TECHNICAL MANAGEMENT TEAM
MEETING NOTES
July 18, 2001
CORPS OF ENGINEERS NORTHWESTERN DIVISION OFFICES – CUSTOM HOUSE
PORTLAND, OREGON

TMT Internet Homepage: http://www.nwd-wc.usace.army.mil/TMT/index.html

FACILITATOR'S NOTES ON FUTURE ACTIONS
Facilitator: Donna Silverberg

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.

Transmission Constraints:
John Anasis reported that no changes have occurred from last week's TMT discussion, although the cooler temperatures have slightly improved the situation. 600 MW is being used over Hungry Horse, Albeni Falls, Libby and Dworshak. John foresaw little to no change in the next two weeks regarding this operation, depending on weather conditions.

Grand Coulee Operation:
The operation plan continues to have Grand Coulee reach 1280' by the end of July and 1278' by the end of August, with a two foot operating range. It is currently at 1283'. Bob Heinith asked what the differential in cost is between releasing water now versus in August.

Water Temperature Update:
Dick Cassidy reported on Lower Granite forebay and tailwater, Anatone, and Peck temperatures for a 24-hour average. He pointed out that significant cooling occurred at the forebay due to releases at Dworshak and cooler weather. This is fairly consistent with the EPA and COE models.
ACTION: Dick will try to distribute information from the thermograph at the next face-to-face meeting. He will also check out whether the McNary mixing device has been used and, if yes, whether it has been effective.

Review Current System Conditions:
Libby and Albeni Falls reservoir levels remain consistent. There was a discharge increase yesterday at Lower Granite. Dworshak drafted over the past week. Hungry Horse is operating at 1000 cfs. Flathead discharges were ramped down and held at 4000 cfs. The remainder of the volume will be used at Columbia Falls. Paul Wagner reported on fish migration, saying that peak migration has passed McNary and most of the fish are in the lower Columbia.

Libby Operations:

Montana has requested an increase in flows to flush out algae that may be detrimental to bull trout in the area. They would also like to test this action to find benefits to bull trout. The proposed operation would involve a pulse and gradual ramp-down over a 24-hour cycle lasting six days. The sheriff in that county has also requested an increase in flows to recover a body reported missing a few days ago.
ACTION: While there was no disagreement from TMT, Rudd Turner and Jim Litchfield will work out the details of the operation. Jim will provide documentation on the possible causes of the algae bloom, any alternatives considered and continual monitoring of the operation's effects on bull trout.

Hydrosystem Storage Needs for Power System Reliability:
Therese Lamb provided a handout on BPA's storage target, which currently is to have 28,000 MW/months of storage in the Federal hydrosystem on October 1. This may change based on the following on-going evaluations: transmission constraints, 12% loss of load probability, and a change in market conditions. BPA remains concerned, both over reaching their storage needs for winter reliability and whether the 28K MW/mos. is sufficient. Their current plan is to meet regional load requirements and make purchases so as much water as possible can be stored.
ACTION: As requested by TMT members, a status report on BPA's system reliability will be presented every two weeks.

SOR 2001 C-6:
CRITFC requested 600 MW/mos. of spill, duplicating the spring spill program, to begin immediately. The justifications for this SOR were the high numbers of fish remaining in the river as well as rising temperatures. Other TMT members were asked to respond:

COE can't support the SOR due to prior agreements not to spill because of the power emergency. Also, flows are so low that project powerhouse and spill minimums may not be met. Oregon supports the request; they say fish migration has suffered to unprecedented levels and they would like The Dalles to be of highest priority. Washington also supports the SOR and says that time is of the essence. This SOR, they feel, is a good compromise based on last week's request. NMFS supports the concept but recognizes the power system emergency constraints as provided for in the BiOp. The BOR and USFWS agree with NMFS. Montana does not support the SOR given the analysis presented at the last Regional Executives meeting regarding the benefits to fish versus the costs to system reliability. Idaho had no representative at the meeting. BPA reminded the group that this is a reliability issue, not a financial issue.

One suggestion was made to spill for two to three weeks at Bonneville and the Dalles. The group wanted to look at this request relative to biological benefits and the increased risk to BPA. TMT members did not feel they could make a decision on this issue, so Oregon asked that it be raised to IT for resolution.
The question posed from TMT to IT is: *Can the planned lower Columbia flows be reallocated to provide a limited amount of spill for fish so that no additional water is used while energy is purchased elsewhere for an initial 2-week period?*
The question will be asked tomorrow at an IT conference call at 3:00 pm.
ACTION: If IT makes a decision tomorrow regarding spill but needs TMT to specify the action, an emergency TMT conference call will be held Friday at 9:00 am.

Next Face-to-Face Meeting, August 1, 9-12:
Agenda items:

- Libby Update
- 28,000 MW Update (Reliability Criteria)
- Water Management Plan
- Emergency Protocols
- IT Update

A conference call is not planned for next week.

1. Greeting and Introductions

The July 18 Technical Management Team meeting, held at the Customs House in Portland, Oregon, was chaired by Rudd Turner of the Corps and facilitated by Donna Silverberg. The following is a distillation, not a verbatim transcript, of items discussed at the meeting and actions taken. Anyone with questions or comments about these minutes should call Turner at 503/808-3935.

Silverberg welcomed everyone to the meeting, then led a round of introductions and a review of the agenda.

2. Operational Update.

John Anasis of BPA's Transmission Business Line reported that little has changed on the system reliability front since last week's TMT meeting; unseasonably cool weather has yielded some improved transmission capacity during daytime hours, and nighttime transfer capacity has not changed. During the day, federal loads have been exceeding the current level of federal generation, which has been helpful,, Anasis said. At night, loads drop, so the federal units are a net user of transmission capacity during light-load hours, by between 85 and 100 MW. Unless there is a major change in load or generation levels, I don't foresee much change from where we are right now, although if the weather heats up, we will start losing capacity during the day, Anasis said.

What's the prognosis for the next two weeks, through, say, August 5? Turner asked. As I said, it depends on the weather, Anasis replied – I haven't seen a long-term projection, but that is the only variable that is likely to change. If the wather stays similar to the pattern we've seen over the past week or so, the transmission system will likely be unchanged, but if the weather heats up significantly, that will likely cause a loss of about 300 MW in daytime transmission capacity, which will have to be prorated among all the users of the pathway. It will then be up to the Transmission Business Line to find non-firm capacity, if generation curtailments are to be avoided, Anasis said.

Kyle Martin said that, while the weather is expected to heat up somewhat over the next week or so, there are no dramatic warming trends on the horizon. Anasis said 30 degrees C – about 86 degrees F – is the threshold at which transmission capacity begins to be reduced.

3. Grand Coulee Operation.

Tony Norris said Grand Coulee is headed toward elevation 1280 by the end of July, and 1278 by August 31 – that is still Reclamation's planned operation, he said. The current elevation is 1283 feet, with 57.3 Kcfs outflow yesterday. In response to a question from Bob Heinith, Scott Bettin said that, over the next few weeks, Grand Coulee will likely fill slightly on the weekends, then draft during the week to meet load. Again, he said, the plan is to reach elevation 1280 by July 31.

The group devoted a few minutes of discussion to the reasons why SOR 2001-9, submitted last week, was not implemented; Bettin reiterated that it was because the power system emergency is still in force, and implementing the SOR would have put BPA into a surplus situation, which would run counter to the federal operating principals. In addition, he said, we didn't know whether or not it would be possible to buy the power we would need later in August to replace this energy. We're running the river to meet load, he said; drafting Grand Coulee an additional three feet would have put us into a surplus position. Is there an opportunity for an exchange? Christine Mallette asked. We've pursued that, but have not yet found anyone willing to do such an exchange, Bettin replied. Heinith requested that BPA provide some additional information about energy pricing at the next TMT meeting.

4. Hydrosystem Storage Needs for Power System Reliability.

Terese Lamb of BPA distributed a handout describing storage targets for the federal projects. She provided an overview of BPA's system reliability concerns for this fall and winter, describing some of the studies BPA and the Power Planning Council have been doing to determine the amount of federal storage needed by October 1 to assure an acceptable (no more than 12% probability of loss of load) level of system reliability: 28,000 MW-months of storage equivalent.

Lamb said it may be necessary to store up to 2,000 MW-months into the federal storage projects by September 30 if the 28,000 MW-months target is to be met. In response to a question from Mallette, Lamb explained the term "loss-of-load probability," essentially, it is an industry-standard term for a situation in which the system would be unable to meet load by any amount or duration.

Lamb noted that the Council has said the next version of this analysis will be available in late August or early September; this is a concern to BPA, she said, because there are a number of facets of this situation we feel need some additional analysis sooner than that.

Lamb touched on the potential impacts of the West-of-Hatway transmission constraint on overall system reliability and storage needs, noting that this situation has not yet been factored into the Council's analysis. She noted that BPA would prefer no more than a 5% loss-of-load possibility, while the Council has concluded that additional storage will yield no more than a 12% loss-of-load probability. BPA feels some additional storage could get us closer to the 5%

loss-of-load target, Lamb said. She added that the Council's analysis assumes that a significant amount of diesel generating resources will be brought on-line this winter; given falling energy prices and the high cost of diesel generation, she said, BPA isn't sure how much diesel generation can realistically be expected to be available this winter. However, the capacity is there if the price is right, Heinith observed.

BPA is also concerned that we need to watch our storage levels very carefully during August and September, said Lamb, given record low runoff and storage levels, and the fact that the runoff volume forecasts only run from April through July. We had an early runoff this year, which has translated into falling water supply forecasts since this spring, Lamb said; BPA is now estimating that the August and September water supply forecast will be 1.5 MAF lower than we thought in the spring. That further erodes our ability to meet the 28,000 MW-month October 1 federal storage target, Lamb said.

We have now exceeded the 28,000 MW-month storage target in the federal system, Lamb said; however, to meet load and maintain minimum flows for fish, we will have to draft the system between now and August 31. The bottom line is that August and September streamflows are a source of great concern at BPA, in terms of our ability to meet the 28,000 MW-month target, she said – we're in a record low water year, and are consequently in uncharted territory.

One positive factor is that there is power available on the market, currently, and prices are falling, Lamb said. BPA has been buying, although the concern there is that the more power we buy, the more water we're able to store and the lower streamflows fall. The other concern is that, so far, temperatures in California, the Northwest and the Southwest have been moderate; once they pick up, as they are sure to do at some point this summer, the entire power market will change significantly for the worse. The bottom line is that we are at the ragged edge, in terms of the likelihood that we will meet the 28,000 MW-month federal storage target, Lamb said.

We should get a pretty good indication of whether or not the target is going to be met over the next week or two, Turner observed. That's correct, said Lamb – we're now entering the critical period. The group then spent a few minutes discussing the assumptions underlying BPA's system reliability analysis; Martin noted that, according to his estimate, the region will see only 50%-70% of normal precipitation during August and September.

The bottom line is that BPA would like to operate the system to meet federal system load, Lamb said; any available water over and above what is needed to maintain federal system reliability will be stored. She noted that last year, the second-lowest water year on record, BPA was able to tap 9 MAF of Canadian storage; we have not been able to replace that water, she said, so we can't count on it this year.

The TMT devoted a few minutes of discussion to this issue, offering a variety of clarifying questions and comments. Ultimately, the discussion moved on to the new System Operational Request, SOR 2001 C-6.

5. Water Temperature Update.

Dick Cassidy distributed a summary of current Lower Granite, Anatone and Peck water temperatures. In general, he said, water is coming out of Dworshak at 48 degrees; five miles downstream at Peck, the water temperature in the Clearwater is 56-58 degrees, and by the time it gets to Lewiston, it is 56-60 degrees. That water provides significant cooling at Lower Granite, he said; forebay temperatures were in the mid-70s on July 12, and are now just under 68 degrees F. Cassidy noted that, even when Lower Granite forebay water temperatures were at their peak, tailwater temperatures at the project were in the high 60s – obviously, there is some stratification in that reservoir.

The group spent a few minutes reviewing current water temperatures at Lower Granite, Ice Harbor and McNary from the Corps homepage. What we're seeing are water temperatures that are consistent with both the EPA and MASS-1 model predictions, Cassidy said; so far, we are seeing significant cooling as a result of the Dworshak operation. If we stay on top of the situation, Cassidy said, we're hopeful that it will be possible to keep Lower Granite tailrace temperatures below 70 degrees. In response to a question from Heinith, Cassidy said he will try to provide recent tri-level thermograph data at next week's TMT meeting.

6. Current System Conditions.

Turner reported that yesterday's day-average flow at Bonneville was 86.2 Kcfs; at McNary, 77.3 Kcfs, with a day-average range of 69 Kcfs-90 Kcfs over the past week. Lower Granite's day-average was 29 Kcfs yesterday, up from 24 Kcfs earlier in the week, possibly due to an increase in Brownlee discharge. Dworshak was at elevation 1574.7 feet as of midnight last night; releasing full powerhouse discharge of 9.8 Kcfs, with 1.5 Kcfs inflow, the project is drafting at a rate of about 1 foot per day. The West-of-Hatway situation caused no curtailments of Dworshak outflow last week, Turner added.

Current Libby elevation is 2435.8 feet, Turner continued, up a foot over the past week with 6 Kcfs outflow and 9.4 Kcfs average inflow. The current Albeni Falls elevation is 2062.3 feet at the Hope Gauge, up a tenth of a foot over the past week, with 8.8 Kcfs outflow yesterday and 7.8 Kcfs inflow. Overall, said Turner, the system is being operated to meet power needs and ESA requirements, and to meet end-of July and end-of-August reservoir elevations. There is no spill for fish this summer, he said.

Turner noted that the most recent SSARR run shows that, given falling inflows, Libby is likely to miss its August 31 refill target of 2439 feet by about two feet. We should probably talk about that at a future TMT meeting, he said; it was so agreed.

Norris reiterated that Grand Coulee is now at elevation 1283 feet, with 57.3 Kcfs outflow; again, the plan is to reach elevation 1280 at that project by July 31. There was a lightning event at Hungry Horse last week, which meant Reclamation had to exceed the 1 Kcfs outflow from that system for a short period. Norris said Hungry Horse is once again releasing 1 Kcfs; it now looks as though it will be possible to meet the Columbia Falls minimum flow and reach elevation 3540 by August 31 – in other words, the 20 feet of Hungry Horse storage will make it downstream for salmon this summer, Norris said.

With respect to the status of the fish migration, Paul Wagner said subyearling passage at Lower Granite is now past the peak – that occurred about two weeks ago – and we're now on a decreasing trend. At McNary, subyearling chinook numbers are back up – the index was 140,000 yesterday, much better than the 17,000 we saw one day last week, Wagner said. What percentage of the 140,000 is Snake River wild chinook? Turner asked. Very small, Wagner replied – most of those are hatchery fish, but they are all listed fish.

Moving on to the cumulative index at Lower Granite, Wagner noted that the curve is flattening out as the run begins to decline; however, we are running within the expected range, as far as total passage, he added. The McNary numbers are somewhat on the low side, he said, but again, we're close to the range we expected to see. One interesting facet is the smolt index compared to outflow, Wagner said; they went pretty much hand-in-hand as flows decreased, and were generally hand-in-hand when flows increased, although there is more variation when things were on the increase. In general, we have seen a correlation between increased flow and increased passage, although in some cases there is a delay of several days before we see that response, Wagner said.

So what does all this tell us? Silverberg asked. That we're well into the subyearling passage period in the Lower Columbia, although there are still substantial numbers of migrants that have yet to come down in both the Columbia and Snake Rivers, Wagner replied. In response to a question, Wagner said there was some mortality last week at Little Goose, with up to 13% mortality seen on one day before the cooling effects of the Dworshak releases reached that project. After that one-day spike, daily barge mortality has gone back down to 2% or less, he said.

The group devoted a few minutes of discussion to the continued high adult returns; one participant noted that 2001 jack counts are running 200%-300% of the 10-year average – not as high as last year, he said, but still an indicator that 2002 adult returns will be better than average.

7. New System Operational Requests.

On July 17, the Corps received SOR 2001 C-6. This SOR, developed and supported by CRITFC, requests the following specific operations:

- Provide immediate 600 MW months of spill at the Spring 2001 levels:

  Bonneville_ 50 Kcfs for 24 hours

  The Dalles_ 30% of daily average flow for 24 hours

  John Day_ 30% of daily average flow for 12 nighttime hours

  McNary_ 30 Kcfs for 12 nighttime hours

Heinith spent a few minutes going through the contents of this SOR, the full text of which is available via the TMT's Internet homepage; please refer to this document for full justification and details. In general, he described this requested spill program as modest, doable and extremely beneficial for fish; it is implementable, given the fact that power prices are low and power is available; he urged BPA to use its reserves to spread the pain to the energy side as well as the biological side in this very difficult water year.

Turner replied that the Executives made a decision earlier this summer not to provide summer spill; he added that, if total river flows fall much lower, it would be difficult to physically implement this SOR, due to powerhouse minimum requirements. Mallette said Oregon supports SOR 2001 C-6, given the tremendous suffering the fish have undergone this year; 600 MW-months is a very modest program, which isn't anywhere close to the BiOp spill program. Bill Tweit said Washington also supports SOR 2001 C-6.

Wagner said NMFS supports the concept of spill, and agrees with the biological benefits CRITFC has listed in their justification. At the same time, he said, the BiOp recognizes that power system stability must remain intact. If spill can be provided, that would be beneficial, he said; however, it doesn't sound as though we have reached the runoff volume threshold that will allow summer spill to proceed. Jim Litchfield said Montana does not support this SOR, given its impacts on system reliability this winter, as well as the limited evidence of biological benefit that would result from the requested spill operation.

Lamb observed that the issue here is not financial; it is a water risk issue and a system reliability issue. In order to meet the 28,000 MW-month winter reliability storage target, we will need to buy power and store water, she said. If we buy power and spill water, we will need to replace that water through purchases later; our concern is that the power we need will not be available, and that what power is available will be much more expensive than it is right now. One thing we've learned over the past year is, don't count on anything – the market is so volatile that we don't feel comfortable taking risks, she said.

Tweit observed that it would be possible for BPA to buy power now, at least for the next few weeks, at a relatively low cost, to implement this SOR. We're not asking you to buy a lot of additional power, he said; this is the time when spill would have the greatest biological benefit, and happily, it is also the time when power rates are as low as

they have been for the past six months. Mallette said Oregon agrees with Tweit's comments. Litchfield noted that if BPA starts buying power so that it can spill, that will affect the power market significantly.

The discussion continued in this vein for some minutes. Ultimately, Turner suggested that BPA could implement the requested spill program, at least for the next two weeks, by setting a price ceiling under which they would be willing to purchase power for the spill program.

Would there be a biological benefit to a two-week spill program at Bonneville and The Dalles? Silverberg asked. Definitely, Heinith replied – survival at Bonneville would be four to five times better through spill than through turbine passage. What do you base that on? Turner asked. Mortality is 10%-20% through the turbines and only 4% through spill, Heinith replied.

Wagner spent a few minutes describing the biological benefits that could be expected to result from a two- to three-week spill program at The Dalles and Bonneville; the bottom line, he said, is that without summer spill, we would predict up to a 14% decrease in survival for some stocks, such as the Umatilla chinook, compared to the survival we would expect to see under the BiOp spill program.

After a few minutes of additional discussion, Lamb reiterated that the main risk associated with this SOR is that it diminishes the ability to meet the region's system reliability storage target. BPA feels that risk is too great, she said – we are already purchasing to meet that target, and to implement this request, we will need to be able to purchase up to 1,600 megawatts every day for a month (the current level of BPA purchases plus 600 MW-months for the spill program). What it all comes down to is the level of risk Bonneville is willing to assume, she said; the more we have to rely on the market to meet our storage targets, she said, the greater that risk will be. There is also a risk to the tribes, Heinith observed – the risk for them is that, two or three years from now, there will be no fish for them to catch and eat. We're just looking for some equity here, he said.

Lamb said it is not accurate to say that fish are assuming 100% of the risk and taking 100% of the hit during this poor water year; we have done the fish operations we can given our system reliability constraints and what we have to work with, water-wise, she said.

Tweit expressed frustration with the fact that, even in the Biological Opinion, a power emergency trumps a very real fish emergency. The tribes still feel that, given current conditions in the power market, it should be possible to implement a modest spill program this summer, Heinith said.

Turner reiterated his suggestion that BPA consider a two-week spill program at Bonneville and The Dalles, with a price cap for its energy purchases. Lamb replied that she has no flexibility to commit to such a spill program at this time. It sounds, then, as

though we need to elevate this issue to the IT, Turner said. After a few minutes of further discussion, the issue was framed for IT as follows:

"Can the planned allocation of flow be shaped to provide a limited amount of spill for fish so that no additional water is used while energy is purchased elsewhere for a two to three-week period?"

It was agreed that Oregon will elevate this issue to IT, for resolution at a conference call tomorrow.

8. Libby Increase to Remove Algal Growth.

Turner reiterated that Libby is releasing 6 Kcfs, currently; there has been a verbal request to increase Libby discharge to remove algal mats below the project. This is something project personnel haven't really seen before, he said, but this is also the first year that there has been no large increase or "pulse" in Libby outflow this year. The request is for a one-day pulse, he said.

There was also a drowning several days ago below Libby, Turner added; we have received a request for increased Libby discharge from the local sheriff's office as well, to aid in the body recovery effort. Typically, we cooperate with such requests, he said, although in this case, the sheriff has requested an increase to 20 Kcfs for 45 hours, which probably won't be possible. We have talked about providing a pulse of 10 Kcfs, Cathy Hlebechuk added.

The concern is that the algae is covering the rocks, and may smother the normal insect population downstream of Libby, negatively impacting primary productivity, Jim Litchfield explained. The request is to bring the project up an hour after sunrise, hold the flow for 24 hours, then begin the rampdown during daylight hours the following day. Montana FWP has requested an increase to 12 Kcfs; the Corps replied that 10.5 Kcfs is the discharge limit at Libby, given the powerhouse situation there. We would then ramp down slowly, and hold a stable outflow at that project through the end of August, Litchfield said.

Could this be a septic system or nutrient inflow problem? Bettin asked. I don't know, Litchfield replied – I'll ask. Do you know the upstream extent of the problem? Jeff Loughly asked. I don't know, Litchfield replied – I do know that it covers an extensive area.

Is this something that needs to be put in the form of an SOR? Silverberg asked. If people want to formalize this request, we can do so, Litchfield replied; our feeling was that this is a short-term operation with limited effects on overall system operations. Mallette asked what other solutions Montana has considered for this problem; Litchfield replied that this is a problem that has not been seen before, and that he is not aware that other solutions, such as herbicide treatment, have been seriously considered.

After a few minutes of further discussion, Mallette recommended that Montana investigate other alternatives before using a flush of water from Libby Dam to accomplish the algae removal. With respect to the body recovery effort, she said, obviously that is a request that has to be accommodated, but 45 hours at 20 Kcfs outflow is probably not realistic. Wagner noted that algae like water, and one possibility may be to reduce Libby outflow, rather than increasing it. Litchfield replied that this may be inconsistent with the needs of both the Sheriff's department and aquatic insects downstream from Libby.

Ultimately, Bettin suggested that the action agencies begin ramping up Libby outflow to 10 Kcfs at 2 p.m. tomorrow, a process that will take four hours, then begin ramping back down at 6 a.m. Turner made a counterproposal, containing slightly different details of timing and ramping rates. After a few minutes of discussion, Bettin noted that there seems to be no TMT opposition to this suggested operation; he suggested that the Corps and Montana work out the specific details of how and when the operation will be implemented. Mallette asked that Montana provide a written response to the question of what other alternatives have been considered to accomplish the algae removal; Litchfield said he will attempt to provide one, but noted that extensive scientific justification for the algae removal operation does not exist – again, he said, we've never seen this situation before. It would also help if any effects of this operation on listed bull trout could be documented, Turner said.

9. Recommended Operations.

The development of recommended operations was deferred pending the resolution of tomorrow's IT conference call.

10. Review of TMT Emergency Protocols.

Discussion of this agenda item was deferred until next week's TMT meeting.

11. Next TMT Meeting Date.

The next meeting of the Technical Management Team was set for Wednesday, July 25 from 9 a.m. to noon; it was agreed that this meeting will be a conference call. Meeting notes prepared by Jeff Kuechle, BPA contractor.

Name	**Affiliation**
Ruth Abney	COE
John Anasis	BPA
Scott Bettin	BPA
Scott Boyd	COE
Mike Butchko	PowerX

Dick Cassidy	COE
Margaret Filardo	FPC
Russ George	Water Management Consultants Inc.
Robin Harkless	Facilitation Team
Bob Heinith	CRITFC
Tim Heizenrater	ENRON
Kyle Johnson	BPA
Jerry Keith	Reclamation
Therese Lamb	BPA
Jim Litchfield	Consultant (Montana)
Ningjen Liu	IPC
Dean MacAfee	Transalta Energy
Christine Mallette	ODFW
Kyle Martin	CRITFC
Doug Marx	Attorney, Lake Pend Oreille Idaho Club
Tony Norris	Reclamation
Chris Ross	NMFS
Donna Silverberg	Facilitation Team
Craig Sprankle	Reclamation
Glen Traeger	AVISTA Energy
Rudd Turner	COE
Bill Tweit	WDFW
Maria Van Houten	ENRON
Paul Wagner	NMFS
Steven Wallace	PacifiCorp
David Wills	USFWS