BAKER RIVER PROJECT RELICENSE

Aquatic Resources Working Group

February 18, 2004

2:00 p.m. – 3:00 p.m.
Conference Call
Call In Number: 1-800-866-6429
Participant Code: 144995 followed by #:

AGENDA

1. Discuss Level 2 output from DFW.06, NMF.02, SSC.21, TNC.24/25	2:00 – 2:30
2. Identify new analyses to be completed by February 27th Instream Flow Technical Meeting	2:30 – 3:00

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Final Meeting Notes

Participants: Paul Wetherbee and Arnie Aspelund (PSE), Irena Netik and Joyce Liu (Powel Ltd.), Phil Hilgert (R2), Chuck Ebel (USACE), Ruth Mathews (TNC), Stan Walsh (Skagit River System Cooperative), Margaret Beilharz, (US Forest Service), Steve Fransen (NOAA), and Mike Stansbury (Skagit County).

AGENDA

1. Discuss Level 2 output from DFW.06, NMF.02, SSC.21, TNC.24/25

Conference call participants have been able to access the results of the HYDROPS modeling runs, but noted there is a lot of material and identifying cause-and-effect associated with different operational strategies is a challenge. Much of the discussion focused trying to understand how the different operating scenarios affected reservoir pool levels and Lower Baker flow releases. Discussion also addressed the influence of different modeling constraints; for instance, Margaret questioned why Lake Shannon reservoir pool levels were held to 404.75-ft msl (NAVD 88) June 1 through October 1? Margaret also noted that the Lake Shannon water quality buffer was 383 fmsl, and that the USFS had recommended that Lake Shannon be held above 380–fmsl May 9 through October 15 for access to the boat ramp.

2. Identify new analyses to be completed by February 27th Instream Flow Technical Meeting

Meeting participants noted that the small size of the Baker reservoirs and the high volume of fall runoff made it a challenge to develop an operational scenario that maintained flows during the spawning period that were less than two times the incubation flows. Participants noted that implementing "triggers" to allow rapid evacuation of the Baker Project reservoirs while minimizing

downstream effects on spawning salmonids appears to be one potential tool to increasing aquatic resource protection. Rapid evacuation of the reservoirs could be accomplished by relaxing the maximum generation constraints specific to each operational scenario. Two potential reservoir evacuation triggers were proposed:

a) Mainstem Skagit River flows. Stan noted that salmon appear to suspend spawning activity in the mainstem Skagit River when flow at the Skagit River near Concrete USGS gage site exceeds 28,000 cfs. Although this flow level does not occur very often during September and October, evacuating Baker reservoirs when Skagit River flows are above this level would minimize potential detrimental effects of Baker flows releases during the salmon spawning period. *[For modeling purposes, 28,000 cfs at the Skagit River near Concrete gage will be interpreted as 24,000 cfs in the Skagit River above the Baker River confluence.]*

b) Average Daily Inflow to Baker Lake and Baker Reservoir Storage Levels. Evacuating the reservoirs, or relaxing the maximum generation constraints, when Baker River runoff is naturally high mimics natural flow fluctuations. After some discussion, the group proposed to consider setting the trigger for reservoir evacuation at the 10 percent exceedance flow for inflow to Baker Lake. The exceedance flow would be calculated for August, September, October 1-15, October 16-31, November, December and January. If inflow to Baker Lake were high, reservoir evacuation (i.e., relaxing the maximum generation constraints) would only occur if the reservoir pool levels were high. If reservoir pool levels were low, drawn down presumably to satisfy minimum flows, inflow would be stored until reservoir storage levels increased.

   In order to meet flood control storage requirements, there must be 16,000 AF of available storage in Baker Lake by November 1, and 74,000 AF of available storage by November 15. If the reservoir pool levels are too high, spill or several days of steady generation must be used to meet the flood control storage requirements. Rather than relying on rapid evacuation immediately prior to the flood control season, consider developing a storage evacuation rule curve that would allow the Project to meet the flood control targets while maintaining operational guidelines specific to each scenario. For instance, if the maximum release target during the fall spawning period were 2,500 cfs, the reservoir would have to have lower intermediate pool level targets than if the maximum generation were 3,000 cfs. Phil suggested that the reservoir pool level could be checked about every 20 days (September 10, October 10 and October 31) and the reservoir evacuated to a target elevation if the pool level was too high on those dates.

   When to start evacuating the reservoirs will be a key consideration to implementing this reservoir evacuation trigger. Early reservoir evacuation impacts recreational use of the reservoirs and decreases the volume of euphotic zone available for sockeye rearing. If needed,

the recreation pool levels could be relaxed up to 4-feet starting the last week in August. However, model runs should start with the recreational reservoir constraints and early reservoir evacuation should be minimized. Identifying the volume and timing of early reservoir evacuation is expected to be an iterative process that will probably require multiple HYDROPS runs. Only if rapid reservoir evacuation is needed on September 10, October 10 or October 31, should we consider beginning or increasing early reservoir evacuation, and not beyond the 4-feet in late August constraint.

The group proposed that the triggers be set as a) Mainstem Skagit River flows or b) Baker Lake inflow and storage level. Thus, the reservoirs would be evacuated if mainstem Skagit flows were high; or if Baker inflow was high and the reservoirs were already "pretty full". Once initiated, reservoir evacuation would continue only as long as those trigger conditions were in effect.

The group requested that the triggers be investigated using a modification of the NMF.02 scenario and a modification of the TNC.25 scenario. Analysis of the effects of Baker releases on salmon spawning/incubation would have to track and essentially discount Project releases that occurred during one of the trigger conditions. For instance, if flows in the mainstem Skagit River near Concrete were above 28,000 cfs for several days (modeled as 24,000 cfs above the Baker River confluence), the spawning/incubation analyses would assume that salmon were not spawning and that Baker Project releases would not have an incubation release requirement during that period.

NEW ACTION ITEMS

- Paul: Identify the rationale for Lake Shannon pool levels being held to 404.75-ft msl (NAVD 88) June 1 through October 1.
- Phil: transmit a brief summary of the conference call by Thursday (02/19).
- Joyce and Irena: Incorporate the reservoir evacuation triggers into NMF and TNC runs and evaluate how well they work in maintaining the maximum generation constraints during August through January as specified in the NMF and TNC runs.