Revised

Engineering Needs for Access Routes Study Plan for
Energy Northwest's
Packwood Lake Hydroelectric Project
FERC No. 2244
Lewis County, Washington

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1.0 INTRODUCTION

Energy Northwest’s Packwood Lake Hydroelectric Project, FERC No. 2244, received its initial license in 1960. Much of the Project is located within the Gifford Pinchot National Forest and consists of an intake canal, a concrete drop structure (dam) and intake building on Lake Creek located about 424 feet downstream from the outlet of Packwood Lake, a 21,691-foot system of concrete pipe and tunnels, a 5,621-foot penstock, a surge tank, and powerhouse with a 26,125 kW turbine generator.

The source of water for the Project, Packwood Lake, is a natural lake situated at an elevation of approximately 2,857 feet above mean sea level (MSL), about 1,800 feet above the powerhouse. Water discharged from the Project is released to the Cowlitz River via a tailrace channel. Power from the Project is delivered over an 8,009-foot 69 kV transmission line to the Packwood substation.

1.1 Study Goals and Objectives

The goal of this study is to develop sufficient information to support Energy Northwest’s application to FERC for relicensing the Packwood Lake Hydroelectric Project regarding the condition, use, and maintenance of project access roads so that appropriate actions can be identified for the protection of natural resources while providing safe access to the project area.

The goal of this study is to also develop sufficient information to provide a technical basis for developing a maintenance plan for managing access roads and trails that is consistent with applicable state and federal regulatory requirements and plans.

The objectives for this study include:

- Document current maintenance of access roads and trails; and
- Identify maintenance and reconstruction needs to make the access roads hydrologically stable and in compliance with maintenance levels and safety standards.

Use patterns for access roads are included in the Draft Recreation Resources Study Plan.

2.0 AGENCY AND TRIBE RESOURCE MANAGEMENT GOALS AND OBJECTIVES

The USDA Forest Service (2005) requested this relicensing study. The Forest Service provided their resource management resource goals and objectives, which are described below:

The Gifford Pinchot National Forest Land and Resource Management Plan (Forest Plan) establishes the management direction of the Gifford Pinchot National Forest. Forest Plan management goals relevant to this study plan include:

- For each existing or planned road, meet aquatic conservation strategy objectives by minimizing disruption of natural hydrologic flow paths, including diversion of streamflow and interception of surface and subsurface flow.
• Meet aquatic conservation strategy objectives by reconstructing roads and associated drainage features that pose a substantial risk to aquatic resources.
• Existing culverts, bridges and other stream crossings determined to pose a substantial risk to riparian conditions will be improved to accommodate at least the 100-year flood, including associated bedload and debris.
• Minimize sediment delivery to streams from roads. Route road drainage away from potentially unstable channels, fills and hill slopes.
• Roads not required for resource use, protection, or other demonstrated access needs should be closed or decommissioned.
• Within the biological deer and elk winter range, roads not needed for access to an active project or to provide access to a recreation destination should be either decommissioned or permanently or seasonally closed to reduce wildlife disturbance.

The Forest Service desired condition of all access routes is a sustainable stable road/trail condition, achieved by providing proper road/trial maintenance, particularly drainage maintenance to avoid sub-grade failures and subsequent resource damage. The road system should be the minimum that meets resource management and protection needs. The road system should minimize risk to aquatic resources and should not retard attaining Aquatic Conservation Strategy Objectives.

The Forest Service classifies the area surrounding Packwood Lake (outside project boundary) as Unroaded Recreation Without Timber Harvest (UH) and Wilderness (WW) under the amended Forest Plan. It is also identified as a Late-Successional Reserve (LSR) and Lake Creek drainage is a Tier 1 Watershed.

3.0 EXISTING INFORMATION AND NEED FOR ADDITIONAL INFORMATION

There are three access roads and one trail to Packwood Lake. This study addresses each of these routes. The County-maintained portion of Snyder Road is not addressed in this plan since Lewis County maintains this paved road. Lewis County also maintains the road to the powerplant and it is not addressed in this plan. The access road that parallels the lower end of the tailrace is not included in this study as it is used solely by Energy Northwest. Recreational trails leading around Packwood Lake are not addressed in this study, as they are not used by Project personnel. The access roads and trail that are addressed in this study plan are shown in Figure 3-1 and described below.

3.1 Snyder Road (FSR 1260)

Snyder Road (Forest Service Road 1260) is a double-lane paved road with few turnouts. The Forest Service assigns Maintenance Level 5 (ML5) to Snyder Road for Mile Post (MP) 0 to MP 1.2. Lewis County has jurisdiction and maintenance responsibility for the road portion not on Forest Service lands (MP 0 to MP 0.83). Snyder Road is classified ML 4 for the next 4.6 miles (MP 1.2 to trail head parking area at MP 5.8). ML 4 classification specifies that the road surface is to be substantially free of potholes and debris and provides comfort and convenience of passenger cars and commercial vehicles traveling at 25 mph. The parking area at the end of Snyder Road is utilized by hikers, horseback riders, and ATV’s. The public can then either
access Trail #78 or return a short distance down Snyder Road to the entrance of the Pipeline Road (Forest Road 1260-066).

Currently, the Snyder Road prism is in fair to good condition with need of some minor crack seal patching and brushing. On Forest Service lands, the drainage maintenance, brushing and surface repair is done by the Forest Service. Energy Northwest uses this road generally once per week for accessing either the Latch Road or the Pipeline Road and Trail No. 74. The purpose of these trips is to check on intake facilities and perform needed maintenance.

3.2 Latch Road (FSR 1262)

FSR 1262, better known as the Latch Road, is a single-lane gravel road with few turnouts. This road is located 1.66 miles up Snyder Road. Approximately 3 miles of the road is in the Lake Creek drainage. The Latch Road is gated and locked approximately 2.4 miles from the junction with Snyder Road. There is no public vehicular traffic behind the gate, although a few hunters may use the road up to the gate in the fall. From this gate, it is another 2.2 miles to where the road ends and a short access trail connects to Trail No. 74. Currently, the road prism is partially wheel-rutted with several drivable water bars that are semi-functional (meaning in heavy rains they would not function properly). According to the Forest Service (2005), much of the ditch lines are full of debris and non-functional, and many of the culverts are partially blocked, both inlet and outlet. Other road conditions include brush encroaching into the roadway and a few springs in the ditch line that erode the travel-way or otherwise fill ditch lines with unsuitable material. This road is currently assigned Maintenance Level 2 (ML2). ML2 means the road is passable by high-clearance vehicles, proper drainage is maintained, and speeds are 15 mph or less.

If the road remains in the Forest Service system, the management objective would be to repair ditch line flows and culverts and outslope the road, where feasible. Culverts would be replaced with armored drivable dips (100 ft long), where possible, and water bars where it is not possible to install a drainage dip. Over all, the road would be left in a low maintenance level condition.

Energy Northwest uses this road in the winter months (approximately once per week), because access becomes difficult due to snow depths on Pipeline Road. In the summer, Energy Northwest most often uses the Pipeline Road to access the lake. During the summer field season, the Forest Service trail crews and volunteers use this road an estimated 10 times per season while working on trails in the Packwood Lake area. Forest Service and Energy Northwest both use the Latch Road as a matter of convenience. The Pipeline Road could provide Energy Northwest and Forest Service administrative access to Packwood Lake. Because the area is LSR, the road is not necessarily needed for vegetation management activities.
Figure 3-1. Access Roads to Packwood Lake.

Source: USDA Forest Service, Gifford Pinchot National Forest 2004
3.3 Pipeline Road (FSR 1260 – 066) and Trail No. 74

Forest Road 1260-066, better known as the Pipeline Road, is a single-lane native surface road with wide spots. This road is gated at MP 0.03 and is 1.3 miles in length. Trail #74, which extends from the end of the Pipeline Road, is another 3.2 miles in length where it reaches Packwood Lake. This road/trail is located near Packwood, northeast of Snyder Road beginning at MP 5.55, T13N, R9E, sections 13 and 24, and T13N, R10E, sections 18, 19, 20 and 21. The Pipeline Road is classified as ML 2 and it is in fair condition with many minor drainage problems. The sub-grade appears to be in good condition. The trail portion is in fair to poor condition. This road and trail provide primary access to Packwood Lake for Energy Northwest. There are several manhole sites to access the pipeline along the way. There are several areas that have surface depressions that hold standing water. In other areas, the surface has worn out and created a channel on some of the steeper sections. Several culverts are either partially blocked or entirely blocked and most of the water-bars/cross-drains are worn to the point of no longer functioning.

The Pipeline Road and connecting trail (Trail #74) provides motorized access to Packwood Lake. The Pipeline Road and Trail #74 are maintained by Energy Northwest and are Energy Northwest’s primary access for operation and maintenance of the Project’s intake facilities. The Pipeline Road is located approximately 100 yards from the parking lot, down Forest Service Road 1260. Energy Northwest use of the Pipeline Road and connecting trail is generally once per week, to check on intake facilities and perform needed maintenance.

The Pipeline Road has been open to ATV use by the public. ATV users illegally drive their machines on Snyder Road from the parking lot to the Snyder Road/Pipeline Road intersection. The Forest Service is considering curtailing recreational ATV use on the Pipeline Road because such use creates conflicts with management objectives for the LSR and Packwood Lake semi-primitive area. In the past, this road/trail was seldom used by the Forest Service.

3.4 Need for Additional Information

No formal inventory of road stability, drainage and tread condition is available. This information is needed to prepare plans to make the roads and trails hydrologically stable and in compliance with safety and maintenance standards. Information is also needed to determine the level of project and non-project use and to determine the direction of future management and maintenance for each of these access routes.

The Latch Road is within a LSR as designated by the Forest Service. Therefore, the Forest Service does not need the road for vegetation management. The need for this road by Energy Northwest is yet to be determined and will depend on whether adequate access can be provided via the Pipeline Road and Trail #74 during the winter months. If Energy Northwest does not need Latch Road, then the Forest Service may initiate a project to decommission this road. The Pipeline Road has been open to the public for non-motorized and motorized use. Information is needed to determine the level of project and non-project use to determine the direction of future management and maintenance.
There has also been a request for additional information to evaluate if water discharging from the pipeline tunnel French drain adjacent to Trail #74 is solely groundwater seepage or if some leakage from the pipeline occurs at this point.

4.0 NEXUS BETWEEN PROJECT OPERATIONS AND EFFECTS ON RESOURCES

Project personnel use Forest Service roads and trails to access water diversion facilities. A 1965 agreement between Energy Northwest (then Washington Public Power Supply System) and the Forest Service discusses management and responsibilities for each of the parties. A review of the agreement was conducted during a meeting with Forest Service staff on April 5, 2005 and it was determined that the agreement was out of date. No other agreement could be found in Energy Northwest or Forest Service files. An assessment of maintenance and/or reconstruction needs of these access facilities would provide the basis for a maintenance plan (per the Forest Plan and the Highway Safety Act), and would provide for protecting resources in the Lake Creek drainage. Road use permits or maintenance agreements are required of any commercial user.

This study is intended to provide information that will contribute to the basis for developing a roads and trails management plan. Energy Northwest is responsible for completing the studies in consultation with the agencies and tribes; however, nothing in this study plan is intended to specify responsibility for road maintenance or reconstruction.

5.0 STUDY AREA AND METHODS

5.1 Study Area

The study area, shown in Figure 3-1, encompasses the road right-of-way for Snyder Road from the Forest Service boundary with Lewis County jurisdiction to MP 5.8, which is the trailhead parking for the Pipeline Road (FSR 1260 – 066) and Trail No. 78. The trailhead parking area and Pipeline Road right-of-way are in the study area as well as trail No. 74 from its trailhead to Packwood Lake. The Latch Road (1262) right-of-way and the steep access trail leading to Trail No. 74 are in the study area. Sufficient area to either side of each of these right-of-ways is included in the study area as necessary to evaluate the hydrologic stability, resource impacts, and road/trail maintenance needs for these access routes.

5.2 Summary of Modifications to Study Methods Requested by the USFS

Only minor modifications to the requested methods are proposed. The methods detailed in this study plan are consistent with those submitted in the study request. The study request included an assessment of use levels for access roads and trail; the level of use of target roads and trail will be assessed according to methods detailed in the recreation study plan. Use of access roads by Energy Northwest and the Forest Service will also be evaluated as part of the recreation study. The results of these studies will be included in the recreation reports.
5.3 Road and Trail Safety

Applicable safety standards for the target roads and trail will be reviewed relative to use patterns. Needs for safety improvement, if any, will be identified that will bring each road or trail into compliance with the standards. A determination will be made as to whether the Pipeline Road and Trail #74 can meet current safety standards for winter use. If this is not possible, the study will include review of Latch Road.

5.4 Maintenance and Reconstruction Needs Assessment

A road inventory will be conducted on the roads and trail within the study area in consultation with the Forest Service District Engineer. The inventory will include an assessment of road stability and hydrologic connectivity. The surveyor will drive/walk the roads and note the condition of the tread, fillslope, ditch, cutslope, and each drainage structure. Areas of past, present, and potential future erosion or instability will be inventoried, and the factors contributing to the area of concern will be recorded. Hydrologic connectivity and potential surface erosion issues will be assessed using the methods described in the Washington Road Surface Erosion Model Manual (WDNR 2004). If specific areas of concern requiring assessment by a licensed engineer are found, these will be noted so appropriate action by an engineer can be taken.

A report on road conditions and potential maintenance/improvement needs will be prepared in consideration of Forest Service maintenance levels and safety standards.

5.5 Pipeline Leakage

When the pipeline is shut down for maintenance, the Forest Service District Engineer and the Forest Hydrologist from the Gifford Pinchot National Forest Headquarters will be notified and a survey of the wet areas (identified at the French drain on the #74 trail and above the Latch Road at approximately MP 3.9) will be made before the pipeline is put back into service. If these areas dry out following the dewatering of the pipeline system, then it is assumed that there are pipeline leaks causing these conditions. These surveys may need to happen more than once, as determined after the first survey by the District Engineer.

6.0 CONSULTATION WITH AGENCIES, TRIBES AND OTHER STAKEHOLDERS

Energy Northwest initiated agency consultation in December 2003. The integrated licensing process plan provides for numerous meetings with stakeholders during the months of May through August of 2005 to discuss, revise and finalize the proposed study plan. Stakeholder representatives will also be invited to provide information for the study and technical reviews of the draft report. Participation of Forest Service engineers and other technical specialists will be sought as identified in the study methods.
7.0 PROGRESS REPORTS, INFORMATION SHARING AND TECHNICAL REVIEW

Energy Northwest and its consultant will report on the methods, progress, and results of the study at stakeholder meetings, which will be held in conjunction with Recreation Resource Committee meetings.

Energy Northwest will provide copies of the draft reports to interested stakeholders for review. Review periods will be 30 days, after which Energy Northwest and its consultant will take review comments into consideration when making revisions and producing final reports.

8.0 SCHEDULE

Numerous meetings are planned from May through August 2005 to finalize the study plan. Energy Northwest will file a revised study plan based on the discussion at these meetings within 30 days of the close of the comment period, by August 24, 2005. Stakeholders will then have 15 days to comment on the revised study plans filed with FERC prior to FERC issuing a Study Plan Determination on September 23, 2005. Data collection on the current use level will be initiated and on-site inventory and field surveys will begin in April 2006 and continue through November 2006 as part of the Recreation Resources Study Plan. The evaluation of maintenance and reconstruction needs will occur in summer through fall 2006, with field work completed by October 2006 and a draft report issued in early 2007.

9.0 LEVEL OF EFFORT AND COST FOR ROAD INVENTORY AND SAFETY REVIEW

The level of effort includes finalization of the study plan, study implementation, and report preparation as well as consultation with agencies, tribes and stakeholders.

The assessment of compliance of roads and trail with safety standards is anticipated to require three days.

The cost for the road inventory is anticipated to include 5 days for field work/field prep time, 4 days to compile and analyze the data collected and write a draft report on road conditions and recommendations, and 5 days to meet and consult with agency representatives, respond to comments on the report, and prepare a final report. This level of effort is not inclusive of any additional time that may be necessary for a licensed engineer to evaluate the results of the needs assessment and prepare any related conceptual designs or complete engineering slope stability analyses.

Total level of effort for all tasks in this study plan is 18 person days with a total estimated study cost of approximately $13,461.
10.0 LITERATURE CITED

