

## **Meeting of the Packwood Lake Hydroelectric Project Fish, Aquatics and Instream Flow Committee**

Date: September 30, 2004

Location: Lacey, Washington

Present:

Energy Northwest - Laura Schinnell, Bernice Kasko, Bill Kiel

EES Consulting - John Blum, Kent Doughty

Washington Department of Ecology - Deborah Cornett, Beryl Fernandes

Washington Department of Fish and Wildlife - Lauri Vigue, Hal Becher

United States Fish and Wildlife Service - Lou Ellyn Jones, Brian Peck, Craig Hansen

United States Forest Service - John Roland, Ruth Tracy

Cowlitz Tribe - Mike Iyall

Yakama Nation - George Lee, Cliff Casseseka

NOAA Fisheries – Blane Bellerud

The committee was asked if they had any further comments on the June 24, 2004 meeting minutes. The Yakama Nation responded with a correct spelling of “Yakama” and that some of the questions they had asked in the last meeting had not been included in the notes. They will provide the questions to Laura Schinnell for inclusion in the June 24, 2004 meeting minutes, which will then be sent out again for review.

Laura Schinnell discussed the August 27, 2004 FERC meeting that was held in Packwood. Lauri Vigue asked if any issues were identified at that meeting. The project boundary and what falls within the boundary was mentioned. A project boundary map will be included in the PAD. The PAD will be submitted the first week of November. Laura clarified that the committee has been meeting on water quality certification and the ILP process will start with submittal of the PAD.

Kent Doughty handed out Powerpoint presentation notes and water quality data charts and briefed everyone on the preliminary results of the studies to date. Study site locations, date of sampling, and parameters were identified for the group. Total dissolved gas data have not yet been fully analyzed, but it appears that TDG did not exceed 103% or less.

Kent reviewed sample sites and parameters for water quality. In the lake, Secchi depth (an indication of water clarity) was 4.75 m in the spring before reducing to 2 m during the peak snowmelt. Glacial inflow reduced the photic zone depth. Secchi depth reached a maximum of 8 m in mid August. Storm events at the end of August again reduced Secchi depth to 0.75 m. The water clarity has important implications to primary production of phytoplankton. Kent next presented vertical profiles of temperature, dissolved oxygen, and pH. The lake was unstratified except for weak stratification in early August. Dissolved oxygen levels remain high throughout the water column, with a bulge (increase) at the lower end of the photic zone. This bulge may be attributed to algae productivity; algae data are not yet available. Nutrient patterns in the lake indicate productivity is nitrogen limited and the lake is oligotrophic (low productivity) based on nutrient levels commonly below detection levels. Kent next presented August temperature data

(preliminary) for Lake Creek and the tailrace. Lake Creek was cooler at its mouth than at the outflow from the lake. The cooling trend is attributed to cold groundwater inflow. Lake Creek did not exceed 16C as measured near the mouth.

In response to a question about variability and effects from basin activity, Kent responded that the lake is in the wilderness area, the lake is glacial fed, and there are no logging operations that would affect the upper tributaries.

Ruth Tracey suggested that some high mountain lakes in Oregon are having more frequent problems with blue-green algae. She asked if the study will identify the potential for blue green algae blooms in Packwood Lake. Kent responded that the studies will look at the species and discussed where blue green algae would be in the water column. Kent was asked about a diurnal swing in dissolved oxygen; he responded that we have not seen one, but that the hydrolab data needed to be analyzed.

Nutrients in the tailrace are low. Nutrient levels in the tailrace and in Lake Creek were also low. These waters are also nitrogen limited. pH rose slightly in the tailrace due to periphyton growth but did not exceed the 8.5 criteria. The maximum pH recorded was 8.1; this was recorded both in the morning and afternoon. Because of people removing the blocks used to grow periphyton samples on, quantifying algal growth in the tailrace was not possible. Periphyton growth was visually assessed as moderate with only patchy growth. The peak in dissolved oxygen at the end of the tailrace was recorded when the plant was at full power.

It was asked if during drawdown EES Consulting was seeing any erosion. Kent responded that he had not seen any. At the mouth of Upper Lake Creek, a delta was observed, but head cutting was not observed. The Upper Lake Creek channel is active and moves back and forth across its floodplain. It was asked if nutrient levels would be different after a storm. Sampling missed the Memorial weekend storms. Late August sampling was on the receding limb of a storm. The study design is not intended to track specific events, as it is geared to determining compliance with water quality standards. Kent was asked if we had walked Upper Lake Creek. EES Consulting will look to see if there are significant alder stands that could contribute to temporary elevated nitrogen levels in Upper Lake Creek. If a spike in nitrogen occurred with the Memorial Day storm, we might see it in the phytoplankton results.

Kent was asked about flows and whether suspended sediment was released to the creek. Lake levels were discussed and the flows used in the instream flow study. We discussed that the lake elevation would change naturally; the most we think we have seen in the record is a change of 3.5 feet. Kent stated that normally coliforms are 4/100; we caught the storm event where they increased to 35/100.

Packwood Lake is currently being drawn down in preparation for the annual maintenance outage. Plant will shutdown on October 1st. Bill Kiel talked about the activities that are scheduled for the outage which include electrical work and inspections. A good time to see the lake at low elevation is now, maybe through next week, depending on rainfall. The lake has been dropping about 0.4 feet per day, and we expect it to be at 2850.5 feet when we shut down on Friday.

Laura talked about the FERC licensing requirements regarding lake level which are: May 1-September 15 a lake level of 2875 feet  $\pm$  6 inches. September 15 – April 30 lake level could be as low as 2849 feet, but we also tend to follow inflows during the winter operation. We hardly ever have the lake at that low an elevation. September is the month we draw down to allow refill during the outage. The natural elevation is 2857 feet, which we think was probably an average.

An interim water quality report will be issued in January 2005.

George Lee asked if there were any issues with Chinook and steelhead being reintroduced and using Lake Creek. Kent responded that so far, they do not see any water quality limitations on use. Only two Chinook have been seen so far, shortly after a release was made. EES Consulting is in the process of doing spawner surveys.

Cliff Casseseka wanted to know when the next spill will be. He asked how the lower creek would respond to nitrogen levels that change due to spill. The Project operates in a run of the river mode and would only spill water if the inflow was more than power production could use. It was asked about nitrogen levels during shutdown. Kent stated that as the nitrogen is low to begin with, he would not expect an effect. Water comes from the surface for release to Lake Creek, in either the natural condition or with the project. Energy Northwest will attempt to notify the committee by email when lake inflow increases enough that overtopping of the dam is likely. Brian Peck asked if fish flow is increased if a spill looks likely. The answer is no, we generally keep flow between 3 to 3.5 cfs.

John Blum handed out summaries of the surveys and presented preliminary results.

The physical habitat assessment is complete and in June the committee selected the study sites for the instream flow study. Thirty four transects at four different study sites were selected for the instream flow study. This takes into account the changes the committee recommended during the June meeting. In mid-July, five of the twelve calibration measurements for the four study sites were taken; the remaining seven calibration measurements were completed in September. All of the transects at each study site were surveyed and tied in to one another. Calibration flows were conducted at the following levels: low – 5 cfs, mid – 15-16 cfs, and high 32-33 cfs plus inflow from springs. The data are currently being checked and will be input into RHABSIM, the hydraulic model used to simulate flows.

Habitat suitability fish observation data were not collected during high flow studies due to lack of visibility.

A permit has been requested for electroshocking but approval has not been granted to date. [Note: a Scientific Collectors Permit was secured from WDFW subsequent to the meeting. Electrofishing surveys will begin immediately].

Snorkeling was been conducted throughout Lake Creek. Rainbow trout and a potential cutthroat trout have been found as well as a few adult Chinook in lower Lake Creek and the side channel/tailrace area.

A confirmed andromous barrier is located at RM 2.0. Studies are in progress to determine if a barrier also exists at a chute located at RM 1.03. Surveys were done at high and medium flows. Low flow surveys still need to be done. Velocities in excess of 15 ft/sec were measured in the chute with no resting spots for about 50 ft upstream of the entrance. Once the information is complete it will be presented to the committee.

Salmon spawner surveys are being conducted twice a month up to RM 1.03 and at least once per month up to RM 2.0. Two Chinook have been noted below the chute at RM 1.03; no salmon have been found above RM 1.03.

The tailrace slough is being surveyed at various flows and two level loggers were installed to evaluate changes in stage at both narrow and wide portions of the slough below the tailrace relative to tailrace flow. Salmon redds have been observed in the slough just downstream of the paved portion of the tailrace, where there is a narrow channel. It appears that discharge measurements from the data loggers correlate with the recorded plant releases. The side channel water level is also controlled by the Cowlitz River when the Cowlitz River flow is high.

Comment was made whether there was gravel in the tailrace and/or slough. John drew a picture for the group of the end of the tailrace and slough area, and indicated that surveys will cover those areas with gravel.

EES Consulting is waiting for a permit to conduct the entrainment study. John asked Hal Beecher for the latest fish screen requirements. Hal will provide this information to John. [Note: A Scientific Collectors Permit has been secured from WDFW subsequent to the meeting to conduct the entrainment study.

Earlier this week, the mouths of the lake tributaries were surveyed to determine fish passage when the lake is drawn down. The concern is whether there are barriers to spawning. Creeks were surveyed and the results vary between creeks. Muller and Upper Lake Creek would allow fish to pass with the lake drawn down. Trapp Creek, which is very short and has little usable area (30-40 feet) is not passable if the lake level is lowered. Crawford Creek is armored and fish would probably not have access. Osprey Creek appears to remain accessible at reduced lake levels; however, analysis of the field data is necessary as passage may be marginal at the lowest lake levels. The final report will contain the results.

The applicability of the instream flow study for assessing flow effects on amphibian habitat has been expressed as an interest. John said he has consulted with a herptologist as to transect placements being representative of available amphibian habitat. The initial conclusion is that the transects are adequate to represent amphibian habitat. EES Consulting has amphibian preference curves (for Pacific giant salamander and tailed frogs – [subject to confirmation] from small streams in the Western Cascades). Habitat suitability curves for all species of interest will be presented to the group in December. Selection and approval of curves will be subject to committee approval. Notification will be sent out in advance of the habitat suitability working meeting so that agencies can plan to have appropriate technical representatives in attendance.

Spawning survey data when completed will be given to NOAA and Fish and Wildlife for their databases.

The next meeting is tentatively scheduled for the same day as the scoping meeting (January 13, 2005), starting at 10:00 a.m. in Packwood. Laura agreed to check with FERC to see if we can conduct the committee meeting, followed immediately by the first scoping meeting for agencies. Some discussion was held on conducting the committee meeting either the day before or after the scoping meeting. Members agreed to provide Laura with feedback on their preferences.

It was asked when Energy Northwest would submit the application for water quality certification. Laura talked about the FERC schedule, she thought 90 days after the application for license, which is a few years out. [Note: the time period is actually 60 days after FERC has issued a notice of acceptance (of the license application) and ready for environmental analysis), currently scheduled for 2008.] However, Energy Northwest, consistent with what they are hearing from Ecology, would like to submit as soon as possible. Laura stated that Energy Northwest will work with this committee, and that application would be with a full package, so that Ecology could make a decision.

A question was asked about the project boundary. Laura stated that Lake Creek is not actually in the Project boundary. However, Energy Northwest needs to study Lake Creek because the project operations do affect the creek.