Notes: 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.

**Meeting Minutes**
Official Minutes and Facilitator Notes from the June 2 and June 9 TMT meetings were open for comment. With no changes made to the 6/2 official minutes or facilitator's notes, they were considered final.

With regards to the 6/9 meeting, the following edits were suggested for the facilitators' notes:

- Libby Operations, second paragraph: Rick Kruger, Oregon, provided language to clarify the specifics of the agreed-to operation and that it remains flow neutral for the Lower Columbia:
    - add: flow neutral "for the lower Columbia River" in the second sentence
    - add: Grand Coulee would fill ½' lower than full "in order to achieve flow neutrality" to the last sentence.
    - **Action:** Kruger and Steve Barton will also coordinate to revise the language just above the Libby polling section.
- Summer FOP: Clarify that the TSWs will be 'removed' at McNary. (note: the COE showed TMT the language that had been submitted to/finalized by the court last week and was posted to the TMT web page.)

The following edit was suggested for the 6/9 official minutes:

- Operations Review, p. 8: remove "a lot" and just say that Grand Coulee "filled."

**Action/Next Steps:** TMT will look to finalize the 6/9 facilitator's notes and official meeting minutes at the 6/23 TMT meeting.

**Weather Update**
Steve Barton, COE, reported on recent changes in precipitation. He shared data for the first 14 days in June: the Columbia River above The Dalles was 241% of normal (vs. 95% for the October-June period); the Snake above Ice Harbor was 191% of normal (vs. 99% of normal Oct-June); and above Grand Coulee was 176% of normal (vs. 87% of normal Oct-June). He also noted that the June final January-July water supply forecast at The Dalles was 74 MAF (69% of normal), but that the forecast had assumed a lesser amount of precipitation than is currently in the system. Departures from normal in terms of inches were as follows: .85" above Grand Coulee, 1.3" above Ice Harbor; and 1.18" above The Dalles.

**Action/Next Steps:** A water supply forecast update will be shared at the 6/23 TMT meeting.

**Libby Operations**

Steve Barton, COE, shared an update on operations at Libby to support sturgeon. The project spilled 5 kcfs on 6/10 and then began ramping up toward 10 kcfs while managing for TDG. Barton said the hourly spill average was 6.8 kcfs and the maximum 12-hour TDG average was 122.87%. Spill is planned to end on 6/17 at which time the project will go to full powerhouse, releasing the remaining sturgeon volume out by the end of June. The COE confirmed its intention to move all the water out for sturgeon by June 30, as planned, and will verify this accounting through its STP runs.

**Action/Next Steps:** An update will be provided to TMT during the 6/23 meeting. Fish data will also be provided by the USFWS at the next meeting.

**Dworshak Operations**

Steve Hall, Walla Walla District COE, reported that the increase in precipitation has improved the likelihood to fill Dworshak. The snow line was at about 6,100 feet, meaning that about 5% of the snow covered area remained. Given the conditions, the COE planned to operate Dworshak at full powerhouse this week (~9.5 kcfs) to slowly and steadily fill the project. Inflows were expected to drop below powerhouse at the end of this week, at which time the COE will refill the project within the top foot of full (elevation 1,600'). The project will pass inflow for the rest of June to meet the desire to release the water into the lower river. Current inflows have been in the range of 10-12 kcfs.

Hall added that the COE will develop its temperature modeling and will share a preliminary run on 6/23 and full analysis at the 6/30 TMT meeting. It was noted that work will be done on the model and TMT may seem some changes as soon as July. The COE has been targeting a 43-45° degree range based on past requests. (The Salmon Managers may request a slightly warmer target for incubating hatchery fish and will follow up with this request if so desired.)

**Lower Granite Barge Incident**

Steve Hall, Walla Walla District COE, shared a visual of the Lower Granite lock and dam site plan, and pointed out the floating guide wall that was hit by a boat heading downstream on Friday, 6/11. Hall reported that the guide wall was loosened from the key and began to float away; to slow the velocity of the water, spill bays 6-8 were shut off and the wall was retrieved and secured with a temporary key. He said the COE expects the permanent repair to be complete by the end of June, and in the interim, will operate spill out of bays 1-5 instead of bays 1-8. Hall clarified that spill volume will be the same during the repair. COE fish biologists did not think this short term operation would have any impact on fish. As the tow boaters have expressed concerns for navigation during high flows, the COE is seeking a long term solution to remedy the issue.

The salmon managers expressed concerns that this operation may create an eddy and increased TDG levels, and suggested the need to get back to the preferred spill pattern as soon as practical. While there had been no reports of an eddy being formed up to this

point, the COE agreed and noted their intent to return to normal operations as soon as possible. A question was asked about the possibility of providing a lesser amount of spill through any of bays 5-8 during the fix; the COE was not able to answer the question during today's meeting.

> **Action/Next Steps:** The COE will provide an update on the repair at the 6/23 TMT meeting.

**Treaty Fishing**

Tom Lorz, CRITFC, shared that an operations request to support treaty fishing had been submitted to the COE for June 16-18 and June 22-24; the request was to operate Bonneville, The Dalles and John Day within a 1.5 foot operating band. Tom thanked the COE for providing very smooth operations to date. The COE responded that they issued teletypes to meet the request as written. Steve Barton, COE, noted that there may be some variability in elevations given the high flows currently in the system.

**Hanford Reach Update**

Russell Langshaw, Grant County PUD, provided a 2010 Priest Rapids Operations Graph depicting protection flow band operations from May 24-June 9. Overall he said it was a successful year, with just one exceedance out of the flow band constraints on 6/1, which followed a holiday weekend. Minimum, maxes, averages and daily deltas were shared. Russell offered to provide a more complete review at the TMT Year End Review.

**Bonneville Powerhouse Operations: SOR 2010-03**

Paul Wagner, NOAA, presented the SOR on behalf of all the signatories: NOAA, USFWS, Washington, Idaho, Oregon, CRITFC, Nez Perce Tribe and Shoshone-Bannock Tribes. The request was to 'narrow the operating range' to 14 kcfs at Bonneville's Powerhouse 2 to address descaling issues occurring from high flows and debris build up at the project. He suggested the issue was similar to what occurred in 2008, though not as severe thanks to improved screen cleaning. Sockeye were observed at a 40% descaling rate while Fall Chinook descaling was up to 5%. No gas bubble trauma had been observed at the project at this point. Wagner said that the Salmon Managers had considered adult fallback issues with this proposed operation, and concluded that since no problems had been observed to date, addressing the descaling problem was the primary concern. Russ Kiefer, ID, noted that this SOR was intended to be a short term response and solution to the acute problem.

The COE responded that its water quality team reviewed the request and did not anticipate any TDG issues to arise if implemented. The COE also clarified that the request was for a maximum of 14 kcfs out of PH 2. BPA asked whether to consider operating PH 1 outside of 1% to avoid TDG exceedances; the Salmon Managers responded with their preference to implement the request as described to address the descaling problem.

The COE also shared that a test planned at Bonneville will require full flexibility of the units and was anticipated to begin as early as June 20, when flow conditions are likely to recede to a point to allow for the test. The Salmon Managers responded that they hope the flow recession will reduce the descaling issues so the requested operation could conclude

coincident with the start of the test – and if not, stated a likely preference to address the descaling issue as priority over the test.

The COE agreed to operate the request as written at least until the start of the planned test. TMT members present at the meeting were polled to confirm support for the operation:

- Idaho – support
- Montana – support
- Oregon – support
- CTUIR – support
- USFWS – support
- BOR – support
- BPA – no objection, but prefers to avoid exceeding gas caps at the project
- COE – supports, with the caveat that need to revisit when the test is planned to begin.

**Action/Next Steps:** The COE will implement the SOR as written, and they clarified that Bonneville powerhouse 1 will continue to operate within 15 peak efficiency. TMT will revisit this issue at the 6/23 meeting – and a conference call may be convened prior to then if needed to address timing of the spill test.

**Spill Priority List**

Paul Wagner, NOAA, shared an updated preferred spill priority list on behalf of the salmon managers. The preference was for the following order for the first four projects: Bonneville, McNary, John Day and The Dalles. The remaining projects would stay in the order that was shared by the COE via email on 6/11.

The COE responded with support for the change to the first four preferences, and added a further change to place Chief Joseph just above Grand Coulee. The Salmon Managers agreed to this added change, and with that, the COE said the new spill priority list would go into effect this afternoon.

**Operations Review**

Reservoirs: John Roache, Reclamation, and Steve Barton, COE, reported on reservoir operations. Grand Coulee was at elevation 1288.5'and passing inflows. Hungry Horse was at elevation 3554.14' with 12 kcfs inflows and 7 kcfs outflows. Libby was at elevation 2422.55', with 37 kcfs inflows and 33.8 kcfs outflows. Albeni Falls was at elevation 2061.88' and near full, with 61.6 kcfs inflows and 54.0 kcfs outflows. Dworshak was at elevation 1599.44', with 10.3 kcfs inflows and 9.5 kcfs outflows.

Lower Granite day average outflows were 130 kcfs (compared to 75.6 kcfs for the seasonal average); Priest Rapids day average flows were 210.5 kcfs (177.2 kcfs weekly average and 118.3 kcfs seasonal average); and McNary day average flows were 328.8 kcfs (355.8 kcfs weekly average and 203.9 kcfs seasonal average).

Fish: Paul Wagner, NOAA, provided a fish passage update. Juvenile yearling Chinook were nearly done on the Snake River, with less than 1,000 passing per day. 4,000-6,000

were passing per day on the Lower Columbia. Subyearling Chinook numbers were declining on the Snake River, with a peak 115,000 passing Lower Granite on 6/5 (Paul noted this was earlier than past years), 112,000 passing Little Goose on 6/12 (down to 15,000 this week) and 100,000 passing Lower Monumental on 6/10 (down to 20,000 this week.) The peak in passage, he noted, was mostly due to hatchery fish, with the wild run coming next. Further down, numbers ranged 70,000-80,000 at McNary and 35,000 at Bonneville. Steelhead passage patterns were similar to Chinook. Sockeye were all but gone from the Snake River projects and passage patterns were similar in the lower river to other stocks.

Russ Kiefer, Idaho, noted that the COE's implementation of a continuation of spring-like conditions at McNary supported wild Chinook, steelhead and other stocks and overall was a good operation.

Adult summer chinook were passing at 2,000/day at Bonneville; steelhead were passing around 500/day; shad passage numbers were high; and sockeye were passing at about 5,000/day. Snake River passage slowed during the high flow periods, then picked up again around 6/13.

Power: Nothing to report.

Water quality: Scott English, COE, said involuntary spill has led to TDG exceedances but that the system is coming back into balance. He provided a May 2010 TDG summary report, noting 28 total exceedances all under the Type 3 category (due to uncertainties when using best professional judgment). June has seen a lot of exceedances, mostly in the 6/5-6/11 timeframe due to involuntary spill.

**The next TMT meeting will be: face to face on 6/23 at 9:00 am.**
Agenda items will include:

- Notes/Meeting Minutes Review
- Dworshak Operations
- Libby Operations
- Lower Granite Floating Guide Wall Repair Update
- Treaty Fishing
- Bonneville Operations
- Operations Review

**Columbia River Regional Forum**
**TECHNICAL MANAGEMENT TEAM OFFICIAL MINUTES**

**June 16, 2010**

Notes: Pat Vivian

***1. Introduction***

Today's TMT meeting was chaired by Steve Barton (COE) and facilitated by Erin Halton (DS Consulting). Representatives of the COE, USFWS, Oregon, NOAA, Idaho, BPA, BOR, CRITFC and others attended. This summary is an official record of the proceedings, not a verbatim transcript. Anyone with questions or comments about this summary should give them to the TMT chair or bring them to the next meeting.

***2. Review Meeting Minutes for June 2 and 9***

Rick Kruger (Oregon) commented on the Libby operations section of the June 9 facilitator's notes:

- The second paragraph needs moredistinction between release of the 40 kaf by June 30 and the way it is metered out of the reservoir. The second sentence concludes, "…while maintaining a flow neutral operation." Add "for the lower Columbia River and all of the 40 kaf released by June 30."

- The paragraph that begins, "The COE asked TMT members…" needs a clearer definition of the operation.

Kruger will email his comments to the COE, and the COE will clarify that the 40 kaf remaining in Libby after June 30 is equivalent to half a foot of elevation in Grand Coulee by end June, or 1,289.5 feet elevation instead of 1,290 feet. The equivalent volume will be subtracted from the Libby releases.

Kruger also commented on the summer 2010 Fish Operations Plan. The TSWs at McNary will be removed, not just unused as the 2010 FOP currently states. The spill pattern will not be the same as last year, as the FOP states, because that pattern was designed for use of the TSW. The spill pattern that will be used is from an old Fish Passage Plan before the TSW was installed. This will also be corrected in the notes and minutes.

John Roache (BOR) commented on the June 9 official minutes under "Operations Review, page 9:

- Under Grand Coulee, delete "a lot" so the sentence reads, "Grand Coulee spilled…"

There were no comments on the June 2 facilitator's notes so those are considered final.

### *3. Hanford Reach Final Report*

Russell Langshaw (Grant PUD) gave a final report on the 2010 Hanford reach protection program. After getting off to a slow start the first few days, compliance was 100% until protection flows ended June 9. Figure 3b attached to today's agenda covers May 24-June 9. During that time, Priest Rapids Dam had mean daily discharges of 129 kcfs, with a minimum of 101 kcfs and a maximum of 194 kcfs. Minimum flows ranged from 95-183 kcfs, with an average of 115 kcfs. Maximum flows ranged from 106-205 kcfs, with an average of 146 kcfs. Daily deltas ranged form 6-43 kcfs, with an average of 30 kcfs.

Langshaw will give a presentation on the Hanford Reach operation at the TMT annual review this fall.

### *4. Water Supply Forecast Update*

Precipitation data for the first 14 days of June are remarkable, Barton said:

- Columbia River basin above The Dalles Dam – 241% of normal (or 1.18 inches more than normal)
- Snake River above Ice Harbor – 291% of normal (1.3 inches)
- Snake River above Grand Coulee – 176% of normal (0.85 inch)
- Kootenai basin – 182% of normal (0.94 inch)

These differ widely from percentages for the whole water year:

- Columbia River above The Dalles– 95% of normal
- Snake River above Ice Harbor– 99% of normal
- Snake River above Grand Coulee – 87% of normal
- Kootenai River basin – 87% of normal
- Flathead River basin – 96% of normal

As of June 7, the final January-July runoff volume forecast from the RFC is 74 maf, 69% of normal, Barton reported. The RFC precipitation forecast assumes that precipitation will vary from 150% of normal for the first half of June to normal for the rest of the month. Conditions are slightly wetter at present than the RFC forecast assumed. A high percentage of normal doesn't necessarily indicate large volumes in the June data – less than an inch for the Snake and Kootanai basins, Kruger pointed out.

The RFC's mid-month water supply forecast will be available for discussion at the next TMT meeting June 23.

### *5. Libby Operations*

The COE initiated spill for the sturgeon operation at Libby Dam beginning with 5 kcfs on June 10 and increasing toward 10 kcfs while tracking TDG levels, rather than starting out with 10 kcfs spill, Barton said. Hourly spill ranged from 6.5 to 9 kcfs, with a daily average of 6.8 kcfs. Spill never got to 10 kcfs due to gas production. The highest 12-hour average TDG reading was 122.87%, which is on the threshold of Montana's water quality standards waiver.

The sturgeon operation is scheduled to continue until the morning of June 17, when outflows drop down to full powerhouse, and disposition of the remaining sturgeon volume and phase 2 storage extends into July. In response to USFWS concerns about the STP volumes being released, the COE will double-check its STP model runs, Barton said. This issue will be part of next week's TMT discussion.

### *6. Dworshak Operations*

Dworshak reservoir is 0.55 feet from being full thanks to enhanced precipitation, and has been discharging full powerhouse flows, currently 9.5 kcfs. There's little operational flexibility in terms of flood control due to recent high inflows, Steve Hall (COE Walla Walla) said. The remaining snow covered area is about 5%, meaning almost no snow, so most of the runoff is due to precipitation.

In order to avoid topping off the reservoir and spilling above the gas cap, the COE has been operating the project at full powerhouse discharges for a slow and steady refill, Hall said. Inflows are 10-12 kcfs. By the end of this week, the current forecast says inflows will drop down below full powerhouse. When that occurs, the COE will try to top off the reservoir at elevation 1,600 feet, passing inflows for the rest of June. The higher the reservoir elevation, the less water it takes to produce full powerhouse flows.

With summer's high temperatures approaching, the COE is working on a full model analysis to be used for temperature control at Dworshak. The model will be ready to use by June 30. Preliminary modeling results should be available by next week. For now, the COE is targeting 43-45 degrees F per a request from the Dworshak hatchery.

Russ Kiefer (Idaho) thanked the COE for its response to the salmon managers' request to refill Dworshak as soon as possible. TMT will continue to monitor Dworshak operations closely over the next several weeks.

### *7. Lower Granite Barge Incident*

On the morning of June 11, a towboat and a barge in the Lower Granite navigation lock hit a floating guidewall, sheared off the bolts at the key where it's attached to the dam, and sent the guidewall floating free, Hall reported.

The COE immediately shut off flows to spill bays 6-8 and rigged the guidewall to the dam with a temporary key. Repairs are expected to take about 2 weeks. Until then, the spill pattern will be disrupted, with the full volume of spill passing through bays 1-5 and spill turned off in bays 6-8. Special bolts that must be made to order are what's taking 2 weeks. The COE is planning to complete the repairs by the end of June.

The accident happened at high levels of spill. Tow boaters have told the COE that high flows create a sideways current underneath the guidewall that makes navigation in and out of the lock difficult. As a long term operation, the COE is considering whether spill might need to be modified, reduced or eliminated in bays 7 and 8 while the navigation lock is in use.

Because the fish ladders are on the south side of the project, there isn't as much need for spill through bays 6-8, Hall said. The impact of the repairs on fish migration is expected to be minimal. Nevertheless it has the potential to create eddies that entrain fish, Kruger said. Tom Lorz (CRITFC) added that the spill patterns have been designed for best egress at Lower Granite, and more spill per bay means more gas. The sooner spill returns to normal, the better. Kruger asked the COE to consider whether spill through bays 6-8 might be used to break up eddies. TMT will be following this issue closely, with an update at the next meeting July 23.

### *8. Summer 2010 Treaty Fishery – SOR 2010-C3*

For the fall Chinook fishing season, SOR-2010-C3 requests 1.5 foot bands as a hard operating constraint at Bonneville, John Day and The Dalles, from 6 am on June 16 to 6 pm on June 18, and 6 am on June 22 to 6 pm on June 24. Tom Lorz (CRITFC) thanked the COE for an excellent job of maintaining an even tighter band than 1 foot elevation.

The COE will implement the SOR as written, with a commitment to stay within the 1.5-foot bands. However, there could be more variability as the COE continues to manage high runoff, Barton said.

### *9. Bonneville 2nd Powerhouse Unit Operations – SOR 2010-03*

In response to a high rate of sockeye descaling observed at Bonneville, this SOR asks the COE to narrow the operating unit range at the Bonneville 2nd powerhouse to low to mid range of peak efficiency, or approximately 14 kcfs, Paul Wagner (NOAA) explained. The current situation is similar to 2008 when the fish screens at Bonneville had to be pulled because project staff couldn't keep up with the rate of debris accumulation. This year the situation is not as extreme. Sockeye descaling rates were 40% but have been declining. Fall Chinook show a 5% rate of descaling, which is higher than desirable.

FPAC members recognize that turning down the turbine loading will increase the amount of water passing through the spillway, Wagner said. There

have been no signs of gas bubble trauma at Bonneville, although some fish with GBT signs have been observed at Little Goose. Another concern is adult fallback which tends to increase as spill rises above 140 kcfs. Summer Chinook and sockeye are passing, and sockeye don't have much of a problem with fallback. However, fall Chinook are potentially more at risk. Nonetheless FPAC agreed the adverse effects of descaling are worse than the effects of fallback, so the turbine loading should be reduced. Signatories to the SOR include NOAA, USFWS, Washington, Idaho, Oregon, CRITFC, and the Nez Perce and Shoshone Bannock tribes.

The SOR also addresses research done by the Northwest Science Center on fish passage through turbines at different loadings. At higher turbine loadings, the range of mortality and descaling was found to be higher. When fall Chinook encounter higher flows through turbines and more turbulence in the gatewells, they experience higher rates of descaling and mortality, especially smaller fish. Russ Kiefer (Idaho) added that the descaling patterns indicate fish are getting caught against the clogged screen and trying to swim along it. The solution proposed by the SOR is short-term while FFDRWG works on this problem.

After reviewing potential impacts of the SOR on water quality, which appear to be minor, the COE supports the SOR up to the point when the Bonneville spill test begins, estimated to be around June 20-22, Barton said. That is when flows are expected to be 300 kcfs or less, which is a hydraulic requirement for conducting the spill test as specified in the summer Fish Operations Plan. That means this SOR will provide 5-7 days of relief from the effects of clogged screens. Kiefer said conditions could become suitable for dropping the SOR's provisions when it's time to begin the spill test. The general consensus of signatories was that it would be better to delay the spill test rather than sacrifice fish to the effects of descaling, Kruger said.

Ruth Burris (PGE) asked whether the Bonneville 1$^{st}$ powerhouse will go to maximum capacity. This SOR applies only to the units in powerhouse 2 because powerhouse 1 is already at full load, Barton replied. The normal operation of those units at 1% of peak efficiency will not be affected by this operation.

Barton asked the FPAC members, if system conditions allow lower unit loading, would that be satisfactory? Yes, lower is better, Wills answered. Tony Norris (BPA) suggested exceeding 1% efficiency at the 1$^{st}$ powerhouse units and picking up extra flows in the 2$^{nd}$ powerhouse. The FPAC wants to pass as many juveniles as possible through the 2$^{nd}$ powerhouse because the 1$^{st}$ powerhouse is untested, Lorz said. Kruger agreed it's not a good idea to pass fish through the 1$^{st}$ powerhouse because the passage conditions to it are unknown. Wagner will check with Gary Fredricks (NOAA) on this.

TMT members were polled on this SOR. **Idaho, Montana,** the **Umatilla Tribe, NOAA, USFWS** and **Oregon** supported it; **BPA** and **BOR** had no objection. The **COE** supports the SOR until it impacts the Bonneville spill test and will implement the SOR accordingly. The COE will monitor the Bonneville fish

screen situation closely and notify TMT members when the river drops below 300 kcfs, a condition for starting the spill test. TMT will revisit Bonneville 2nd powerhouse operations at its next meeting June 23.

### *10. Spill Priority List*

FPAC members have reviewed the spill priority list and placed Bonneville, McNary, John Day and The Dalles at the top in that order, Wagner said. John Day has been moved from the bottom of the list to third place. The rest of the proposed list is the same, with Ice Harbor next, followed by The Dalles and Chief Joseph.

The COE proposed to implement the list as proposed with one exception: Chief Joseph moves back down the list to precede Grand Coulee, pending further analysis of the effects of spill. There was no objection to the COE proposal.

### *11. Operations Review*

**Reservoirs.** Grand Coulee is at 1,288.5 feet elevation, about 1.5 feet below full and passing inflows. Hungry Horse is at 3,554.14 feet elevation. Discharges were increased to 7 kcfs this morning in response to a forecasted rise from the current inflows of 12 kcfs to 17-18 kcfs over the next few days.

Libby is at elevation 2,422.55 feet with inflows of 37 kcfs, discharging 33.8 kcfs. Albeni Falls at elevation 2,061.88 feet is nearly full, with inflows of 61.6 kcfs and outflows of 54 kcfs, spilling 25.6 kcfs. Dworshak is at elevation 1,599.44 feet, with inflows of 10.3 kcfs and outflows of 9.5 kcfs.

Lower Granite is discharging 130 kcfs, with a seasonal average of 75.6 kcfs for spring. Priest Rapids discharged 328.8 kcfs yesterday, with a seasonal average of 203.9 kcfs; last week's average flow was 355.8 kcfs. McNary is discharging 328.8 kcfs, with a seasonal average of 203.9 kcfs.

**Fish.** Juveniles: Yearling spring Chinook are nearly gone from the Snake River. Fewer than 1,000 passed Lower Granite Dam on June 15, Wagner reported. Lower river passage numbers are 5,000 per day at McNary and a few thousand per day each at Bonneville and John Day.

Subyearling Chinook passage has been high. Peak counts were 112,000 subyearlings at Little Goose on June 12 (now 15,000 per day), and nearly 100,000 at Lower Monumental on June 10 (now 20,000 per day). These are largely hatchery releases, to be followed by the wild spring Chinook migration. Subyearling spring Chinook passage numbers have been 70-80,000 per day at McNary for the past 2 days, nearly 50,000 per day at John Day, and nearly 35,000 per day at Bonneville. SOR 2010-C3 (discussed above) was written mainly out of concern for these large numbers of subyearlings. Subyearling Chinook passage on the lower river projects is now in the 2,000 per day range.

Steelhead have mostly left the river system, and sockeye passage is nearly done at the Snake River projects. Kiefer thanked the COE for meeting Idaho's request to keep spring operations ongoing at McNary, though it was based on an overprediction of sockeye runs. Yearling passage at the lower Columbia projects is 5,000 per day at John Day and Bonneville.

Adults: Summer Chinook are passing Bonneville at the rate of a few thousand per day. Steelhead and sockeye passage at Bonneville is picking up to about 500 fish per day of each. In general, passage numbers have increased since flows receded.

**Power.** There was nothing to report today. The COE thanked BPA for its flexibility last week in managing lower Columbia River operations.

**Water Quality.** Spilling through gates 1-5 at Lower Granite in response to the barge incident produced a bulk spill pattern, which raised TDG levels. Scott English (COE) showed TMT the May TDG summary linked to today's agenda. Involuntary spill throughout the Snake and Columbia basins has resulted in numerous exceedances. High TDG levels have declined over the past few days.

### *12. Next Meeting*

The next TMT meeting will be in person June 23, with Bonneville, Libby and Dworshak operations, repairs at Lower Granite, treaty fishing, and review of meeting minutes on the agenda.

| ***Name*** | ***Affiliation*** |
|---|---|
| Steve Barton | COE |
| Jim Litchfield | Montana |
| Doug Baus | COE |
| David Wills | USFWS |
| Rick Kruger | Oregon |
| Paul Wagner | NOAA |
| Russ Kiefer | Idaho |
| Laura Hamilton | COE |
| Don Faulkner | COE |
| Steve Hall | COE Walla Walla |
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| Scott English | COE |

Phone:

| | |
|---|---|
| Tony Norris | BPA |
| John Roache | BOR |
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| John Hart | EWEB |
| Jason Flory | USFWS |
| Tim Heizenrader | Centaurua |

| | |
|---|---|
| Glen Trager | Shell Energy |
| Shane Scott | PPC |
| Jeremy Giovando | COE Seattle |
| XX | Seattle City Light |
| Barry Espenson | CBB |
| Margaret Filardo | FPC |
| Bill Rudolph | NW Fish Letter |
| Richelle Beck | DRA |
| Rob Allerman | Deutsch Bank |
| Greg Hoffman | COE Libby Dam |
| Scott Bettin | BPA |