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October 1, 2008
PKWD-08-058

Ms. Kimberly D. Bose, Secretary
Office of the Secretary
Federal Energy Regulatory Commission
888 First Street, NE
Washington, D.C. 20426

Dear Ms. Bose:

Subject: **PACKWOOD LAKE HYDROELECTRIC PROJECT
FERC DOCKET NO. P-2244-022
RESPONSE TO AGENCY PRELIMINARY TERMS AND CONDITIONS**

Energy Northwest, Licensee of the Packwood Lake Hydroelectric Project (Project), FERC No. 2244, files the following comments (Attachments 1-4) on the preliminary terms, conditions, fishway prescriptions and recommendations submitted by the consulting agencies in the relicensing of the Project. These include:

1. USDA Forest Service, Gifford Pinchot National Forest, Preliminary Federal Power Act § 4(e) Terms & Conditions dated August 14, 2008
2. US Department of Commerce, NOAA/NMFS Preliminary Recommended Terms and Conditions and Preliminary Fishway Prescriptions, dated August 18, 2008
3. State of Washington, Department of Fish and Wildlife, Recommendations, Terms and Conditions [FPA Section 10(j)], dated August 13, 2008

With the assistance of the Licensee, the consulting resource agencies worked together, and the Forest Service took the lead on drafting the text of the majority of the terms, conditions, and recommendations that were filed. However, a few of them were separately drafted (e.g., NOAA/NMFS fishway prescription and recommendations) because of the differences in agency authorities and responsibilities. The Licensee did not see the agency justifications for their conditions and recommendations prior to their filing and, therefore, did not have the opportunity to provide our input on these important underlying assumptions.

The Licensee has provided relevant excerpts of these recommendations and mandatory conditions and justifications (*italic*), followed up with the Licensee's comments. The Licensee wants to emphasize that, in general, the terms, conditions, and recommendations are acceptable to us. They were agreed upon in principle with the agencies, and are substantially

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embodied in the Protection, Mitigation, and Enhancement (PME) measures proposed in the recently filed Final License Application (FLA) for the Project. However, the Licensee feels the following comments and corrections will assist FERC staff's understanding of the Project and its effects as they conduct the environmental analysis of the Project relicensing.

Please contact me at (509) 377-8581 if you have any questions.

Respectfully,



Dan Ross

Packwood Project Manager

Attachments:

- Attachment 1 Energy Northwest's Response to USDA Forest Service, Gifford Pinchot National Forest
 - Section A Federal Power Act Preliminary § 4(e) Terms & Conditions dated August 14, 2008
 - Section B Justification Statements for FPA § 4(e) Terms & Conditions dated August 14, 2008

- Attachment 2 Energy Northwest's Response to US Department of Commerce, NOAA/NMFS Preliminary Recommended Terms and Conditions and Preliminary Fishway Prescriptions dated August 18, 2008

- Attachment 3 Energy Northwest's Response to State of Washington Department of Fish and Wildlife Recommendations Terms and Conditions dated August 13, 2008

- Attachment 4 References Cited

Attachment 1

Energy Northwest's Response to USDA Forest Service, Gifford Pinchot National Forest

Section A

Federal Power Act Preliminary § 4(e) Terms & Conditions dated August 14, 2008

Condition No. 7 Lower Lake Creek Stream Restoration and Monitoring

Within two years of License issuance, the Licensee shall, in coordination and consultation with the USDA Forest Service, U.S. Fish and Wildlife Service, National Marine Fisheries Service and the Washington Department of Fish and Wildlife, Washington Department of Ecology, and Tribes, and with approval by the USDA Forest Service, prepare a Lower Lake Creek Stream Restoration, Enhancement and Monitoring Plan for the portion of the Anadromous reach up to RM 1.0 and the upper reach of Lower Lake Creek extending from drop structure to about 1,464 ft downstream (RM 5.1 - 5.3), and file the plan with the Commission for approval. The primary goal of the plan is to restore and enhance anadromous and resident salmonid habitat in Lower Lake Creek by increasing rearing and spawning habitats. The primary objective for the Anadromous reach is to convert the existing plan-bed/step-pool channel into a wood and boulder forced step-pool system that more accurately reflects the natural channel form, function and processes appropriate for this reach. The primary objective for the isolated reach of Lower Lake Creek 1,464 ft below the drop structure is to increase small woody structure and spawning gravels for resident rainbow trout.

The Lower Lake Creek Stream Restoration, Enhancement and Monitoring Plan shall use the following objectives and design criteria as the basis for Plan development. However, if reach-specific assessment data indicate adjustments that will maximize the primary objectives, the objectives and design criteria may be modified. Any modifications to the objectives and design criteria will be determined in coordination and consultation with the natural Resource Agencies and Tribes.

Energy Northwest Response: This condition mandates many specific details of stream habitat restoration in the lower reaches of Lake Creek, which are based on general region wide criteria and not on the actual conditions in the Lake Creek watershed. (See the Forest Service Existing Information discussion in its justification for Condition No. 7.) Energy Northwest wishes to assure that the detailed, specific design criteria (e.g., the number of square feet of habitat), currently in the 4(e) condition, are clearly identified as guidance only for the development of the Lower Lake Creek Stream Restoration, Enhancement and Monitoring Plan (Plan). This detailed Plan is currently scheduled to be developed within two years of license issuance and is subject to final approval by the Forest Service.

Energy Northwest would like to note that the target values quoted in Condition No. 7 were based on modeling, assuming certain physical dimensions for the stream, to determine if

stream enhancement was a viable option. They do not represent the actual surveyed conditions of lower Lake Creek. The actual target values for all restoration objectives will be included in the Plan when it is developed in consultation with the Forest Service and other agencies. The objectives and other design details will be based on actual stream survey numbers in contrast to the numbers presently contained in the wording of Condition No. 7.

The agencies have recommended that 10 cubic yards of gravel be placed in the uppermost reach of lower Lake Creek below the Project drop structure, within the first year after license issuance. Energy Northwest believes that the same result can be achieved by placing a smaller initial volume of gravel and periodically adding gravel as necessary to replace that lost by stream transport. However, Energy Northwest agrees to place an initial volume of 10 cubic yards of gravel at an agreed-upon recruitment site utilizing removable equipment (e.g., temporary flume), as requested by the Forest Service. Following the initial placement, Energy Northwest will replenish the recruitment station with an amount of gravel equal to the quantity that migrates downstream during bank full events. This process will ensure the gravel will be and has been transported downstream, and that adequate supplies remain available at the recruitment station.

Due to the lack of road access, gravel additions will only be made during the summer months following the occurrence of a habitat forming flow (defined in Condition No. 6). The addition of supplemental gravel in conjunction with an increased frequency of habitat forming flows (Condition No. 6) is being utilized to enhance the resident fish habitat in this reach.

Finally, the condition states that: "*The initial 5-year update to the plan will be completed the tenth year after issuance of the new License and will be filed in 2020.*" We suggest that the 10th year of the new license may or may not be 2020; therefore, this language should be changed to delete reference to the Year 2020.

Condition No. 9 *Entrainment in Project Intake*

1. *Evaluate the condition and sealing of the existing traveling fish screen with Resource Agency personnel. Screen evaluation techniques may include a remote camera, by direct inspection or some other means, to be determined in consultation with the Resource Agencies. If screen condition or sealing problems are found, the Licensee in consultation with the Resource Agencies shall determine whether to modify the existing traveling screens and/or evaluate the use of administrative controls, or pursue a major screen redesign. Go to No. 5 if a major redesign of the traveling fish screens is determined.*
2. *If the current traveling screens are adequately sealed, or, after modifying the screens to be adequately sealed, test and verify the screen approach velocity over a range of lake elevations and intake flows. Testing of the traveling fish screens approach velocities will be done with the trash rack screens removed. Specific dates will be determined in consultation with the Resource Agencies.*
3. *If the State screen approach velocity criteria are satisfied then Licensee will retain the existing traveling screen as the primary fish exclusion device. Go to No. 6 for the development of an intake structure operation manual.*

4. *If the State screen approach velocity criteria are not satisfied then the Licensee in consultation with the Resource Agencies will determine whether to experiment with a baffling system and other minor modifications (including limiting inflow at certain lake elevations), or pursue a major screen redesign (See No. 5). The baffling system and other screen or operation modifications, and approach velocity standard testing will be completed by the end of the second year of the new license. If the State screen approach velocity criteria is satisfied then go to No. 6 for the development of an intake structure operation manual. If the State screen approach velocity criteria is not satisfied then go to No. 5 for a major redesign of the traveling fish screens.*
5. *Major Fish Screen Redesign: A major screen redesign may mean significant changes to the existing screens or replacement of the existing screens. The point of fish exclusion can either be the trash rack or inside the intake structure. The Licensee shall consult with qualified engineers to explore options for screening that will satisfy State approach velocity criteria, and then in consultation with the resource agencies, determine the new screen design. The timeline for the redesign process is as follows:*
 - *Proposed conceptual designs will be made available to Resource Agencies by the end of the third year of the new license.*
 - *Final design decision will be made by the end of the fourth year of the new license.*
 - *Construction to be completed by the end of the seventh year of the new license.*
6. *The Licensee shall prepare an intake structure operation manual for Resource Agency approval. The manual will specify screen monitoring intervals, maintenance intervals, and the actions that will be taken given significant events, including load rejection, overtopping inflows over the drop structure, bypass flow failures, penstock leaks, landslides, earthquakes and fires. The manual shall be provided to the Resource Agencies within two years of time the final intake structure configuration is completed.*

Energy Northwest Response: Energy Northwest has completed several steps required for this condition and they are detailed below.

Both of the traveling screens (1 & 2) were inspected. The perimeter seals (sides and bottoms) were verified to be complete and functional. A lighted, underwater camera was utilized to inspect the screens and videos were taken of the closure devices. These videotapes will be presented to the Agencies to provide verification the inspection was satisfactory, as no Agency personnel were available to witness the inspection.

Energy Northwest, in collaboration with the Agencies, developed a Velocity Testing protocol that would determine screen approach velocities at a wide range of lake elevations and plant flows. These tests were completed and revealed that at a range of lake levels and lower plant flows, the screen velocity criteria was easily met. However, as plant flows were increased, the criteria was slightly exceeded in some instances and at extreme high plant flows the criteria could not be met. The results are being compiled and will be presented to the Agencies in the near future. Energy Northwest will present the results, as well as videotapes that show that at all lake levels and plant flows tested, fish in and around the forebay of the screens were not in distress and were able to move freely. The next step will be to reach consensus on a proposal that will establish operating conditions and limitations.

For the sake of clarity, the velocity testing was done with the “outer debris screens” removed, not the “trash rack screens”. The trash racks are permanently installed and embedded in concrete.

Additional Comments: Energy Northwest has worked with the consulting agencies on the development of this condition and agrees in principle. The approach velocity testing was completed on September 23, 2008. Energy Northwest requested these additional tests because initial tests, conducted in 2007, were considered inadequate because they did not encompass a wide enough range of lake levels and plant flows to be meaningful. These new data are being compiled and will provide a clear picture of how the rotating screens perform over a wide range of conditions. This allows all parties to evaluate the results and re-examine all of the potential options based on the physical data, including approach velocities at the screen as well as fish behavior. The outcome of these negotiations will determine the future course of action for the Project intake.

Energy Northwest proposed in the FLA that the evaluation criteria for the screens should include a standard for fish mortality, in addition to the flow velocity, since the objective of the screen criteria is to ensure that few fish are entrained. We recommend that the fish mortality monitoring data currently being acquired by Energy Northwest be considered by the Agencies when determining the final disposition of this issue. Current mortality results are far smaller than those observed and reported in the 2007 study plans. The large numbers of fish mortalities found on the traveling screens during the conduct of the study plan can largely be attributed to the extreme conditions that occurred in the lake during Winter 2006/2007 (record setting precipitation and high lake inflows in November 2006 and unusually high lake turbidity for extended periods of time in 2007).

Condition No. 11 Amphibian Monitoring at Site B

Within in the first year after License issuance, the Licensee shall monitor the lacustrine fringe wetland habitat at the head of Packwood Lake known as Site B for northwestern salamander larvae presence and to determine whether the larvae are able to move into the lake after the annual September 16 change in minimum lake elevation or if there is a physical barrier to their movement.

The Licensee shall monitor Site B as follows:

- 1. Monitoring for larvae shall begin prior to September 16 when winter operating lake levels are in effect,
 - a. Detection methods shall include the use of dip-net and/or aquatic funnel traps to record the number and size (snout-vent length) of larvae found.**
- 2. Following the annual drawdown, Site B will be re-visited:
 - a. If Site B is not dewatered, the site will again be sampled for larvae using the above detection methods;*
 - b. The topography of the site will be documented by field notes and photographs, and the depth of any remaining water within Site B will be measured; and*
 - c. The outlet of Site B to the lake will be examined to determine whether there is a barrier to larval movement into the lake (i.e., do logs screening Site B from the lake and a sill of accumulated sediments block movement).**

Energy Northwest Response: This condition was written as a request for additional information with the intent that it be performed prior to the issuance of the license. However, the timing of this study has been changed to occur after the new license is issued and changes are necessary to accommodate the new operating conditions anticipated under the new license. Energy Northwest proposed in the FLA that after September 15 each year the lake would be gradually drawn down, as needed, to provide instream flows, continuous tailrace flows and project generation. This annual drawdown under the new license is in contrast to the more abrupt drawdown under the current license that precedes the annual maintenance outage. Because of the revised operating regime under the new license, Energy Northwest proposes that the wording of item 2 of this condition be reworded to reflect the more gradual winter drawdown. We recommend that the words “Following the annual drawdown” be changed to say something similar to “Following the establishment of the winter operating lake levels.” The establishment of winter operating levels can best be defined by the change of project operations from a primary reliance on the utilization of stored reservoir water (drawdown) to an operations mode that matches plant generation to the lake inflows. This change in operations is affected by the onset of wet winter weather patterns and can vary widely from year to year but generally occurs in the October – November time period.

Section B

Justification Statements for FPA § 4(e) Terms & Conditions dated August 14, 2008

Condition No. 1 **Implementation of Activities on National Forest System (NFS) Lands;**

Condition No. 2 **Resource Coordination;**

Condition No. 3 **Fire Prevention Plan**

I. Existing Situation

The USDA Forest Service administers lands within and adjacent to approximately 18 miles of Hells Canyon Reservoir, and administers lands downstream of the HCD. These lands are managed for multiple uses including; recreation use, wildlife habitat, livestock grazing, cultural resource protection and facilities maintenance.

Energy Northwest Response: The USFS is aware of this and will correct the text of this justification in their final submittal. Stated land uses should be corrected to indicate that it refers to Packwood Lake and the Packwood Lake Hydroelectric Project.

Condition No. 4 **Packwood Lake Elevations and Annual Project Maintenance**

I. Existing Situation

Pre-Project Packwood Lake elevations were collected by the USGS from September 1959 through early July 1963 and generally fluctuated between 2856.5 and 2857.5 MSL. Minimum lake elevations were generally between 2856.0 and 2856.5 feet MSL. The lowest lake elevation recorded between September 1959 and July 1963 (Pre-project) was 2855.94 ft. MSL (ENW E.5.2-25, FLA 2008). Royce (1965) also reported lake elevations fluctuating between 2586 and 2587.

Energy Northwest Response: The USFS is aware of this and will correct the reference to the lake elevation for Royce to 2856 and 2857 ft. MSL in their final submittal.

Condition No. 5. **Lower Lake Creek Instream Flows**

III. Justification/Support of Preliminary Terms and Conditions

This flow regime is considered a minimal flow release and associated increases to spawning and rearing habitat as modeled by WUAs indicate only slight increases to rearing habitat for Chinook, Steelhead, Cutthroat and Rainbow Trout from current Project flows to Proposed Flows and about 6-7% increase in spawning habitat for Chinook and 3% increase in spawning habitat for Steelhead, see Table 5.5-1, page 112 (EES Consulting 2007). For example, during April and May, the heaviest use months for Steelhead spawning, Steelhead spawning WUA increased only 3% with the additional release of flows (3 cfs increased to 7 cfs in April and 15 cfs in May). Steelhead rearing WUA highest increase occurred during the months of August (7%) and September (9%) when flows increased from 3 cfs to 15-20 cfs.

Energy Northwest Response: The Forest Service correctly states that under the current condition, habitat would increase from 3% to 6-7% with the proposed flows if habitat enhancement were not an integral component of the instream proposal (Condition No. 5). Modeling exercises indicate that with habitat restoration and enhancement,

spawning and rearing habitat for the target species is substantially increased over the current operation, and on average, exceed pre-project conditions. This modeling is provided in the Final License Application as Tables E.5.3.1-48 through E.5.3.1-51.

Condition No. 9 Entrainment in Project Intake

I. Existing Situation, Para. 2

All of the controlled water release from Packwood Lake passes through travelling fish screens in the intake building including water entering the pipeline and penstock (e.g., water used for energy production), and the bypass flows (water contributed to lower Lake Creek). The volume of water passing through the screen is estimated through a back calculation derived from forebay water surface elevation. The estimated volume of water ranges from 44 cfs to 190 cfs depending upon energy production level.

Energy Northwest Response: The text states that the water flow passing through the traveling screens is estimated from lake level. This is not correct. Plant flow and bypass flow are measured directly in each pipeline with electronic flow measuring equipment (i.e., the flow is not estimated). This flow measurement may have been confused with the method used to estimate spill flow over the drop structure. That flow is estimated using a stage-discharge formula developed for the spillway, which calculates spill flow based on lake elevation for a rectangular weir.

Attachment 2

Energy Northwest's Response to US Department of Commerce, NOAA/NMFS Preliminary Recommended Terms and Conditions and Preliminary Fishway Prescriptions dated August 18, 2008

IX. Mandatory Fishway Prescriptions

Article 2: Ensure adequate fish passage conditions at tailrace channel crossings

Within two years of license approval, the licensee shall develop and implement a plan to provide adequate passage, that meets NMFS fish passage standards (NMFS, 2004), at the Snyder Creek crossing of the lined tailrace. The licensee must receive NMFS approval of the Plan before submitting it to FERC for their approval.

Energy Northwest Response: Article 2 requires Energy Northwest to develop and implement a plan for the Snyder Creek tailrace crossing within two years. That is contrary to the previously agreed schedule for the Energy Northwest PME measure (FLA Section E.5.3.1.3.6) and in the Forest Service's 4(e) Condition No.10, which allows five years for completion of the Snyder Creek culvert rerouting project. Energy Northwest requests that the Article 2 condition be changed to allow for completion within five years of license approval. NMFS is aware of this discrepancy and has committed to the issue a notice of change to their letter.

X. Reservations of Authority

NMFS requests that FERC include as a license condition, a general reservation of authority for NMFS to prescribe additional or modified fishways at such times and locations as it may subsequently determine are necessary to provide for safe, timely and effective downstream and upstream passage of anadromous fish through the Applegate Hydroelectric Project facilities.

Energy Northwest Response: The NMFS reservation of authority should be corrected to refer to the Packwood Lake Hydroelectric Project. NMFS is aware of this and has committed to issue a notice of change to their letter.

Attachment 3

Energy Northwest's Response to State of Washington Department of Fish and Wildlife Recommendations Terms and Conditions dated August 13, 2008

Condition No. 9 *Entrainment in Project Intake*

[Refer to entire condition]

Energy Northwest Response: Energy Northwest has the same comments with respect to WDFW's entrainment recommendation as for the Forest Service's 4(e) Condition No. 9 regarding entrainment. It is confusing in that it refers to activities that will be done before the new license is issued. It was also noted that the WDFW recommendation on entrainment, also called "Condition No. 9," does not contain the exact language that appears in the same Forest Service condition. It is recommended that the wording be coordinated between Agencies.

Condition No. 10 *Fish Passage at Snyder Creek*

Rationale Statement

Currently Snyder Creek passages under the tailrace flume, requiring fish to pass through a long culvert both upstream and downstream. The sunken design of the culvert may represent a fish passage obstruction. The culvert is also prone to plugging, which may also impede fish passage. By rerouting Snyder Creek to flow into Hall Creek, this will improve the flow of Hall Creek, a significant tributary with good rearing habitat. This is an improvement over discharging directing into the Cowlitz River, which is milky from glacial fines and mostly unshaded, and thus, is lower quality habitat quality.

Energy Northwest Response: This description should be revised to prevent confusion. It implies that Snyder Creek currently discharges directly into the Cowlitz River, which is incorrect. Snyder Creek currently flows into Hall Creek after it passes under the Project tailrace in a long culvert upstream of the flume, as described above. Under the new license, Snyder Creek will be rerouted to allow fish to pass freely through a new stream channel and the existing culvert crossing will be bypassed. The revised Snyder Creek channel will join Hall Creek at a point less than 500 feet farther downstream than it does currently (downstream of the flume). See the description of this measure in the FLA (Section E.5.3.1.3.6).

Attachment 4

References Cited

Devine Tarbell & Associates. 2007. Final Amphibian Survey Report for Energy Northwest's Packwood Lake Hydroelectric Project, FERC No. 2244, Lewis County, Washington, January 2007.

EES Consulting, Inc. 2007. Packwood Lake Hydroelectric Project, FERC No. P-2244, Fish Distribution and Species Composition Report, prepared for Energy Northwest, August 2007.

Energy Northwest. 2008. Final Application for New License, Packwood Lake Hydroelectric Project, FERC No. P-2244-012. February 2008.