

Henry M. Jackson Hydroelectric Project
FERC No. 2157

**TERRESTRIAL RESOURCES
2022 ANNUAL REPORT**



April 2023

Submitted by:



Public Utility Snohomish PUD No.1 of Snohomish County
Everett, WA

Final – This document has been prepared for Snohomish PUD. It has been peer-reviewed by the Snohomish PUD for accuracy and formatting based on information known at the time of its preparation and with that understanding is considered complete. The document may be cited as:

Public Utility District No. 1 of Snohomish County (Snohomish PUD). 2022 Annual Terrestrial Resource Monitoring Report, License T LA-1, for the Henry M. Jackson Hydroelectric Project, FERC No. P-2157. April 2023.

This document should not be cited or distributed without this disclaimer.

Cover Photo Description and Credit:

Joe Dreimiller, City of Everett Watershed Patrol. Taken August 28, 2020, on the north shore of Spada Lake Reservoir shortly after the National Park Service coordinated release of Mountain Goats translocated from the Olympic National Park.

TABLE OF CONTENTS

EXECUTIVE SUMMARY.....	iv
1. INTRODUCTION.....	1
2. TERRESTRIAL RESOURCES MANAGEMENT PLAN.....	4
2.1. BACKGROUND	4
2.2. WORK COMPLETED IN 2022.....	4
2.3. ISSUES OR PROPOSED CHANGES	14
3. NOXIOUS WEED MANAGEMENT PLAN	15
3.1. BACKGROUND	15
3.2. WORK COMPLETED IN 2022	16
3.3. WORK PLANNED FOR 2023	17
3.4. ISSUES OR PROPOSED CHANGES	17
4. MARBLED MURRELET HABITAT PROTECTION PLAN	17
4.1. BACKGROUND	17
4.2. WORK COMPLETED IN 2022.....	18
4.3. WORK PLANNED IN 2023	18
4.4. ISSUES OR PROPOSED CHANGES.....	18

LIST OF APPENDICES

- Appendix A Noxious Weed Control Figures
- Appendix B Consultation Documentation Regarding Draft Report

LIST OF TABLES

Table 2-1	Woody habitat structure management, 2022.....	7
Table 2-2	Waterfowl nest box use on the Lost Lake Tract.....	12
Table 2-3	Incidental wildlife observations in 2022.....	14

LIST OF FIGURES

Figure 1-1	Location of Project and Terrestrial Resource Management Plan Tracts.	2
Figure 2-1	Woody habitat structure creation at Spada Lake Tract, 2022.....	5
Figure 2-2	Woody habitat structure creation at the Lost Lake Tract, 2022.....	6
Figure 2-3	Created decaying live tree with “cat-faced scar” created near top (red arrow) and up- turned branches forming bushy top.	8
Figure 2-4	Typical understory in stands where no commercial thinning or gap creation has occurred... ..	10
Figure 2-5	Post-gap creation, showing strong evidence of the impact of increased light input to gap.....	10
Figure 2-6	Woody debris piles deposited near P4 on lower pipeline ROW.....	11
Figure 2-7	Nest boxes at Lost Lake.....	13

LIST OF ACRONYMS AND ABBREVIATIONS

City	City of Everett, Washington
CWD	coarse woody debris
DBH	Diameter at breast height (4.5')
DLTs	decaying live trees
DNR	Washington Department of Natural Resources
FERC	Federal Energy Regulatory Commission
GPS	Global Positioning System
MMHPP	Marbled Murrelet Habitat Protection Plan
NWMP	Noxious Weed Management Plan
Project	Henry M. Jackson Hydroelectric Project, FERC No. 2157
RRMP	Recreation Resource Management Plan
ROW	right-of-way
SCNWCB	Snohomish County Noxious Weed Control Board
Snohomish PUD	Public Utility Snohomish PUD No. 1 of Snohomish County
SRCT	Sultan River Canyon Trail
Tribes	Tulalip Tribes of Washington
TRMP	Terrestrial Resources Management Plan
WDFW	Washington Department of Fish and Wildlife
WHMP	Wildlife Habitat Management Plan
WHS	woody habitat structures
USFWS	U.S. Fish and Wildlife Service
USFS	U.S. Forest Service Mt. Baker-Snoqualmie National Forest

EXECUTIVE SUMMARY

Activities accomplished in 2022 pursuant to the Terrestrial Resource Management Plan (TRMP), Noxious Weed Management Plan (NWMP), and Marbled Murrelet Habitat Protection Plan (MMHPP) for the Henry M. Jackson Hydroelectric Project (Project) are summarized in this report. Implementation of these three plans was initiated following the Federal Energy Regulatory Commission (FERC) Order Issuing New License effective on 2 September 2011. Requirements of each plan were met during the 2022 action year. No problems were encountered during implementation and no significant changes are proposed for the management plans. Tasks scheduled for 2023 are also presented.

Tasks Accomplished During 2022

- Created 611 snags, decaying live trees, coarse woody debris logs and canopy gaps on the 163.6 acres of the Spada Lake and Lost Lake tracts to promote mature forest characteristics in younger aged stands and provide decaying woody structures absent in much of the forest.
- Continued an intensive effort to manage noxious and invasive weeds on all TRMP tracts of land, with a concentrated effort to control weed infestations within the Spada Lake Reservoir watershed.
- Maintained and monitored waterfowl nest boxes at Lost Lake.
- Preserved and protected old growth forest, wetlands, and riparian forest on Project lands.
- Followed the restrictions of the MMHPP in all Project related activities, including implementation of the Recreation Resources Management, woody habitat structure creation, and planning for replacement of the 48" Howell-Bunger valve at the base of Culmback Dam.
- Snohomish PUD biologists coordinated with Project staff regarding operations and maintenance activities to ensure that all Project activities were conducted in accordance with the TRMP, NWMP, and MMHPP.

Tasks Scheduled for 2023

- Complete annual evaluation of approximately 225 acres of land on the Spada Lake, Williamson Creek and Lost Lake tracts for creation of decaying live trees, snags, coarse woody debris logs, and canopy gaps, a subset of which will have woody habitat structure creation occurring for the second time under the existing FERC license.
- Plan and implement commercial thinning on select stands to improve mature forest characteristics.
- Continue implementation of woody habitat structure monitoring program to evaluate effectiveness and utilization of canopy gaps and created woody structures.
- Continue to manage noxious and invasive weeds on all TRMP tracts of land.
- Continue preservation and protection of old growth forest, wetlands, and riparian forest on Project lands.
- Continue to maintain and monitor waterfowl nest boxes at Lost Lake.
- Continue coordination with engineering, operations, and maintenance staff on Project activities to ensure that the TRMP, NWMP and MMHP are considered when activities are being planned and adhered to when activities are conducted.

1. INTRODUCTION

The Terrestrial Resource Management Plan (TRMP), Noxious Weed Management Plan (NWMP), and Marbled Murrelet Habitat Protection Plan (MMHPP) for the Henry M. Jackson Hydroelectric Project (Project) are requirements under the Federal Energy Regulatory Commission (FERC) Order Issuing New License, issued on 2 September 2011 (136 FERC 62, 188), Ordering Paragraph E, License Appendix B, Condition 2; and Article 411 Marbled Murrelet Habitat Protection Plan. This 2022 Annual Report for the TRMP, NWMP, and MMHPP was prepared by Public Utility Snohomish PUD No. 1 of Snohomish County (Snohomish PUD) as required by each of these plans.

The TRMP describes the actions Snohomish PUD will take to protect, mitigate, and enhance terrestrial resources associated with the Project on four management tracts (Figure 1-1). The TRMP was prepared in consultation with the U.S. Fish and Wildlife Service (USFWS), U.S. Forest Service Mt. Baker-Snoqualmie National Forest (USFS), Washington Department of Fish and Wildlife (WDFW), and the Tulalip Tribes (Tribes). The plan guides the management of approximately 4,456 acres of land and water within the Project boundary. The TRMP is available on Snohomish PUD's web site via the following link: <https://www.snopud.com/wp-content/uploads/2021/08/TRMP.pdf>

Habitat enhancement methods are incorporated in the TRMP for forest vegetation management, including old growth, young forest, and understory management; lake, wetland, and stream buffers; snags, decaying live trees (DLTs) and coarse woody debris (CWD); right-of-way management; and waterfowl nest boxes on the four tracts. The TRMP describes the existing habitat conditions and values, management constraints and habitat management objectives, methods, and prescriptions for each tract. It also describes monitoring and reporting requirements and provides a schedule for implementation.

A report must be prepared and submitted to the USFWS, WDFW, and the Tribes annually and submitted to FERC every five years. Reports document and summarize implementation of the TRMP during the intervening period and identify activities planned for the next period.

Monitoring data are presented in summary form and analyzed. Problems and proposed changes in the TRMP, if any, are discussed. Review meetings are offered to the USFWS, WDFW and Tribes by Snohomish PUD, to discuss information included in the reports. This report represents the annual report to the reviewing agencies and details activities that occurred in 2022 and those that are planned for the 2023.

The NWMP describes Snohomish PUD's strategy for controlling and containing the spread of Class A, Class B Designate, and Snohomish County Selected Noxious Weeds, as well as other weeds Snohomish PUD manages within the Project boundary. The NWMP was developed in consultation with the Snohomish County Noxious Weed Board (SCNWCB), the City of Everett (City), Washington Department of Natural Resources (DNR), USFWS, WDFW and USFS. The NWMP is available on Snohomish PUD's web site via the following link: <https://www.snopud.com/wp-content/uploads/2021/08/NWMP.pdf>

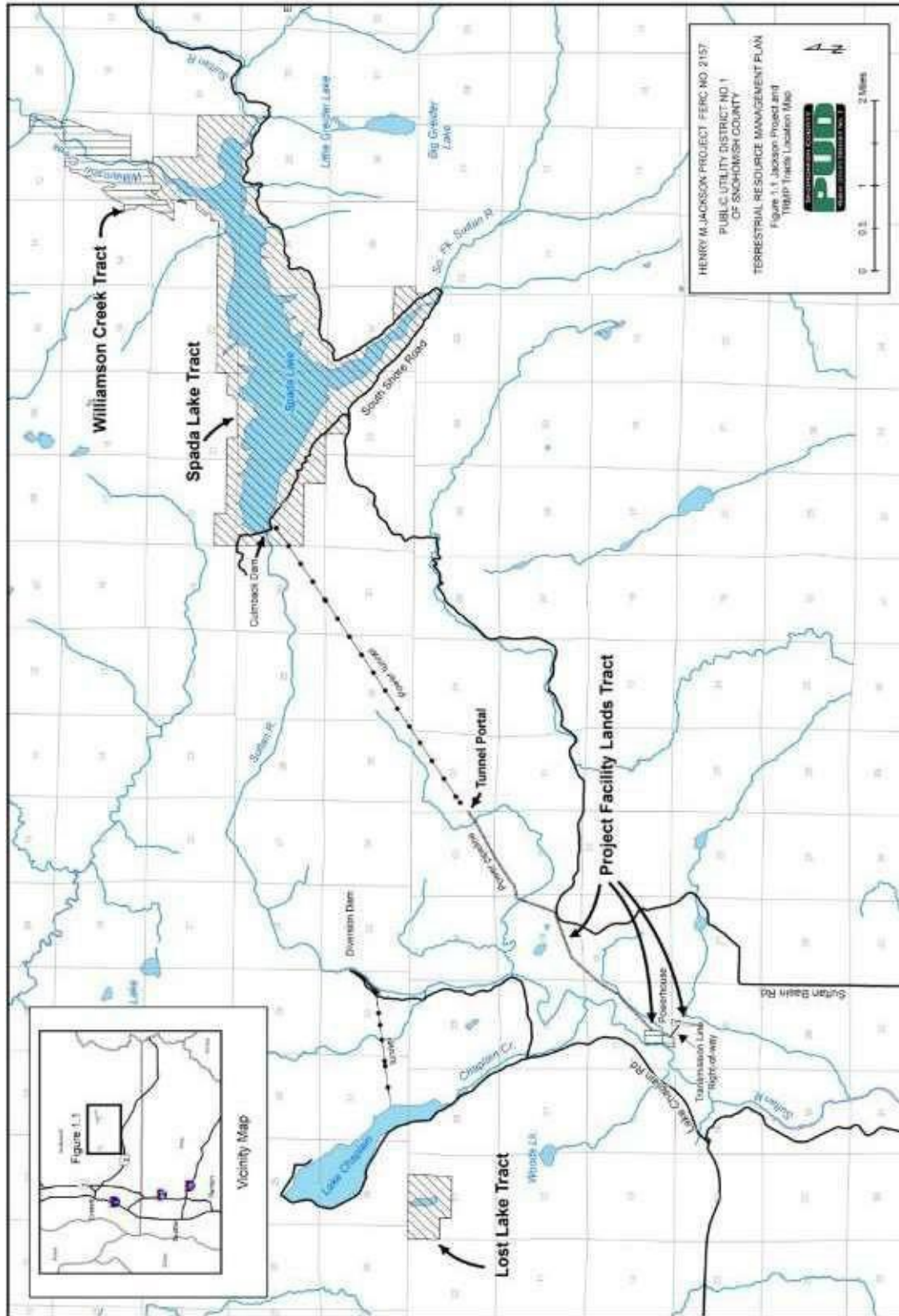


Figure 1-1 Location of Project and Terrestrial Resource Management Plan Tracts.

The NWMP includes:

- A list of Washington State Class A, Washington State Class B Designate and Snohomish County Selected Noxious Weeds, updated annually to reflect changes in State and County lists.
- A summary of Washington State Class A, Washington State Class B Designate, Snohomish County Selected, and other target species of noxious weeds occurring within the Project boundary based on ongoing weed management work and the 2007 Noxious Weed Inventory.
- A summary of ongoing weed management activities on Project lands.
- Treatment options and recommendations for established and new infestations of target weed species, including management goals, measurable objectives, and priorities for treatment.
- Prevention strategies (e.g., weed prevention practices for ground disturbing work, revegetation methods, and education information for Project employees).
- Monitoring and implementation schedules.

The NWMP also includes annual consultation with SCNWCB and the other stakeholders. The annual consultation includes updates to the noxious weed list, a summary of weed management actions taken since the previous report, and periodic (five-year) review of plan accomplishments and updates of lists and appendices, prepared in consultation with the stakeholders. This information is provided to FERC as part of each five-year TRMP report.

The MMHPP was developed after surveys by Snohomish PUD and others documented the presence of marbled murrelets (a federal Endangered Species Act listed threatened species) in the Sultan Basin, which resulted in the designation of portions of the forest in and near the Project boundary as “occupied” by nesting marbled murrelets. The MMHPP describes specific measures that Snohomish PUD will implement to avoid or minimize Project-related impacts to marbled murrelets and their habitat. Three general types of Project-related activities are addressed in the plan: 1) pruning, topping, and felling of road-side danger trees; 2) over story thinning and creation of snags, DLTs, coarse woody debris, and forest canopy gaps during implementation of the TRMP; and 3) the creation of new recreation trails and associated facilities as required in the Recreation Resource Management Plan (RRMP) under License Article 413.

In February 2011, Snohomish PUD updated the MMHPP to incorporate requirements of the USFWS Biological Opinion, Incidental Take Statement, Reasonable and Prudent Measures and Terms and Conditions for the proposed issuance of the license for the Project. These measures were reviewed by the Settlement Parties and USFWS concurred with the update. The updated MMHPP was included in the new license for the Project under Article 411. The MMHPP is available on Snohomish PUD’s website via the following link:

https://www.snopud.com/wp-content/uploads/2021/08/P2157MMHPP_0311_1212.pdf

License Article 411 approved the MMHPP and specified that survey results and field notes of monitoring efforts for marbled murrelets will be documented and sent to the USFWS in conjunction with the TRMP annual reports for any year that surveys are conducted, or maps are updated. The MMHPP states that at least every 10 years, Snohomish PUD will update the Project marbled murrelet habitat maps to reflect current habitat conditions. Snohomish PUD may conduct surveys for nesting marbled murrelets in all suitable habitat that is not known to be occupied and has not been surveyed for 10 years or more. If Snohomish PUD chooses not to survey suitable habitat, such habitat will be considered occupied for purposes of the MMHPP

and will be described in the applicable report and update of the MMHPP.

Article 411 requires that at least every 10 years, Snohomish PUD will file for FERC approval, an updated MMHPP developed in consultation with USFWS and WDFW. Activities related to the MMHPP during 2022 are noted in this report.

2. TERRESTRIAL RESOURCES MANAGEMENT PLAN

2.1. BACKGROUND

TRMP management measures include the creation of snags, DLTs and CWD from live trees, across the four tracts of land, exclusive of old-growth forest; these components are collectively referred to as “woody habitat structures” (WHS) in this report. Trees are selected from the largest size class and are typically clustered in groups of about 30 trees, called “canopy gaps”, to simulate a small windthrow or root-rot patch. Canopy gaps are usually triangular in shape, with the base of the triangle being on the south or southwest side in an effort to maximize light penetration to the forest floor during the growing season, to encourage understory growth. The apex of the triangle is typically on the north or northeast end. The target gap size is 0.10 to 0.25 acre, depending on local limitations.

Forest stands on the Spada Lake Tract were harvested in the 1960s and most have stem densities greater than 450 trees per acre. Gap size on the Spada Lake Tract is often limited by the presence of numerous drainages and their required buffers. The base of a typical gap within the tract measures about 120 feet, with the height of the triangle also being about 120 feet (7,200 square feet; 0.16 acres).

Stand age on the Lost Lake Tract is typically around 75 years, with a selective harvest having been performed in the 1980s. The result, compared to the Spada Lake Tract, is stands of lower density that are much more heterogeneous including individuals and pockets of deciduous trees. Due to lower stand density, average tree diameter and canopy coverage per tree is much greater than at Spada Lake. Consequently, fewer trees are required to be topped or felled in one area on the Lost Lake Tract to achieve a canopy gap similar in size to those at Spada Lake. A typical gap at Lost Lake contains 5-10 trees, and averages about 0.15 acres. WHS may also be created individually or in smaller groups, as needed to maintain appropriate distribution and based on habitat limitations.

2.2. WORK COMPLETED IN 2022

2.2.1. Snag, Decaying Live Tree and Coarse Woody Debris Creation

In 2022, a total of 164 acres, comprised of 2 stand complexes were treated resulting in 611 WHS being created. Early onset of fire season caused the work period to be significantly reduced. Stand 9-38 at Spada Lake will be completed in 2023. Figures 2-1 & 2-2, and Table 2-1 show WHS management on TRMP lands during this period.

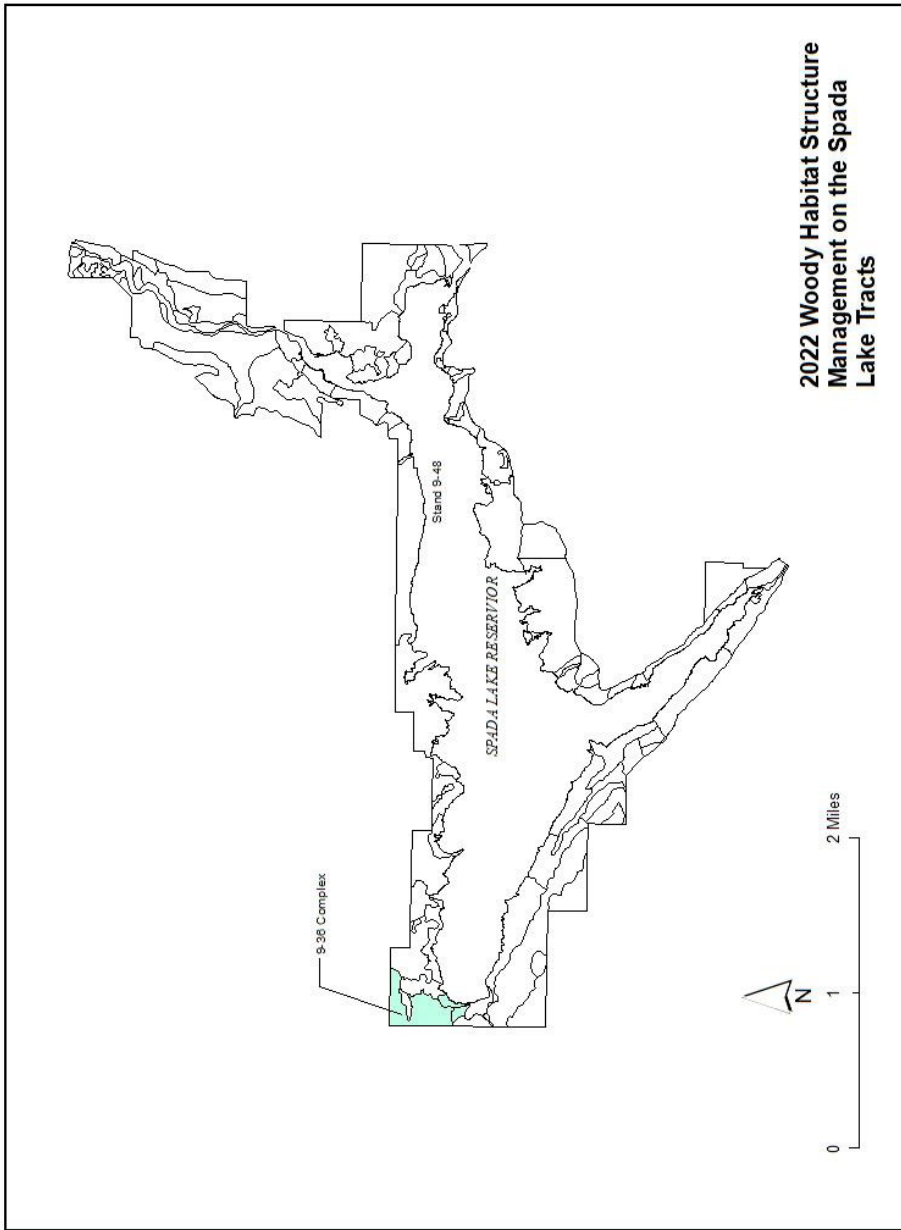


Figure 2-1 Woody habitat structure creation at Spada Lake Tract, 2022.

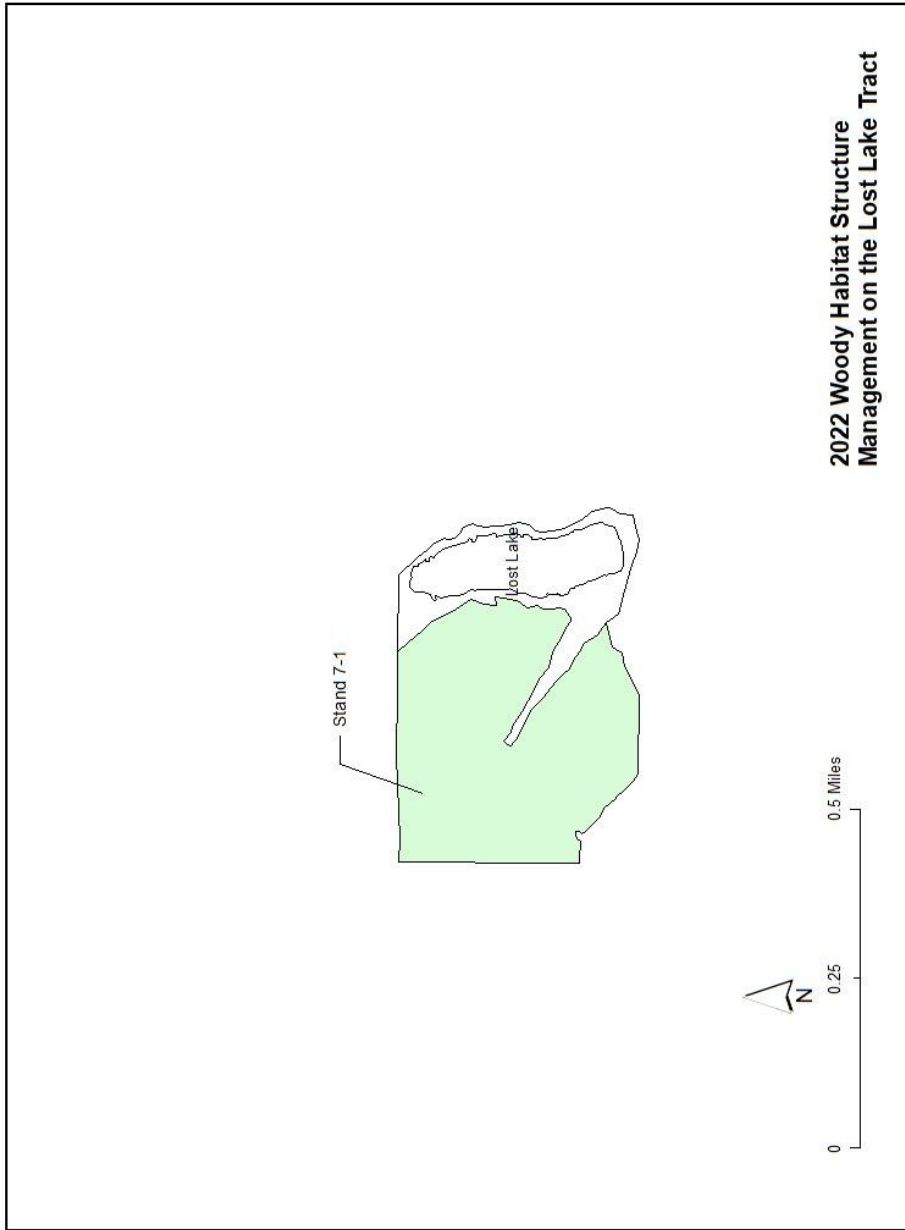


Figure 2-2 Woody habitat structure creation at the Lost Lake Tract, 2022.

Table 2-1 Woody habitat structure management, 2022.

2022; 163 acres; 611 created		
Unit or Stand Complex	Spada 9-38 Complex	Lost Lake Stand 7-1
ACRES TREATED 163		
DECAYING LIVE TREES		
# CREATED	293	266
AVG DBH (in)	14.6	16.7
AVG HT (ft.)	69.9	88.8
#/acre	3.5	3.3
SNAGS		
# CREATED	10	2
AVG DBH (in)	12.9	15.1
AVG HT (ft.)	64.6	35.5
#/acre	0.1	0.1
Coarse Woody Debris		
# CREATED	8	24
AVG DBH (in)	12.7	16.6
#/acre	0.1	0.3
TOTAL #/ACRE	3.7	3.7
NOTES	Creation began in 2022 and will be completed in 2023	Creation began in 2021 and was completed in 2022



Figure 2-3 Created decaying live tree with “cat-faced scar” created near top (red arrow) and up- turned branches forming bushy top.

2.2.2. Long-Term Woody Habitat Structure and Gap Monitoring

Long-term monitoring of created WHS and gaps began in 2021, as required by the TRMP. Units within the Lost Lake, Williamson Creek and Spada Lake Tracts were selected for monitoring to record observations of wildlife use, decay rates of snags and CWD, and longevity and growth of DLTs. Units were selected across the ownership to provide the broadest variety of stand types, treatment ages, species composition, slope, and aspect. Ten percent (41) of all gaps created as of 2021 will be monitored over the course of the plan. Gaps will be monitored either annually or every 5 years with detailed observational data and photo documentation taken at both types of gaps. Annual monitoring of WHS and gaps will allow a detailed accounting of changes that occur over time in woody structures (decay rate, breakage/fall rate, fungal growth etc.) and wildlife use as well as vegetative changes and wildlife use of gaps. Monitoring WHS and gaps on a 5-year schedule will allow more gaps to be monitored over the duration of the plan to provide a broader based knowledge of activities occurring within those gaps. Within selected gaps (both annual and 5-year gaps), 3 WHS are selected from each cardinal direction plus 3 from the interior of the gaps, for a total of 15 WHS within each gap. Parameters measured are:

- Snags – height, decay stage, % bark remaining, signs of wildlife use, fungal bodies.

- CWD – length of main section (as they often break when felled), decay stage, signs of wildlife use, fungal bodies.
- DLTs – evidence of formation of a new top (branches turning upward to create a multi-topped tree, height (of newly grown top, if applicable), signs of wildlife use, fungal bodies, overall health of the tree.
- Understory vegetation – overall % cover, height and % cover of all species noted within the gap, signs of wildlife use, regeneration of conifers, evidence of invasive species.
- Evidence of influence outside of gap perimeter, i.e., is sunlight entering the gap increasing the vegetative growth beyond the edge of the gap?
- Photo documentation – photos are taken 360 degrees around the gap to document vegetative growth both within the gap and in the adjacent forest.

Preliminary results of the gap and WHS monitoring are encouraging. Many of the DLTs still survive and have upper branches turning upwards to form dense new tops (Figure 2-3). The age range of gaps sampled was from 2-10 years (from time of initial WHS creation). Within gaps, the average percent vegetative cover increased from primarily devoid of vegetation to a range of 40-68% (Figures 2-4 & 2-5). In terms of deer forage, nearly every gap had vaccinium, with typical heights ranging from 2-8 feet, with numerous gaps having evidence of deer browsing.

Conifer seedlings and/or saplings were often present, ranging in height from 6 inches to 12 feet but in only one case did they appear to be crowding out the other native flora. Several gaps also included species not commonly found throughout the remainder of the forest, including red elderberry, false azalea, and vine maple, likely due to the increase in light input and attraction of seed dispersing birds utilizing those gaps. Very few gaps had invasive species (evergreen and Himalayan blackberry), which are very rarely mature with fruit, and were pulled by hand when found. These are also no doubt brought in by seed dispersing birds visiting the gaps.

This WHS and gap monitoring plan was designed as a forward-looking program to inform changes to be made to the way WHS and gaps are created, including specific techniques of topping trees and sizes, shapes, and orientation of the gaps, etc. Initial observations of note include the impact of light influence into the adjacent forest. The impact of ambient light from the gaps typically extended from 30-100 feet into the adjacent forest, depending on aspect, slope, and size of gap. While the adjacent forest did not exhibit as large of a response to the increased light as the gap itself, the impact of the gap creation outside the immediate gap perimeter is notable in terms of producing a more diverse and productive understory for herbivores as well as hiding cover for predators and prey alike. As expected, gaps with a broad opening to the south and west showed the greatest increase in understory vegetation and were most likely to have the furthest influence into the woods beyond the gap perimeter.

Another observation of note is that many of the trees which had been girdled from the ground (with the intention of becoming CWD) were still standing and functioning as snags, some for as long as 10 years. Many had broken off and lost some of their height since girdling, but this appears to be a safer way to create snags while also quickly producing some CWD (the upper portion which breaks off).



Figure 2-4 Typical understory in stands where no commercial thinning or gap creation has occurred.



Figure 2-5 Post-gap creation, showing strong evidence of the impact of increased light input to gap.

2.2.3. Right-Of-Way Management

Since TRMP implementation began in late 2011, work on the pipeline right-of-way (ROW) has consisted largely of weed control, as detailed in Section 3.0, but has also included placement of bottomless culverts to span three creeks between manholes P1 and P4. This project allows continuous access to the ROW without the use of adjacent roads that are not under Snohomish PUD's control, and also provides a more expeditious means of monitoring the pipeline in the event of seismic activity. Measures, including the use of gates, will be implemented as needed to ensure that unauthorized motor vehicle access does not increase as a result of the stream crossing placement.

All disturbed or amended soils will be promptly seeded with a mixture of non-invasive, weed-free grasses and forbs as listed in the TRMP. For erosion control, only certified weed-free straw is used on all Snohomish PUD lands.

Several truckloads of wood from Culmback Dam that were not suitable for deposit into the riverine system were deposited on the lower pipeline ROW to provide hiding cover for small mammals and to break up the line of sight (Figure 2-6).



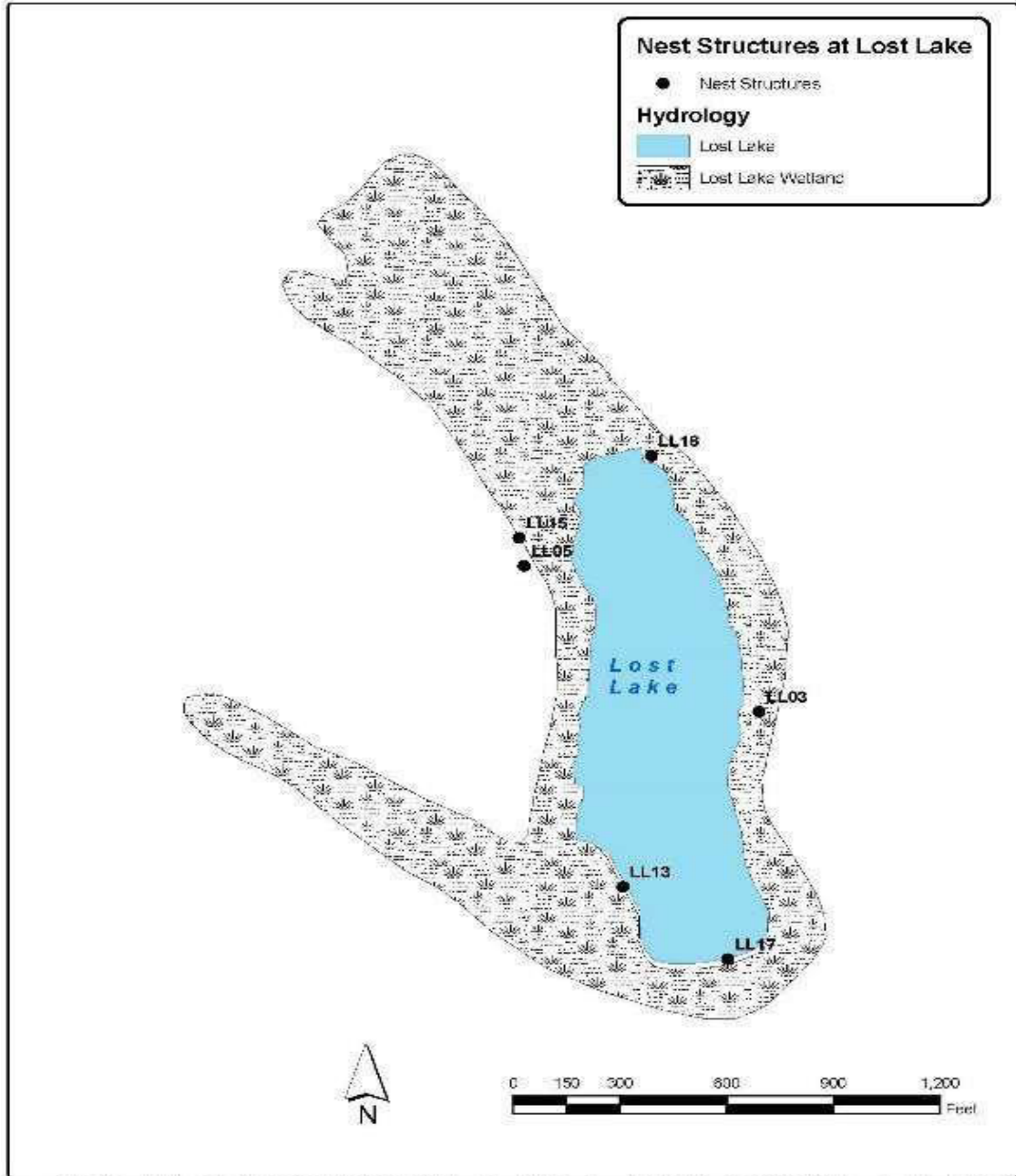
Figure 2-6 Woody debris piles deposited near P4 on lower pipeline ROW.

2.2.4. Waterfowl Nest Boxes

On the Lost Lake Tract, a total of six nest boxes were available for use, with two being used by cavity nesting waterfowl (Table 2-2). Boxes were checked, cleaned, repaired as needed, and provided with fresh nesting material on February 4. All boxes were visited again on May 4 and 25 to determine use, check for damage, and remove unwanted species, including native squirrels, starlings, and their nests, per WDFW request. A late June visit was also conducted to estimate final production numbers. Nests of native birds are not removed if found. Setting females or their eggs were not moved or handled for counting during nest checks, therefore quantities should be considered low estimates. The locations of the six existing nest structures on the Lost Lake Tract are depicted in Figure 2-7. Historical use has ranged from 16 to 50 percent with no clear preference for a particular box or location around the lake/wetland complex exhibited by any species.

Table 2-2 Waterfowl nest box use on the Lost Lake Tract.

BOX #	RESULTS
BOX 3	No use.
BOX 5	No use.
BOX 13	6 Hooded mergansers fledged.
BOX 15	6 Buffleheads fledged.
BOX 17	New box installed on same tree. No use.
BOX 18	No use.



Document Path: E:\Operations\Jackson\NATURAL RESOURCES\TERRESTRIAL\YMW\Annual Report\2012\Annual Report Draft\2012\2012\Agencies\20130218\05\2012\Annual Report\Figures\Fig4-Nest Structures

Figure 2-7 Nest boxes at Lost Lake.

2.2.5. Stewardship Activities or Observations of Note

Snohomish PUD biologists met with Project staff to inform and educate them regarding the TRMP and worked with them to ensure that the TRMP was being followed during implementation of maintenance activities.

Table 2-3 provides a summary of notable wildlife observations on Project mitigation land during the 2022 action year. These are incidental only and are not part of a systematic monitoring program.

Table 2-3 Incidental wildlife observations in 2022.

DATE	LOCATION	SPECIES	DESCRIPTION
3/2/22	Lost Lake	Bufflehead	Pair swimming at south end of lake
4/21/22	Lost Lake	Bear	Yearling on road near Lost Lake
4/21/22	Lost Lake	Bear	Sow and cub on road neat Lost Lake
4/21/22	Lost Lake	Wood Duck	Pair near floating fishing dock
5/16/22	Lost Lake	Pileated Woodpecker	Calling from west side of lake
5/3/22	Spada Lake	Osprey	Flying east near South Fork arm
5/24/22	Spada Lake	Nuthatch	Several calling in treetops near gap on Stand 9-38
5/16/22	Lost Lake	Hairy Woodpecker	Pair feeding nestlings in natural snag near road, SW corner of lake
7/10/22	Lost Lake	Common merganser	5 young, nearly fledged
7/17/22	Lost Lake	Wood duck	2 females foraging near outflow of lake
8/03/22	Lost Lake	Mallard	3 pairs near outflow of lake
8/03/22	Lost Lake	Canada geese	3 near outflow of lake

2.2.6. Lake, Wetland and Stream Buffers

Activities occurring within buffers included nest box maintenance and WHS creation, as described in the previous sections of this document. The buffer restrictions for snags, DLTs and CWD described in the TRMP were followed, which allow only individual or small groupings of WHS to be made within 100 feet of a lake, wetland, or stream. Within the remainder of the buffers, which may be up to 500 feet wide, gap sizes are restricted to 0.25 acres.

2.3. ISSUES OR PROPOSED CHANGES

No issues have come up and no changes are proposed at this time.

3. NOXIOUS WEED MANAGEMENT PLAN

3.1. BACKGROUND

Due to water quality concerns, noxious weeds and invasive species found within the Spada Lake Reservoir and City of Sultan watersheds (along the pipeline ROW) were treated with naturally derived herbicides; initially high strength vinegar in 2016, then Caprylic acid, trade name Suppress EC, by state-licensed contract herbicide applicators, overseen by Snohomish PUD biologists who are also state-licensed herbicide applicators. This product is OMRI listed and labeled for organic production but is a non-selective herbicide (it will damage or kill any portion of a plant that it contacts) and is non-systemic (it only affects the portion of the plant that it touches and is not translocated through the plant's vascular system to kill the roots). Using this type of herbicide requires repeat applications, as it is not as effective as systemic herbicides, but is considered safer for water quality by the City of Everett (primary purveyor of drinking water in Snohomish County, serving 75 percent of county residents) and the City of Sultan.

Areas outside of the above-mentioned watersheds have been treated with synthetic herbicides that are systemic and selective and require fewer treatments. Again, all applications were performed by state-licensed contract herbicide applicators.

As part of re-licensing studies, botanical consultants were contracted to survey all project lands that had project structures, roads, prior forestry activities or other human disturbances for invasive or noxious weeds. A detailed map and Global Positioning System (GPS) record was created to document presence and level of infestation for each invasive species. These sites are visited multiple times each year by Snohomish PUD staff familiar with weed identification and treatment. Areas of the Project that were disturbed and weed-prone, where noxious weeds have been previously observed (particularly during the 2007 noxious weed surveys), and sites that have been previously treated, were evaluated for the presence of noxious weeds. Treatment locations were captured and recorded using a GPS device, with that data then incorporated into Snohomish PUD's GPS database, to allow tracking of weed occurrences and treatment efforts, to guide the following year's management. Figures A1 through A18 in Appendix A provide an overview of the project lands, and specific weed locations identified around Spada Lake and pipeline ROW. These figures include comparisons between weed locations identified by the botanical consultants in 2007 and those identified by Snohomish PUD biologists in 2022.

Overall, Snohomish PUD's approach to invasive weed control has been successful in preventing most seed production and spread of known infestations. No new species of noxious weed have been documented on Project lands since the original 2007 surveys, and most occurrences of weeds are becoming smaller and more intermittent in space. Availability of suitable spraying weather is the primary factor dictating the number of times weeds are sprayed over the course of the growing season, and therefore plays a large role in determining the overall effectiveness of control efforts.

Snohomish PUD biologists met with Project staff to inform and educate regarding the NWMP and worked with them to ensure that the NWMP was being followed.

3.2. WORK COMPLETED IN 2022

Areas of the Project that were disturbed and weed-prone, as well as areas where noxious weeds had been observed and treated in the past, were visited to control noxious weeds. As the weather allowed, multiple treatments were made at all sites during the growing season. Appendix A contains Figures A-1 through A-17 showing mapped locations of invasive species.

3.2.1. Lost Lake Tract Treatment and Monitoring

The access road and the boat launch area at Lost Lake were visually inspected for noxious and invasive species several times during the growing season. Particular attention was paid to areas identified in the 2007 Noxious Weed Survey. Species of weeds treated include herb Robert, Canada thistle, and Himalayan and evergreen blackberry. Weeds found were treated twice in 2022.

In 2021, fragrant water lily was found along the eastern shore of the lake in several small clusters. Multiple trips were subsequently made each year to clip the flowers to prevent seed production. The plants were flagged and will be visited multiple times during the spring-summer growing season to track growth and potential spread over time.

3.2.2. Spada Lake Tract Treatment and Monitoring

Weed species most commonly found along roads on the Spada Lake Tract were Canada thistle and oxeye daisy. Culmback Dam had significant infestations of hawkweed and smaller patches of Scotch broom. Due to construction activities, weed control on the dam was not possible this year. Within the Spada Lake Reservoir Watershed, which supplies most of Snohomish County with drinking water, the City of Everett has requested that herbicides derived from inorganic compounds not be used. Naturally derived, high-strength acids have proven to be successful in treating weeds and have been approved by the City for use within the watershed. Many of the treated plants display top-kill or reduced vigor quickly and for a considerable length of time after treatment, but multiple applications are typically required. Plants were treated as early in the growing season as practicable and were re-treated as needed and as allowed by weather conditions. Seed production was prevented in nearly all cases, as required by State and County regulations.

3.2.3. Williamson Creek Tract Treatment and Monitoring

Hawkweed, reed canary grass, and Canada thistle have been found on the Williamson Creek Tract during previous field visits. The abandoned road has become largely overgrown with alder saplings, and as a result, these infestations do not appear to be extending their range, and in fact should begin shrinking as a result of limited sunlight and nutrients. Based on this and the difficulty of accessing this now roadless area, other sites have received higher priority for treatment. The area was visually assessed while performing snag/gap creation activities.

3.2.4. Project Facility Lands Treatment and Monitoring

The pipeline ROW was visited multiple times during the growing season to locate and treat invasive species. Typical weeds found here include hawkweed, Scotch broom, Canada thistle and tansy ragwort.

Noxious weeds on the transmission line ROW were also sprayed several times during the

growing season, with the primary species found here being English holly, Bull and Canada thistle, and blackberry species.

3.2.5. Annual Review of Noxious Weed List

Snohomish PUD reviewed the State and County's annual updated weed list for 2022. No changes were made that impacted weed control on Project lands.

3.2.6. Update of Species-Specific Management Methods

No updates to specific management methods have been proposed; emphasis will continue to be on controlling seed production, preventing new infestations, and reducing the size and number of existing infestations.

Cultural methods to prevent new infestations or reduce existing infestations continued to be employed including: 1) keeping ground disturbance to a minimum while mowing vegetation, and 2) seeding/placing weed-free straw on open or disturbed soils as soon as possible. Where infestations exist, herbicides remained the most effective treatment due to the size and variety of locations.

Snohomish PUD is also committed to ensuring that weeds that survive treatment with inorganic herbicides (those outside of the Spada and City of Sultan watersheds) do not develop resistance to a particular mode of action (the specific means by which the herbicide damages or kills the plant cells). As a result, Snohomish PUD biologists routinely evaluate new products to determine their efficacy for use in controlling the species of weeds present on Project lands.

3.3. WORK PLANNED FOR 2023

Areas of the Project that are disturbed and weed-prone, where noxious weeds have been observed, and sites that have been previously treated will be visited several times during the growing season to document and treat noxious weeds. Licensed contract herbicide applicators will be used to apply herbicides. Prior to initiation of any ground disturbing activities, staff will meet to discuss pre- and post-project means to reduce the likelihood of increasing infestation size or spreading weed propagules to new areas, including, to the extent possible, treating existing weeds prior to those ground-disturbing activities.

3.4. ISSUES OR PROPOSED CHANGES

No issues have come up related to implementation of the NWMP and no changes to the plan are proposed at this time. Any changes to the list of weeds requiring control, based on changes to the State and County weed lists, may necessitate changes to the NWMP.

4. MARBLED MURRELET HABITAT PROTECTION PLAN

4.1. BACKGROUND

Project-related activities conducted in the Spada Lake Reservoir Basin and on other Project lands were conducted according to the MMHPP. Plans and activities were prepared or modified as needed to comply with the MMHPP. These activities included:

- Implementing the Whitewater Recreation Plan under License Article 412
- Air-lifting toilets out of the Bear Creek and Nighthawk Recreation Sites to support the RRMP
- Conducting snow surveys to support project operations and water supply planning
- Conducting hazard tree maintenance activities to support operation and maintenance
- Conducting recreation site vegetation maintenance and trail improvements
- Implementing all aspects of the TRMP
- Implementing all aspects of the NWMP
- Updating suitable marbled murrelet habitat maps and the MMHPP
- Planning for installation of SNOTEL weather station on Kromona Ridge
- Maintaining recreation facilities in support of the RRMP

4.2. WORK COMPLETED IN 2022

Project-related activities conducted in the Spada Lake Reservoir Basin and on other Project lands were conducted according to the MMHPP. Plans and activities were prepared or modified as needed to comply with the MMHPP. These activities included:

- Conducting snow surveys to support operations and water supply planning
- Planning for installation of SNOTEL weather station on Blue Mtn
- Maintaining recreation facilities in support of the RRMP
- Implementing the TRMP
- Implementing the NWMP

Snohomish PUD biologists met and had numerous conversations with Project staff to coordinate Project-related work and ensure compliance with the MMHPP.

4.3. WORK PLANNED IN 2023

Snohomish PUD biologists will continue to stay informed of Project-related activities that might affect marbled murrelets and their habitat and advise and educate those working on the Project of the MMHPP requirements. Language related to seasonal and daily timing restrictions to protect nesting murrelets is included in all construction contracts.

- Conduct commercial thinning in viable stands to improve mature forest characteristics.

4.4. ISSUES OR PROPOSED CHANGES

No issues related to the implementation of MMHPP have arisen and no changes to the plan are proposed.

Appendix A

Noxious Weed Control

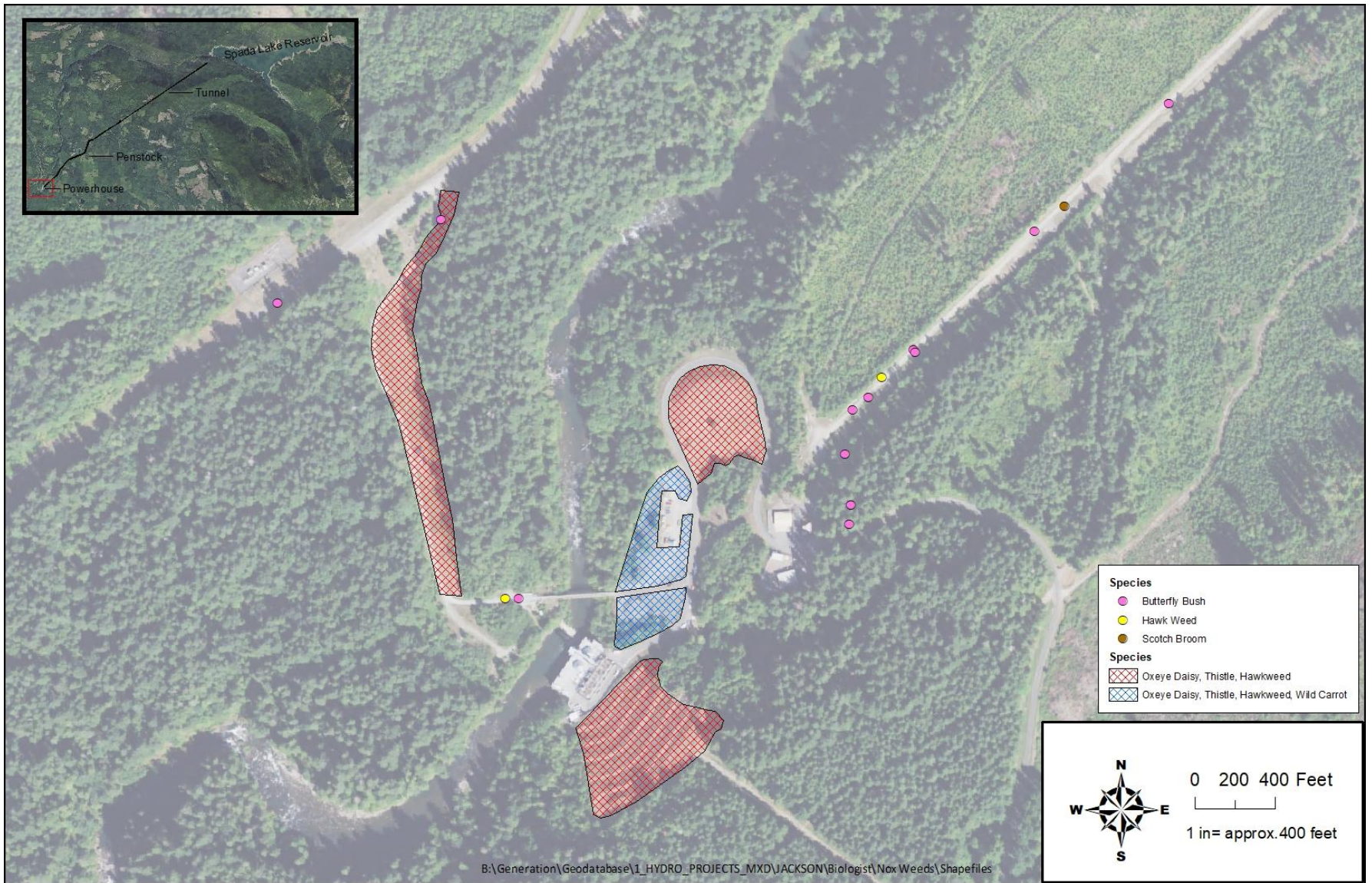


Figure A-1



Figure A-2



Figure A-3



Figure A-4



Figure A-5



Figure A-6



Figure A-7



Figure A-8

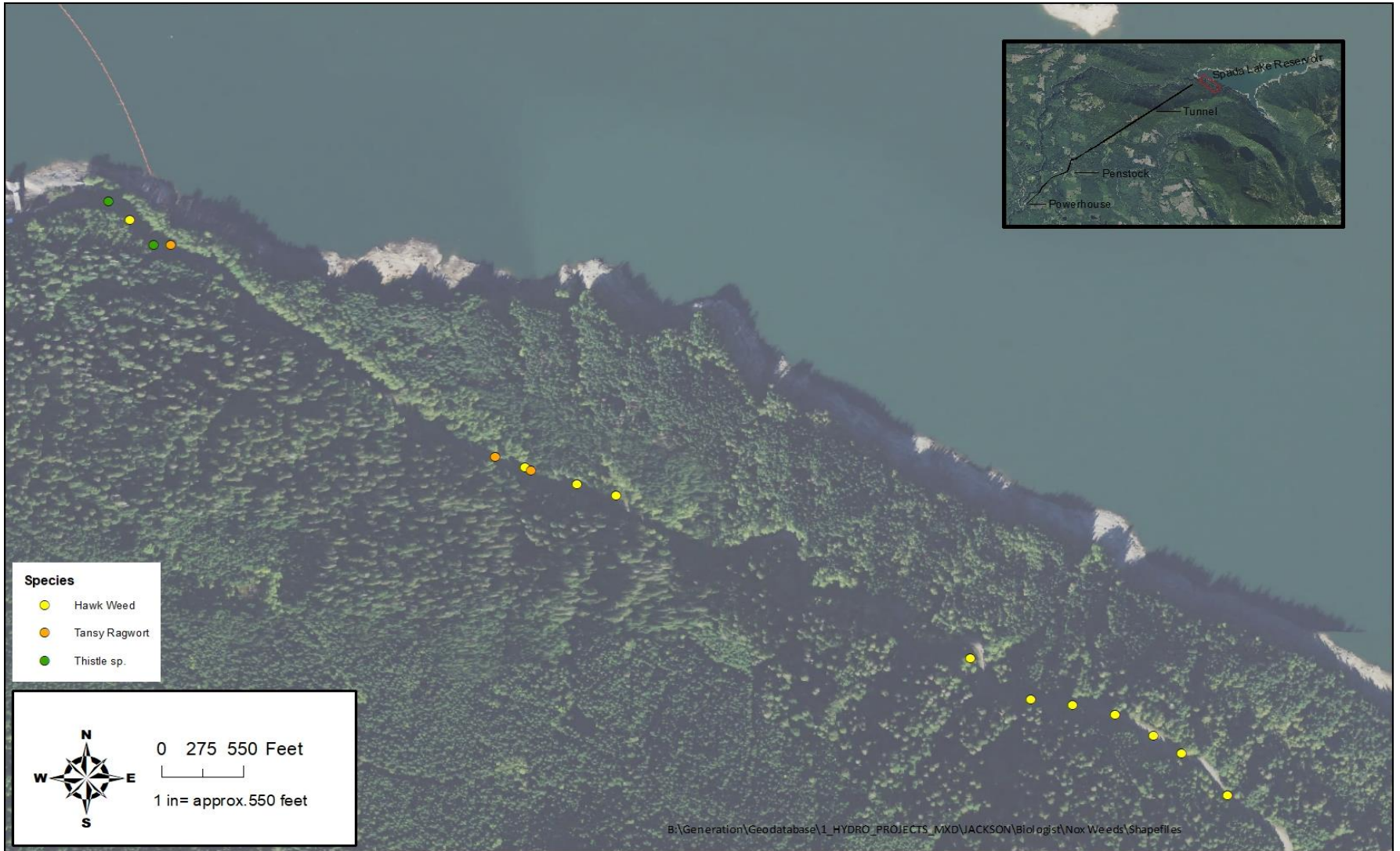


Figure A-9

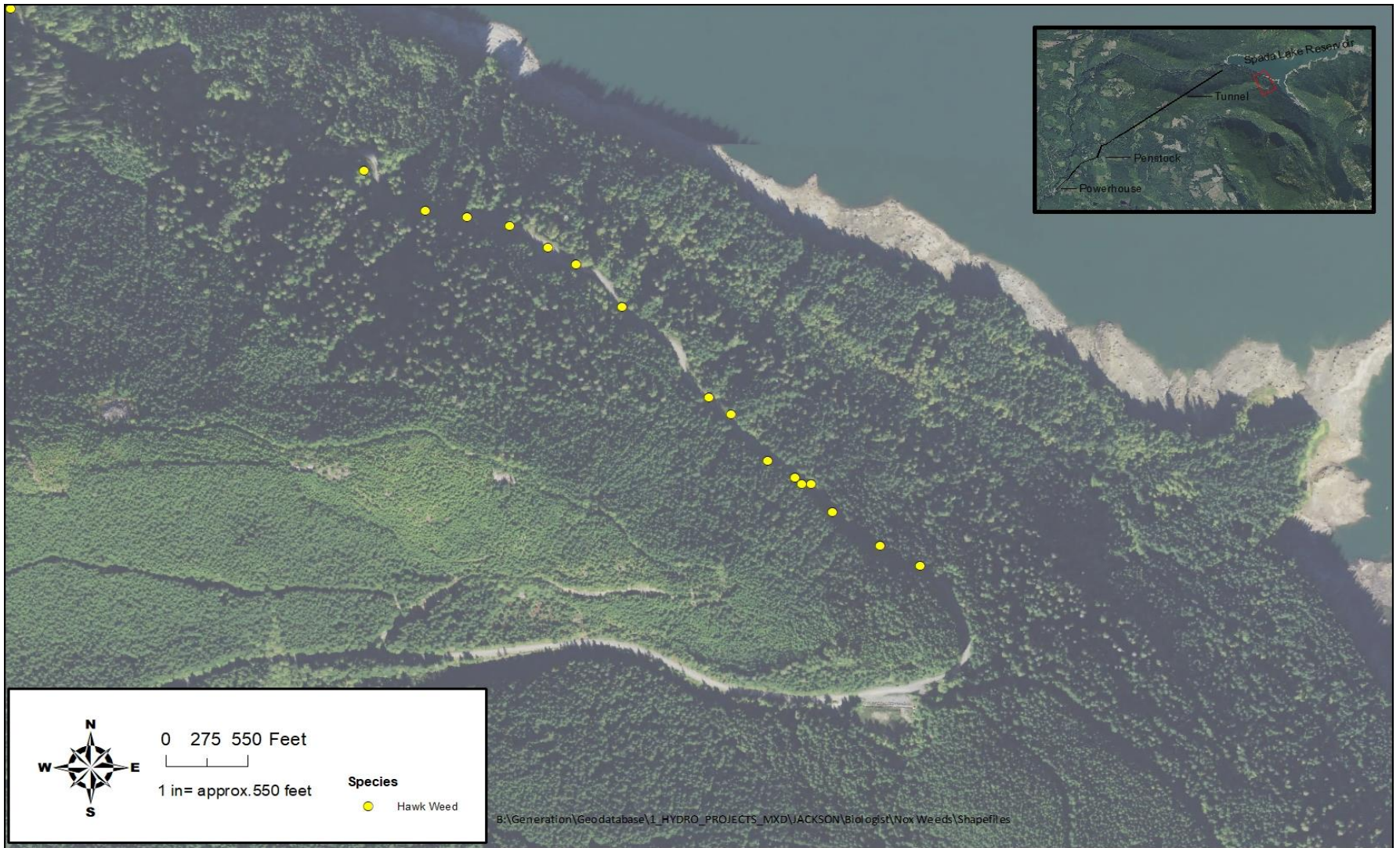


Figure A-10

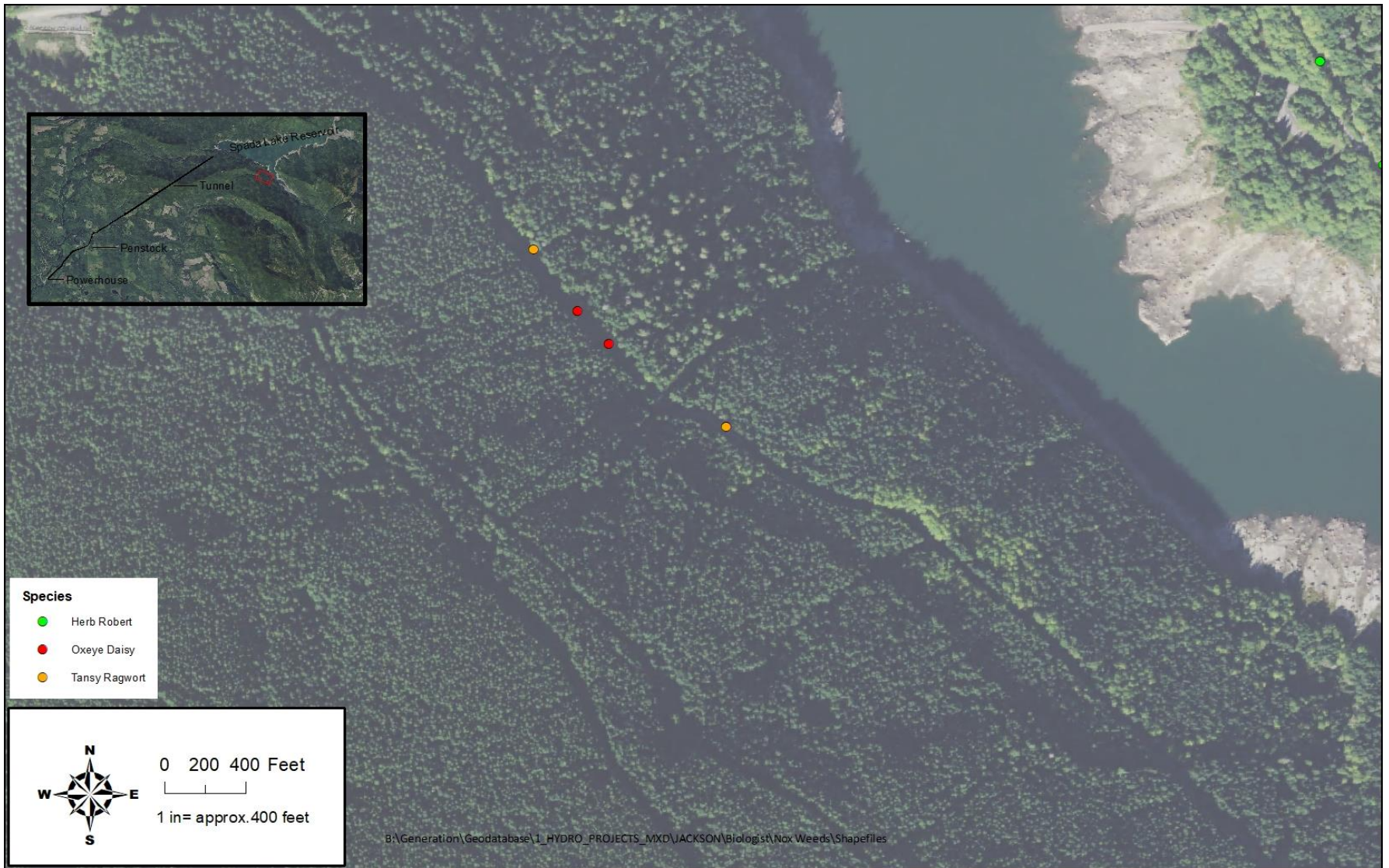


Figure A-11

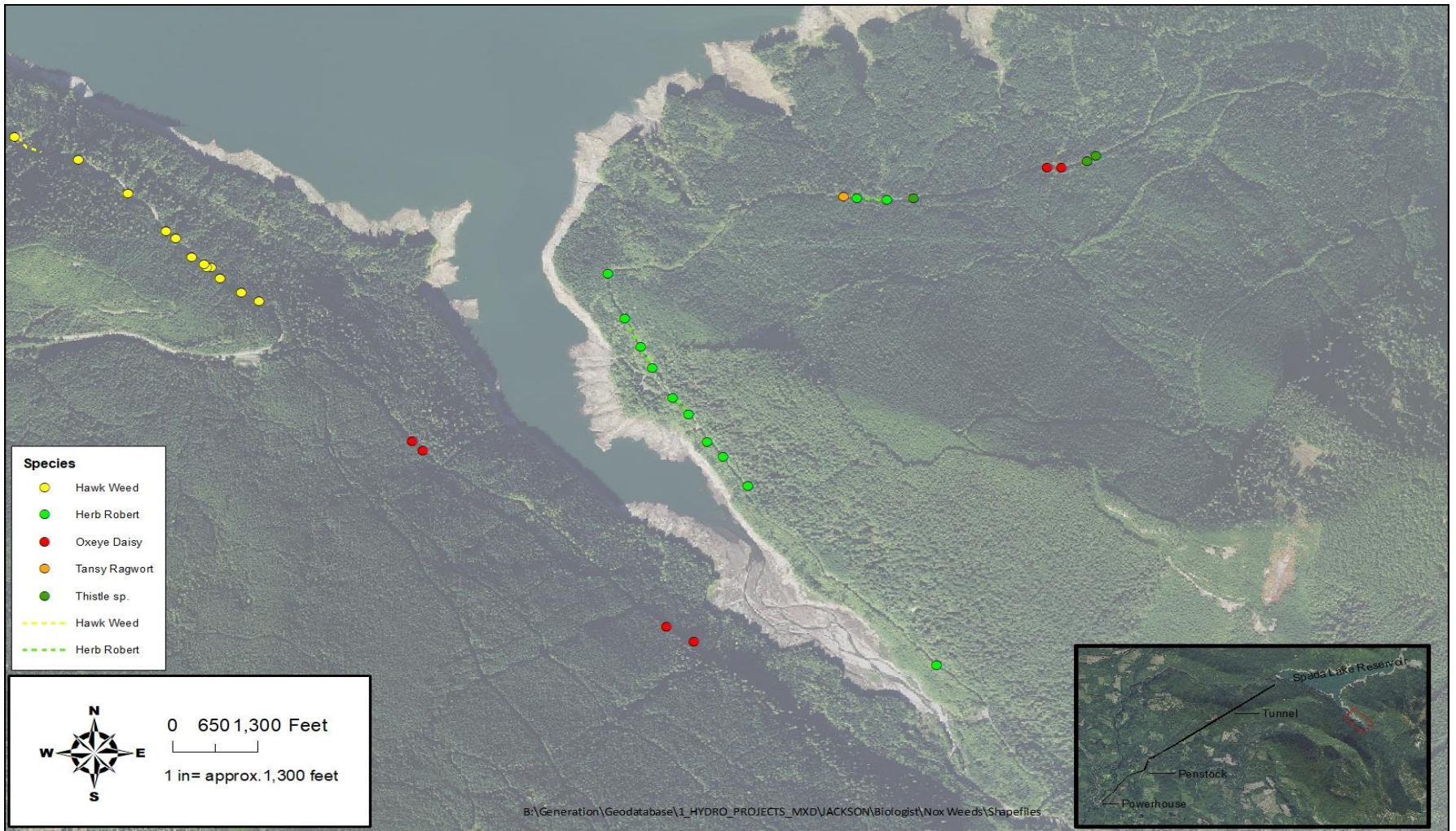


Figure A-12

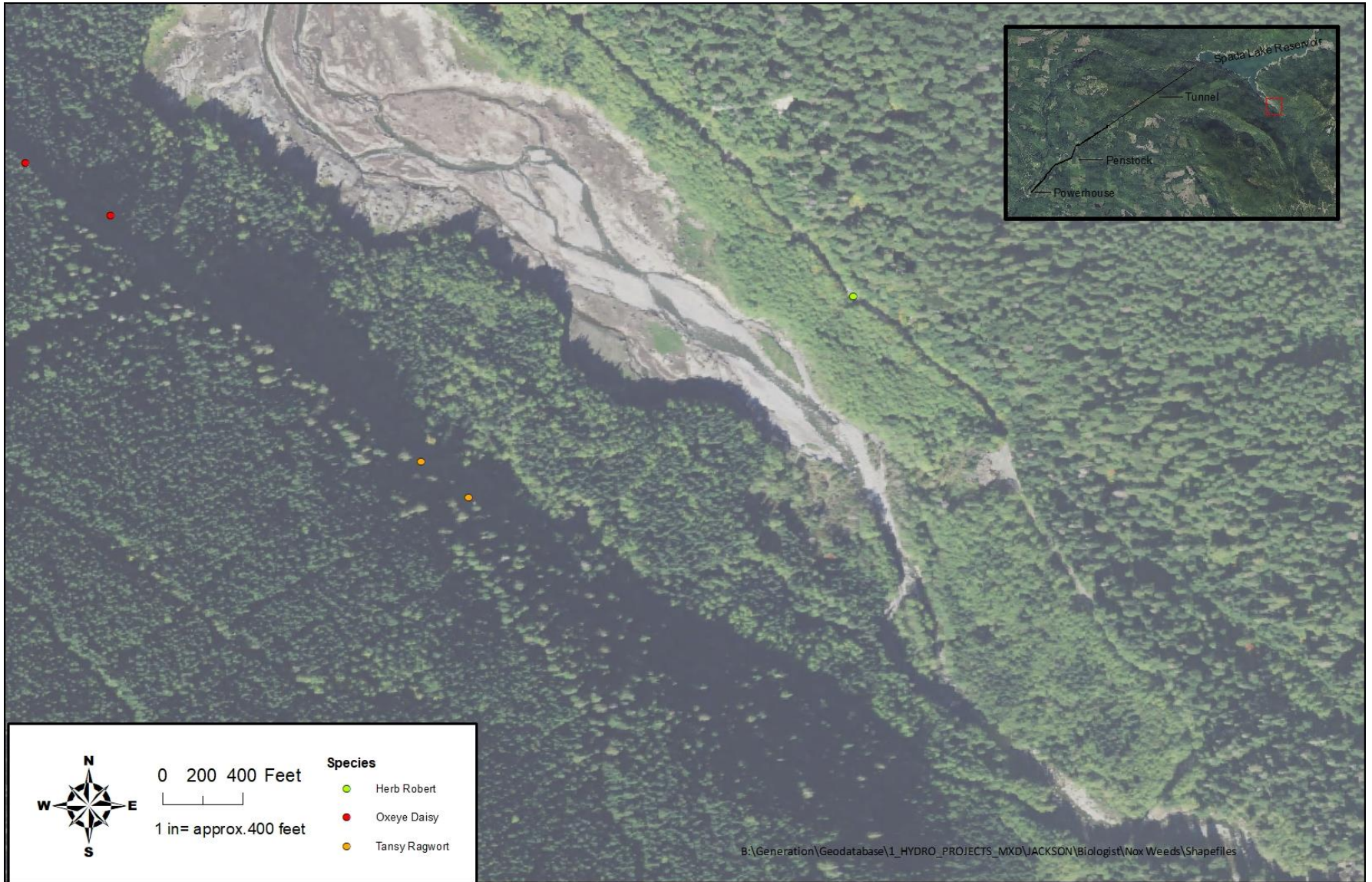


Figure A-13



Figure A-14

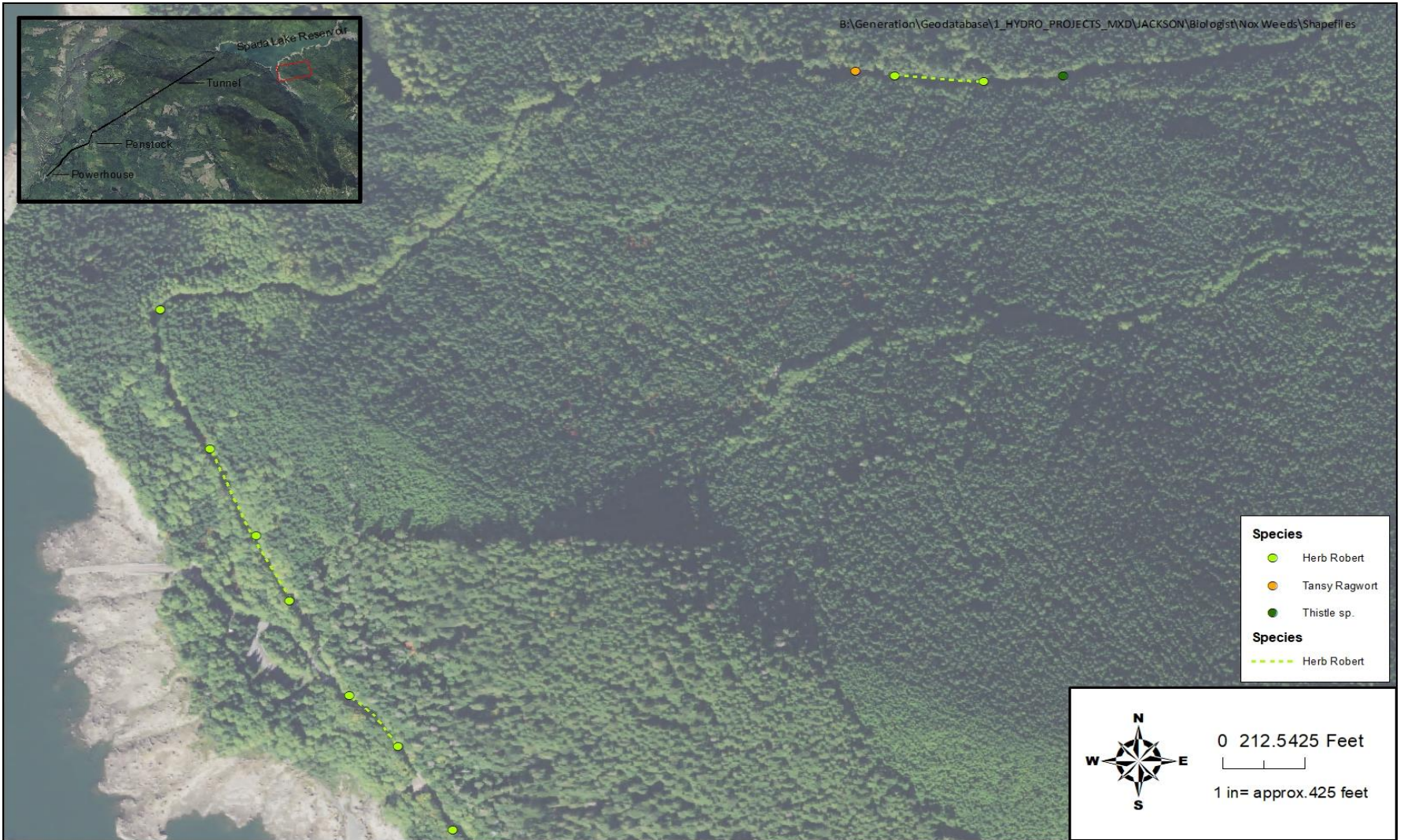




Figure A-16



Figure A-17

Appendix B. Consultation Documentation Regarding Draft Report

APPENDIX B

From: [Schutt, Mike](#)
To: [Applegate, Brock A \(DFW\)](#); [Eric Ozog USFS](#); Kurt.Aluzas@usda.gov; [Jonathane Schmitt USFS](#); [Kevin James USFS](#); [Saw, Geraldine](#); [Michael Sevigny \(msevigny@tulaliptribes-nsn.gov\)](mailto:msevigny@tulaliptribes-nsn.gov); jeffrey_garnett@fws.gov
Cc: [Binkley, Keith](#); [Presler, Dawn](#)
Subject: RE: Jackson Project (FERC No. 2157) - 2022 Terrestrial Resources Annual Report for 30-day review and comment
Date: Thursday, March 16, 2023 2:53:05 PM
Attachments: [2022 DRAFT JHP TRMP Annual Report.pdf](#)
[2022 Appendices.pdf](#)

Dear Jackson Project Terrestrial Resource Group Members:

Attached for your review and comment is the draft report covering the Jackson Hydro Project's Terrestrial Resource Management Plan (TRMP), Noxious Weed Management Plan (NWMP), and Marbled Murrelet Habitat Protection Plan (MMHPP).

The attached report summarizes activities accomplished pursuant to the License and associated terrestrial management plans for the Jackson Hydro Project for 2022 and those activities planned for 2023. If you have any comments on the draft report, please email them to me by end of day Friday, April 14, 2023. Comments will be reviewed and responded to as appropriate prior to finalizing the report; the report will not be filed with FERC this year.

The management plans governing activities can be found on the District's website at:

[Terrestrial Management Plans and Reports - Snohomish County PUD \(snopud.com\)](#)

If you have any questions regarding the attached draft report or management plans, don't hesitate to contact me.

Mike Schutt
Sr. Environmental Coordinator – Wildlife
Generation – Natural Resources
Snohomish County PUD
Office) [425-783-1712](tel:425-783-1712)
Cell) [425-210-5816](tel:425-210-5816)