

Baker River Project License Implementation

Aquatic Resources Group

Team Leader: Arnie Aspelund (PSE), arnie.aspelund@pse.com

PRESENT

Arnie Aspelund, Nick Verretto, Doug Bruland, Irena Netik, Caitlin Faulkner – by phone, and Jacob Venard (PSE); Hannah Hadley, Karl Eriksen, Lynn Wetzler, and Nancy Gleason by phone (USACE); Brock Applegate, Brett Barkdull, Wendy Cole, Joan Thomas, Edward Eleazer, and Kevin Kurras (WDFW); Lou Ellyn Jones and Mark Celedonia (USFWS); Steve Fransen (NOAA); Stan Walsh (SRSC), Grant Kirby (*Sauk-Suiattle*); Bob Helton (Citizen); Jeff McGowan, Kara Symonds by phone (Skagit Co.); Jeremy Gilman (USFS); Craig Olson (NWIFC); Jon-Paul Shannahan and Bob McClure (Upper Skagit Indian Tribe); Lyn Wiltse and Jamie Riche (PDSA Consulting).

DECISION: None today.

2014 ARG DATES: Sept. 9 (meeting quarterly at PSE Service Center in Burlington)

2015 ARG DATES: Jan. 13, Feb (Date TBD for Bull Trout Consult), Mar. 10, June 9, Sept. 8

ACTION ITEMS

- Jacob Queue up decision re: the proposed new reporting schedule.
- Jacob Update the ARG re: use of LWD at erosion control project; queue up decision if needed.
- Nick Coordinate development of plan to address entrainment of out-of-basin trout into Depression Lake pump station for exclusion from Baker Lake.
- Nick Distribute the draft upstream and downstream protocols and the upstream fish trap harvest distribution contacts list to the Co-Managers for review & edit.
- All Review and update the Baker River upstream fish trap harvest distribution contacts list and send to PSE.

PREVIOUS and/or ONGOING ACTION ITEMS

- Nick Develop a plot overlaying fry stocking numbers with annual out-migrant collection numbers.
- Co-Mgrs Review & update the draft upstream & downstream fish facilities protocols and send to PSE.
- Co-Mgrs Send a draft Fish Production Plan to Arnie ASAP, as per FPPF (Sept. 2014).
- All Review / update the ARG representation list for your organization (ongoing, as needed).

GENERAL INVESTIGATION UPDATE

Hannah Hadley, Karl Eriksen, Nancy Gleason (who has been named as the new Corps representative to the ARG), and Lynn Wetzler called in to update the ARG. The *integrated* draft feasibility report/*environmental impact statement* was released June 6 for 45-day public review period. Comments are due by July 21. Lynn walked through the project status quickly, noting that much more detail is included in the report. The Skagit GI is a single purpose flood risk reduction project, and she noted some details about the study area and process. This project was started in 1997, when the feasibility cost sharing agreement was originally signed; it was re-scoped in May 2012 under the USACE's new 3x3x3 planning approach.

Final array of alternatives included:

- No action
- Comprehensive Urban Levee Improvement (CULI)*
- Joe Leary Slough (JLS) Bypass Wide Confined Channel*
- Swinomish Bypass Wide Confined Channel*

(*Baker Dam operational modifications and non-structural measures can be added onto all action alternatives.)

From those options, the Tentatively Selected Plan (TSP) has been identified, and the draft Feasibility Report / Environmental Impact Statement (FR/EIS) has been released for review. The CULI alternative is the TSP. Highlights of the proposed modifications include full flood storage at Upper Baker on Oct 15 and 20k acre feet at Lower Baker from Oct 15 - Mar 1. It will require operational modification to the UB and LB dam, a new northern Burlington levee, *Riverbend levee*, and *Lion's Park floodwall*, improvements to about 9 miles of existing levees, non-structural *measures* as needed, no modifications to I-5 or *any* bridges. She said it was also determined to be the most environmentally acceptable alternative and she commented that the proposal is consistent with Article 107. Analysts examined early seasonal storage at UB and flood storage at LB. The combination of UB and LB operational modification measures would provide 17,000 cfs flow reduction for the 1% ACE flood at Concrete.

In addition to the public review that began last Friday, there are internal legal and *policy* reviews as well as an additional external review that all happen concurrently.

Next public meeting is next Thursday, June 19, 6:00-8:00 pm, at the Skagit Transfer Station Community Room. Folks are welcome to review posters with project information from 6:00-6:30; there will be a presentation from 6:30-7:00, and public comment will be heard from 7-8:00.

Next Steps:

- Public and concurrent reviews
- Evaluation of reviews / comments
- Agency decision milestone
- Feasibility-level design (through 2015)
- Final report
- Chief's report (likely late 2015)
- Congressional authorization
- Pre-construction, engineering, and design (PED phase, likely 2017 at the earliest)
- Bid and construction

Grant, JP, and Stan asked about the Corps' environmental review process. Stan reiterated his disappointment with the quality of the USACE's environmental analysis, noting that he feels it to be inconsistent with the commitment the Corps made *to the parties during the Baker Relicense*. Bob Helton noted his concern with the brevity of the planned meeting. He also asked about the sea level rise assumptions included in the Corps' work. They responded that they used the maximum, 2.15 feet of sea level rise, which is not enough to create a meaningful impact at the area of focus.

SAFETY MOMENT

Arnie pointed out the poster "Nobody Gets Hurt Today," which relates to PSE's commitment to safety at work ... and at home! Home eye injuries are on the rise, and most are preventable. PSE recently focused on training related to appropriate eye protection. Look for the ANSI Z87.1-2003, ANSI Z87.1-2010 (same as Z87.2) certification to know that you have safety glasses that comply with the latest industrial standard.

BRCC, LICENSE PROCESS UPDATES

Jacob reported that the last BRCC meeting was a focused on updates from the resource groups. It was held April 22 and notes are available for details. He also reported that the proposed reporting schedule update was distributed to all the resource groups for review and comment. No comments have been received, so he will

queue up a formal decision to finalize the change. Assuming FERC approves the change, 2014 reporting will happen on the new schedule.

Irena updated the group that Paul Wetherbee has taken over the position of Director of Budgeting at PSE; the Hydro Licensing Director position is being filled now. We'll meet the new Director at the next ARG meeting.

Arnie shared a message from former PSE employee and BRCC / ARG member, Cary Feldmann. He and his wife are enjoying Anchorage, he sends his warm greetings to all, and he celebrates these successes with the ARG. Lyn added that another former BRCC / ARG member, Gary Sprague, will be at the Skagit River brew pub 6/24 at noon. She's planning to attend and is happy to carpool if others are interested.

REQUEST TO USE NON-ROOT WAD LWD

Jacob noted that PSE is working with USFS to conduct shoreline erosion control at Swift Creek (per Article 110) to protect the campsites and swimming beach. The goal is to protect the right bank from erosion, and he showed pictures of the site plan and proposed Large Woody Debris (LWD) "flood fences."

Jacob wanted to know if the ARG is comfortable using the LWD that was collected last year. There are about 100 pieces of wood that could be useful for this project if the ARG approves, however those pieces were cut to 16-foot lengths for transport (the need for full-length logs has been communicated with the Project). If the ARG does not want to use the LWD collected last year, he will work with the contractor to source appropriate materials elsewhere. USFS is donating 42 logs that they have staged nearby.

Stan was surprised by the scope of this project, feeling like it is much larger than he was expecting. Jeremy noted that this was identified as one of the highest-erosion areas in a recent study. The design has gone through multiple iterations, and noted that all but a few of these flood fences would be dewatered before spawning season.

JP asked about the decision process for using LWD, Jacob said that his purpose for bringing this up today is just to get a feel for how ARG members feel. He will review the decision process that was developed last year, and will move forward according to that process.

HEADWORKS WATER SUPPLY

Jacob updated the group on the work to stabilize the hillside near the hatchery. PSE has been working on this in consultation with the USDA Forest Service and the WDFW. Shannon & Wilson has been contracted to develop a draft design that is expected to be delivered to PSE in late June. The longer-term erosion control measures are scheduled for implementation this summer-fall to stabilize surface erosion in the construction area this summer.

FRY RELEASE SITE WORK GROUP

The work group has met once, will meet again June 30. Jacob said the group is in the midst of working through the issues; there is nothing new to report, yet.

FRY PRODUCTION, AI & SB4 OPERATIONS

Kevin reported that about 1.9M fry from the AI program were planted into Shannon and about 1.9M into Baker. Another 1.8M from the spawning beach went into Baker, too. There was no additional IHN beyond the two trays that he already reported to Fish Co-Managers. They are watering up the spawning beaches and AI ponds this week, so they are ready to go! He reviewed the stocking plans: about 550 per beach, about 1,500 per AI circular.

Brett clarified that fish can be distributed in a simplified way during the early run when there are few fish coming in. He asked that they be transported daily ... but noted that it is not necessary to distribute them evenly with each delivery when the numbers are very low (no need to make separate trips for single fish, for

example). The intent is to stay close to the overall distribution outlined in the hauling plan, while being attentive to imposing unnecessary stress on the fish.

Arnie noted that the hatchery output has been incrementally growing, which is consistent with agreements in the license. He encouraged Co-Managers to look to Beach 4 and ensure that the output is optimized. Stan and JP said that they would need more comfort with the water supply to consider increasing those numbers. Brett clarified that Co-Managers feel they are doing that already, based on egg-to-fry survival rate. If / when AI becomes maximized, they may consider adjusting the beaches.

Kevin reported on some isolation / incubation experiments (see the "Density, Feed Amount, vs. Growth" handout, distributed with the agenda). He also reported on the use of baffle boards to slow the feeding process in the new feeding trays (see "The Use of Baffle Boards to Slow Feed" handout, also distributed with the agenda).

Doug reported that they are finishing up their annual maintenance at the spawning beach and hatchery now. He reported on the fish in the circulars. There are about 5K rainbow trout still in one of the circulars; most of those are set to be released before July 4 except for a small number that will be held for the Cascade Days Derby. About 330K sockeye are being held for fall release and most of the 221K coho will be distributed to Lake Shannon next week (65K coho will be held for studies and 2015 releases).

SPAWNING BEACH DECOMMISSIONING

Caitlin Faulkner called in to report that decommissioning work will resume in mid-July to modify the LWD installations as shared with the ARG last year. Contractors will finish the planting and the project will be officially complete.

SALMON DISPOSAL

Arnie reported that WDFW and Law Enforcement partners have expressed concern with potential conflict related to the disposal of IHN-hot salmon carcasses. They are concerned about the potential for bear attraction and interactions with hunters. He understands that this conversation is continuing between WDFW and USFS off-line; Jeremy expects resolution on this issue within the next six weeks or so.

DEPRESSION LAKE

The Co-Managers expressed concern with continuing to plant non-native trout in Depression Lake due to their continued entrainment into the pump-back station which transports them into Baker Lake. They requested that PSE remedy the issue and coordinate with the Co-Managers regarding the proposed action. Kevin clarified that this year's remaining trout could be released into Depression Lake as planned; any changes will be for future years.

FISH PASSAGE OUTMIGRATION UPDATE – ONE MILLION FISH TODAY!!

The ARG celebrated the millionth outmigrating fish of the year with a fish cake for the milestone outmigration. Doug provided the outmigration report, noting that they have already transported a million juvenile fish from the basin (literally transported the millionth fish during the ARG meeting...and the run continues!). They are on target to break records again at Upper Baker ... and with the FSC at Lower Baker, the numbers are through the roof (from 58k with the old gulper to over 200k last year ... and on target to go over 400k this year)! There is no evidence that the system has reached capacity – smolts size and condition remains excellent.

A summary report of operational issues will be included with the ARG fish passage summaries in future meetings for transparency and to keep the Co-Managers informed of issues, decisions and work performed by PSE that is typically reported only in the annual FERC reports. Several issues have impacted downstream fish passage operations this year, including two short outages, crowder drive motor failure, holding pond diverter gate failure, pump tripping without alarming (i.e., communication issue) and primary screen cleaner tripping. The Lower Baker Atlas Polar brush cleaner rails were improperly constructed, leading to

deformation from normal operational loads and consequent limit switch tripping and failure to fully clean all primary screen panels. The supplier has recognized their obligation to replace both port and starboard rail assemblies under terms of the warranty. The work, scheduled to begin the first week of July, will require each side of the brush cleaners to be shut down for approximately one week (the opposing side remaining in operation). The cause of the primary pump trips without alarming and auto-start is being investigated with TSI (programmed all controls), Flygt/Whitney Equipment (pump suppliers) and PSE's transmission personnel (to verify that it's not an incoming power issue).

FSC REPAIRS, SCREENS UPDATE, LONG TERM MONITORING

Nick reviewed background information on the Lower Baker FSC hydraulic control baffles that PSE has been working on and consulting with the NMFS and the ARG over the course of the past year. The issue relates to lack of full hydraulic control at the screen face due to material selection and fabrication. Control baffle perforation size increases with depth along any one section, whereas each is supposed to be constant. Post-season inspections identified a cross flow issue at the ramp section. The ramp section baffles were modified in February to remedy the issue, and several thousand baffle and head differential measurements were fed into a hydraulic model to assess the extent of the problem and to assist in determination of corrective action.

The UB and LB screen channels are very similar. Secondary hydraulic control baffles consist of two sliding perforated plates at both facilities.. Primary hydraulic control at UB is via vertical louvers, while sliding perforated plates control primary screen flow distribution at LB. one made of stainless steel for strength and one made of plastic (UHMW) to reduce friction and prevent galling & seizing. These two materials have different expansion coefficients, which creates fit and control problems. Nick showed photos of the equipment and discussed the complexities related to possible solutions. The problem was first identified late in the flow balancing of startup activities. Secondary screen flow distribution is fine, but distribution across the deeper primary channel screen panels is uneven and approach velocities exceed the prescribed criterion. Wholesale removal and replacement or modification is not a viable option due to the complexity, potential risks, expense and questionable marginal benefit relative to alternatives consisting of modifying the panels in-place.

From a review of the modeling results, it was agreed that adjustment of baffle positions and a reduction in head differential would provide a significant improvement of the existing condition. All the primary screen baffles were adjusted, the revised head differential measurements taken, pump speeds and FSC trim adjusted, and cross-sectional velocities taken to verify channel flow and (coarse) distribution over the course of three days just prior to the beginning of the peak outmigration. These adjustments reduced the head differential from 11-18 inches down to 5-11 inches; which will provide better hydraulic control, reduce the electrical load on the pump from 98% down to 90% (improving their reliability and longevity), and reduce the impact of flow differential across the screens (within any one vertical baffle control panel). While this is a significant improvement, it doesn't solve the problem.

The next step is to identify which frames require modification, modify the baffles accordingly, readjust the baffles to rebalance screen flow, modify pump speeds and FSC trim, and empirically verify the hydraulic conditions through head differential and cross-sectional velocity measurements, and near-screen approach velocity measurement in the upstream panels. The next consultation meeting is June 30th at R2's office to identify frames within each screen to be modified, review additional modeling results and agree on a plan. The work is scheduled for September 2015, pending budget approval, although there is a chance that supplemental funding will be made available that will enable the work to be conducted October 2014.

Brock asked whether these repairs will solve the fry mortality issue. It is Nick's opinion that even a perfectly executed screen facility would not safely accommodate newly emergent sockeye because the criterion was developed for Chinook fry of 52-55mm size (which, even at similar size, have a greater swimming capability than sockeye). The fry mortality issue will likely remain after recommended screen modifications, so the issue will have to be managed by release timing, size or other means.

LB BIOLOGICAL STUDY

Nick showed photos related to the 2014 biological studies. He will provide a more detailed report at the September ARG meeting. Nick plans to modify the performance and monitoring smolt release method (at ~10-ft depth from the transport tanks through a weighted suction hose) unless there are any objections. The original rationale for the submerged release was thought to be for predator avoidance and stress reduction, but neither appears to be a real risk due to the 24-hour holding, mid-lake release sites and dusk release timing. Others in the room couldn't remember where this came from, but Steve agreed that he believed it to be related to predation risk as well. Doug stated that in the dozens of dusk releases conducted since 2006 no bird or fish predation had been observed, and would be highly unlikely, and that he would like to revise the release method to a simple above water flexible hose that had been tested prior to the first release in 2015. Nobody was opposed, but folks can contact him directly if they have concerns or would like to consider other alternatives.

DOWNSTREAM AND UPSTREAM TRAP PROTOCOLS

Nick will send these to the Co-Managers for updates / clarifications. Brett pointed out a couple of the largest changes that are in the works. They are going to change the actions for Chinook unmarked CWT fish and Chinook ad-clipped CWT fish. The unmarked CWT fish have been going to Baker; the Co-Managers want to discontinue this practice and they want the new protocol to call for whacking ad-clipped CWT fish. They will update the protocols and send them to Arnie.

BAKER RIVER UPSTREAM TRAP HARVEST DISTRIBUTION CONTACTS

Nick noted that he created the list to assist with trap allocation when the need arises, and asked folks to review and update their agency's contact information and send to PSE.

SOCKEYE FORECAST NUMBER

Brett reported that the pre-season adult sockeye return estimate is 35,377 fish.

PLANS AND REPORTS

Arnie noted that annual reports for 505 (Aquatic Riparian Habitat) and 602 (Funding) are coming in July. Upstream Fish Passage and Connectivity will be coming out in August. A few more coming this fall, then we'll move over to the new annual reporting cycle.

505 - AQUATIC RIPARIAN HABITAT WORKING GROUP UPDATE

Contracting is moving forward for projects approved this year. Jacob noted that it has been a big year for Scott, and he's doing a great job taking over as coordinator of the Article 505 process. He is working through two project scope changes. He will bring together a process improvement meeting in the near future.

MEETING EVALUATION

- WHOHOOOOOO!! It is a "big dam deal" to reach a million outmigrants!!
- Got a lot done and got out a little early

September 9, 2014 Draft Agenda Topics:

- Usual ARG welcome and standard updates / reports
- Update from USACE re: Skagit GI (approx. 30 min.)
- Update on Unit 4
- Standard updates on hatchery and fish passage
- Other license implementation updates
- Update on SA505