

COLUMBIA RIVER TECHNICAL MANAGEMENT TEAM

June 13, 2018

Facilitator's Summary

Facilitator: Emily Stranz; Notes: Nancy Pionk, 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/2018/>

Treaty Fishing

Kyle Dittmer, CRITFC, provided an overview of the Treaty Fishing SOR (SOR C-1) on behalf of the Columbia River Inter-Tribal Fish Commission tribes. SOR 2018-C1 requests a 1.5-foot band for the Bonneville, The Dalles and John Day pools during the treaty fishing periods: June 18-22 and June 25-29. He noted that the tribes are forecasting approximately 64,900 fish in the summer Chinook run and 98,800 in the sockeye run (which is below average for sockeye). He indicated that, based on the run sizes, it is likely that the summer fishing season will be four weeks. CRITFC will update their fish counts on June 25th and Kyle will provide an update to the TMT at the June 27th TMT meeting.

Kyle shared that if people are interested in buying fish from the tribal fisher people, the CRITFC website provides details on where to buy fish. Doug Baus, Corps, appreciated CRITFC's advance notice for planning purposes, and stated that the Action Agencies will implement SOR C-1.

- ACTION: The Action Agencies will operate the BON, TDA, and JDA pools within a 1.5-ft band from June 18-22 and June 25-29.

Lower Granite Powerhouse Outage

Doug Baus, Corps, presented on the planned powerhouse outage operation at Lower Granite Dam, scheduled for June 20. Per TMT request, a written description of the operation is posted on the TMT website. Doug noted that this is the second phase of the emergency repair that occurred on May 2 and was previously coordinated at TMT. The operation on June 20 will be consistent with the May 2 operation. The intent is to complete the repair and return to normal operations as soon as possible; it may not take two full days to return the forebay to MOP, depending on how much water is stored. Paul Wagner, NOAA, noted that this operation was reviewed by FPAC and Salmon Managers are okay with it moving forward.

- ACTION: Effective Wednesday, June 20, 1200 to 1800 hours, the Action Agencies will spill 50 kcfs, operate unit 5 for station service (approximately 5 kcfs), and store any remaining inflow in the forebay above the appropriate Minimum Operating Pool (MOP) 1-foot range. After the operation is complete, they will resume 120/115% gas cap spill operation and draft LWG forebay back to the appropriate MOP 1-foot range within a period of 2 days.

Dworshak Dam Operations

Steve Hall, Corps, presented on Dworshak Dam. He noted that the forebay elevation was currently 1593.3 ft, outflow is 2.2 kcfs. The inflow forecast indicates that inflow will continue to decline and then temporarily bump up due to rain before coming back down again. The project is in the process of refilling and hope to refill so as to avoid spilling above the gas cap, if possible. Currently, the plan is to hold outflows at 2.2 kcfs through the weekend and then increase to 4.4 kcfs (two units) to moderate inflows. Steve projected that the reservoir will be full (within the top foot) by the 3rd week of June and that they will be able to hold the reservoir full through the July 4th weekend. They will continue tracking water temperature; however, at this point expect Lower Granite tailwater temperatures to be around 62-63 degrees F around June 20th, which is well below the target action temperature of 67 degrees F. He

indicated that they are running the temperature model on a weekly basis and will provide weekly reports at TMT.

Steve also provided an update of Unit 3 work (links to pictures are on TMT website). He noted that work is proceeding as planned and the unit is still scheduled for return to service on July 1, 2018. The unit must be tested before the unit can be returned to service and that testing is scheduled for June 22-30, 2018. It was noted that there will be a discussion about the measures to be implemented during the testing at the June 14, 2018, FPOM meeting. Previous testing of this type has impacted adult fish and caused adult fish mortalities, thus the Corps is looking for input and ideas to address issues at the FPOM meeting.

Adult PIT-Tag Monitoring Tools

Paul Wagner, NOAA, updated the group on current data. He noted that the FPC passage indicator shows that fish passage is tracking within expectations, at 70% of the predicted interval. With regard to data from DART Adult PIT-Tag Reach Distribution and Delay, he noted that the daily data shows an overall 89% conversion rate. Passage decreased to 50% during a two-day interval on June 8 and 10, and then increased to 71%. Paul attributed the increase to changing the elevation of the adjustable surface weir (ASW) at Little Goose, from low crest to high crest (which means less flow over the ASW). He explained that when flows are below 85 kcfs, operating the ASW at low crest can contribute more to the eddy that can lead to adult delay at Little Goose. By operating the ASW at high crest, spill is spread out more at lower flows which can reduce the eddy. He and other fish managers agreed that the change in operation appeared to address the decrease in passage. Paul indicated that the fish managers will continue to observe passage and alert TMT if there is a need for an unscheduled meeting.

Spill Priority List

Dan Turner, Corps, explained that the current Spill Priority List with TDA at the top is set to expire on June 15. He explained that the Corps' intent is to revert to the earlier (April 1) Spill Priority List with all projects in order from upstream to downstream and sought input from TMT members. Julie Ammann, Corps, noted that the Spill Priority List is only used when there is lack of market for the power (load). There were no objections to implementing the proposed list. Russ Kiefer, Idaho, noted support for the list at this time; however, explained that there may be a need to discuss moving the transport projects to lower priority in mid-July to benefit collection and transport of subyearlings. Dan noted that this is a "living" document that can be revised at any time. Dan indicated that the new Spill Priority List will start on June 16 and be in effect through August 31st, unless otherwise coordinated with TMT.

- ACTION: The Corps will implement the proposed spill priority list June 16th through August 31st. This prioritizes lack of load spill at projects in order from upstream to downstream.

FOP Spring Spill Update

Dan Turner, Corps, provided an update on ongoing spill operations. Dan noted that TDG in the forebays dropped down in a consistent pattern throughout the system. He attributed this to a fairly large wind event that stripped TDG out of the system. The Corps increased spill caps on June 7, 8, and 12 due to the changes in conditions. TDG was below 115% in the forebays of Snake and Columbia River projects.

Dan noted that the Bonneville tailrace gauge at Cascades Island is still inoperative and a repair is scheduled for next week. They are combining a variety of data to make sure the spill cap is still good and there are no indications that they are not meeting the gas cap at Bonneville.

Dan reviewed the process and assumptions for setting spill caps. He noted that last week, the spill cap at Lower Granite was held because TDG was estimated to increase in the downstream forebay. This did not happen and TDG simultaneously decreased. Consequently, the spill cap was increased. He noted rapid decreases in TDG at Lower Monumental (2.5% TDG decrease over 15 hours) and rapid increases at The

Dalles (2.5% increase in TDG over 11 hours), which demonstrate the challenges of trying to set spill caps on a daily basis and the difficulty of setting one spill cap to keep a steady value.

Salmon managers expressed concerns that the spill caps resulted in TDG below the gas cap for some projects over the last week. They had expected that spill caps would have been raised at Little Goose and other projects on Friday, once it appeared that the projected increase in TDG had not occurred. Salmon managers expressed the concern that the Corps is being too conservative in setting the spill caps and requested that the Corps be as aggressive as possible to meet the gas standards, recognizing this may occasionally result in exceeding the gas standards.

Julie Ammann, Corps, noted the challenges of making the spill cap decisions with imperfect forecasts and lack of control over environmental conditions such as the stripping effect of wind. She assured salmon managers that the Corps is striving to maximize spill to meet and not exceed the gas cap. All recognized the challenges that go in to determining spill caps and appreciated the hard work of the Corps team.

Doug Baus noted that the Lower Columbia projects will be transitioning to summer spill on June 16 and the Snake River projects will be transitioning on June 21.

Agenda for June 20, 2018 Meeting

1. Weekly updates on Spring Spill
2. Treaty Fishing
3. Little Goose Adult Fish Passage
4. Dworshak –Temperature updates

The next TMT meeting is a face-to-face meeting on June 20, with a process meeting to follow.

TMT members are encouraged to review all outstanding meeting summaries and minutes, which will be approved at the June 20 meeting.

Columbia River Regional Forum
TECHNICAL MANAGEMENT TEAM OFFICIAL MINUTES
June 13, 2018
Minutes: Melissa Haskin, FLUX Resources

Introduction

Representatives of BPA, NOAA, USFWS, COE, OR, WA, ID, MT, Umatilla (CRITFC), Nez Perce Tribe, and others participated in today's TMT meeting chaired by Doug Baus, COE, and facilitated by Emily Stranz, DS Consulting.

1. Treaty Fishing - Kyle Dittmer, CRITFC

The Corps will implement SOR 2018-C1, available on the TMT site. The SOR calls for the following as quoted from the official SOR request:

- Bonneville: Operate the pool within a 1.5-foot band during the treaty fishing period.
- The Dalles: Operate the pool within a 1.5-foot band during the treaty fishing period.
- John Day: Operate the pool within a 1.5-foot band during the treaty fishing period.

For the periods of:

- 6 am, Monday, June 18, 2018, through 6pm, Friday, June 22, 2018
- 6 am, Monday, June 25, 2018, through 6pm, Friday, June 29, 2018

The forecasted 2018 run size for adult Chinook is near average (64,900) and Sockeye is below average (98,800). The next update will be available at the earliest the week of June 25, 2018, as new data come in.

2. Lower Granite Powerhouse Outage June 20 - Tony Norris, BPA, and Doug Baus, Corps NWD

Tony Norris, BPA, and Doug Baus, Corps, presented on a planned powerhouse outage at Lower Granite on Wednesday, June 20 from 1200 to 1800 hours. During that time the Corps will maintain spill at 50 kcfs and operate unit 5 for station service (approximately 5 kcfs). Remaining inflow will be stored in the forebay above MOP. When operations are complete the Corps will resume spilling to the spill cap and draft the pool back to MOP within a period of two days.

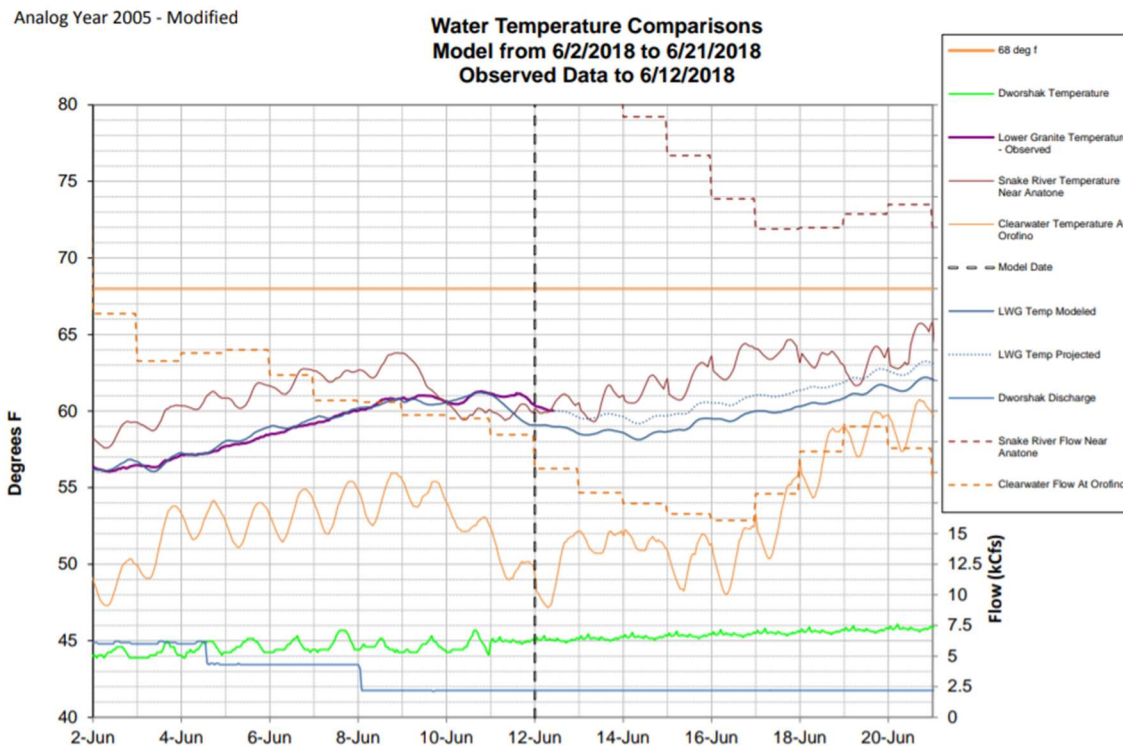
Baus explained that this operation is Phase 2 of the outage that occurred on May 2, as coordinated with TMT. The summary attached to the agenda was presented to TMT on June 6. Paul Wagner, NOAA, weighed in saying that FPAC had reviewed the plan and was OK with the operation. There were no objections to the plan.

3. Dworshak Dam Operations - Steve Hall, Corps

Dworshak is at 1,593.2 ft elevation. The Corps is aiming to fill it at the right rate to avoid having to spill above the gas cap. Right now outflows are 2.2 kcfs. There is a continued decline in inflows, but we are expecting to see a bump over the weekend due to rain. The Corps will hold

outflows at 2.2 kcfs until after the rain, at which point they will reevaluate and likely return to 2-unit operation at 4.4 kcfs to moderate refill. According to current projections, the reservoir will be within a foot of full by the weekend after July 4; however temperature augmentation may need to start prior to that.

Dworshak Dam outflow temperatures are currently 44-45 degrees F. Currently Lower Granite Dam tailwater temperatures are 60 degrees F and are forecasted to increase to 63 degrees F by June 20. Right now things are fairly cool and the Corps is running weekly models to review temperatures.



Unit 3 Update

Hall showed some pictures of the new rotor being installed. The unit will be tested from June 22-30 and then returned to service. Right now it is on schedule to be returned July 1.

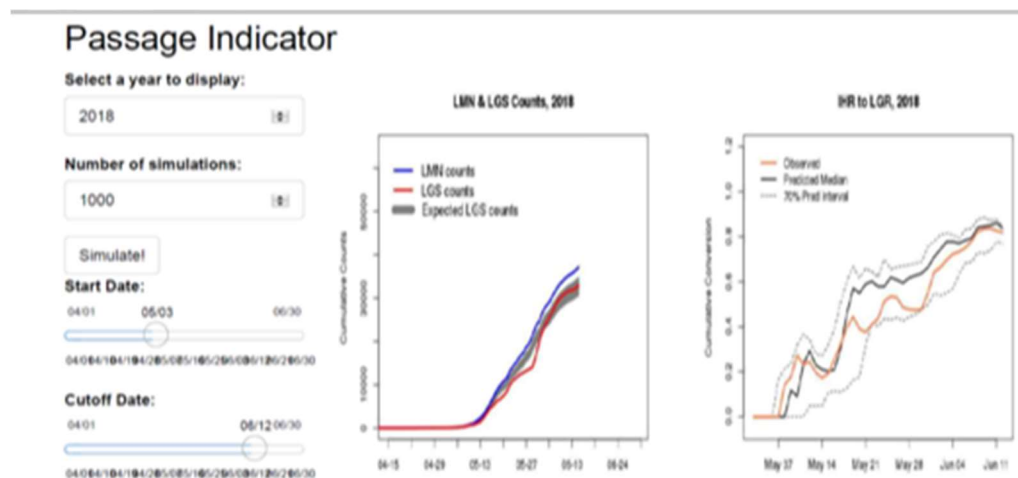
Dave Swank, USFWS, noted that testing has caused problems in the past with adult passage, specifically mortality as fish get into places they should not get into and asked Hall what measures the Corps would be taking to avoid this. Hall replied, “we’re going to explore some ideas and we welcome anyone else’s ideas for that at the FPOM meeting on Thursday.”

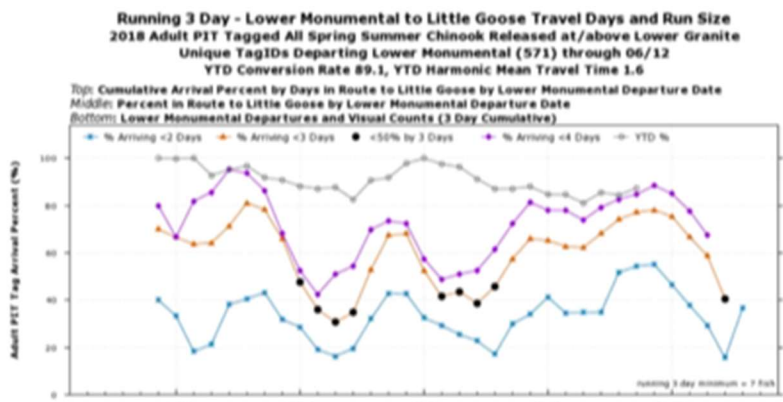
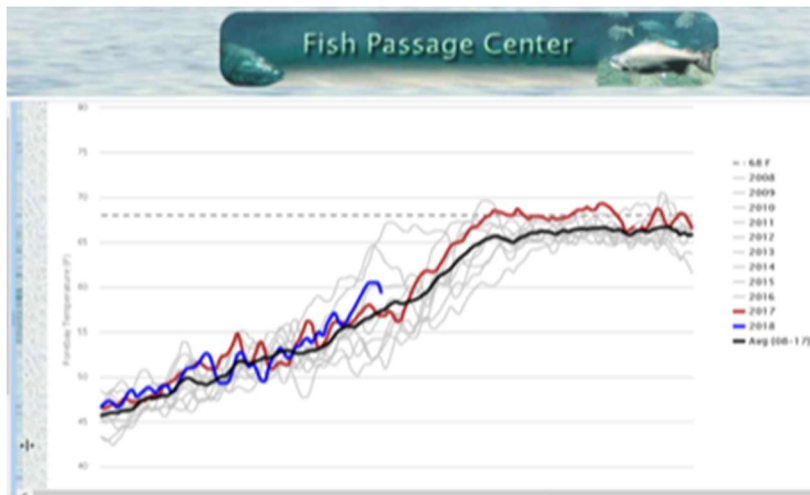
4. Adult PIT-Tag Monitoring Tools - Paul Wagner, NOAA Fisheries, and Doug Baus, Corps NWD

Things are tracking within expectations and 89% of adult spring/summer Chinook are converting from Lower Monumental (LMN) to Little Goose Dam (LGS). There was an interruption in passage from LMN to LGS June 8 through June 10, with conversion rates less than 50% in the 2-day timeframe. Wagner noted 1-day conversion rates from LMN to LGS of 46% on June 7, followed by a drop to 12.5%, 18% and then 15% on June 8, 9, and 10, respectively. He noted counts at Little Goose increased to 780 on June 12, up from 244 the day before. He thinks this change may be due to the ASW, which was changed from low crest to high crest on June 11, due to flows dropping below the 85 kcfs threshold defined in the Fish Passage Plan. The ASW is operated in low crest to pass more water during higher flows. But as flows were dropping, it may have confused adult fish trying to find the ladder entrances. Now that the ASW is in high crest and passing less water, fish passage has improved.

Wagner said that salmon managers will monitor passage over the next few days but that they believe recent changes indicate things are getting back on track due to the change in ASW operations.

Wagner shared the following fish passage graphs from FPC and DART:





5. Spill Priority List - Dan Turner, Corps

Dan Turner, Corps, presented the following Spill Priority List for TMT to discuss.

Level	Priority Order	Project	TDG (%)	Example Spill Level (kcfs) ¹
LEVEL 1 State TDG Standard ¹ ("Gas Cap") <i>In Level 1, Lack of Load spill will be allocated to projects that are not already spilling to the gas cap for FOP spill (i.e., projects that spill to the gas cap for FOP spill will be skipped over).</i>	1	LWG	120% / 115%	35
	2	LGS	120% / 115%	26
	3	LMN	120% / 115%	27
	4	IHR	120% / 115%	80
	5	MCN	120% / 115%	145
	6	JDA	120% / 115%	95
	7	TDA	120% / 115%	105
	8	BON	120% / na	121
	9	CHJ	110%	20
	10	GCL	110%	Outlet Tubes=0; Drum Gates=5
	11	DWR	110%	35% of project outflow
LEVEL 2	12	LWG	120%	52
	13	LGS	120%	55
	14	LMN	120%	50
	15	IHR	120%	80
	16	MCN	120%	200
	17	TDA	120%	150
	18	JDA	120%	130
	19	BON	120%	121
	20	CHJ	120% / 115%	60
	21	GCL	115%	Outlet Tubes=0; Drum Gates=30
LEVEL 3	22	LWG	122%	60
	23	LGS	122%	63
	24	LMN	122%	75
	25	IHR	122%	100
	26	MCN	122%	210
	27	TDA	122%	175
	28	JDA	122%	160
	29	BON	122%	150
	30	CHJ	120%	120
	31	GCL	120%	Outlet Tubes=5; Drum Gates=40
LEVELS 4 and up	Same Priority Order as Level 3			

The above spill priority list will be implemented starting on June 16 and reverts back to prioritizing spill for lack of load at projects in order from upstream to downstream (Lower Granite to Bonneville). On May 2, TMT coordinated to move The Dalles (TDA) up to first priority to increase the chance of additional spill above the gas cap for lack of load. Wagner noted that moving The Dalles to first priority in spring was specific to gas cap operations so wouldn't be relevant to summer spill when the target is 40% of outflow. The salmon managers can revisit the list later and revise the order if necessary.

Russ Kiefer, ID, voiced support but also noted that in mid-July Salmon Managers may want to consider moving The Dalles Dam further down the spill priority list. He said that could be discussed in a later FPAC meeting.

Representatives of the Nez Pearce Tribe also voiced no objection but asked what the reporting process was in the event the BPA would need to implement the spill priority list.

Tony Norris, BPA, noted it is reported in the hourly data on the Corps website when spill is above the FOP target.

Julie Ammann, Corps, noted that the Corps does not separate lack of load spill from involuntary spill due to hydraulic limitations.

6. FOP Spring Spill Update - Dan Turner, Corps

a. TDG Overview Table - Snake River

TDG in the forebays have decreased in the Snake River. At Little Goose, TDG dropped to 110% due to high winds that stripped TDG from the system. The Corps increased spill caps due to changing conditions on June 7, June 8, and June 12. At Little Goose, spill caps were raised from 26 kcfs to 30 kcfs. At Lower Monumental and Ice Harbor the spill caps were increased as well. Ice Harbor has been operating at minimum generation and spill is below the spill cap. Overall, the Snake River projects having been spilling at their spill caps for the last 5 to 7 days. The McNary forebay has also dropped below 115%.

b. TDG Overview Table - Columbia River

TDG in the downstream forebays have dropped into the 110-111% range due to winds. Therefore, spill caps were increased at the lower Columbia projects as well. The Bonneville forebay was at 115% the day of the meeting (June 13). The Cascades Island gauge at the Bonneville tailrace, mentioned in previous meetings, is still inoperative and waiting on repairs from USGS, hopefully next week, reported Turner.

c. NWRFC Extended Inflow Forecast - Lower Granite

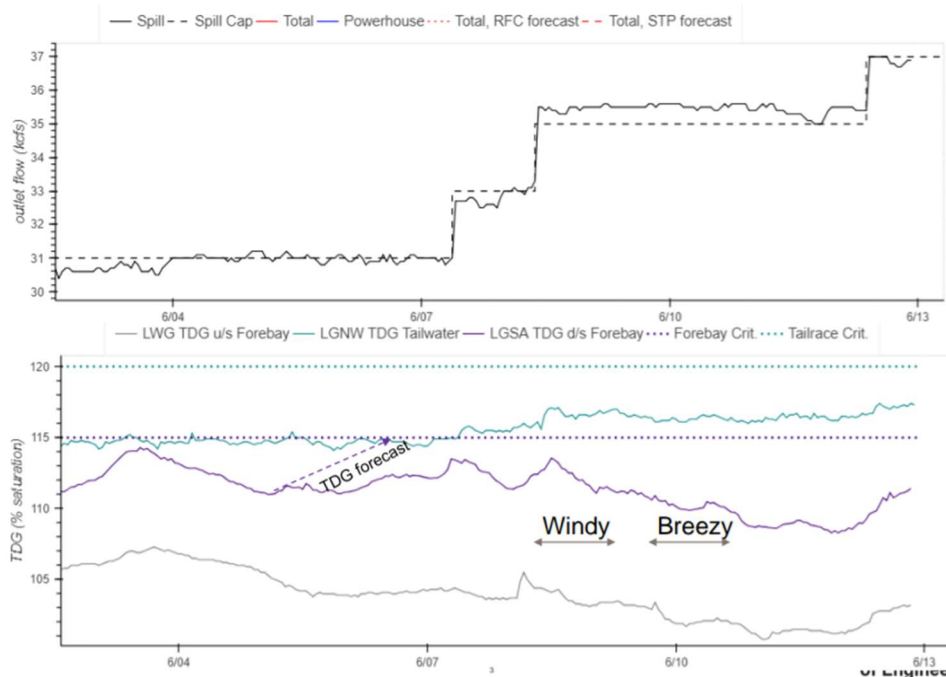
No report.

d. NWRFC Extended Inflow Forecast - The Dalles

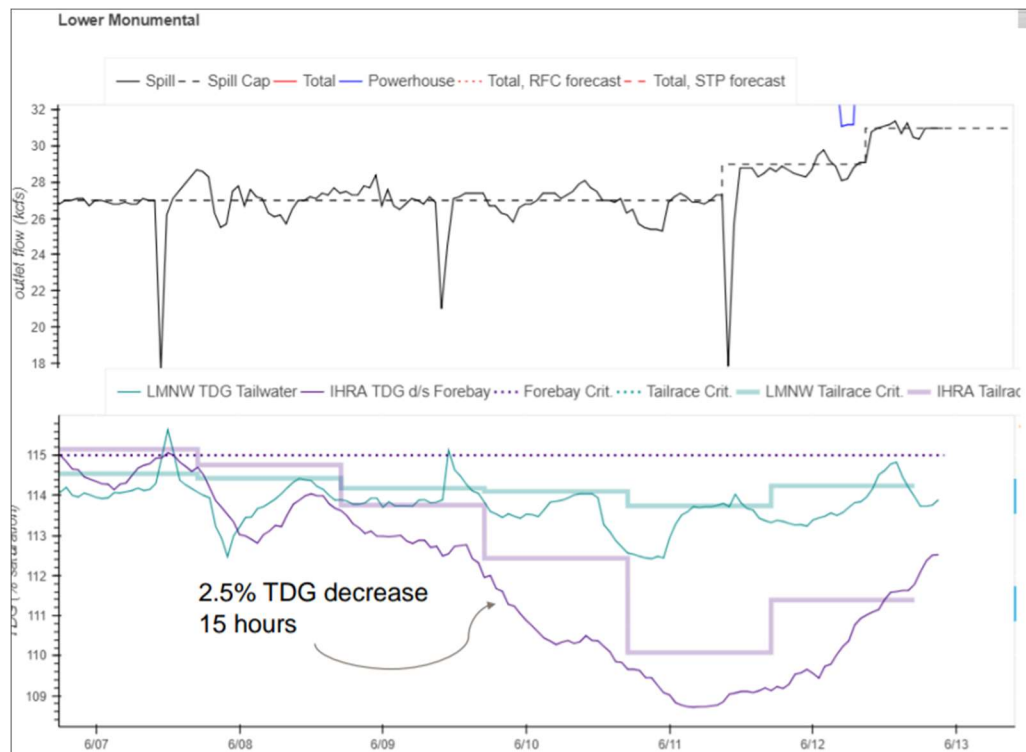
No report.

e. Project Graphs (Posted Wed 6/13 @ 9am)

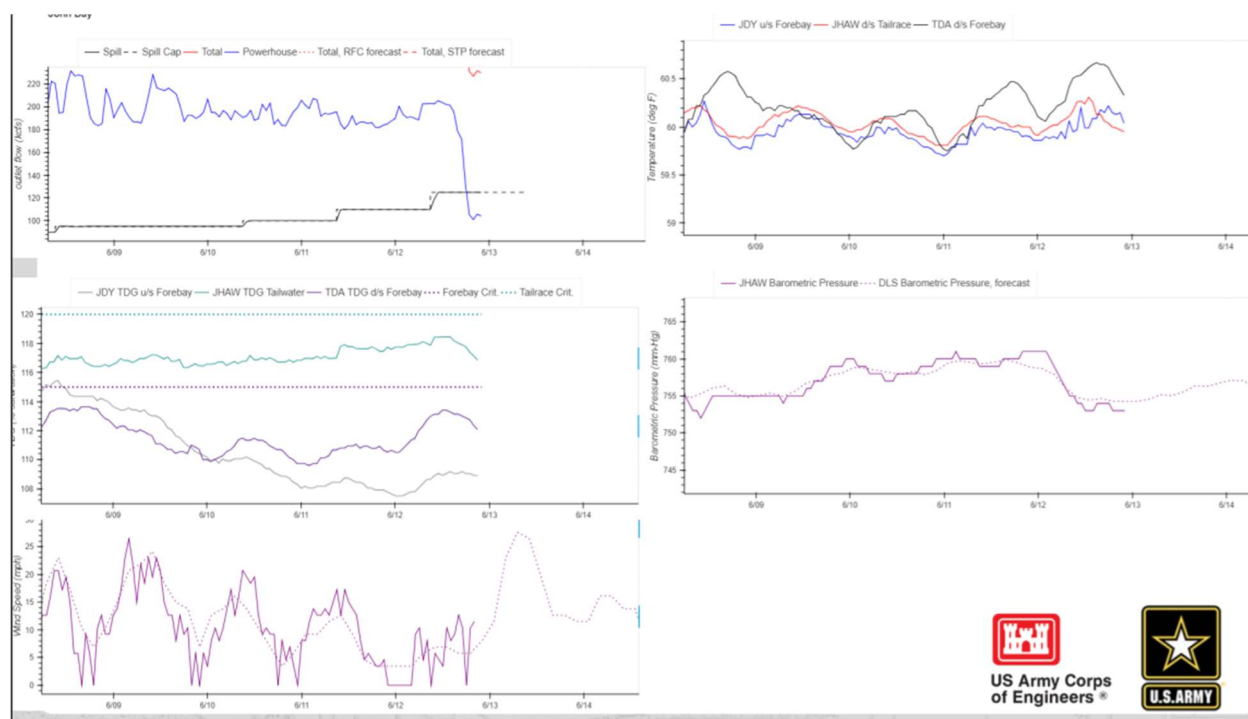
Turner presented the following graphs:



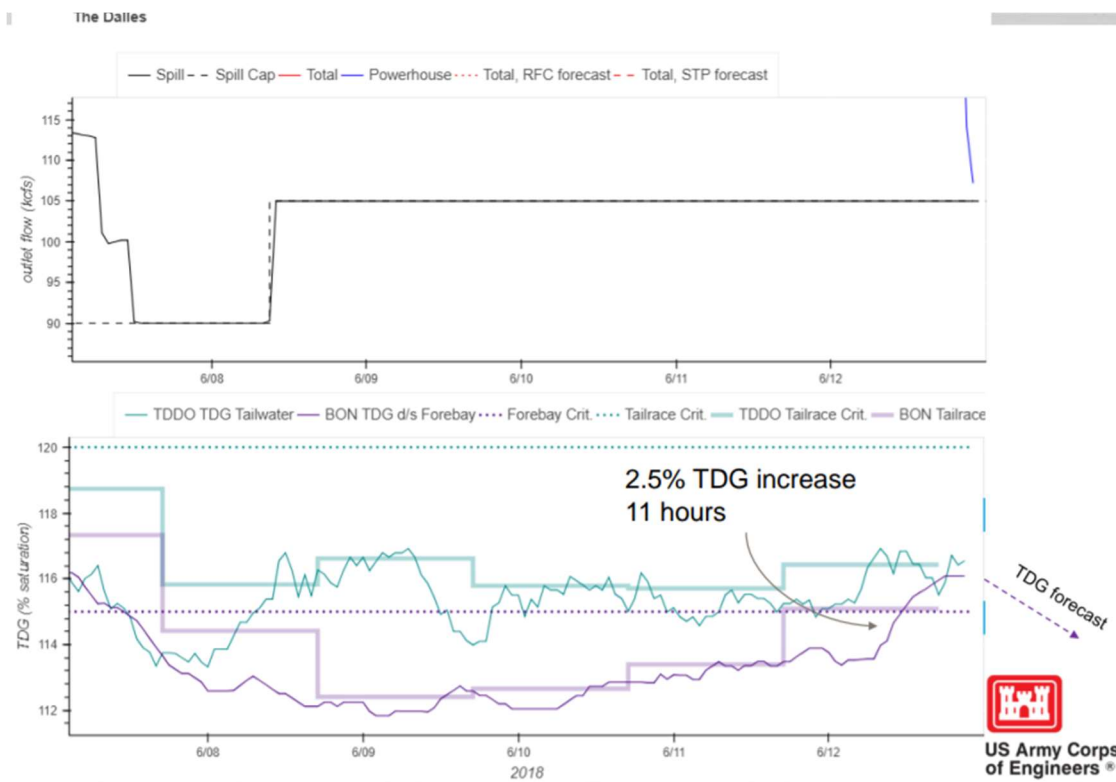
The graph above shows that TDG produced by the Lower Granite spill cap did not come in as forecasted. The Corps reacted by increasing the Lower Granite spill cap on June 7, 8 and 12.



The above graph shows a rapid decrease in TDG in the Ice Harbor forebay. In fact, a 2.5% decrease over 15 hours, which is of note because the Corps sets spill caps on a daily basis. This change shows why one spill cap over time would be difficult to maintain, even with a perfect forecast. TDG in the Ice Harbor forebay “bottomed out” on June 11 and has been increasing since.



At John Day, there were high winds starting off the week, with daily averages well above 10 mph, the threshold for “significant wind.” Wind dropped down on June 12. The graphs show the relationship between wind and TDG, with TDG decreasing during high wind periods. High wind is expected again today (6/13).



The above graph shows that The Dalles spill cap is currently exceeding the downstream forebay gas cap. The Corps expects TDG to decrease due to wind over the next few days and thus does not anticipate needing to lower the spill cap as it believes environmental conditions will alleviate TDG above 115%.

Paul Wagner, NOAA, mentioned that some members of FPAC had expressed frustration over spill not being closer to the gas cap at some projects over the past week.

Russ Kiefer, ID, expressed his viewpoint that the spill caps were not increased sufficiently at an adequate number of projects. Kiefer said: "It was my recollection that last Tuesday, upon reviewing conditions, we were in a declining hydrograph where we were transitioning from involuntary to voluntary spill and we have seen the pattern set up that high TDG caused by involuntary spill can result in delayed response from the Corps in bringing spill caps up for current conditions." Kiefer expressed his concerns to the FPAC Chair and was reassured that the Chair had already spoken with Turner and learned that the Corps didn't increase spill caps to avoid exceeding the gas cap when TDG was forecasted to increase due to calmer weather. Kiefer said that at the last TMT meeting, June 6, 2018, Dan had projected increasing TDG in the downstream forebays but had noted he would be looking at conditions and adjust the spill caps as necessary. However, Kiefer said, by Friday what had been forecasted was not occurring, and during a call, salmon managers specifically voiced concern about Little Goose and the need to raise the spill cap as a fish protection measure on Friday. Kiefer did not feel like a 2 kcfs change in one forebay (Lower Granite) was enough.

Julie Ammann, Corps, replied that her team responded by increasing spill caps consistent with the process to not exceed the gas caps, and had the same concerns as Kiefer that spill at Lower Granite was too high because of the effect it can have on TDG down river. She said the Corps is trying to be deliberate in making changes and making sure those decisions have the intended effect the Corps think they will. She noted that weather forecasts are imperfect, and that the Corps is operating to implement the court order and evaluating spill caps every day to meet but not exceed the state water quality standards. She expressed that she understood the frustration of salmon managers, particularly that TDG does not always do what salmon managers would like it to do, but that her team is trying to be very careful in how they react and not overreact because they have observed problems with exceeding too much in the past.

Ammann specifically pointed to the TDG data at the Snake projects, observing that TDG had increased for 2 days, which, after a lag would be seen at the next forebay. She noted that on Friday last week, the spill caps at Little Goose and Lower Monumental were right at 114-115% TDG in the next downstream forebays. Julie said: “This does not jump out to me as ‘wow, we need to make a drastic increase’”, and noted again that the Corps wants to avoid overreactions that result in exceeding the gas cap. “We were right in the ballpark of where we needed to be to implement the gas cap spill,” she said.

Kiefer expressed that there is an inconsistency between what happens and what appears in the data. Specifically he noted a lag, saying that the TMT should be seeing operations at Little Goose not for what is reporting on a particular day but what will happen 2 days out at Lower Monumental.

Ammann responded that the Corps is not trying to use TDG levels from the previous day to try to pre-predict what the WA standard is going to be. She said the Corps uses hourly data, the models they have and their best professional judgement to try to hit the standards. She pointed out that on top of that, there are always environmental factors that are uncertain and variable; for instance in the prior week, excessive wind that was higher than forecasted stripped TDG from the system.

Dave Statler, Nez Perce, observed that perhaps the Corps is careful not to overreact but at the same time it is important that the Corps does not underreact.

Dave Swank, USFWS, made a similar comment, saying he understands how difficult of a process this is and that there has been a lot of learning this year. His impression is that the Corps thought they were overreacting too often earlier in the season and consequently adjusted their strategy. He said his ideal would be a balance of being over TDG some days, under some days and right on other days.

Erick Van Dyke, OR, said that this discussion had been brought up in May. He felt after it was discussed in May, there was a time when the Corps made a “good effort” and was collaborating. However, after that, there was a period of involuntary spill and that the Corps was unable to manage along the lines of the injunction. He said he feels that right now the Corps is operating to

more of a “status quo” approach to make sure TDG does not exceed the state standards. The problem, he said, was when the SYSTDG method was dropped. He wants to see the Corps go back to the “maximizing spill approach” used in April.

Ammann was concerned by the inaccuracy of some of Van Dyke’s statements. In regards to the “status quo” comment, she responded, “We are not operating to last year’s FOP in any way, shape or form.” She continued, “We have been implementing this court order just as we said we would and trying to implement a gas cap spill operation...we were very clear that we would not necessarily use the SYSTDG model every day, especially in periods of involuntary spill, but my team HAS been using the model and tools at their disposal to make decisions since we have been transitioning out.” She asked to see where on the table Erick Van Dyke saw that the Corps was operating to the 110% gas standard.

Van Dyke noted one incident where the forebay at Little Goose was at 110% and “potential” 108-109% “in some forebays”. He said that he believed the forebays had been informing the Corps operations.

Ammann responded that if Van Dyke was asking the Corps to exceed state water quality standards, the Corps would not be able to do that, stressing again that the goal of the Corps, per the court order is to meet but not exceed state water quality standards.

Statler added that he believed the Corps should be as aggressive as possible in setting spill caps to achieve desired TDG levels and that the agency should not be so cautious that it never exceeds standards.

Ammann noted again that the Corps is not striving to be over the gas cap but appreciates the concerns expressed at TMT and that the Corps will take them into consideration.

5. Next TMT

The next TMT meeting is a face-to-face meeting on June 20, 2018. During that meeting, there will be an update on Tribal Fishing, Little Goose, the FOP, and Dworshak. The June 20th meeting will be followed by a DS Consulting process meeting. As a reminder, the Corps will switch from spring spill operations to summer spill operations on the lower Columbia on June 16 and on the Snake River on June 21.

Today’s Attendees:

Name	Affiliation
Charles Morrill	WA
Dan Turner	Corps
Dave Statler	Nez Perce
David Swank	USFWS
Doug Baus	Corps
Erick Van Dyke	OR
Jim Litchfield	MT

Joel Fenolio	BOR
Julie Ammann	Corps
Lisa Wright	Corps
Paul Wagner	NOAA
Russ Kiefer	ID
Scott Bettin	BPA
Tony Norris	BPA
Ann Setter	Corps
Dave Benner	Fish Passage Center
Emily Stranz	DS Consulting
Melissa Haskin	Flux Resources
Nancy Pionk	DS Consulting
Ruth Burris	PGE
Steve Burrell	Corps
Kyle Dittmer	CRITFC