

COLUMBIA RIVER TECHNICAL MANAGEMENT TEAM

June 28, 2023

Facilitator's Summary

Facilitation Team: Emily Stranz & Colby Mills, 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; it is not intended to be the "record" of the meeting. Official minutes can be found on the TMT website: <http://pweb.crohms.org/tmt/agendas/2023/>. Suggested edits for the summary are welcome and can be sent to Colby at colby@dsconsult.co.

Review Meeting Summaries & Minutes – TMT Members will review the June 14 official meeting minutes and facilitator's summaries at the next TMT meeting.

Libby Dam – Leon Basdekas, Corps, provided a mid-season update for Libby Dam operations. RFC water supply forecasts have decreased significantly since May, and although there have been swings, the Corps is looking at overall trends and monitoring gauges. To target the end of September draft elevation of 2,439 feet: outflows may be able to hold near 9 kcfs through the end of September if refill follows what the empirical data suggest, otherwise outflows may need to drop to around 8.25 kcfs in mid-July, as ESP data suggest. Leon noted that if the forecast does persist, outflows will reduce. The Corps will adjust to real-time conditions to best meet objectives.

Brian Marotz, MT, offered appreciation for the Corps' efforts in shaping the water during this dry period. In response to a query, Leon noted that the empirical data (besides RFC forecast) includes gauge data from the Kootenay River, Ft. Steele, Elk River, and Fernie to see how their flows are declining in relation to the total inflow into Lake Koochanusa, as well as looking at fill rates per day. The Corps looks daily at their data as well as forecasting; both are important in their decision-making.

Currently Libby is at 2,451 feet. The soft target in May was 2,454 feet, and Leon thought the project is likely to come in a little below that target. Greg Hoffman, Corps, added that they have received reports from downstream and upstream user groups that are happy with projections and outcomes of the operations.

Operations Review

Reservoirs – Joel Fenolio, Reclamation, reported on Bureau of Reclamation projects:

- **Hungry Horse:** midnight elevation was 3,553.4 feet, with releases of 2,000 cfs, and inflows yesterday at 4,500 cfs, which is close to peak elevation at the dam. Given the dry conditions, Reclamation is targeting 12-feet from full, and will hold releases at 2,000 cfs. Columbia Falls minimums will become the operating target sometime this summer and could be earlier than normal (August) given the conditions.
- **Grand Coulee:** midnight elevation was 1,286.3 feet, and inflows bumped to 111,000 cfs in the last couple days, with releases about 90,000 cfs. The project is slow to refill right now, and is projected to come in between 1,286-1,286.5 feet at the end of the month, targeting refill by July 9.

Flow augmentation on the upper Snake is out of all three basins: the Payette, Boise, and Upper Snake above Milner. Reclamation expects to finish Milner releases (about 3,000 cfs) around July 10/11. The Boise River ramped down to 1,200 cfs through the city, and should be ramping down irrigation releases in the next week or so. The Payette just started releasing over the last week and will continue through August. In response to a query, Tony Norris, BPA, noted that there are no additional flows from Canada to support dry conditions other than what has already been planned.

Lisa Wright, Corps, reported on Corps of Engineers projects:

- **Libby:** midnight elevation was 2,451 feet, average inflows of 14.9 kcfs, and outflows of 9 kcfs;
- **Albeni Falls:** midnight elevation was 2,062.2 feet, average inflows of 25.9 kcfs, and outflows of 22.6 kcfs;
- **Dworshak:** midnight elevation was 1,599.5 feet, average inflows of 4.1 kcfs, and outflows of 1.6 kcfs;
- **Lower Granite:** average outflows of 45.2 kcfs;
- **McNary:** average outflows of 161 kcfs; and
- **Bonneville:** average outflows of 156 kcfs.

Willow Walker, Corps, provided an update on Dworshak's transition into summer operations. The reservoir is 1,599.5 feet, in the last half-foot from full pool which is considered 100% full. The project will increase releases, likely on Friday, to roughly 3,000 cfs to maintain full pool and pass inflows (not yet for temperature augmentation). Currently, the Clearwater near Orofino is 63 degrees F, the Snake River at Anatone is 65 degrees F, and the Lower Granite tailwater is around 63 degrees F. Modeling shows that by the end of the 10-day outlook, the temperature at Lower Granite will reach close to the 68 degrees F threshold, so temperature augmentation will likely start at the end of next week, with about 3-4 days for Dworshak water to impact Lower Granite's tailwater.

Water Quality – Dan Turner, Corps, reported on the transition to summer spill operations. The Ice Harbor forebay has exceeded the 115% water quality standard, up to 116% for the last 2 days, and this morning. As a result, the Lower Monumental spill pattern will change from bulk to uniform, in an effort to bring TDG down in the tailrace and in the Ice Harbor forebay a couple days later. This change will likely be made this afternoon after a couple more hours of data. A heat wave and low winds are forecasted so TDG values are expected to hold or increase. The Corps will evaluate this spill change on a daily basis and hopefully revert back to bulk spill as soon as possible. This same operation occurred in 2021 at this time to manage TDG at the project. Exceedances at Chief Joseph Dam are believed to be TDG passing downstream from Canada through Grand Coulee Dam.

Erick Van Dyke, ODFW, noted that using uniform spill at Lower Monumental is a positive gas abatement approach and reasonable for fish passage. Because this has happened more than once, he hoped that changing to the uniform spill pattern prior to gas exceedances might be considered in the future. Trevor Conder, NOAA, noted that NOAA would likely oppose a preemptive change to uniform spill at 17 kcfs because bulk spill at this rate is more beneficial for juveniles; they agreed that the Corps' plan is appropriate to avoid the current TDG issue.

Fish – Juveniles: Trevor reported that the predominant species in the system now is sub-yearlings, with a trickling of yearlings coming through (as expected for this time of year). The sub-yearling index at Bonneville was 28,000 at B2; similar at McNary; 7,000 at Lower Granite yesterday. Low numbers of coho, steelhead and sockeye are passing, with a bump for sockeye at McNary a couple days ago. Dave noted that juvenile lamprey passage doesn't seem to increase seasonally like some of the other species, instead, they continue through spring and early summer.

At Bonneville, summer Chinook adults are around 2,000/day (same as 10-year average), with about 16,000 sockeye yesterday (138,000 total). Steelhead are at 200 or less/day, and are not really moving through other projects (slightly later than average). High numbers of shad are also coming through the project, about 4 million to date. Trevor noted that shad will be a concern if they continue to increase. Charles Morrill, WA, noted that TAC run forecasts over Bonneville are tracking nicely. Dave noted that the adult lamprey run is still going strong, and is 261% of the 10-year average at Bonneville.

At McNary, things are going as expected based on Bonneville passage. Ice Harbor is seeing 200-300 summer Chinook per day, quite a few shad, and some sockeye (22 yesterday). Lower Granite has 200-800 summer

TMT – June 28, 2023

Chinook per day, barely any steelhead, 14 sockeye, and about 1,000 shad, which remains a concern at Lower Granite as well.

Power System – Tony noted warm weather ahead for next week, and during the holiday weekend, although nothing of concern for the power system.

The July 5 TMT meeting was cancelled and if needed due to changing conditions, a TMT meeting will be added to the calendar at the end of the week.

Questions and Comments from Members of the Public – there were no questions or comments from members of the public.

The next scheduled TMT meeting is on July 12, 2023, at 9:00 AM.

**Columbia River Regional Forum
Technical Management Team
OFFICIAL MINUTES
Wednesday, June 28, 2023
Minutes: Andrea Ausmus, BPA (contractor, CorSource Technology Group)**

Today's TMT meeting was held via conference call and webinar, chaired by Doug Baus, Corps, and facilitated by Emily Stranz, DS Consulting. A list of today's attendees is available at the end of these minutes.

1. Review Summaries and Minutes – June 14

- June 14 – Summaries and Minutes – They were posted this morning and TMT members need more time to review. Will look at them next time TMT meets.

2. Libby Dam – Leon Basdekas, Corps-NWS

a. Operations Mid-Season Update

- Declining Water Supply Forecasts
 - Declining forecast since their update in May.
 - There was a pickup through the middle of May and then there has been a decline with some undulations.
 - Even when putting the presentation together last week Basdekas had about 80 kcfs “disappear” from the RFC forecasts and what they are projecting for April to August inflows period.
- Observed and Forecast Inflows
 - May runoff was much higher than the 30-year average.
 - The consequence is below average inflows now in June and through the rest of the summer.
 - Much drier than average this year.
- Reservoir Operations 2023
 - Reservoir levels have been on a rapid rise from the low FRM elevation at the end of spring.
 - Currently refilling with a peak around mid-July.
 - Basdekas is not sure what the peak will be – there are probably a couple more feet to go.
 - Koocanusa is filling about a quarter of a foot per day over the last week.
 - Inflows remain steady around 14 – 15 kcfs.

- Targeting end of September elevation of 2439' per the BiOp.
- Reservoir Outflows 2023
 - Outflows: 9 kcfs
 - Watching mid-July forecasts very closely and the Corps may drop outflows down to 8.25 kcfs to reach the end of September elevation. In order to have a smoother and steadier outflow into the end of summer.
 - This is still conceptual and subject to change. Shows the general overall trend and flow objectives. Will change as basin conditions become more apparent.
- Current Flow Plan Status
 - RFC forecasts have decreased significantly since May.
 - Corps does not want to be reactionary on daily changes in the forecast, they are looking at the overall trends and watching the gages to see when things start to materialize at the gages.
 - Meet end of September draft requirement of 2439.0 ft.
 - If refill is as ESP data suggest, may need to drop outflows to 8.25 kcfs in mid-July.
 - If refill is as empirical data suggests, may be able to hold near 9 kcfs through end of September.
 - Will reduce outflows if forecast persists.
 - As with all our plans, we will adjust to real-time conditions with more (or less) water than is currently forecasted to best meet the above objectives.
 - Basdekas thinks that we are in good shape for a dry year. For having a dry year and to be having such good flows out of Libby Dam for this time of year and to meet the refill objectives.

Brian Marotz, MT. thinks that this is a great solution to this dry period we are getting into. He thinks that the Corps did a great job shaping. Even though it was a tier 1 year for sturgeon (no volume), it was shaped well. Marotz said that he knows that part of the chart was conceptual on the way down, but if it will hold have it go to 9 kcfs or 8.25 kcfs if they must for the rest of the growing season that covers the majority of the productive riffles in the river. Marotz said that will be positive for productivity in the river for the rest of the year and the shape of the refill in the reservoir looks promising as well.

Kelsey Swieca, NOAA, thanked the Corps, and asked what type of empirical data they are looking at that may be different than the RFC forecast that would result in the potential difference in outflows.

Basdekas said that the empirical data they are looking at is the gage data at Kootenay River at Fort Steele and Elk River at Fernie, BC and seeing how those flows are declining in relation to the total inflow into Lake Kooconusa. We are seeing about a quarter foot per day average fill rate. Corps cannot look at historically where we are (for date) because most of the runoff has come off early in the system, so they take where they are

in gaged inflow into Lake Koochanusa, which is more typical for later in the summer. Then look at the descending limb (historic 25 percentile flow) and intersect it with what is observed now. Next, follow the historical recession for 3 weeks and finally scale the difference in flow rates to total inflow. Basdekas said it is more of a “back of an envelope” calculation then modeling, but in his opinion, it is just as valid because they are looking at hard data rather than forecasted information. They are looking at both, they are both important in their decision making. They have two conflicting pieces, but until they see the response in the gage then they will be more apt to make a flow change decision. So, they are watching that daily.

Van Dyke asked how close to full is Libby. Basdekas said that they are at 2451’ and soft target projected in May was 2454’ and they likely come in below that. Exactly where Basdekas is not sure yet.

Greg Hoffman, Corps, added that he has been receiving reports from both the downstream and upstream user groups in Canada. The angling communities are thrilled with what the projections are – ecologically is what TMT likes to talk about, but the anglers are thrilled based on the biology of what occurs in the river, productivity and what impact that has on the fishery and upstream. This elevation range, 2445’ – 2450’ is ideal for the Canadian user groups, just north of the border, and this is an impactful operation this summer considering some of the treaty stuff going on. Hoffman added that the temperature management at Libby Dam has been spot on this year. They are running at 55°F and they will remain conservative as it is a good flow volumetrically for temperature management.

Dave Swank, USFWS, asked how the 8.5/9 kcfs is compared to where we have been at in recent past years, and how much of that that is due to the lack of a sturgeon flow pulse this year or he asked if there is something else going on.

Basdekas said that it is a hard question to answer because in the sturgeon pulse they have a dedicated volume that does impact the volume in Libby after refill. It is not a clear-cut answer. He said that he would have to dig into it more to answer what Swank looking for. Basdekas said that the flows last year at this time were higher but for end of summer and end of September he does not recall exactly where they were last year, it was a wet year and there was more water in the system. Right now, they are above 6,000 cfs minimum bull trout flows. He said that he is available if Swank wants to reach out to him directly.

3. Operations Review

a. Reservoirs

Reclamation – Joel Fenolio

- Hungry Horse Dam
 - Midnight elevation: 3553.4 ft.
 - Outflows: 2 kcfs
 - Inflows: 2.5 kcfs

- Close to peak elevation at the Hungry Horse Dam
- Right now, at a decision point on targeting 12 feet from full given the dry conditions. Columbia Falls minimum normally would take over about August with these types of dry conditions. With the soil moisture and how things are dropping off it could come earlier.
 - To meet 12 feet from full they could drop down to 1.5 – 1.1 kcfs out but they would be coming back up.
 - Talking to Montana FWP, the preference is to hold the 2 kcfs out and then Columbia Falls minimums will take over at some point this summer.
 - During that operation, they are only looking at a foot or two of difference in terms of where they will be end of September. Given the dry conditions they are seeing modeling where they might be closer to 20 feet from full.
- Operation (unless there is objection) hold for now.

Marotz added that holding will help them out. Combined with what is in the mainstem will lead to good conditions in the river. He said that precipitation levels are still unknown. Whether it is the 12 feet or 20 feet they are still within the discussed parameters, so Marotz thinks that it is looking good. He said that Fenolio is doing the best he can with the changing forecasts and Marotz thinks that it is coming out good for the river and the reservoir.

- Grand Coulee Dam
 - Midnight elevation: 1286.3 ft.
 - Current Inflows: 111 cfs
 - Average Outflows: 90 kcfs
 - They are having a slow refill.
 - End of the month elevation between 1286 – 1286.5 feet.
 - Target refill by July 9
- Flow Augmentation
 - Flow augmentation of the Upper Snake coming out of all three basins; Payette, Boise, and Upper Snake above Milner.
 - Upper Snake above Milner
 - 3 kcfs
 - Finish release around July 10 or 11
 - Boise
 - 1.2 kcfs
 - Ramped down through the city of Boise.

- Ramping down to irrigation releases in the week or so and done with full augmentation there.
- Payette
 - Just started doing releases last week
 - Will be metering out the releases through the end of August.

Charles Morrill, WA, asked if they are pushing through Canadian water from the proportional releases.

Fenolio asked if Morrill meant through Coulee.

Morrill said that he understood that Arrow was discharging and they were going to give us water the last week of June to help because of their situation. He said that there would be additional water coming down to support flows at McNary. Morrill asked if there have been comments on that.

Fenolio said that he had not.

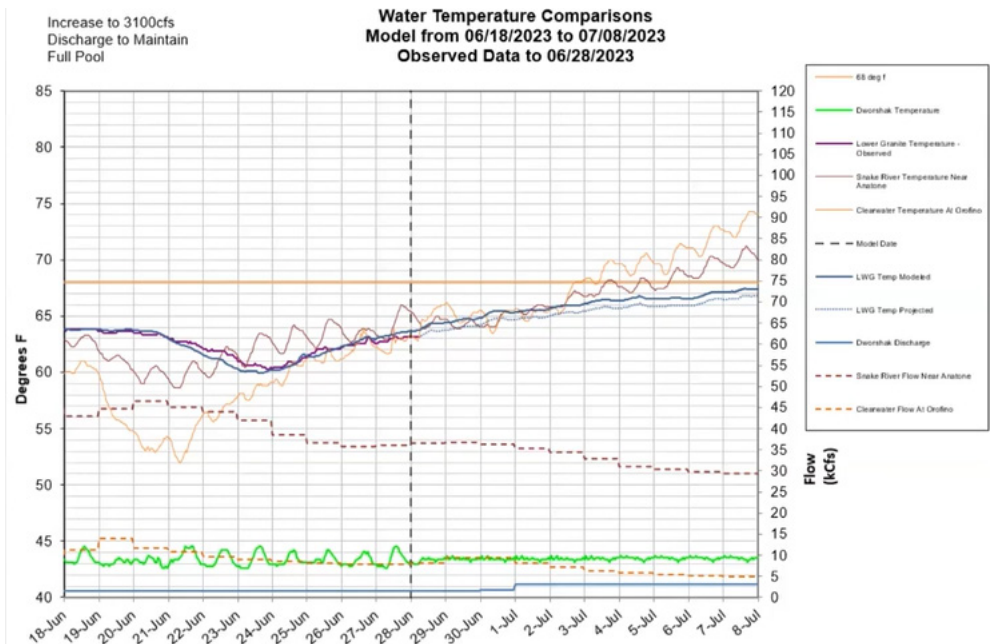
Tony Norris, BPA, said in the U.S., nothing more than what was planned.

Corps – Lisa Wright

- Libby Dam
 - Midnight elevation: 2451 ft.
 - Inflows: 14.9 kcfs
 - Outflows: 9 kcfs
- Albeni Falls
 - Midnight elevation: 2062.2 ft.
 - Inflows: 25.9 kcfs
 - Outflows: 22.6 kcfs
- Dworshak Dam
 - Midnight elevation: 1599.5 ft.
 - Inflows: 4.1 kcfs
 - Outflows: 1.6 kcfs
- Lower Granite average outflows: 45.2 kcfs
- McNary average outflows: 161 kcfs
- Bonneville average outflows: 156 kcfs

Operation Updates – Willow Walker, Corps

- Dworshak – Transition to Summer Operations
 - Reservoir elevation: 1599.5 (last half-foot of full pool)
 - Considered 100% full.
 - Good news – filled the reservoir before summer flow temperature augmentation needs to begin.
 - Full water supply for summer.
 - Increasing releases Friday (June 30, 2023) to ~3 kcfs.
 - To maintain full pool and to pass inflows.
 - Not for temperature augmentation.



- Orange line marks 68°F at Lower Granite tailwater
 - Summer temperature augmentation target.
- Blue line marks the projected to go in their models.
- Clearwater near Orofino: 63°F
- Snake River at Anatone: 65°F
- Lower Granite Tailwater: 63°F
- Good buffer before the 68°F at the end of this ten-day time window.
 - Closer to the 68°F cap
 - Temperature augmentation will likely begin next week.
 - They need 3-4 days to send cool water for it impact Lower Granite’s tailwater temperature. They will make sure that they are ahead of that.

b. Water Quality – *Dan Turner, Corps*

- Transitioned to Summer Spill Operations.
- Ice Harbor
 - Forebay criteria is being exceeded.
 - 06/26/23 116
 - 06/27/23 116
 - Turner said that he believes that it is exceeding again this morning (June 28, 2023).
 - Management option:
 - Change the Lower Monumental spill pattern from a bulk spill pattern to a uniform spill pattern.
 - Will bring TDG down in the tailrace and a couple days later in the forebay.
 - They likely make this change this afternoon.
 - They want to see a couple more hours of data to see if the Ice Harbor forebay TDG level decreases. There is a heatwave and low winds forecasted on the system, so they are expecting those to continue to hold steady at 116 or increase a little. This bulk to uniform transition will help manage that.
 - In late June/early July 2021 they did the same transition. Turner said that this is not a new situation, and this is the way that it was managed in the past.
- Chief Joseph
 - Turner believes that the exceedances are still coming downstream from Canada through Grand Coulee Dam and passing through the system.
 - Hopefully will see this decrease, it looks like TDG at the border is starting to decrease and we will need to pass those through the reservoirs before we see the decreases downstream.

Trevor Conder, NOAA, asked Turner if they do go to uniform at Lower Monumental Dam, if he would expect to transition back to bulk at some point or if he would hold uniform for the remainder of the season.

Turner said they would evaluate on a daily basis and would hopefully be able to revert to bulk when TDG comes down. He said if they get a wind on the system and some degassing they can go back.

Erick Van Dyke, OR, said that it has been well over a decade that Oregon has suggested that using uniform at Lower Monumental is a positive gas abatement approach. He said that it is also reasonable for fish egress and passage. Van Dyke said that he hopes that it can start to be recognized that this has happened more than once, and it could be avoided

potentially by altering spill to the uniform pattern before we see gas violate the criteria. He said that he hopes that it could be considered internally.

Conder said NOAA would oppose a preemptive move to uniform at 17k because bulk spill is more attractive to juveniles and puts more juveniles through the spillway. Survival estimates indicate that survival is a little higher under the bulk at 17k. That is NOAA's preference, but they do agree that this uniform is a reasonable operation to reduce TDG.

c. Fish

Salmon – Trevor Conder, NOAA

- Juveniles
 - Yearling
 - Trickling of yearlings as expected for this time of year.
 - Subyearling Chinook
 - Bonneville
 - BO2 (Index): **~28K**
 - Almost all the flow is going to B2, there are only two units operating with 95 kcfs spill. Only thing happening at B1 is the Sluiceway.
 - McNary
 - Index is similar to Bonneville.
 - Lower Granite
 - LGR (Index): **~7K**
 - Coho
 - Just a few
 - Steelhead
 - Low numbers
 - Sockeye
 - Low Numbers
 - McNary
 - MCN (Index): **538**
 - Unusual small pulse.
- Adults
 - Bonneville
 - Summer Chinook

- 2000/day (right on the ten-year average)
- Last year there was a pulse of about 5000/day. They have not seen that this year yet. It was an unusual pulse.
- Tracking right along average.
- Conder was at a project yesterday (June 27, 2023) and there are nice fish coming through. They are a decent size, 20-30 pounds.
- Shad
 - A lot of Shad, not tracking a record.
 - Ladder is completely full.
 - YTD: ~4M
 - It is increasingly becoming a concern of Conder's to see if this will increase. He is keeping an eye on it.
- Sockeyes
 - 06/27/23 ~16K
 - YTD ~138K
- Steelhead
 - 200 or less
 - Starting to move up Bonneville but not anywhere else.
 - Getting a slightly late start to the steelhead run.
 - Slightly later than the 10-year average.
- McNary
 - Nothing substantial - what you would expect based on what is going on at Bonneville.
- Ice Harbor
 - Summer Chinook
 - ~2-300/day
 - Shad
 - Quite a few
 - Sockeye
 - Seeing sockeye run coming through.
 - 06/27/2023 22
 - Fish are moving.
 - Temperatures are in a range that is tolerable.
- Lower Granite
 - Summer Chinook
 - ~2-800/day

- Steelhead
 - Barely any moving at the moment.
- Shad
 - 06/27/2023 ~1000
 - Shad can be problematic with he adult trap and that is one of the concerns with them.
- Sockeye
 - YTD: 14

Lamprey – Dave Swank, USFWS

- Juveniles
 - Still coming in
 - McNary
 - Has higher numbers.
 - Lamprey do not seem to decrease; they continue into the spring/summer.
- Adults
 - Lamprey run is strong.
 - Bonneville: 261% of 10-year average.

TAC Update – Charles Morrill, WA

- Total is tracking nicely at this point in time.

d. Power System – *Tony Norris, BPA*

- Warm weather ahead.
- Holiday weekend.
- Nothing of concern, all is well.

4. Public Comments: None

5. Set agenda for next meeting – July 12, 2023

Today’s Attendees:

Agency	TMT Representative(s)
Army Corps of Engineers	Doug Baus (chair), Julie Ammann, Lisa Wright
Bonneville Power Administration	Tony Norris, Scott Bettin
Bureau of Reclamation	Joel Fenolio
NOAA Fisheries	Trevor Conder, Kelsey Swieca
US Fish & Wildlife Service	

Washington	Charles Morrill
Oregon	Erick Van Dyke
Idaho	Jonathan Ebel
Montana	Brian Marotz
Nez Perce Tribe	
Umatilla Tribe	
Colville Tribe	
Warm Springs Tribe	
Kootenai Tribe	
Spokane Tribe	

Other Attendees (non-TMT members):

Corps – Dan Turner, Aaron Marshall, Alexis Mills, Chris Peery, Leon Basdekas, Willow Walker, Greg Hoffmann

NOAA – Dana Bethea

DS Consulting – Emily Stranz (Facilitator), Colby Mills

BPA – Andrea Ausmus (note taker, Contractor with CorSource Technology Group)

NW Power and Conservation Council – Kate Self

Columbia Basin Bulletin – Mike O’Bryant

Chelan PUD – Jay Fintz, Melissa Lesser

Energy Keepers – Eve James

Oregon DEQ – David Gruen

Snohomish PUD – Mike Shapley