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Subject: **PACKWOOD LAKE HYDROELECTRIC PROJECT
FERC DOCKET NO. P-2244
THREATENED, ENDANGERED, AND SENSITIVE SPECIES MANAGEMENT
PLAN, SEPTEMBER 2019**

Energy Northwest (EN), in accordance with the Order Issuing New Operating License issued by the Federal Energy Regulatory Commission (Commission) October 11, 2018, herein files the final Threatened, Endangered, and Sensitive Species Management Plan, September 2019 (Plan) for the Packwood Lake Hydroelectric Project (Project). The filing of this Plan satisfies the License Article 403, United States Department of Agriculture – Forest Service (USFS) 4(e) Condition No. 12 related to the development of the Plan and the United States Department of Commerce – National Oceanic and Atmospheric Administration/National Marine Fisheries Service (NMFS) RPM #6 and RPM #9.

The Plan was drafted by EN and distributed to the USFS, the United States Department of the Interior – Fish and Wildlife Service (FWS), NMFS, and the Washington State Department of Fish and Wildlife (WDFW), Washington State Department of Ecology (Ecology), and the Cowlitz Indian Tribe and Yakama Nation, herein after referred to as the Resource Agencies Committee (RAC) for comment prior to finalizing. All comments received and associated EN responses and documentation of revisions are attached to this filing.

The goal of the Plan is to provide the general methodology to provide protection, mitigation, and enhancement and monitoring of threatened, endangered, and sensitive species and their habitats that may be affected by Project operation or Project-related activities during the duration of the Project License. Per Table 1 of the Plan, it is notable that much of our management of certain TES species is explicitly detailed in a series of individual plans meant to address potential impacts to specific species.

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September 12, 2019

PACKWOOD LAKE HYDROELECTRIC PROJECT

FERC DOCKET NO. P-2244

**THREATENED, ENDANGERED, AND SENSITIVE SPECIES MANAGEMENT PLAN,
SEPTEMBER 2019**

As part of Condition No. 12, the Plan must include EN's filed Rare Plant Management Plan filed with FERC on June 6, 2008. The first version of the Rare Plant Management Plan was filed in 2008 during Project relicensing, and an updated version, including species list updates, was filed in January 2019 following Project license issuance. The Project license requires that EN include the Rare Plant Management Plan in this Threatened, Endangered, and Sensitive Species Plan, thus the measures described in the Rare Plant Management Plan are included in this document. Since the January 2019 filing of the Rare Plant Management Plan, USFS published an updated Regional Forester's Sensitive Species list, which includes Gifford Pinchot National Forest. As a result, Appendix A of this Plan includes the most recent list of Gifford Pinchot National Forest Sensitive Species.

EN will fully comply with all provisions of the Plan.

EN seeks Commission approval of the Threatened, Endangered, and Sensitive Species Management Plan, September 2019.

If you have any questions or require additional information regarding this Plan, please contact me at 509.378.9755 or kwilliams@energy-northwest.com.

Respectfully,



Ken Williams

Supervisor, Hydro & Wind Projects

- Enclosure: 1) Threatened, Endangered, and Sensitive Species Management Plan, September 2019
2) Threatened, Endangered, and Sensitive Species Management Plan, Summary of Agency Comments, September 2019
3) Threatened, Endangered, and Sensitive Species Management Plan, Record of Consultation, September 2019

Distribution:

Email: Commenting agencies

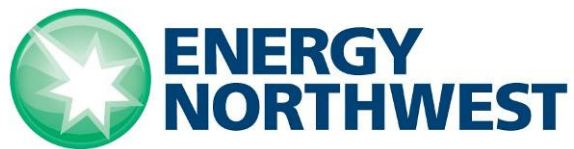
Hardcopy: Cowlitz Indian Tribe (3); Yakama Nation (3)

**Final
Threatened, Endangered, and Sensitive Species
Management Plan**

for

**Energy Northwest's
Packwood Lake Hydroelectric Project
FERC No. 2244
Lewis County, Washington**

Submitted by:



**P.O. Box 968
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September 2019

Threatened, Endangered, and Sensitive Species Management Plan

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1.0 INTRODUCTION

Energy Northwest's (EN) Packwood Lake Hydroelectric Project (Project), Federal Energy Regulatory Commission (FERC) No. P-2244, received its initial license in 1960. The majority of the Project is located in the Gifford Pinchot National Forest. The Project consists of an intake canal, a concrete drop structure (dam) and intake building on Lake Creek located about 424 ft. 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 situated at an elevation of approximately 2,857 ft. above mean sea level (MSL), about 1,800 ft. 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.

EN filed its Final Application for New License of the Project on February 24, 2008. FERC issued a new license for the Project on October 11, 2018.

1.1 Plan Justification

The Project license issued by FERC requires EN to develop a Threatened, Endangered, and Sensitive Species Management Plan (Plan) within one year of license issuance (FERC 2018). Specifically, the United States Department of Agriculture - Forest Service (USFS) Federal Power Act Final Section 4(e) Condition No. 12 and License Article No. 403 describe the requirements pertaining to development of a Plan. Similarly, the United States Department of Commerce - National Marine Fisheries Service (NMFS) Biological Opinion Resource Protection Measure (RPM) #6 and #9 requires EN to provide NMFS with a plan(s) and report(s) describing how listed species in the action area would be protected and/or monitored and to document the effects of the action on listed species in the action area.

1.2 Purpose and Scope of the Plan

The goal of the Plan is to provide protection, mitigation, and enhancement and monitoring of threatened, endangered, and sensitive species and their habitats that may be affected by Project operation or Project-related activities during the duration of the Project License.

1.3 Elements of the Monitoring Plan

Per the USFS Section 4(e) Condition No. 12, EN's Plan includes the following elements:

1. *Initial species list - The initial list should include threatened, endangered and sensitive species that occur within the project boundary or on lands affected by project operation or project-*

related activities. For each species, the list should reference the relicensing studies that documented occurrence and/or evaluated project effects.

- 2. Updating the species list - The plan should provide for annual consultation, review, and updating of the list. Species would be added or removed according to changes in their status or changes in the potential for project effects (e.g., construction of new facilities).*
- 3. Conducting baseline surveys - The plan should provide for baseline surveys of species currently on the list if no surveys have been completed at sites where project operations or project-related activities could affect them. Baseline surveys should also be conducted for species that may be added to the list if they occur at sites where the project could affect them.*
- 4. Preparing biological evaluations - Where USDA Forest Service Regional Forester Special Status Species may be affected, the Licensee must consult with the USDA Forest Service to prepare a draft biological evaluation, in accordance with the Condition No. 1 - Implementation of Activities on National Forest System Lands.*
- 5. Monitoring project effects - For USDA Forest Service Regional Forester Special Status Species, the plan should include monitoring to identify project effects at confirmed sensitive species sites every 2 years for 6 years following License issuance and at 3-year intervals thereafter, unless a determination can be made at year 6 that no additional monitoring is necessary. For other threatened, endangered, and sensitive species, the Licensee must consult with the USDA Forest Service to determine an appropriate monitoring frequency, based on site-specific conditions.*
- 6. Implementing protective measures - The plan should provide for designing and implementing PME or restoration measures if monitoring results show project-related effects.*
- 7. Effectiveness monitoring and adaptive management - The plan should include follow-up monitoring to measure the effectiveness of any protective measures that are implemented, and use of this information to modify and improve the Threatened, Endangered, and Sensitive Species Management Plan. Adaptive management must mean the adoption of the following strategic actions: measures must be implemented, effectiveness monitoring must take place, and alternative fallback options must be employed if proposed control measures fail to protect and enhance fish and wildlife resources as anticipated.*
- 8. Consultation, reporting, and updating the Threatened, Endangered, and Sensitive Species Management Plan - The plan should provide for annual reporting and consultation, with updates to the plan as needed. The report must be provided to the USDA Forest Service 30 days prior to the Annual Resource Coordination meeting. The report must also provide details for the out-years planned activities. The Licensee must allow a minimum of 60 days for the USDA Forest Service to comment and to make recommendations prior to filing the final report with the Commission for approval. If the Licensee does not adopt a recommendation, the filing must include the Licensee's reasons, based on Project-specific information.*

2.0 SPECIES LISTS AND PROTECTIVE MEASURES

2.1 Initial Species List and EN Management Plans

2.1.1 Species Listed Under the Endangered Species Act

Species that are listed under the Endangered Species Act (ESA) that may occur in the Project area are listed below (Table 1). FERC’s Environmental Assessment (EA) for the Project discussed threatened, endangered, and sensitive species, and a summary of FERC’s findings regarding the effects of the Project on listed species and their critical habitats is presented below (FERC 2009). Table 1 also documents EN’s management plans that contain measures specifically designed to protect species that may be affected by Project operation. Protection measures for species that have EN management plans designated in the list below are contained within those management plans and are not further discussed within this Plan.

Table 1. Species listed under the Endangered Species Act (ESA) that may occur in the Project area, and EN management plans that specifically address listed species.

Species	ESA Listing Status	FERC Species Effect Finding	FERC Critical Habitat Finding	Relevant EN Management Plans
Fish				
Chinook salmon (<i>Oncorhynchus tshawytscha</i>)	Threatened	Likely to adversely affect (FERC 2009)	Likely to adversely affect (FERC 2009)	<ul style="list-style-type: none"> • Fall-Run Chinook Monitoring Plan, May 2019 (EN 2019a). [On hold until further notice from NMFS]. • Lower Lake Creek Restoration, Enhancement, and Monitoring Plan (EN, under development) • Snyder Creek Restoration, Enhancement, and Monitoring Plan (EN, under development) • Tailrace Water Temperature Monitoring Plan, January 2019 (EN 2019b) • Water Quality Protection Plan (EN, under development) • Lake Creek Instream Flow and Ramping Rate Monitoring Plan, April 2019 (EN 2019c)
Coho salmon (<i>O. kiscutch</i>)	Threatened	Likely to adversely affect (FERC 2009)	None designated (FERC 2009)	<ul style="list-style-type: none"> • Lower Lake Creek Restoration, Enhancement, and Monitoring Plan (EN, under development) • Snyder Creek Restoration, Enhancement, and Monitoring Plan (EN, under development) • Tailrace Water Temperature Monitoring Plan, January 2019 (EN 2019b) • Water Quality Protection Plan (EN, under development) • Lake Creek Instream Flow and Ramping Rate Monitoring Plan, April 2019 (EN 2019c)

Species	ESA Listing Status	FERC Species Effect Finding	FERC Critical Habitat Finding	Relevant EN Management Plans
Steelhead (<i>O. mykiss</i>)	Threatened	Likely to adversely affect (FERC 2009)	Likely to adversely affect (FERC 2009)	<ul style="list-style-type: none"> • Lower Lake Creek Restoration, Enhancement, and Monitoring Plan (EN, under development) • Snyder Creek Restoration, Enhancement, and Monitoring Plan (EN, under development) • Tailrace Water Temperature Monitoring Plan, January 2019 (EN 2019b) • Water Quality Protection Plan (EN, under development) • Lake Creek Instream Flow and Ramping Rate Monitoring Plan, April 2019 (EN 2019c)
Chum salmon (<i>O. keta</i>)	Threatened	No effect (FERC 2009)	No effect (FERC 2009)	N/A
Bull trout (<i>Salvelinus confluentus</i>)	Threatened	No effect (FERC 2009)	No effect (FERC 2009)	N/A
Wildlife				
Canada lynx (<i>Lynx canadensis</i>)	Threatened	No effect (FERC 2009)	No effect (FERC 2009)	N/A
Grizzly bear (<i>Ursus arctos</i>)	Threatened	No effect (FERC 2009)	None designated in Washington State (FERC 2009)	N/A
Gray wolf (<i>Canis lupus</i>)	Endangered	No effect (FERC 2009)	None designated in Washington State (FERC 2009)	N/A
North American Wolverine (<i>Gulo gulo luscus</i>)	Proposed Threatened	No effect (FERC 2018)	No effect (FERC 2018)	N/A
Marbled murrelet (<i>Brachyramphus marmoratus</i>)	Threatened	No effect (FERC 2009)	No effect (FERC 2009)	N/A
Northern spotted owl (<i>Strix occidentalis</i>)	Threatened	Not likely to adversely affect (FERC 2009)	Not likely to adversely affect (FERC 2009); Nesting Northern spotted owl should be addressed prior to stream restoration activities (FERC 2018)	<ul style="list-style-type: none"> • Lower Lake Creek Restoration, Enhancement, and Monitoring Plan (EN, under development) • Snyder Creek Restoration, Enhancement, and Monitoring Plan (EN, under development) • Avian Protection Plan, January 2019 (EN 2019d)

Species	ESA Listing Status	FERC Species Effect Finding	FERC Critical Habitat Finding	Relevant EN Management Plans
Yellow-billed cuckoo (<i>Coccyzus americanus</i>)	Threatened	No effect (FERC 2018)	No effect (FERC 2018)	N/A
Plants				
Howellia (<i>Howellia aquatilis</i>)	Threatened	No effect (FERC 2009)	None designated (FERC 2009)	N/A
Kincaid's Sulfur Lupine (<i>Lupinus sulphureus kincaidii</i>)	Threatened	No effect (FERC 2009)	No effect (FERC 2009)	N/A
Nelson's checkermallow (<i>Sidalcea nelsoniana</i>)	Threatened	No effect (FERC 2009)	None designated (FERC 2009)	N/A

2.1.2 USFS Region 6 Sensitive Fish Species List

USFS Region 6 has identified Sensitive fish species that may occur in the Project area (Table 2; EN 2008). Since none of the listed species are present in the Project area, no management plans are necessary for these species.

Table 2. Fish species listed as Sensitive by USFS Region 6 that may occur in the Project area, and EN management plans that specifically address these species.

Species	Habitat Present?	Species Present?	Relevant EN Management Plan(s)
Interior redband trout (<i>O. mykiss</i>)	No	No	N/A
Pygmy whitefish (<i>Prosopium coulteri</i>)	No	No	N/A
Coastal cutthroat trout (<i>O. clarki clarki</i>)	Yes	Yes	<ul style="list-style-type: none"> • Lower Lake Creek Restoration, Enhancement, and Monitoring Plan (EN, under development) • Snyder Creek Restoration, Enhancement, and Monitoring Plan (EN, under development) • Tailrace Water Temperature Monitoring Plan, January 2019 (EN 2019b) • Water Quality Protection Plan (EN, under development) • Lake Creek Instream Flow and Ramping Rate Monitoring Plan, April 2019 (EN 2019c)

2.1.3 USFS Region 6 Sensitive Wildlife Species List

USFS Region 6 has identified 12 Sensitive wildlife species that have been documented or may occur in the Project area (Table 3; EN 2008a). FERC's assessment of these species and relevant

EN management plans are noted in Table 3 below. Protection measures for species that have EN management plans designated in the list below are contained within those management plans and are not further discussed within this Plan.

Table 3. Wildlife species listed as Sensitive by USFS Region 6 that may occur in the Project area, and EN management plans that specifically address these species.

Species	Occurrence (EN 2008a)	EN Comments (EN 2008a)	FERC Assessment	Relevant EN Management Plan(s)
Wolverine (<i>Gulo gulo luteus</i>)	Possible	Wide ranging species associated with undisturbed high elevation areas. Status uncertain.	No effect (FERC 2018)	N/A
Pacific Townsend's big-eared bat (<i>Corynorhinus t. townsendii</i>)	Possible	Has been found opportunistically in the region. No systematic surveys have been conducted.	N/A	N/A
Common loon (<i>Gavia immer</i>)	Documented	Known to occur at Packwood Lake during migration, but no breeding records.	N/A	N/A
Peregrine falcon (<i>Falco peregrinus</i>)	Possible	Wide ranging species that often nests on high cliffs. Might occur in Project vicinity during migration.	N/A	N/A
Bald eagle (<i>Haliaeetus leucocephalus</i>)	Documented	Known to occur on Cowlitz River, particularly during salmon runs, and observed at Packwood Lake. Surveys for nests were conducted by licensee.	Nesting bald eagle should be addressed prior to stream restoration activities (FERC 2018)	<ul style="list-style-type: none"> • Lower Lake Creek Restoration, Enhancement, and Monitoring Plan (EN, under development) • Snyder Creek Restoration, Enhancement, and Monitoring Plan (EN, under development) • Avian Protection Plan (EN 201e9)
Cope's giant salamander (<i>Dicamptodon copei</i>)	Possible	Usually aquatic (in small streams) in all life stages. Occurrence evaluated as part of amphibian survey.	N/A	<ul style="list-style-type: none"> • Amphibian Site B monitoring (FERC 2018) • Lower Lake Creek Restoration, Enhancement, and Monitoring Plan (EN, under development) • Snyder Creek Restoration, Enhancement, and Monitoring Plan (EN, under development)

Species	Occurrence (EN 2008a)	EN Comments (EN 2008a)	FERC Assessment	Relevant EN Management Plan(s)
Cascade torrent salamander (<i>Rhyacotriton cascadae</i>)	Possible	Semi-aquatic in rocky seeps and small streams. Occurrence evaluated as part of amphibian survey.	N/A	<ul style="list-style-type: none"> • Amphibian Site B monitoring (FERC 2018) • Lower Lake Creek Restoration, Enhancement, and Monitoring Plan (EN, under development) • Snyder Creek Restoration, Enhancement, and Monitoring Plan (EN, under development)
Larch Mountain salamander (<i>Plethodon larselli</i>)	Documented	Terrestrial in all life stages. Has been found opportunistically near trails by Packwood Lake.	N/A	<ul style="list-style-type: none"> • Amphibian Site B monitoring (FERC 2018) • Lower Lake Creek Restoration, Enhancement, and Monitoring Plan (EN, under development) • Snyder Creek Restoration, Enhancement, and Monitoring Plan (EN, under development)
Van Dyke's salamander (<i>Plethodon vandykei</i>)	Possible	Usually associated with seepages or splash zones. Occurrence evaluated as part of amphibian survey.	N/A	<ul style="list-style-type: none"> • Amphibian Site B monitoring (FERC 2018) • Lower Lake Creek Restoration, Enhancement, and Monitoring Plan (EN, under development) • Snyder Creek Restoration, Enhancement, and Monitoring Plan (EN, under development)
Puget Oregonian [snail] (<i>Cryptomastix devia</i>)	Possible	Moist, mature and older forests, often associated with big-leaf maples.	N/A	N/A
Malone jumping-slug (<i>Hemphilia malonei</i>)	Possible	Moist upland forests, often associated with sword fern and woody debris.	N/A	N/A
Blue-gray tail-dropper (slug) (<i>Prophysaon coeruleum</i>)	Possible	Rarely occurring in Washington in upland forests in moist microhabitats.	N/A	N/A

2.1.4 Rare Plant Occurrences

EN previously developed a Rare Plant Management Plan in consultation with all requisite agencies to protect specific plant species in the Project vicinity and filed it with FERC. The first version of the Rare Plant Management Plan was filed during 2008 during Project relicensing, and an updated version, including species list updates, was filed in January 2019 following Project license issuance. The Project license requires that EN include the Rare Plant Management Plan

in the Threatened, Endangered, and Sensitive Species Plan, thus the measures described in the Rare Plant Management Plan are included in this document. Since the January 2019 filing of the Rare Plant Management Plan, USFS published an updated Regional Forester's Sensitive Species list, which includes Gifford Pinchot National Forest. As a result, Appendix A of this Plan includes the most recent list of Gifford Pinchot National Forest Sensitive Species (USFS 2019).

For the purposes of this Plan, "rare plant species" include all USFS Regional Forester Special Status Species (USFS 2015) vascular plants, bryophytes, and lichens; Washington Natural Heritage Program (WNHP) plant species; and United States Department of the Interior - Fish and Wildlife Service (FWS) Threatened, Endangered and Sensitive plant species (Appendix A). EN conducted rare plant surveys from 2005 to 2007, and the results of these surveys are contained in the Rare Plant Survey Final Report (EN 2008b). Only two rare plant species, *Peltigera pacifica* and Oregon goldenaster (*Heterotheca oregona*) have been located in the Project area (Figure 1). Measures proposed to protect *Peltigera pacifica* and Oregon goldenaster are described in Section 2.2 below.

Small occurrences of four USFS Regional Forester Special Status Species lichens (*Collema nigrescens*, *Nephroma bellum*, *Nephroma occultum*, and *Platismatia lacunosa*) were located together just outside of the Project boundary, along the Packwood Lake Trail in the Goat Rocks Wilderness Area (EN 2008; Figure 1). No special management measures are proposed for these lichens, since Project-related activities are unlikely to affect these species.

2.1.4.1 *Peltigera pacifica*

The *Peltigera pacifica* Pipeline Road occurrence consists of eight small subpopulations along a 1.25 mile portion of USFS Road 1260-066 (Pipeline Road), Pipeline Trail #74 and the buried pipeline (all on NFS lands) (EN 2005). Project-related maintenance of any of these features has the potential to affect the *Peltigera pacifica* occurrence through direct loss, disturbance, noxious weed spread or habitat alterations. Invasive plant species could potentially degrade or occupy *Peltigera* habitat. The *Peltigera* occupies habitat adjacent to, but not on the road prism of USFS Road 1260-066 and the Pipeline Trail, which has been subject to minimal routine maintenance during the last several years. While there are no planned changes to how the road, Pipeline Trail or pipeline will be used or maintained under the new License, inevitably some maintenance to the road, trail, or pipeline will be necessary in the future. Ground-disturbing activities associated with maintenance could affect *Peltigera* thalli or habitat. The overstory canopy of young coniferous trees and tall shrubs growing along the road and pipeline where the *Peltigera pacifica* grows might become too large and require trimming or removal. If disturbance in its habitat or to its population were unavoidable, *Peltigera pacifica* may be able to successfully maintain or re-establish itself through time based on the observation that the population initially established itself in the young forested stand that grew up after the road and pipeline were constructed in the early 1960s.

Peltigera pacifica is a USFS Regional Forester Special Status Species lichen species that grows on soil, duff, woody debris and occasionally on tree bases in low elevation, moist forests. This lichen species is identifiable year round (when not under snow).

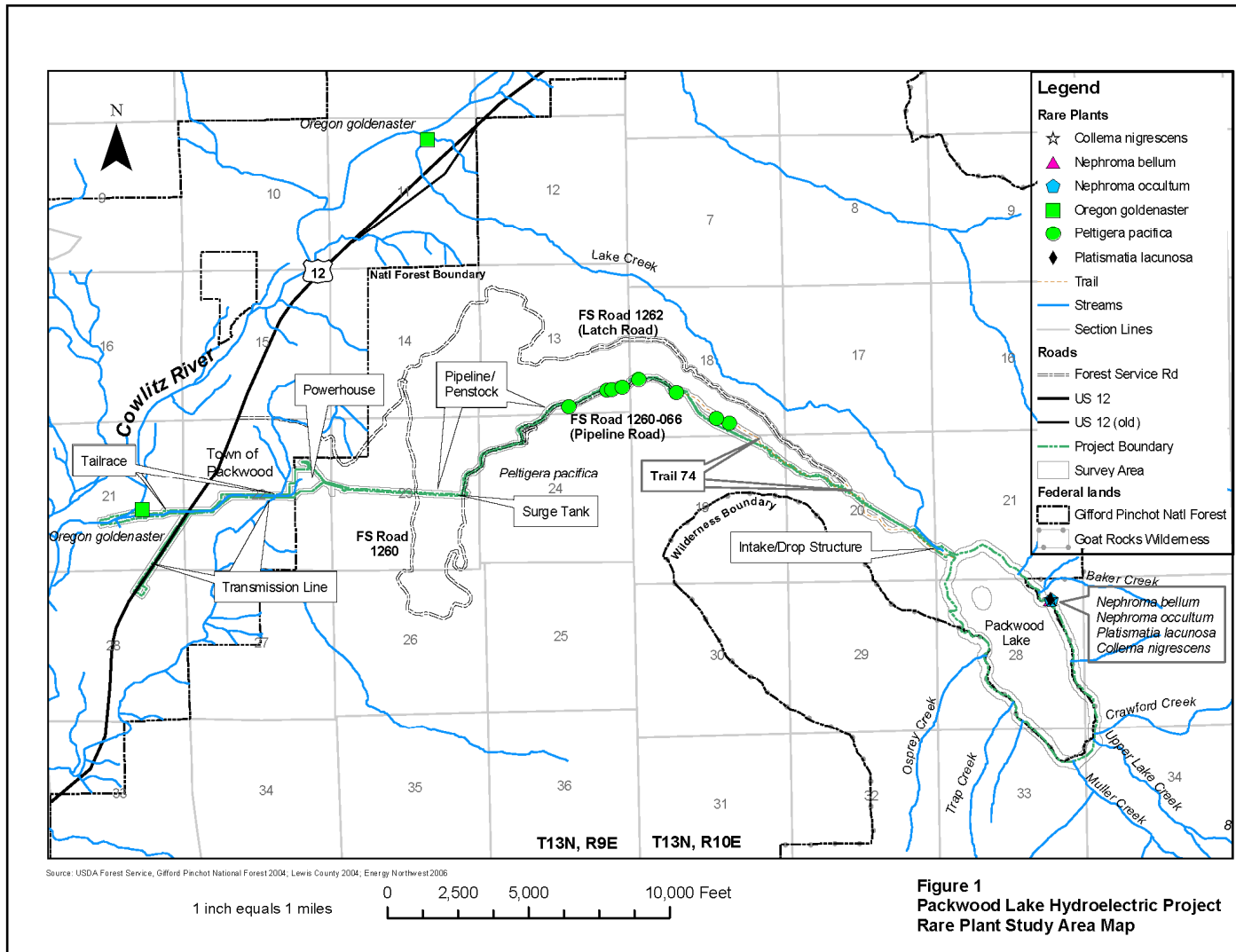


Figure 1. Packwood Lake Hydroelectric Project Rare Plant Study Area Map.

2.1.4.2 Oregon goldenaster

An occurrence of Oregon goldenaster (*Heterotheca oregona*) is located on the Cowlitz River gravel bar near the tailrace, within the Project boundary on land owned by EN and on private land owned by others. There is also a small occurrence of four plants on private land at the confluence of Lake Creek and the Cowlitz River, which is not in the Project boundary (EN 2008b). Project-related activities or effects that would cause direct loss, disturbance, or habitat alterations are not likely to occur either under the current license or under the proposed Project operating regime. Oregon goldenaster is a WNHP Sensitive species. Its typical habitat is open, sunny to partially shaded sites on sand and gravel bars along rivers. Seasonal river flooding is probably important in maintaining the habitat for this species (WNHP 2011). It is identifiable from June to September.

Listed noxious weeds, such as butterfly bush and Japanese knotweed, could cause habitat degradation and destruction within the Oregon goldenaster population. Operation of the Project may provide continued avenues for noxious weed introduction, establishment and spread. EN has developed an Integrated Weed Management Plan for the Project, which establishes responsibilities and requirements for the control of noxious weed infestations within the Project area (EN 2019e). Noxious weed control would be deemed necessary, if listed noxious weeds such as butterfly bush or Japanese knotweed are present within Oregon goldenaster habitat in the Project area. As directed by the Integrated Weed Management Plan, EN is required to remove butterfly bush, knotweed species and other weed species listed by the Lewis County Noxious Weed Control Board (LCNWCB) within the Project area. Control of the noxious weeds in and near the population would be beneficial, but care will be taken also, so that rare plants are not negatively affected by trampling or control measures (EN 2019e).

2.2 Rare Plant Protective Measures

2.2.1 *Peltigera pacifica* Protective Measures

EN proposes the following measures for PME of the Pipeline Road *Peltigera pacifica* occurrence in the Project Area.

- Monitor the *Peltigera pacifica* occurrence every two years for six years following License issuance and at 5-year intervals thereafter.
- During these surveys, monitor for noxious weed infestations in *Peltigera* habitat. If noxious weeds are located in *Peltigera* habitat, these weeds will be controlled according to the Packwood Lake Project Integrated Weed Management Plan in consultation with the USFS (EN 2019e).
- USFS Road 1260-066 will be maintained according to USFS Maintenance Level 2 (ML2) guidelines. At this maintenance level, it is not anticipated that activities will need to occur off the road prism.
- *Peltigera pacifica* thalli have not been found growing on the road prism. A biological evaluation for *Peltigera pacifica* subpopulations would be done in advance of any road or trail maintenance, tree and shrub trimming, or other ground disturbing activities planned for the

area outside of the road or trail prism that would affect *Peltigera pacifica* thalli. A plan would be developed in consultation with the USFS, with a goal of avoiding or minimizing damage to *Peltigera pacifica* thalli and habitat and would include provisions to monitor, mark, protect, or move affected subpopulations during ground-disturbing activities.

- If damage to *Peltigera pacifica* thalli or habitat were unavoidable, rocks and moss mats with the attached lichen thalli could be experimentally permanently moved to a similar habitat or temporarily moved and replaced after maintenance work has been completed. If such transplanting were attempted, the transplants would be monitored twice a season for two years, or as agreed, to track and document whether this technique is successful.
- If destruction of some *Peltigera pacifica* subpopulations were unavoidable, a survey would be made for other populations outside of the Project area in the general vicinity. These populations would be preserved to provide for local propagation opportunities.
- Any needed revegetation of disturbed areas would be done with native plant species according to USFS standards.
- Where there is a potential for Regional Forester Special Status Species to be affected by Project operations or maintenance, actions associated with other management plans, or other ground disturbing activities, EN will consult with the USFS in advance, to determine the need for, and if necessary, prepare a draft biological evaluation. Biological evaluations will be based on the location of known rare plant occurrences, the type of ground disturbing activity and potential impacts associated with it. Biological evaluations are subject to review and approval by the USFS for habitat and ground-disturbing activities on NFS lands. If Project-related effects to rare plant occurrences are anticipated, reasonable protection, mitigation, enhancement or restoration measures will be implemented, as defined in the approved biological evaluation. Updated USFS, WNHP, and USFWS rare plant species lists will be included in the biological evaluation. Any field surveys or monitoring will be conducted and reported according to USFS standards.

Rare plant training will be provided to appropriate EN personnel. This training will cover all USFS rare plant species in the Project area, and provide information related to identification, ecology and protection.

2.2.2 Oregon goldenaster Protective Measures

EN proposes the following measures for PME of the Oregon goldenaster occurrence in the Project area.

- Survey Oregon goldenaster occurrence in the Project area prior to ground-disturbing activities in lower Lake Creek.
- Resurvey the Oregon goldenaster occurrence every five years to monitor and identify Project effects during the new license term.

- During these surveys, monitor for noxious weed infestations in Oregon goldenaster habitat. If noxious weeds are located, they will be controlled according to the Integrated Weed Management Plan in consultation with the LCNWCB (EN 2019e).
- Though none is planned during the next license period, if any Project-related ground disturbing activities in the vicinity of the Oregon goldenaster occurrence were to occur, the USFS would be consulted to determine the need for a biological evaluation. A biological evaluation would be prepared if necessary, in advance of any ground disturbing activities in the area, with the goal of avoiding or minimizing damage to the goldenaster occurrence.
- Ensure that any fish habitat restoration efforts in the Lower Lake Creek area (RM 0.0 to 0.3) do not disturb the small Oregon goldenaster subpopulation at the mouth of Lake Creek.
- Where there is a potential for Regional Forester Special Status Species to be affected by Project operations or maintenance, actions associated with other management plans, or other ground disturbing activities, EN will consult with the USFS in advance, to determine the need for, and if necessary, prepare a draft biological evaluation. Biological evaluations will be based on the location of known rare plant occurrences, the type of ground disturbing activity and potential impacts associated with it. Biological evaluations are subject to review and approval by the USFS for habitat and ground-disturbing activities on NFS lands. If Project-related effects to rare plant occurrences are anticipated, reasonable protection, mitigation, enhancement or restoration measures will be implemented, as defined in the approved biological evaluation. Updated USFS, WNHP, and USFWS rare plant species lists will be included in the biological evaluation. Any field surveys or monitoring will be conducted and reported according to USFS standards.

Native plants should be used to revegetate any disturbed areas.

2.3 EN Restoration Activities and Protective Measures

2.3.1 Lower Lake Creek Restoration

FERC's Project license order states that restoration activities along lower Lake Creek have the potential to affect Oregon goldenaster, nesting bald eagles, and nesting northern spotted owls (FERC 2018). As such, EN plans to conduct surveys and develop protection measures for these species prior to any land-disturbing or in-water construction activities associated with the stream restoration activities along lower Lake Creek. Details regarding survey methods and threatened, endangered, and sensitive species protection measures will be provided in EN's Lower Lake Creek Restoration Plan, which EN is currently in the process of developing.

2.3.2 Snyder Creek Restoration

FERC's Project license order states that fish passage improvement activities associated with re-routing Snyder Creek to join Hall Creek immediately downstream of the Project tailrace have the potential to affect special-status amphibians (FERC 2018). As such, EN plans to conduct surveys and develop protection measures for these species prior to any land-disturbing or in-water construction activities associated with the stream restoration activities along Snyder and Hall

creeks. Details regarding survey methods and threatened, endangered, and sensitive species protection measures will be provided in EN's Snyder Creek Restoration Plan, which EN is currently in the process of developing.

3.0 SCHEDULE

3.1 Rare Plant Management Plan Schedule

This section describes the consultation and reporting process EN will follow with regard to rare plants in the Packwood Lake Project area. The Plan will ultimately be a part of, and will be coordinated with, the Threatened, Endangered, and Sensitive Species Plan. Lands addressed by this Plan include those within the FERC-designated Project boundary, or those outside of the Project boundary influenced by Project-related, ground-disturbing activities, or any other activities conducted as a part of Project operations or license compliance.

An annual rare plant management report describing all activities related to rare plant management will be provided to the USFS and the RAC 30 days prior to the annual Resource Coordination meeting (which will be required under the USFS mandatory conditions). The annual meeting will provide a routine opportunity for agency consultation regarding rare plants and other environmental topics important to the operation of the Project as they affect USFS administered lands. The report will also provide details for the coming year's planned activities and determine whether preparation of any biological evaluations will be necessary. If EN does not adopt a recommendation, the report will include the reasons, based on Project-specific information. The annual report and the Plan will include updated USFS, WNHP, and USFWS rare plant species lists, in which plant species are added or removed, according to changes in their status. Activities associated with other management plans, including the Integrated Weed Management Plan, Lower Lake Creek Stream Restoration Plan, and the Road Maintenance Plan will be coordinated with the provisions and goals of the Plan.

The Packwood Project Supervisor will oversee and monitor activities relating to the Plan, evaluate the effectiveness of existing protective measures, coordinate with the USFS and the RAC, and maintain an in-house rare plant occurrence database and will be responsible for preparing the annual rare plant management report. New information will be added to the Plan annually and it will be reviewed every five years and updated, if needed, in consultation with the agencies. The agency review and comment procedures described above for the annual report will be used for any future filing of a revised, updated Plan.

Rare plant surveys and monitoring efforts on GPNF lands will meet standards described in the *Threatened, Endangered and Sensitive Plants Survey Field Guide* (USFS 2005a). Newly located and existing rare plant occurrences will be documented following *Threatened, Endangered, and Sensitive Plants Element Occurrences Field Guide* (USFS 2005b). Rare plant surveys and monitoring of other public, private, and EN lands will be performed and documented according to the methodology described in the Revised Rare Plant Survey Study Plan for Energy Northwest's Packwood Lake Hydroelectric Project FERC No. 2244, Lewis County, Washington (EN 2005). All

rare plant surveys and monitoring will be done at an appropriate time of the year by qualified botanists.

3.2 Lower Lake Creek and Snyder Creek Restoration Schedules

FERC's Project license order requires EN to submit plans for both the lower Lake Creek and Snyder Creek restoration activities within two years of license issuance (by October 2020). EN has developed a Restoration Subcommittee consisting of resource experts from all requisite State and Federal agencies. EN is currently developing both of the aforementioned plans in cooperation with the rest of this subcommittee and will be working with them throughout the implementation of both restoration efforts. Surveys for threatened, endangered, and sensitive species that may be affected by the restoration implementation will be conducted prior to any ground disturbing and/or in-water work. Likewise, any measures necessary to protect these species will be developed in advance of any ground disturbing or in-water work in consultation with resource agencies. The schedule for conducting surveys and commencing restoration activities at these locations will be discussed in detail within the respective restoration plans.

3.3 Consultation, Reporting, and Plan Updates

USFS Condition No. 2 in FERC's Project license order requires EN to produce a rolling 3-year annual Report and Work Plan (annual report) that provides updates regarding Project management activities and documents the results of natural resource monitoring. NMFS' Biological Opinion RPM #6 and #9 require annual reports regarding Project activities, monitoring results, and effects on listed species, which will be addressed in the annual report. Washington Department of Ecology's (Ecology's) Water Quality Certification (WQP) for the Project requires annual reporting on items pertaining to water quality including tailrace water temperature monitoring, spill reporting, instream flow, and habitat forming flows. Water quality has the potential to affect listed species, and all reporting items required by Ecology will be addressed in the annual report.

As part of the annual report, EN will report to the Resource Agencies Committee (RAC) the status of threatened, endangered, and sensitive species surveying, monitoring, and protection measure effectiveness. The annual report will also contain information regarding the planned activities pertaining to listed species for the upcoming year and out-year. The annual report will be provided to the RAC a minimum of 45 days prior to the annual Resource Coordination meeting for review, and a second RAC review period of 30 days will occur after the annual meeting. The annual consultation and annual report review process will provide an opportunity for resource agencies to comment on the status of threatened, endangered, and sensitive species lists and protection measures. If, as a result of annual agency consultation, updates to this Plan are necessary, EN will revise the Plan and resubmit it to resource agencies for a 30-day comment period prior to filing an updated version with FERC.

4.0 REFERENCES

- Energy Northwest (EN). 2005. Revised Rare Plant Survey Study Plan for Energy Northwest's Packwood Lake Hydroelectric Project FERC No. 2244, Lewis County, Washington. August 2005.
- EN 2008a. Application for New License for Energy Northwest's Packwood Lake Hydroelectric Project FERC No. 2244, Lewis County, Washington. February 2008.
- EN 2008b. Rare Plant Survey Final Report for Energy Northwest's Packwood Lake Hydroelectric Project FERC No. 2244, Lewis County, Washington. May 2008.
- EN. 2019a. Packwood Lake Hydroelectric Project NMFS Modification Related to the Development and Implementation of the Fall-Run Chinook Monitoring Plan. May 2019.
- EN. 2019b. Packwood Lake Hydroelectric Project Final Tailrace Water Temperature Monitoring and Enhancement Plan. January 2019.
- EN. 2019c. Packwood Lake Hydroelectric Project Final Lake Creek Instream Flow and Ramping Rate Monitoring Plan. April 2019.
- EN. 2019d. Packwood Lake Hydroelectric Project Final Avian Protection Plan. January 2019.
- EN. 2019e. Packwood Lake Hydroelectric Project Final Integrated Weed Management Plan. January 2019.
- Federal Energy Regulatory Commission (FERC). 2009. Notice of Availability of Final Environmental Assessment for the Packwood Hydroelectric Project FERC No. 2244. Issued July 1, 2009.
- FERC. 2018. Order Issuing New License for the Packwood Hydroelectric Project FERC No. 2244. Issued October 11, 2018.
- USDA Forest Service (USFS). 2005a. Threatened, Endangered, and Sensitive Plants Survey Field Guide.
- USFS. 2005b. Threatened, Endangered, and Sensitive Plants Element Occurrences Field Guide.
- USFS. 2019. Regional Forester's Special Status Species List - Federally Threatened, Endangered, and Proposed (TE&P), USDA Forest Service, Pacific Northwest Region, March 2019. Online at: <http://www.fs.fed.us/r6/sfpnw/issssp/agency-policy/>
- Washington Natural Heritage Program (WNHP). 2011. Field Guide to the Rare Plants of Washington. Online at: <https://www.dnr.wa.gov/NHPfieldguide>
- WNHP. 2018. 2018 Washington Vascular Plant Species of Special Concern. Online at: https://www.dnr.wa.gov/publications/amp_nh_vascular_ets.pdf?sfnc

APPENDIX A

**UPDATED USFS SENSITIVE SPECIES AND WNHP LIST OF KNOWN OCCURRENCES OF
RARE PLANTS IN LEWIS COUNTY, WASHINGTON**

**Updated USFS Sensitive Species, and WNHP List of Known Occurrences of
Rare Plants in Washington March 2019**

GPNF Sensitive Species March 2019	Documented (D) or Suspected (S)
Arctoparmelia incurva	D
Bolandra oregana	D
Carex densa	D
Carex macrochaeta	S
Carex proposita	D
Chrysolepis chrysophylla var. chrysophylla	D
Cicuta bulbifera	S
Cirsium remotifolium var. remotifolium	D
Collinsia sparsiflora var. bruceae	S
Coptis aspleniifolia	S
Coptis trifolia	S
Corydalis aquae-gelidae	D
Cryptantha rostellata	S
Dactylina arctica	D
Damasonium californicum	S
Dermatocarpon meiophyllizum	S
Diplacus cusickii	S
Erigeron howellii	S
Erigeron oregonus	S
Eriophorum viridicarinatum	D
Eryngium petiolatum	S
Erythranthe pulsiferae	D
Erythranthe suksdorfii	S
Fritillaria camschatcensis	S
Githopsis specularioides	D
Hedysarum occidentale	D
Heterotheca oregona	D
Howellia aquatilis (threatened)	
Isoetes nuttallii	S
Juncus howellii	D
Lasthenia glaberrima	S
Leptogium cyanescens	S
Leptosiphon bolanderi	S
Lipocarpha aristulata	S
Lomatium laevigatum	S
Lomatium suksdorfii	S
Luzula arcuate ssp. unalaschcensis	D
Lycopodiella inundata	S
Meconella oregana	S
Microseris borealis	D
Montia diffusa	D
Navarretia tagetina	S
Ophioglossum pusillum	S
Orthocarpus bracteosus	D
Packera bolanderi var. harfordii	

Pedicularis rainierensis	S
Penstemon barrettiae	D
Penstemon deustus var. variabilis	S
Penstemon wilcoxii	D
Pinus albicaulis	D
Polemonium carneum	S
Polystichum californicum	D
Potentilla breweri	S
Ramalina thrausta	D
Ranunculus populago	D
Ranunculus triternatus	S
Rorippa columbiae	S
Rotala ramosior	S
Scouleria marginata	S
Scribneria bolanderi	S
Sidalcea hirtipes	D
Sisyrinchium sarmentosum	D
Sullivantia oregana	S
Tholurna dissimilis	D
Trillium parviflorum	S
Umbilicaria lambii	D
Usnea longissima	D
Utricularia intermedia	D

**Washington Natural Heritage Information System
List of Known Occurrences of Rare Plants in Lewis County, Washington
June 2018**

<i>Scientific Name</i>	<i>Common Name</i>	<i>State Status</i>	<i>Federal Status</i>	<i>Historic Record</i>
Balsamorhiza deltoidea	Puget Balsamroot	R2		
Calamagrostis canadensis var. imberbis	Blue Joint Reedgrass	R2		H
Carex densa	Dense Sedge	T		
Cimicifuga elata var. elata	Tall Bugbane	S	SC	
Delphinium leucophaeum	Pale Larkspur	E	SC	
Erigeron aliciae	Alice's Fleabane	S		
Eryngium petiolatum	Oregon Coyote-thistle	T		
Erythronium revolutum	Pink Fawn-lily	S		
Euonymus occidentalis var. occidentalis	Western Wahoo	T		
Githopsis specularioides	Common Blue-cup	S		
Isoetes nuttallii	Nuttall's Quillwort	S		
Lathyrus holochlorus	Thin-leaved Peavine	E	SC	
Lathyrus vestitus ssp. bolanderi	Pacific Pea	E		

Lupinus sulphureus ssp. kincaidii	Kincaid's Sulfur Lupine	E	LT	
Meconella oregana	White Meconella	T	SC	H
Montia diffusa	Branching Montia	S		H
Pedicularis rainierensis	Mt. Rainier Lousewort	S		
Poa laxiflora	Loose-flowered Bluegrass	S		
Polemonium carneum	Great Polemonium	T		
Potentilla breweri	Brewer's Cinquefoil	T		H
Sidalcea hirtipes	Hairy-stemmed Checker-mallow	ET		
Sidalcea nelsoniana	Nelson's Checker-mallow	E	LT	
Silene scouleri ssp. scouleri	Scouler's catchfly	S		
Trillium parviflorum	Small-flowered trillium	S		
Wyethia angustifolia	California compassplant	S		

Description of Codes

Historic Record: H indicates most recent sighting in the county is before 1977.

State Status: State Status of plant species is determined by the Washington Natural Heritage Program. Factors considered include abundance, occurrence patterns, vulnerability, threats, existing protection, and taxonomic distinctness. Values include:

E = Endangered. In danger of becoming extinct or extirpated from Washington.

T = Threatened. Likely to become Endangered in Washington.

S = Sensitive. Vulnerable or declining and could become Endangered or Threatened in the state.

R2 = Review group 2. Of potential concern but with unresolved taxonomic questions.

Federal Status: Federal Status under the U.S. Endangered Species Act (USES) as published in the Federal Register:

LT = Listed Threatened. Likely to become endangered.

SC = Species of Concern. An unofficial status, the species appears to be in jeopardy, but insufficient information to support listing.

Summary of agency comments on the Packwood Lake Hydroelectric Project (FERC No. 2244) Threatened, Endangered, and Sensitive Species Management Plan and Energy Northwest’s (EN) responses.

Number	Comment Location	Comment Source	Stakeholder Comment	EN Response
United States Department of Commerce - National Marine Fisheries Service (NMFS)				
1	Section 1.1 Section 1.3	NMFS Response (08/30/19)	The Plan Justification states that RPM #9 of the NMFS BO requires EN to provide NMFS a plan(s) and report(s) describing how listed species in the action area would be protected and/or monitored and to document the effects of the action on listed species in the action area. Sections 1.3, Elements of the Monitoring Plan, lays out Plan elements specified by the Forest Service. Please revise to include how the Plan would meet terms and conditions from the NMFS BO and revised ITS.	There are a series of natural resource monitoring plans and license articles specifically designed to assess listed species’ condition in relation to operations within the Project area. These plans, in cooperation, represent the collaboratively agreed to mechanism for protecting/ monitoring listed species. Per the Resource Coordination Plan, annual meetings and reports will be utilized to document condition based on data collected the previous year and outline future activities. The Resource Coordination Report will be the primary document utilized for summarizing data collection efforts and plans for upcoming years. Table 1 provides a list of all relevant management plans and provides both their finalized dates and locations where they can be accessed for review.
2	Table 1	NMFS Response (08/30/19)	Table 1 lists relevant EN Management Plans but does not detail contents of the plans. How will EN ensure that the plans listed in Table 1 meet the requirements specified in the NMFS BO and revised Incidental Take Statement? What timelines are	All of the plans cited in Table 1 were collaboratively developed with NMFS and other agencies either during the relicensing process or upon license issuance. These plans were reviewed in draft form by the agencies and all comments were considered prior to any finalization and filing with FERC

Number	Comment Location	Comment Source	Stakeholder Comment	EN Response
			<p>anticipated for the development of the plans, and how will EN ensure that the plans meet timelines required in the NMFS BO and revised Incidental Take Statement?</p> <p>Also, table 1 lists the FERC species effect finding. I suggest revising this to show the effects conclusions or concurrences from the NMFS and USFWS Biological Opinions.</p>	<p>occurring. Descriptions on the collaboratively developed requisite methodologies to ensure timelines from the BiOp and ITS will be met have been incorporated into the respective plans. Table 1 has been modified to provide the respective plans finalized dates and locations where they can be accessed for review.</p>
<u>United States Department of Agriculture – Forest Service (USFS)</u>				
1	Email	USFS Response (08/29/19)	<p>Hi Audrey, I have not gotten a response about September 6 yet, but did get a preliminary comment from John Jakubowski, Wildlife Biologists so am sending along right away. “wolverine. It is now a proposed species again so would be more appropriately addressed in the ESA table then the sensitive table”. He said he would have time to finalize his review on Friday so I will send that along Monday.</p>	EN appreciates the response.
2	Email	USFS Response (08/29/19)	<p>Hi Audrey, John J’s final comments were “I did notice that the wolverine is listed in both the ESA and sensitive table, so that is fine since it does move around a lot between status</p>	EN appreciates the response.

Number	Comment Location	Comment Source	Stakeholder Comment	EN Response
			<p>categories. Everything else looks good too.</p> <p>With the bald eagle we did observe at least 10 at the upper end of the lake on the day that I went to site B last June, so they must be nesting there somewhere. I don't think there are any effects to bald eagles with this project but it may be worth noting that nesting at the lake is very likely.”</p> <p>I will see when Brad and Ken will have their comments to you.</p>	

Packwood Lake Hydroelectric Project

License Implementation Consultation Record

Management Plan: THREATENED, ENDANGERED, AND SENSITIVE SPECIES MANAGEMENT PLAN

DATE	SUMMARY OF CONTACT	AGENCY/ORGANIZATION CONSULTED	DOCUMENTATION FILENAME (pdf)
07/10/18	Site Visit Invitation	Cowlitz Indian Tribe (CIT) United States Department of Agriculture - Forest Service (USFS) United States Department of Commerce - National Marine Fisheries Service (NMFS) United States Department of Defense - Army Corps of Engineers (USACE) United States Department of the Interior - Fish and Wildlife Service (USFWS) United States Department of the Interior - National Park Service (NPS) Washington State Department of Ecology (Ecology) Washington State Department of Fish and Wildlife (WDFW) Yakama Nation (YN)	Site Visit 081618 – Invitation email 071018.pdf
08/06/18	Site Visit Event Package	CIT, USFS, NMFS, USACE, USFWS, NPS, Ecology, WDFW, YN	Site Visit 081618 - Event Package email 080618.pdf Site Visit 081618 - Agenda 081618.pdf
08/16/18	Site Visit	USFS, NMFS, Ecology, WDFW	Site Visit 081618 – Habitat Restoration Invitation email 071018.pdf Site Visit 081618 – Habitat Restoration Event Package email 080618.pdf
10/11/18	Consultation	All agencies	Order Issuing New License EN to agencies 101118.pdf

DATE	SUMMARY OF CONTACT	AGENCY/ORGANIZATION CONSULTED	DOCUMENTATION FILENAME (pdf)
11/08/18	Site Visit	USACE, WDFW	Site Visit 110818 – Habitat Restoration Event Package email 103118.pdf
12/17/19	Consultation	All agencies	Management Plan Review Process and Meeting Planning email 121719.pdf
05/22/19	Consultation	USFS	Rare Plant Management Plan Modification for Monitoring 2019 email USFS and EN 052219.pdf
05/23/19	Filing	FERC	Rare Plant Management Plan EN to FERC 052319.pdf
06/20/19	Site Visit	All agencies	Site Visit 062019 – Habitat Restoration Invitation email 051519.pdf
07/29/19	Consultation	All agencies	Threatened, Endangered and Sensitive Species Management Plan email 072919.pdf
08/29/19	Consultation	USFS	Threatened, Endangered and Sensitive Species Management Plan USFS comments 082919.pdf
08/30/19	Consultation	NMFS	Threatened, Endangered and Sensitive Species Management Plan NMFS comments 083019.pdf