

Henry M. Jackson Hydroelectric
Project FERC No. 2157

**TERRESTRIAL RESOURCES
2017 ANNUAL REPORT**



April 22, 2018

Submitted by:

Public Utility District No.1 of Snohomish County



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

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Cover Photo: Male wood duck at Chaplain Marsh, courtesy Joe Dreimiller, City of Everett Watershed Patrol.

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LIST OF ACRONYMS AND ABBREVIATIONS

City	City of Everett, Washington
CWD	coarse woody debris
District	Public Utility District No. 1 of Snohomish County
DLT	decaying live trees
DNR	Washington Department of Natural Resources
FERC	Federal Energy Regulatory Commission
MMHPP	Marbled Murrelet Habitat Protection Plan
NWMP	Noxious Weed Management Plan
OMRI	Organic Materials Review Institute
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
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
USFWS	U.S. Fish and Wildlife Service
USFS	U.S. Forest Service Mt. Baker-Snoqualmie National Forest

EXECUTIVE SUMMARY

Activities accomplished during 2017 on 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 2017 time frame. No significant changes are proposed for the management plans. At the request of Washington Department of Fish and Wildlife, expressed during the 2012 annual report and meeting, the same number of woody habitat structures (snags, decaying live trees, and coarse woody debris) will be created as specified in the TRMP, but standing structures will be created in place of some of the coarse woody debris. Also, the TRMP nest box program was modified to include an additional monitoring visit during the nesting season. Tasks scheduled for 2018-2020 are also presented.

Tasks Accomplished during 2017

- Created snags, decaying live trees, coarse woody debris logs and canopy gaps on the Spada Lake Tract to promote mature forest characteristics in younger aged stands.
- Maintained and monitored waterfowl nest boxes at Lost Lake.
- Preserved and protected old growth forest, wetlands, and riparian forest on Project lands.
- Implemented 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.
- Continued planning for initiation of woody habitat structure monitoring program in 2021.

Tasks Scheduled for 2018

- Evaluate approximately 220 acres of land on the Spada Lake Tract for creation of decaying live trees, snags, coarse woody debris logs and canopy gaps, to ensure that by the end of the initial 10-year period (2011-2020) all TRMP lands have been evaluated for woody habitat structure creation.
- Continue to maintain and monitor waterfowl nest boxes at Lost Lake.
- 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 coordination with engineering and operations & 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.
- Finalize planning for long-term woody habitat structure monitoring program.

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 2017 Annual Progress Report for the TRMP, NWMP, and MMHPP was prepared by Public Utility District No. 1 of Snohomish County (the District) as required by each of these plans.

The TRMP describes the actions the District 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 the District's web site via the following link:

<http://www.snopud.com/PowerSupply/hydro/jhp/jhplicense.ashx?p=1978>.

The TRMP incorporates habitat enhancement methods for forest vegetation management, including old growth, young forest and understory management; lake, wetland and stream buffers; snags, decaying live trees and coarse woody debris; 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.

The TRMP requires that a report be prepared and submitted to the USFWS, WDFW, and the Tribes annually and submitted to the 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 is presented in summary form and analyzed. Problems with implementation and proposed changes to the TRMP, if any, are discussed. Review meetings are offered to the USFWS, WDFW and Tribes by the District, to discuss information included in the reports. This report represents the 2017 annual report to the agencies, details activities that occurred in that year, and those that are planned for the following year.

The NWMP describes the District'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 the District manages within the Project boundary. The NWMP was developed in consultation with the Snohomish County Noxious Weed Board (SCNWB), the City of Everett (City), Washington Department of Natural Resources (DNR), USFWS, WDFW, and USFS. The NWMP is available on the District's web site via the following link:

<http://www.snopud.com/PowerSupply/hydro/jhp/jhplicense.ashx?p=1978>.

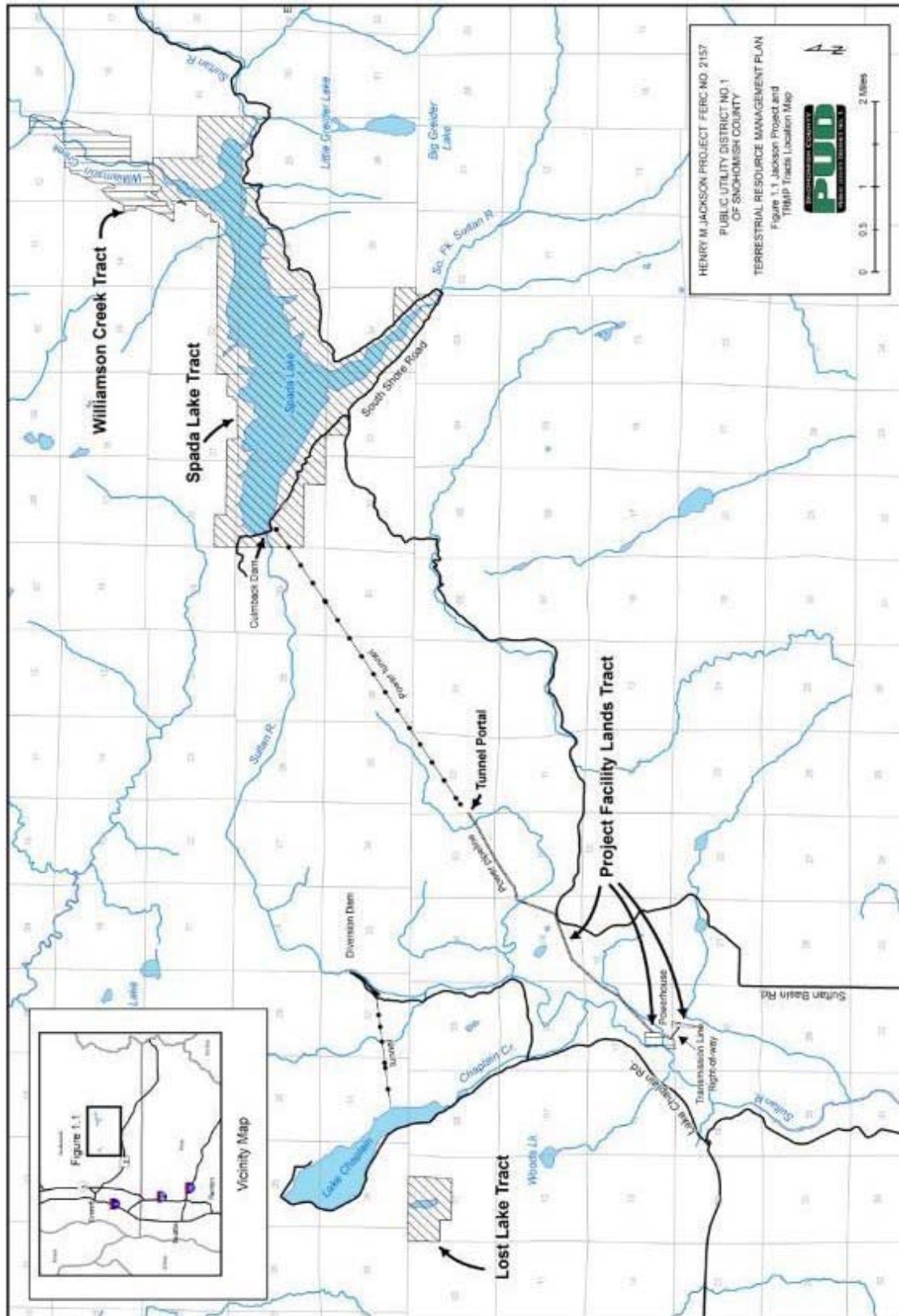


Figure 1-1. Project vicinity map.

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 the District and others documented the presence of marbled murrelets (a federal Endangered Species Act (ESA) 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 the District 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, decaying live trees, 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, the District 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 the District’s website via the following link:
(<http://www.snopud.com/PowerSupply/hydro/jhp/jhplicense.ashx?p=1978>).

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, the District will update the Project

marbled murrelet habitat maps to reflect current habitat conditions. The District 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 the District 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, the District will file for Commission approval, an updated MMHPP developed in consultation with USFWS and WDFW. Activities related to the MMHPP during 2017 are noted in this report.

2. TERRESTRIAL RESOURCES MANAGEMENT PLAN

2.1. PRIOR YEARS' SUMMARY – 2016

This section includes background explanations of activities, and results summarized from the previous years' reports, for activities occurring since the beginning of the current 5-year reporting period (2016).

2.1.1. Snags, Decaying Live Trees and Coarse Woody Debris

TRMP management measures include the creation of snags, decaying live trees (DLTs) and coarse woody debris (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” in this report. Trees are selected from the largest size class and are typically clustered in groups of about 30 trees, called “canopy gaps”. 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 80 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 Tract. 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. Woody habitat structures may also be created individually or in smaller groups, as needed to maintain appropriate distribution and based on habitat limitations.

In 2016, difficulty in securing a suitable contractor prevented the creation of any woody habitat structures. As a result, approximately 25% more acreage will be treated in each of the 4 years remaining in the initial 10 year creation cycle, to ensure that all available acres have been visited by the end of 2021, per the License requirement.

2.1.2. Right-Of-Way Management

Noxious and invasive weed management were the primary activity conducted on the pipeline right-of-way (ROW) in 2016. Since TRMP implementation began in late 2011, work on the pipeline right-of-way (ROW) has consisted largely of weed control, but 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 the District's control, as well as more expeditious monitoring of 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.

2.1.3. Waterfowl Nest Boxes

A total of six nest boxes (Figure 2-1) are provided on the Lost Lake Tract, and are monitored several times during the year. Maintenance occurs in February to ensure six boxes are provided at the beginning of each nesting season. A mid-nesting season visit occurs in early May to more accurately document use, with the final check and box clean out occurring in early June. In 2016, 1 of 6 boxes was successfully used, with 10 Hooded Mergansers fledging.

2.1.4. Stewardship Activities or Observations of Note

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

Table 2-1 provides a summary of incidental wildlife observations on Project mitigation land in 2016. These are incidental only and are not part of a systematic monitoring program.

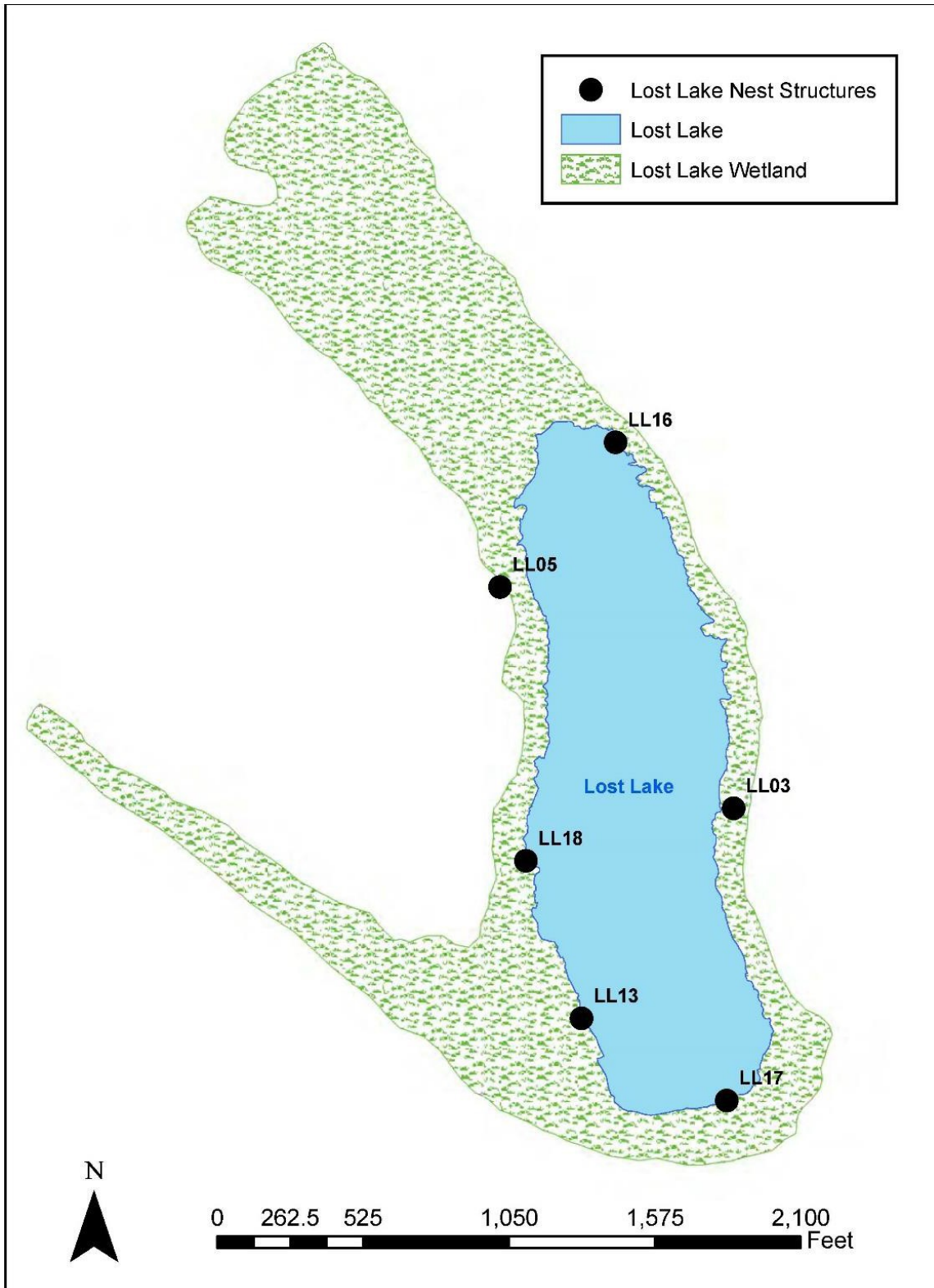


Figure 2-1. Nest structure locations at Lost Lake.

Table 2-1. Incidental wildlife observations on Project lands – 2016.

DATE	LOCATION	SPECIES	DESCRIPTION
4/1/16	Spada Lake	Loons	Swimming on Spada Lake
4/1/16	Culmback Dam	Sooty Grouse	In tree along road north of Culmback Dam
4/1/16	Spada Lake	Cormorant	Several swimming on Spada Lake
4/1/16	Spada Lake	Wood Duck	2 or 3 swimming on Spada Lake
4/1/16	Spada Lake	Warbler	In brush at South Shore boat launch
4/1/16	Spada Lake	Common Merganser	Swimming on Spada Lake
4/1/16	Spada Lake	Mallard	Swimming on Spada Lake
4/1/16	Spada Lake	Canada Geese	Swimming on Spada Lake
5/5/16	Lost Lake	Black bear	Sow & cub crossing road near Lost Lake
5/16/16	Culmback Dam	Bald Eagle	Pair flying overhead at Culmback Dam
5/26/16	Lost Lake	Wood Duck	Female with chicks on Lost Lake
5/26/16	Spada Lake	Common Merganser	4 pairs swimming in mouth of North Fork Sultan River
5/26/16	Spada Lake	Bald Eagle	Mature eagle flying over mouth of NF Sultan River
5/26/16	Spada Lake	Canada Geese	25 flying over Spada Lake
8/12/16	Spada Lake	Osprey	3 flying over lake
8/12/16	Spada Lake	Golden Eagle	1 flying over lake

2.2. WORK COMPLETED IN 2017

2.2.1. Snags, Decaying Live Trees and Coarse Woody Debris

TRMP management measures include the creation of woody habitat structures (snags, decaying live trees, and coarse woody debris) from live trees, on the 4 tracts of Project mitigation land. A brief history of land management as it relates to their creation is presented in Section 2.1.1.

In 2017, 1,407 woody habitat structures were created on 5 Spada Lake Tract stands/complexes totaling 211 acres (Figure 2-2, Table 2-3). Two stand complexes that were not completed in 2017 will be completed in 2018. A stand complex is one larger stand and multiple small stands (typically 1 acre or less) consolidated to allow easier management. Of the woody habitat structures created in 2017, 80 percent (1,126) were live-topped to become DLTs. These typically have at least 5 whorls of live limbs left to allow the tree to remain alive for at least several years following topping, in the hopes that infection by heart rotting fungus occurs. Typically, the largest trees are selected to be live-topped. During 2017, as in the past, these woody habitat structures were typically created in groups to create an opening in the forest canopy. On the Spada Lake Tract, these groups can be made up of 30 or more trees, due to the high density of stems. The target size for canopy gaps is from 0.10 to 0.25 acres.

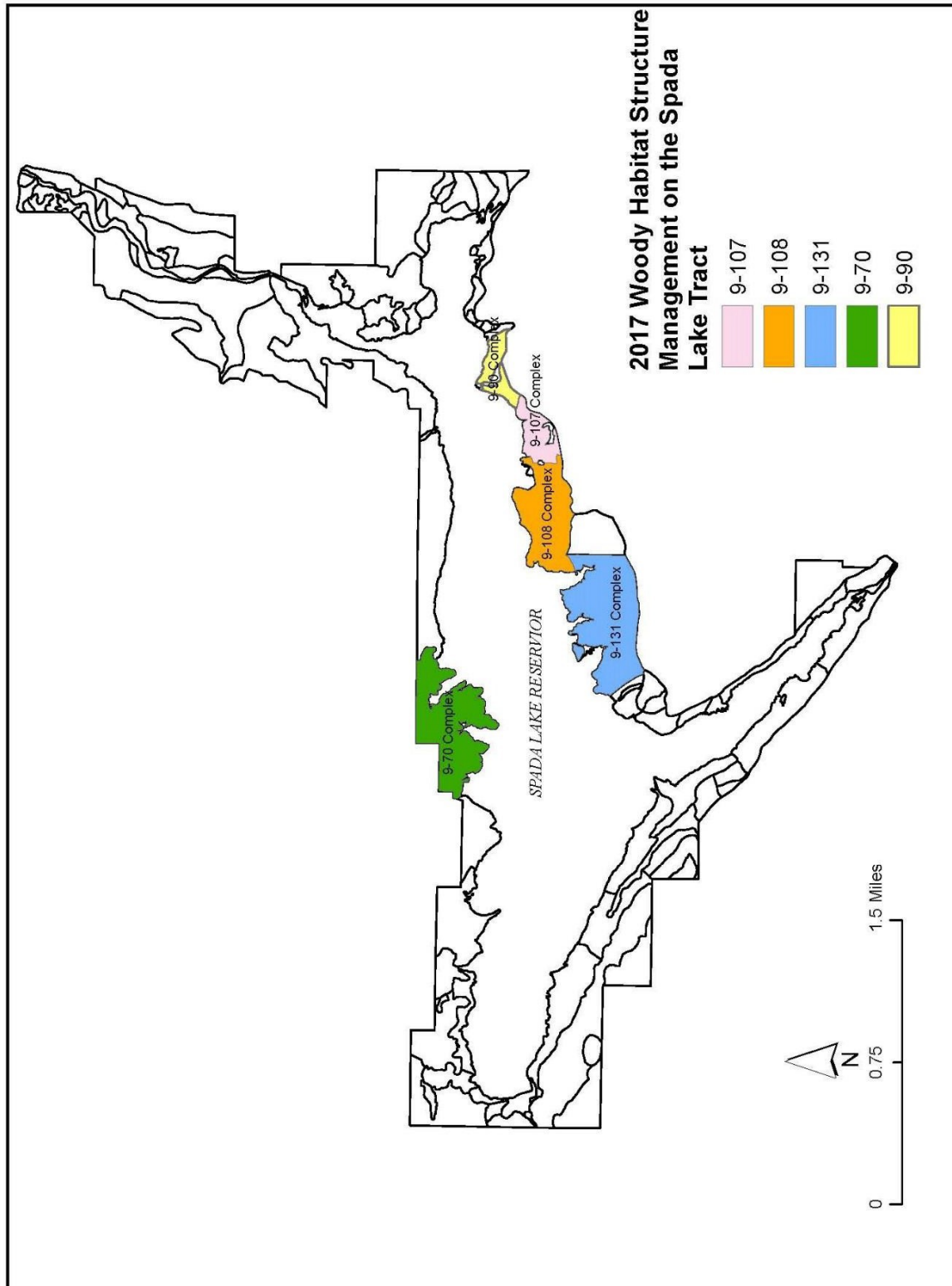


Figure 2-2. Woody habitat structure creation on the Spada Lake Tract, 2017.

Table 2-2. Woody Habitat Structure Creation - 2017.

2017: 209 acres treated; 1,451 created						
UNIT and Year Creation Occurred		Spada 9-70 Complex	Spada 9-131 Complex	Spada 9-90 Complex	Spada 9-107 Complex	Spada 9-108 Complex
ACRES TREATED (Total 211.2)		75.7	40.1	23.8	29.6	42.0
DECAYING LIVE TREES						
Total 1,126	# CREATED	362	257	123	164	220
	AVG DBH (in)	13.3	13.8	14.0	15.5	14.9
	AVG HT (ft.)	66	67	66.8	57	62.5
	#/acre	3.4	2.0	5.2	6.0	2.7
SNAGS						
Total 259	# CREATED	114	16	43	32	54
	AVG DBH (in)	12.8	19	12.5	13.4	13.6
	AVG HT (ft.)	66.5	73.9	62.8	53.3	59.3
	#/acre	1.1	0.12	1.8	1.2	0.7
COARSE WOODY DEBRIS						
Total 22	# CREATED	9	6	0	1	6
	AVG DBH (in)	12	12.5	0	11.2	11.7
	#/acre	0.1	0.05	0	0.03	0.10
TOTAL #/ACRE		4.6	2.2	7.0	7.2	3.5
NOTES		Work on this unit began in 2015, and will be completed in 2018	Work on this unit began in 2015, and will be completed in 2018			Work on this unit will be completed in 2018

2.2.2. Right-Of- Way Management

Control of noxious weeds continued along the pipeline ROW, with Canada thistle, Hawkweed and Scotch broom being the species most often encountered.

2.2.3. Waterfowl Nest Boxes

On the Lost Lake Tract, a total of six nest boxes were available for use in 2017, with one being used by cavity nesting waterfowl (Table 2-4). Boxes were checked, cleaned, repaired as needed, and provided with fresh nesting material on February 14. All boxes were visited again on May 8 and 23 to determine use, check for damage, and remove unwanted species, including native squirrels and non-native birds and their nests. Eggs were not moved or handled for counting during nest checks, therefore quantities should be considered low estimates. The one box that was used for nesting was checked again on June 9 to determine the final disposition of the nest. All 9 eggs successfully fledged. The locations of the six existing nest structures on the Lost Lake Tract are depicted in Figure 2-1.

Table 2-3. Waterfowl nest box use on the Lost Lake Tract in 2017.

BOX #	RESULTS
BOX 3	5/23/17 - 9 Hooded Merganser eggs being incubated. 6/9/17 - Remnants of 9 HM eggs found. Nest cleaned. 9 successfully fledged.
BOX 5	No use.
BOX 13	No use.
BOX 15	No use.
BOX 16	No use.
BOX 17	No use.

2.2.4. Lake, Wetland and Stream Buffers

Activities occurring within buffers included nest box maintenance and woody habitat structure creation, as described in the previous sections of this document. The buffer restrictions for snags, DLT and CWD described in the TRMP were followed, which allow only individual or small groupings of woody habitat structures 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.

2.2.5. Stewardship Activities or Observations of Note

Though potentially overshadowed in the annual report by proactive management, one of the key elements of the TRMP is the protection of old growth forests, wetlands and riparian areas on the four management tracts. The TRMP requires the preservation of 502 acres of existing old growth forest and promotion of old growth characteristics on 1,119 acres of second growth conifer forest. Approximately 57 acres of riparian forest and 40 acres of wetlands are protected from human disturbance and maintained as high-quality habitat under the TRMP. All management activities in 2017 considered these objectives. These habitat types were protected and received

minimal management activity in 2017, primarily woody habitat structure creation within buffer zones.

District wildlife biologists worked with Project staff throughout the year in an effort to ensure compliance with the TRMP.

Some incidental observations of wildlife species by District wildlife biologists and knowledgeable City of Everett personnel on TRMP lands are listed in Table 2-4. This list of observations is not the result of systematic surveys for wildlife, but is included in this report simply to document the presence of these species on management lands.

Table 2-4. Incidental wildlife observations on Project lands – 2017.

DATE	LOCATION	SPECIES	DESCRIPTION
2/14/17	Lost Lake	Pileated Woodpecker	Pair calling from east side of lake
2/14/17	Lost Lake	Bufflehead	1 pair swimming on lake
2/14/17	Lost Lake	Hooded Merganser	4 pair swimming on lake
2/14/17	Lost Lake	Mallard	5 pair swimming on lake
2/14/17	Lost Lake	Kestrel	Caught small song bird near fishing platform
4/8/17	Spada Lake	Western Tanager	Female in willows at South Shore recreation site
4/8/17	Spada Lake	Canada Geese	Several on shore at South Shore recreation site
4/27/17	Spada Lake	Ruby Crowned Kinglets	Flock at South Shore recreation site
6/1/17	Pipeline ROW	Black bear	2 adults foraging on ROW about ½ mile north of powerhouse
8/27/17	Spada Lake	Osprey	Calling from Bear Cr. drainage area in SE corner of tract
9/14/17	Spada Lake	Osprey	Again heard calling from similar area as 8/27/17

2.3. WORKED PLANNED FOR 2018

2.3.1. Snags, Decaying Live Trees and Coarse Woody Debris

Creation of woody habitat structures will continue on the Spada Lake and Williamson Creek Tracts to ensure that all TRMP lands have been evaluated for woody habitat structure creation by the end of 2020. The focus will be on stands where woody habitat structure creation has not yet occurred, or where creation occurred more than 10 years ago. Approximately 225 acres will be evaluated and have woody habitat structures created, as needed, to meet the 10-year cycle outlined in the TRMP.

2.3.2. Right-Of-Way Management

Aggressive noxious and invasive weed control will continue on all Project lands to prevent seed production. 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 District lands.

2.3.3. Waterfowl Nest Boxes

Nest boxes on the Lost Lake Tract will be repaired as needed by the end of February, to ensure availability for the upcoming nesting season. An intermediate nesting season check will be performed (early May) to remove unwanted species, including native squirrels, starlings and their nests, or any other non-native birds. A final nest box productivity check will be conducted in mid to late June to ensure accurate determination of use, as specified in the TRMP.

2.3.4. Lake, Wetland and Stream Buffers

Aside from woody habitat structure creation and nest box maintenance, as summarized in this report and detailed in the TRMP, no other activities are planned in buffer zones.

2.4. ISSUES OR PROPOSED CHANGES

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

3. NOXIOUS WEED MANAGEMENT PLAN

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 a naturally derived herbicide by state-licensed contract herbicide applicators, overseen by District biologists who are also state-licensed herbicide applicators. These are non-selective herbicides (they will damage or kill any portion of a plant contacted), and are non-systemic (they only affect the portion of the plant that is contacted, and are not translocated through the plant's vascular system to kill the roots). Using these types of herbicides requires repeat applications, as they are not as effective as systemic herbicides, but are considered safer for water quality by the City of Everett (primary purveyor of drinking water in Snohomish County, serving 80% 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 and overseen by state-licensed 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 GPS record was created to document presence and level of infestation for each invasive species. These sites are visited multiple times each year by District 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 the District's GIS database, to allow tracking of weed occurrences and treatment efforts to guide the following year's management.

3.1. PRIOR YEAR SUMMARY – 2016

Overall, the District's approach to invasive weed control has been successful in preventing most seed production and spread of known infestations. No new species of noxious weeds 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. High strength acetic acid was used in 2016, but is hazardous to the applicators and also can damage equipment if not thoroughly flushed out regularly.

District biologists met with Project staff to inform and educate regarding the NWMP and worked with them to ensure that the NWMP was being followed, particularly with regard to construction and earth moving activities, to prevent weed propagules from being translocated to other areas.

3.2. WORK COMPLETED IN 2017

A new herbicide was utilized in 2017, it is still an acid based product, but is much safer during application and not as hard on equipment. Suppress EC (79% Caprylic and Capric acids) is Organic Materials Review Institute (OMRI) listed and labeled for organic production. Results to date indicate that it is as effective as the high strength vinegar used in previous years. 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. In Appendix A, Figure A1 shows an overview of the project lands, while figures A2 through A11 show weed locations identified around Spada Lake Reservoir. Figures A12 through A18 show weed locations along the pipeline ROW. These figures include comparisons between weed locations identified and mapped by District biologists with a similar level of intensity in 2015 and those identified and treated in 2017.

3.2.1. Lost Lake Tract Treatment and Monitoring

During 2017, 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 2017.

3.2.2. Spada Lake Tract Treatment and Monitoring

During 2017, weed species most commonly found along roads on the Spada Lake Tract were Canada thistle and oxeye daisy. Culmback Dam had large infestations of hawkweed and smaller patches of Scotch broom. 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 are not expected to extend their range significantly. Based on this and the difficulty of accessing this now roadless area, other sites have received higher priority for treatment.

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 there included Canada thistle, hawkweed, Scotch broom, and tansy ragwort.

Noxious weeds on the transmission line ROW were also sprayed several times during the growing season, with the primary species found there being English holly, Bull and Canada thistle, and blackberry species.

3.2.5. Annual Review of Noxious Weed List

The District reviewed the State and County's annual updated weed list for 2017. 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 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. The herbicide used was changed in 2017 in favor of another organic acid that exhibited less volatility and risk to the applicators. All indications are that the new product has performed as well or better than the prior product.

The District 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, District 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 2018

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 project, staff will meet to discuss pre- and post-project means to reduce the likelihood of 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 and no changes 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. PRIOR YEAR SUMMARY – 2016

This section includes background explanations of activities and results summarized from the previous years' reports.

Project-related activities conducted in the Spada Lake Reservoir Basin and on other Project lands in 2016 were conducted according to the MMHPP. Plans and activities were prepared or modified as needed to comply with the MMHPP. These activities included:

- Air-lifting toilets out of the Bear Creek and Nighthawk Recreation Sites to support the RRMP
- Construction work to allow anadromous fish passage at the Diversion Dam
- Conducting snow surveys to support project operations and water supply planning
- Conducting hazard tree maintenance activities to support operation and maintenance
- Implementing all aspects of the TRMP
- Implementing all aspects of the NWMP

Signage is included at Spada Lake Reservoir recreation sites to alert users of the need to contain all refuse to protect nesting marbled murrelets, and bear proof garbage receptacles are provided at every recreation site and trailhead.

4.2. WORK COMPLETED IN 2017

Project-related activities conducted in the Spada Lake Reservoir Basin and on other Project lands during 2017 were conducted according to the MMHPP. Plans and activities were prepared or modified as needed to comply with the MMHPP. These activities included:

- Planning and construction of the auxiliary tunnel to allow water temperature

- conditioning to benefit the fisheries resource, as required by License Article 415.
- Conducting snow surveys to support operation and water supply planning.
- Maintaining recreation facilities in support of the RRMP.
- Implementing the TRMP.
- Implementing the NWMP.

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

4.3. WORK PLANNED FOR 2018

District 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.

4.4. ISSUES OR PROPOSED CHANGES

No issues have come up and no changes are proposed for the MMHPP.

Appendix A

Maps of Noxious Weed Locations within the Project Boundary



Figure A-1. Overview of Project Lands and sequence of noxious weed figures.

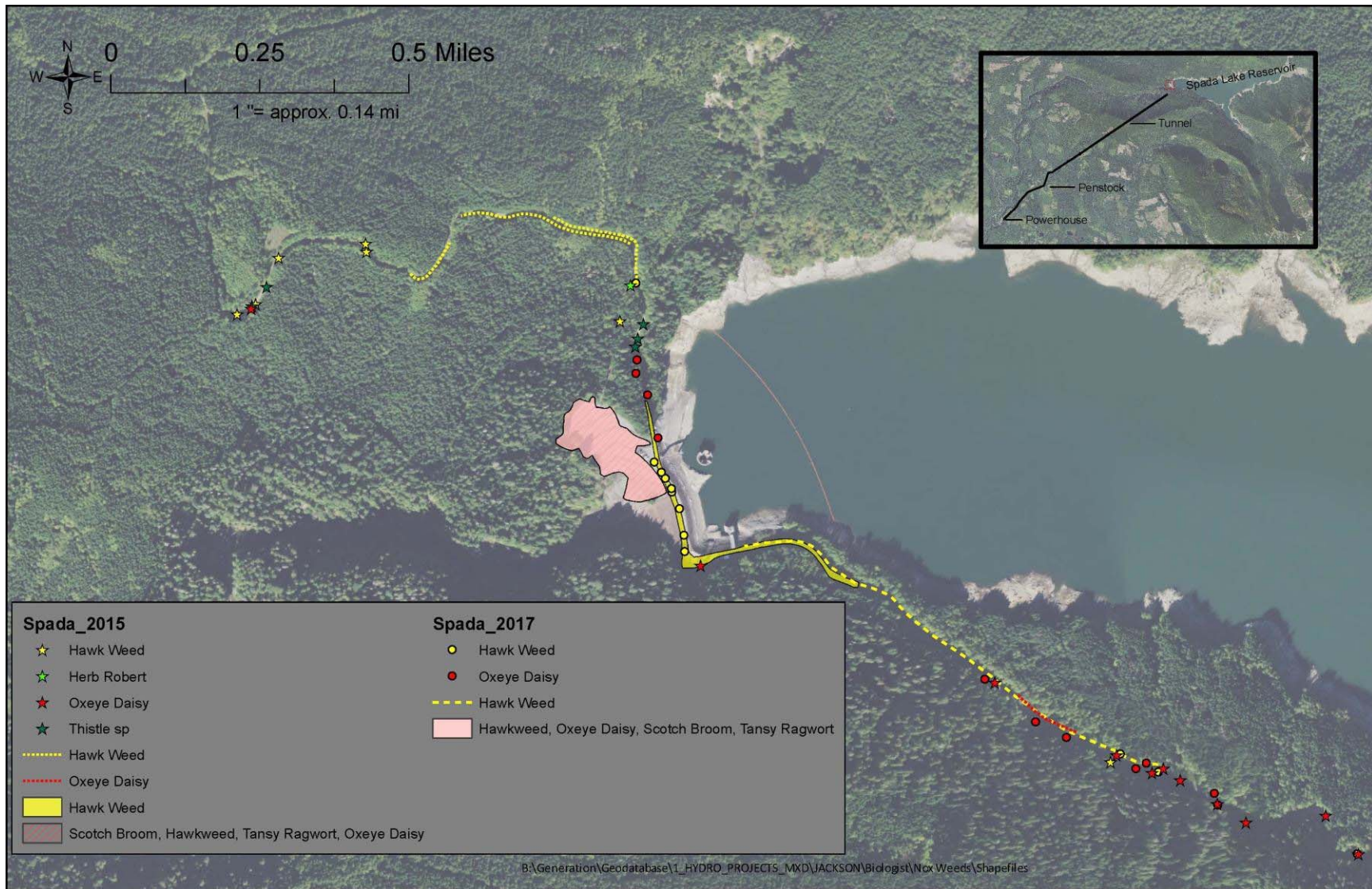


Figure A-2. 2015 and 2017 noxious weed locations at Culmback Dam.

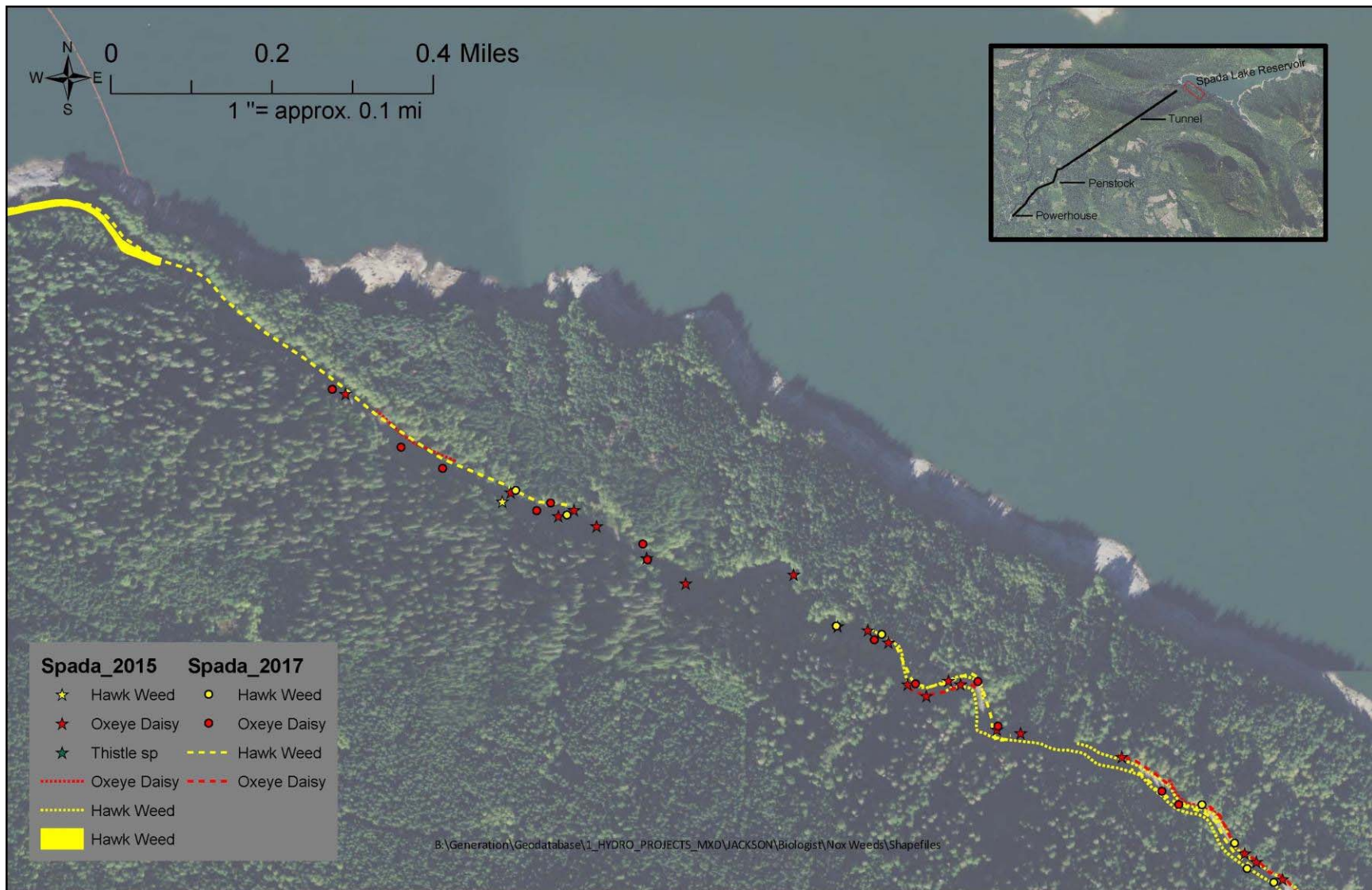


Figure A-3. 2015 and 2017 noxious weed locations along Lower Culmbach Dam Road.

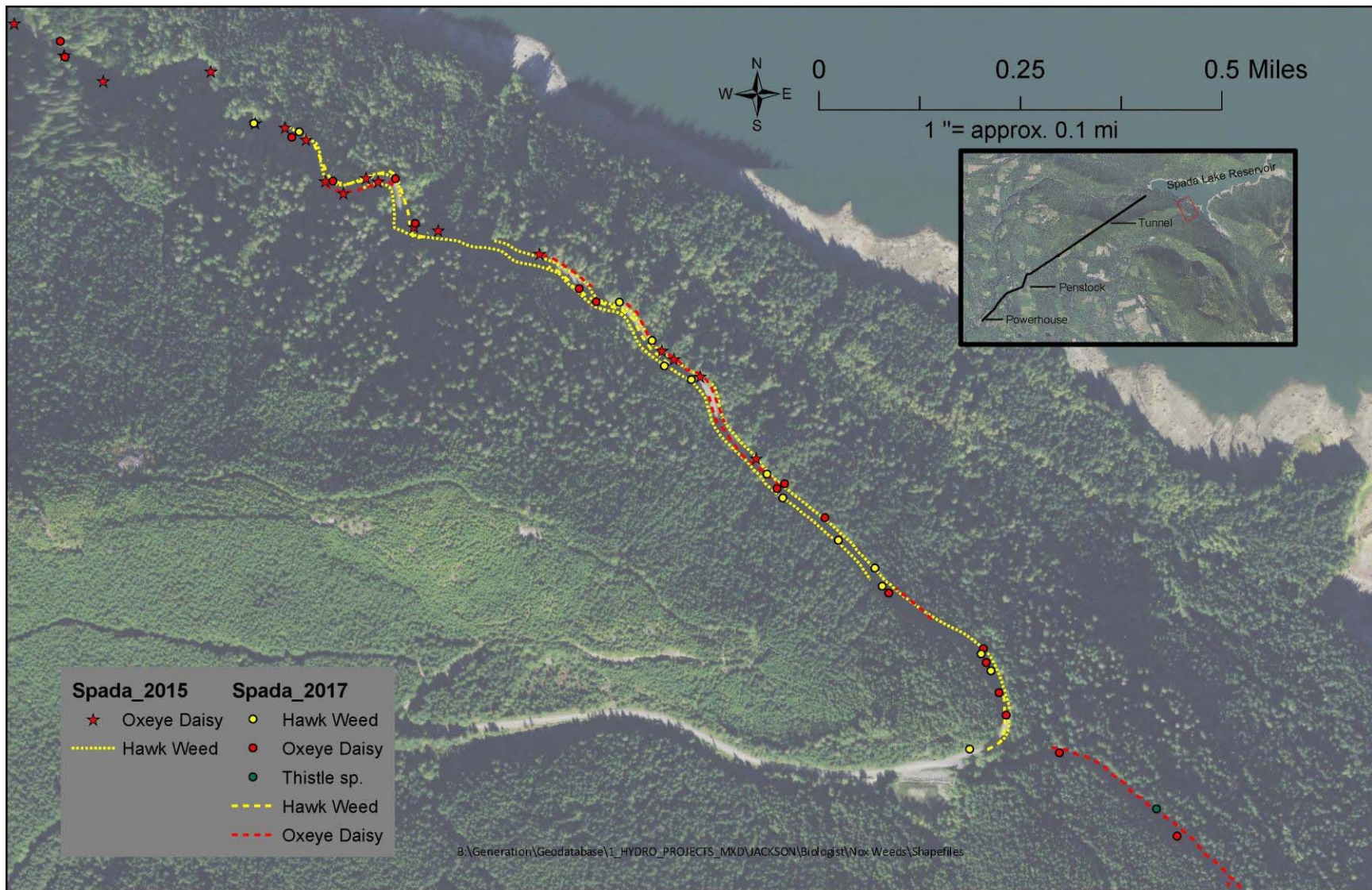


Figure A-4. 2015 and 2017 noxious weed locations along Upper Culmback Dam Road.

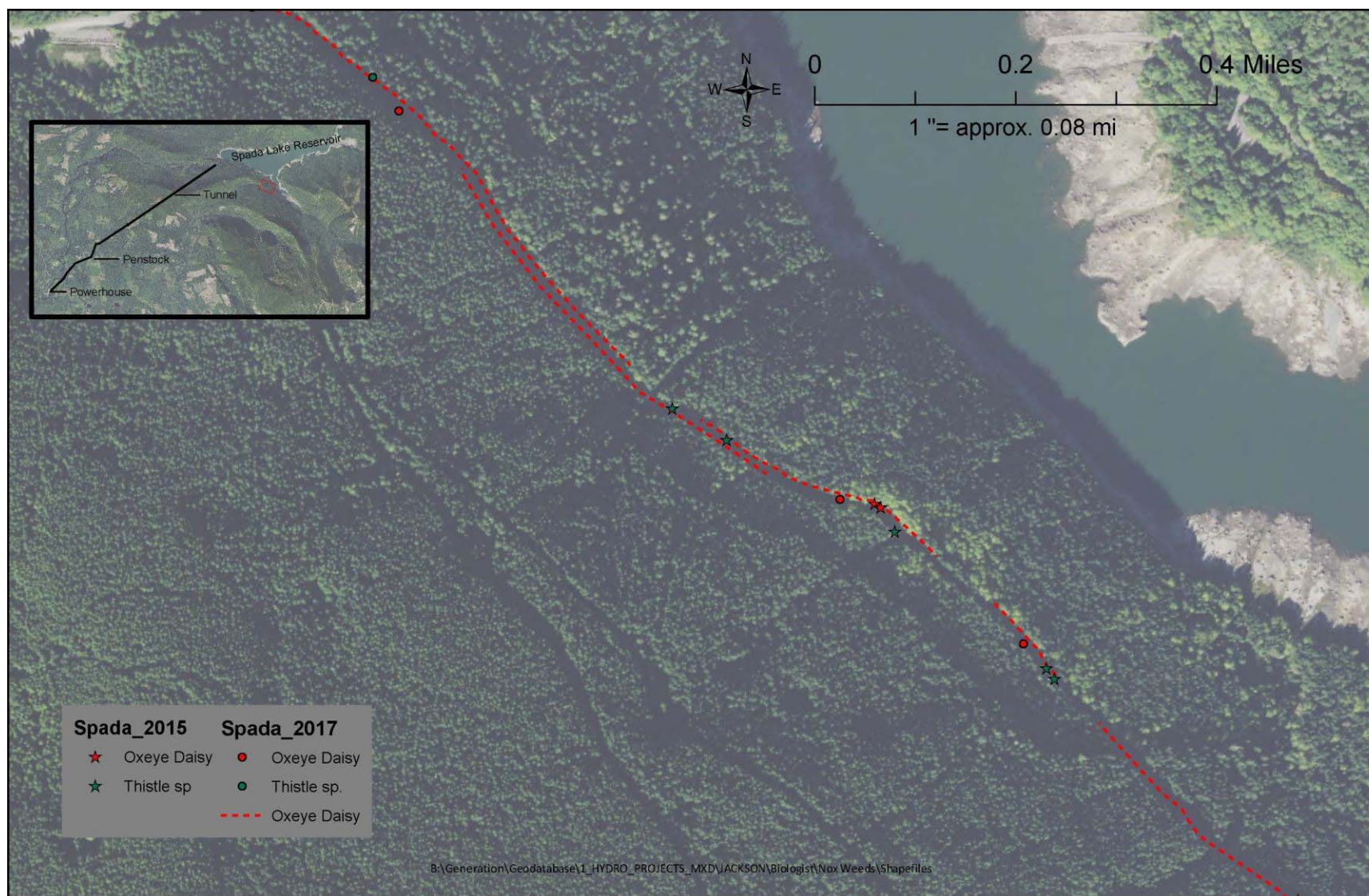


Figure A-5. 2015 and 2017 noxious weed locations along South Shore Road, section 1.

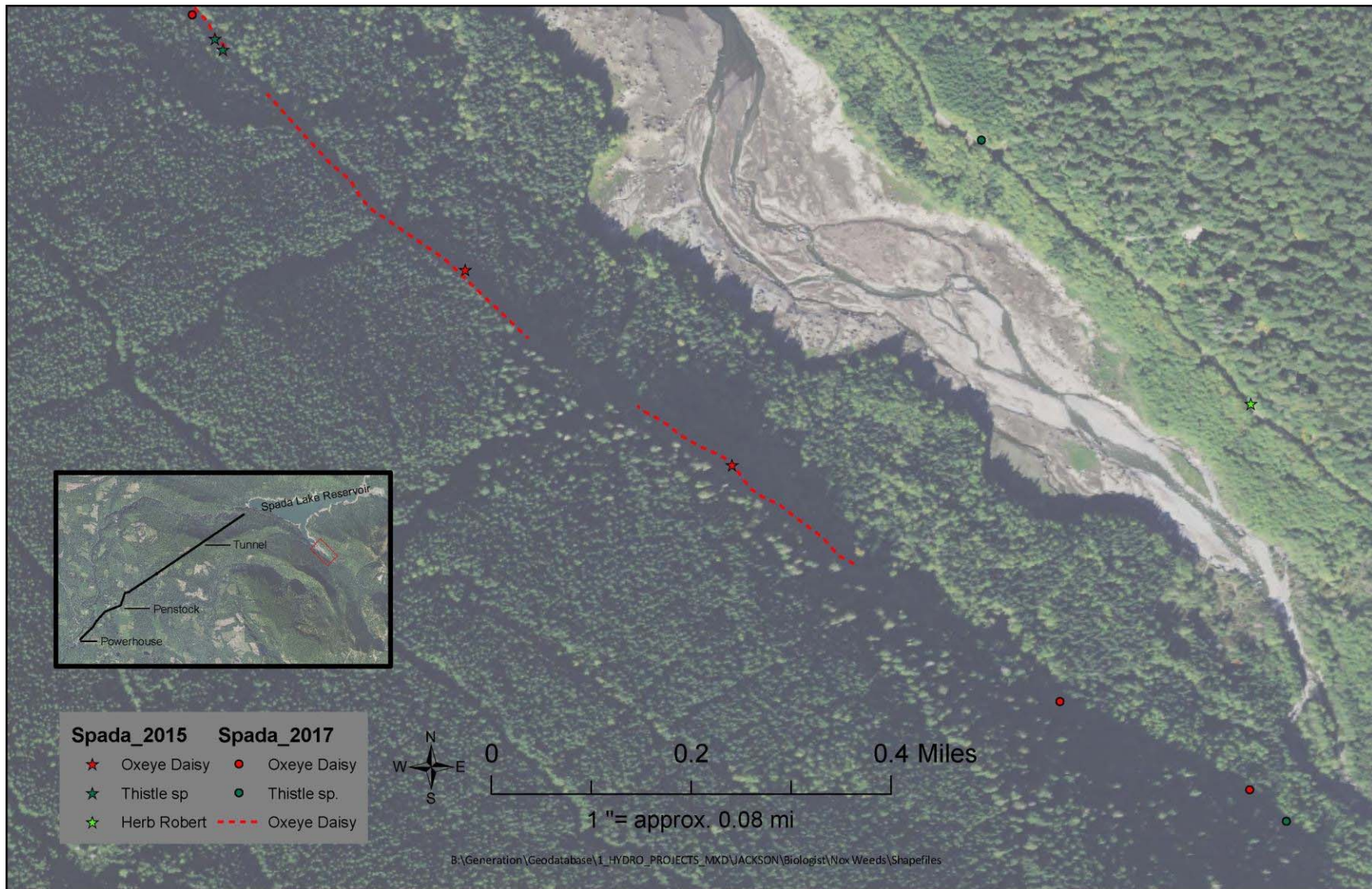


Figure A-6. 2015 and 2017 noxious weed locations along South Shore Road, section 2.

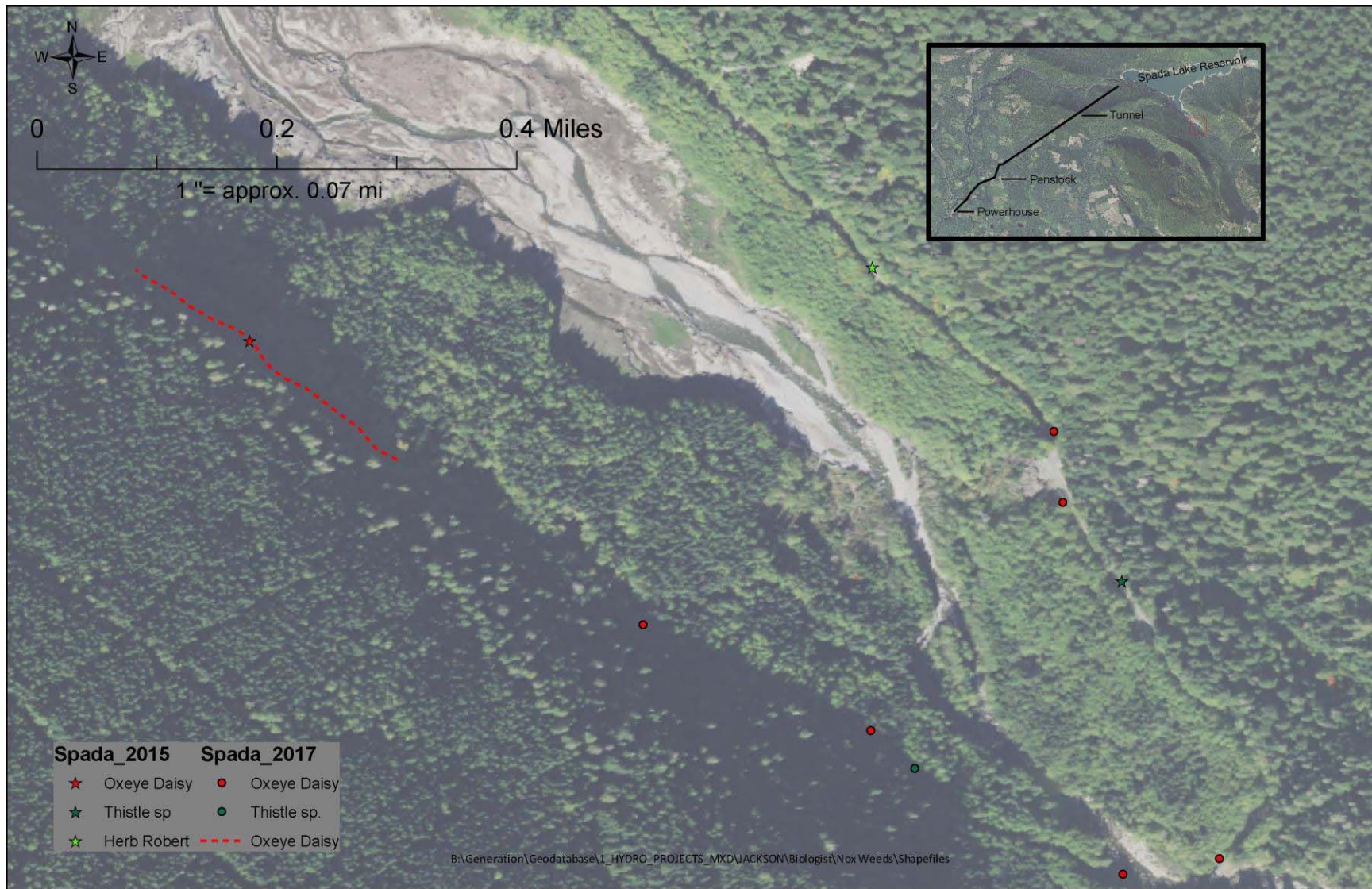


Figure A-7. 2015 and 2017 noxious weed locations along South Shore Road, section 3.

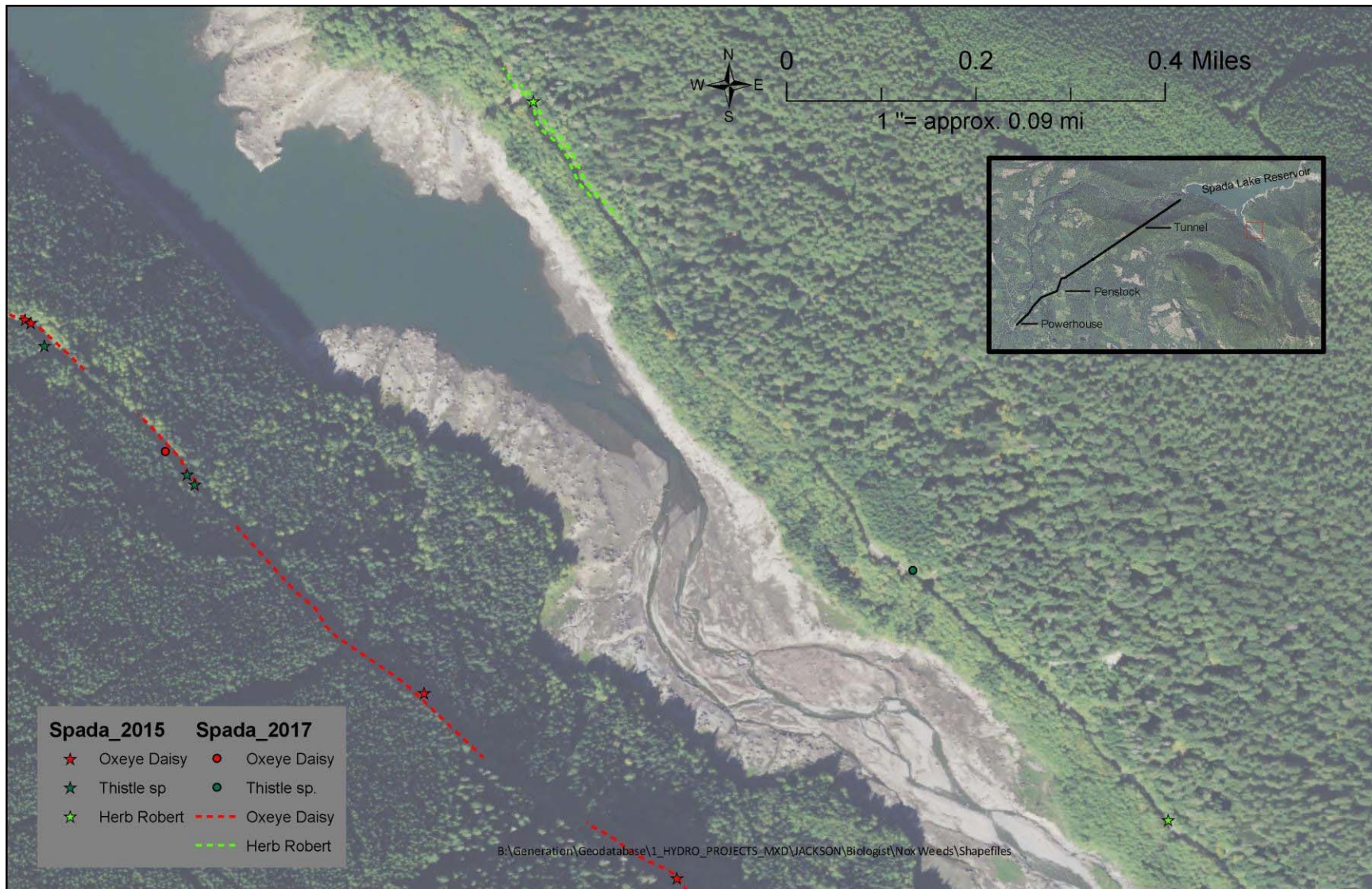


Figure A-8. 2015 and 2017 noxious weed locations along South Shore Road, section 4.

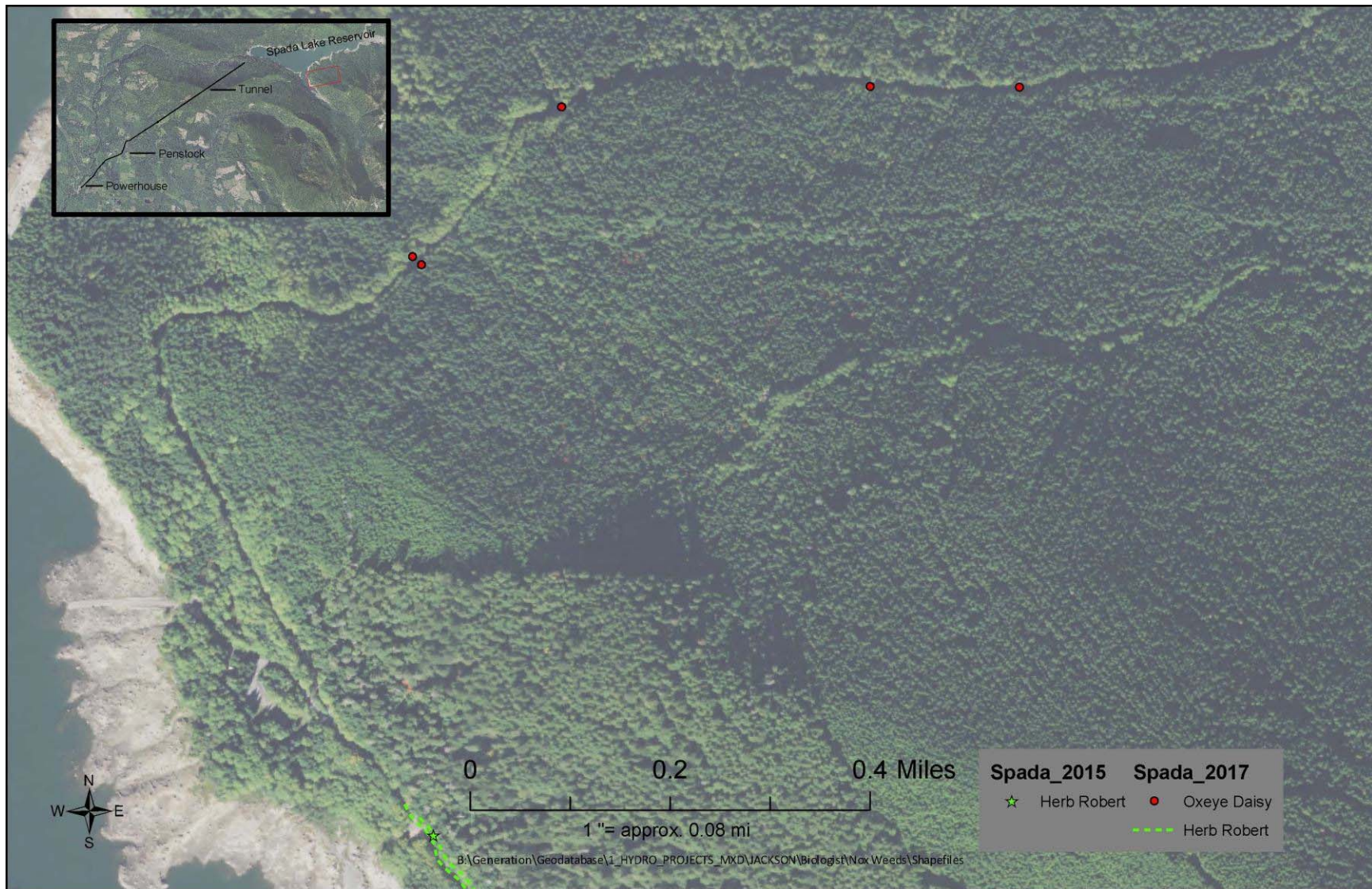


Figure A-9. 2015 and 2017 noxious weed locations along South Shore Road, section 5.

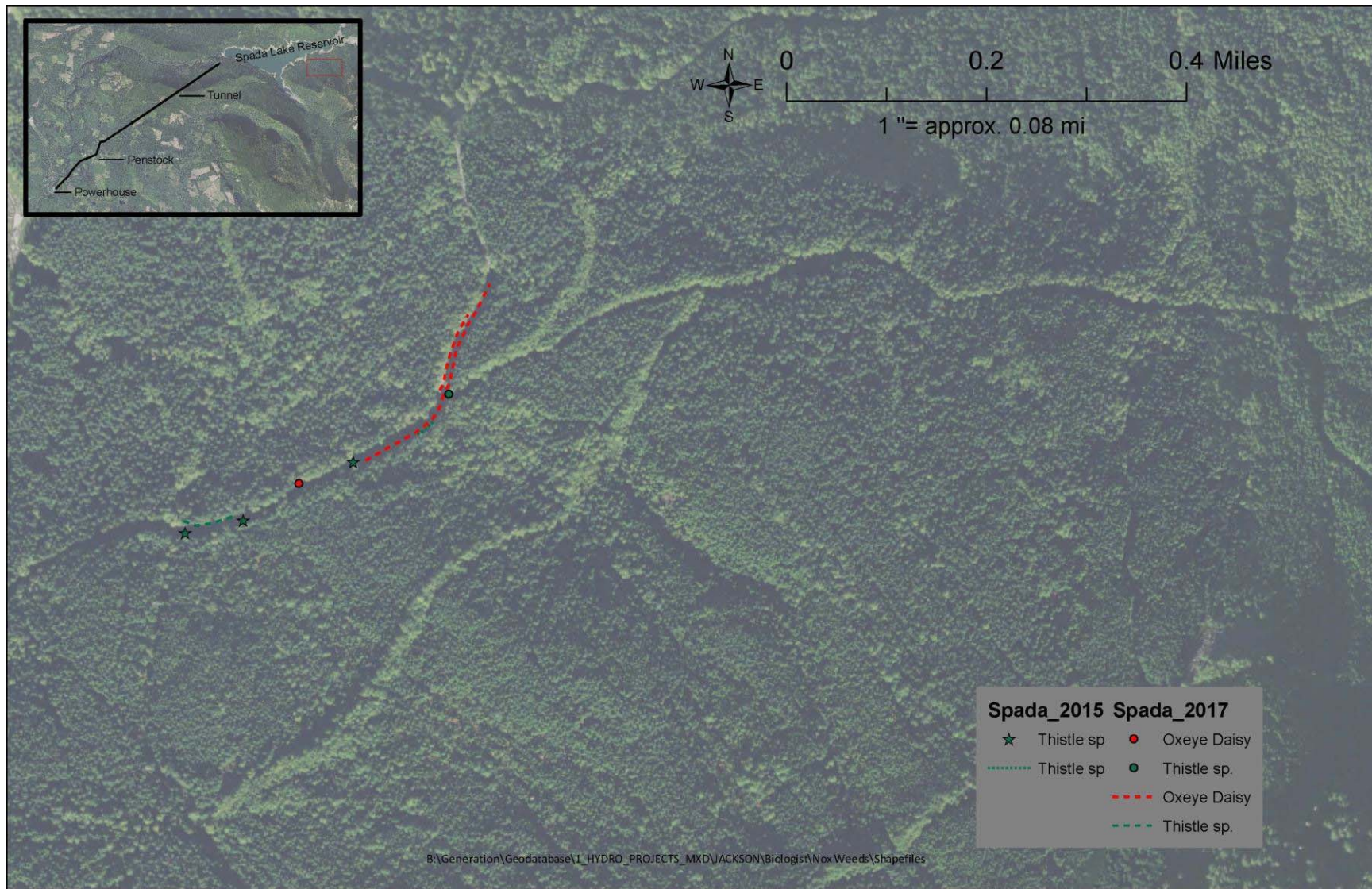


Figure A-10. 2015 and 2017 noxious weed locations along South Shore Road, section 6.

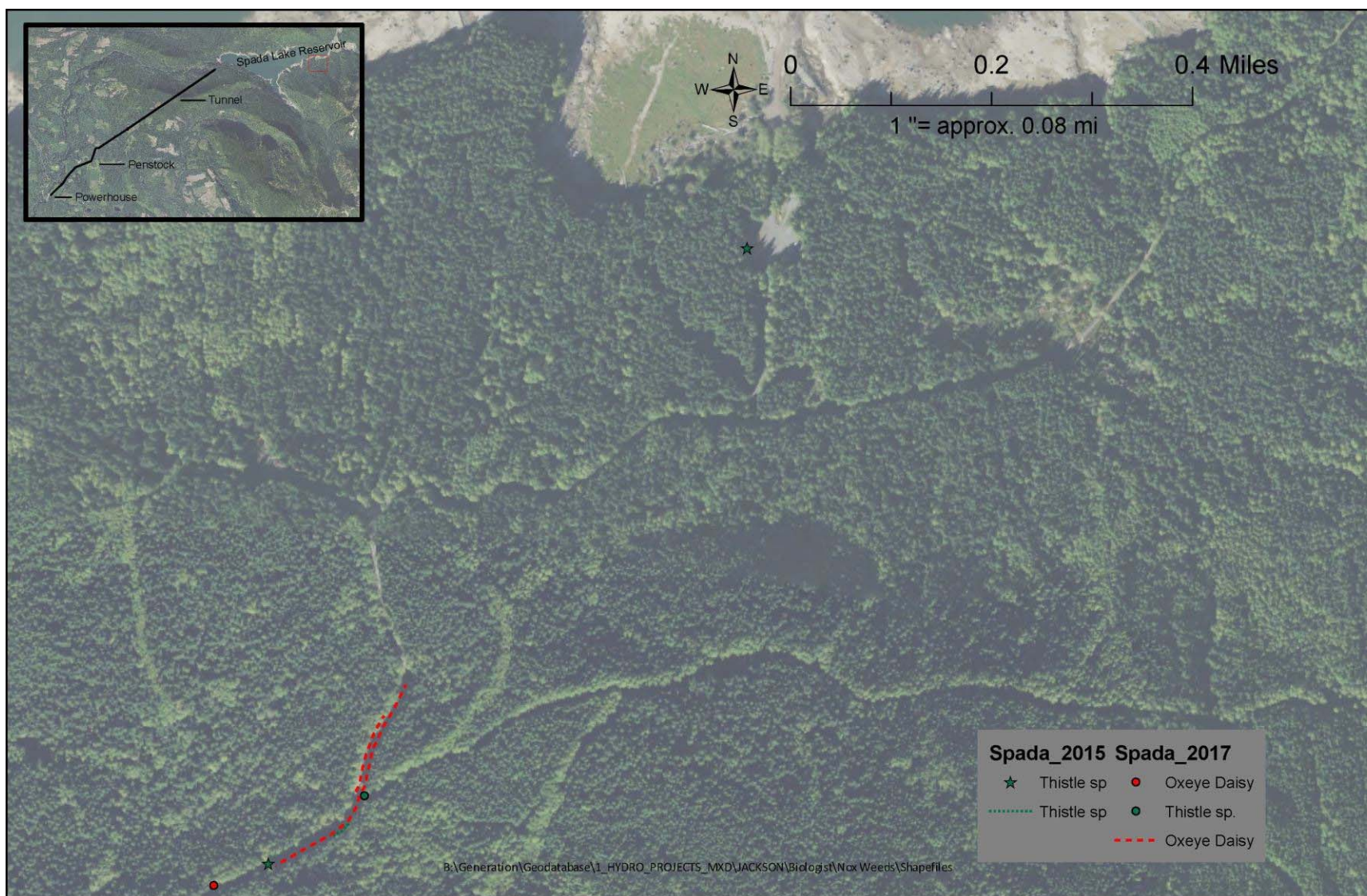


Figure A-11. 2015 and 2017 noxious weed locations along South Shore Road, section 7.

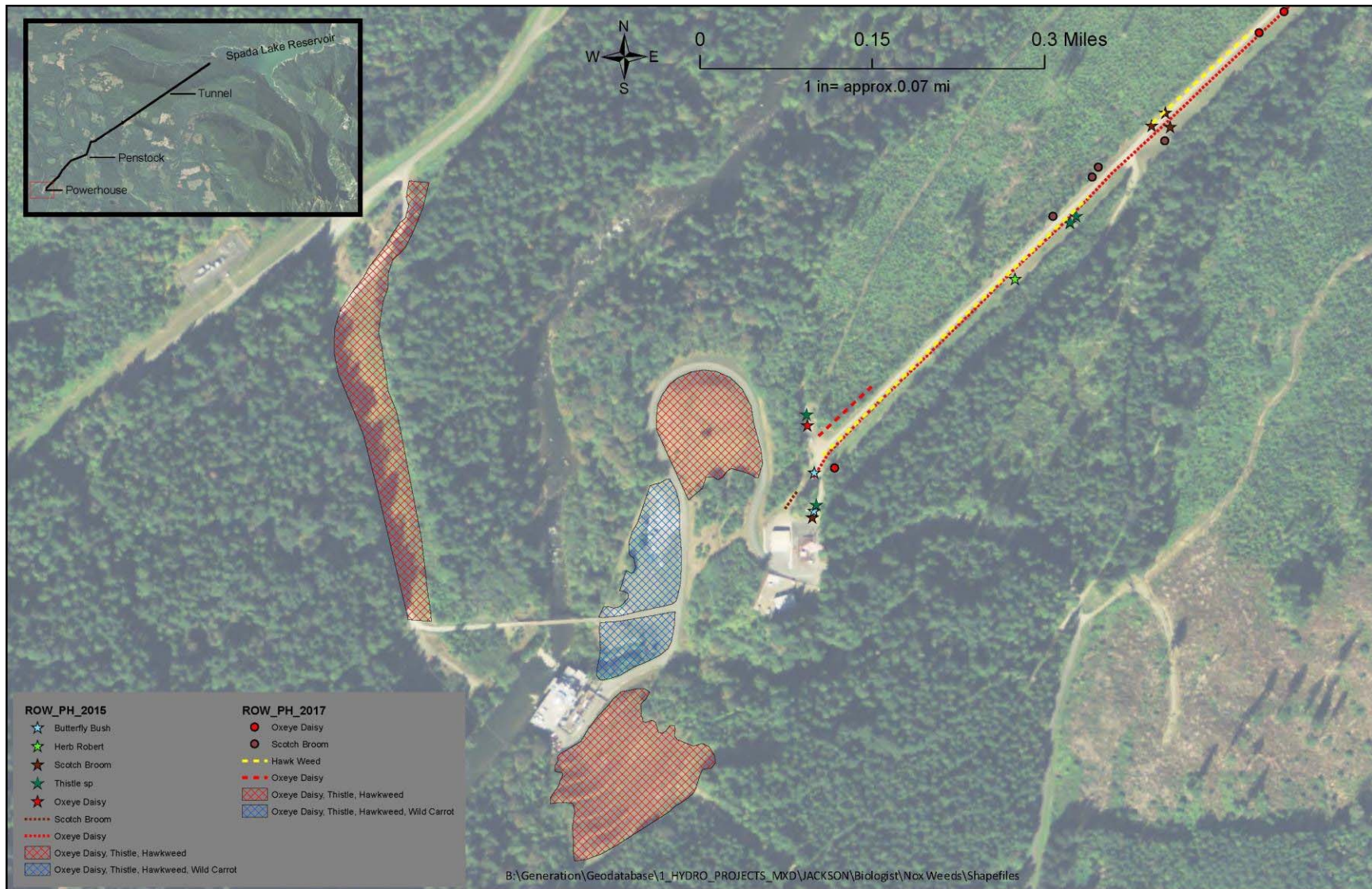


Figure A-12. 2015 and 2017 noxious weed locations at the powerhouse and along pipeline ROW, section 1.



Figure A-13. 2015 and 2017 noxious weed locations along the pipeline ROW, section 2.



Figure A-14. 2015 and 2017 noxious weed locations along the pipeline ROW, section 3.

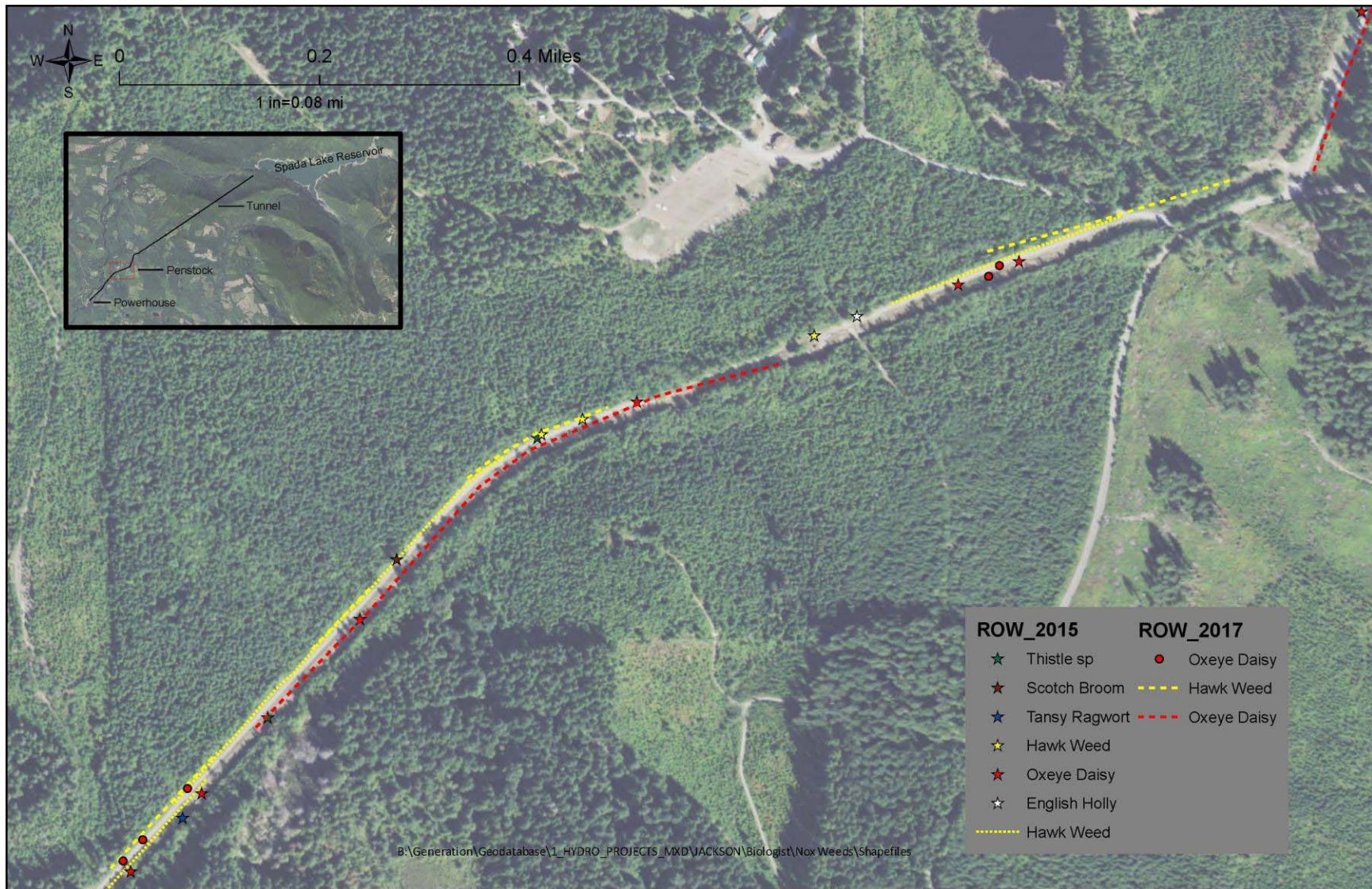


Figure A-15. 2015 and 2017 noxious weed locations along the pipeline ROW, section 4.

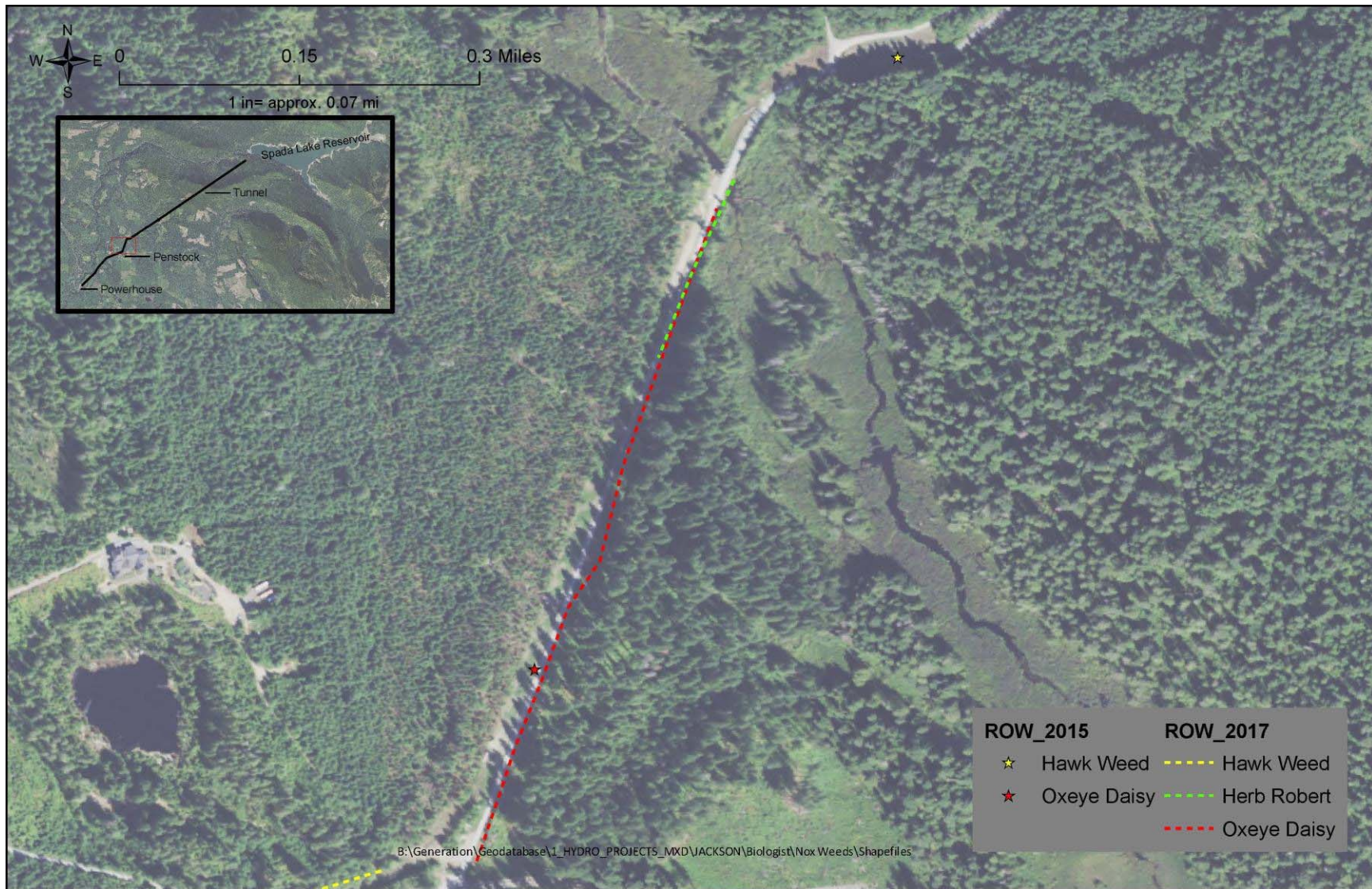


Figure A-16. 2015 and 2017 noxious weed locations along the pipeline ROW, section 5.

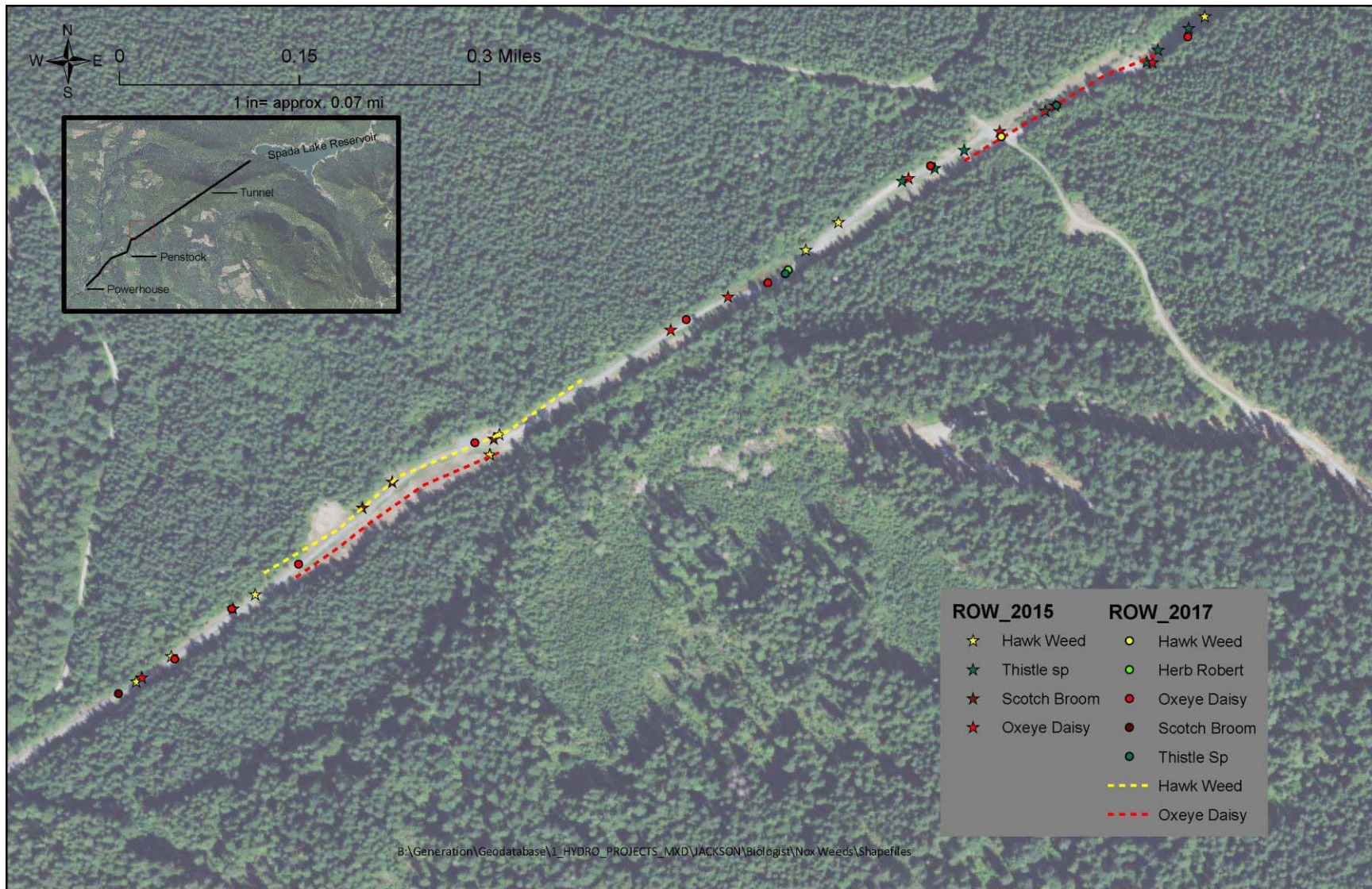


Figure A-17. 2015 and 2017 noxious weed locations along the pipeline ROW, section 6.

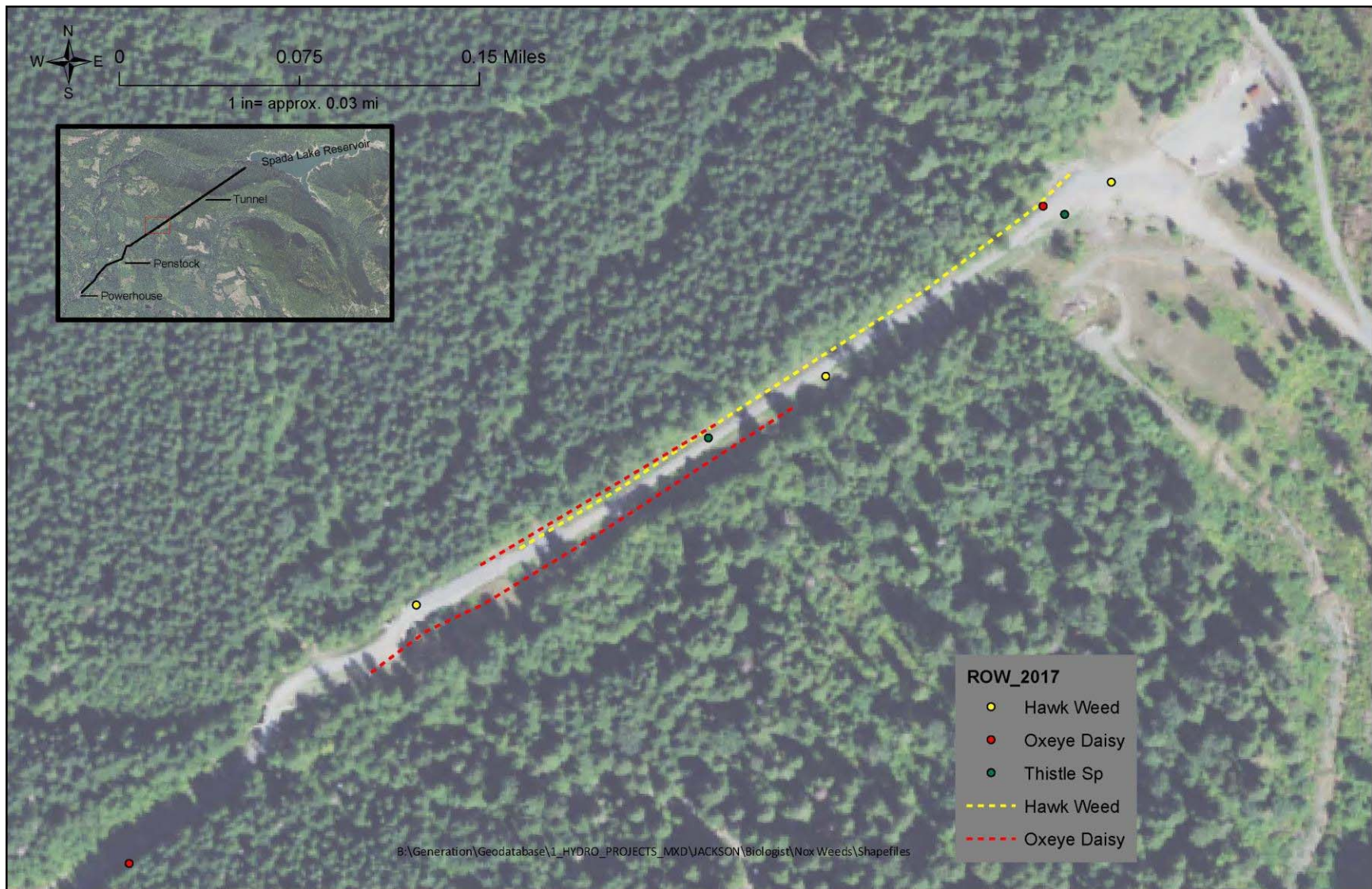


Figure A-18. 2015 and 2017 noxious weed locations along the pipeline ROW, section 7.

Appendix B

Consultation Documentation Regarding Draft Report

Presler, Dawn

From: Sprague, Rylan N -FS <rsprague@fs.fed.us>
Sent: Friday, April 13, 2018 3:13 PM
To: Schutt, Mike
Subject: RE: WDFW Comments to Jackson Hydroproject (FERC No. 2157) - Terrestrial Resources 2017 Annual Report for 30-day review and comment

Hello Mike, I completed reviewing relevant management plans for Botany resources and found the reports to be very thorough and comprehensive to meet the needs of Botanical Resources on the Mt Baker-Snoqualmie National Forest. Retention of old-growth stands and minimizing impacts to wetlands / riparian habitats are some of the key issues in this area, and have been well addressed in the reports. There has been no further documentation of sensitive plant species beyond the lichens already mentioned in the reports, and no further recommendation for mitigations in these areas. Past recommendations, including the composition of seed mix, have been incorporated into the current reports and again are sufficient to meet the needs of the Botany resource.

Thank you for providing such thorough consideration of the resources within your project area, and for the opportunity to provide input. Please feel free to contact me for any future questions, concerns, or information sharing.



Rylan Sprague
South Zone Botanist
Forest Service
Mt. Baker-Snoqualmie National Forest
Skykomish & Snoqualmie Ranger Districts

p: 425-888-8753
rsprague@fs.fed.us

902 SE North Bend Way
North Bend, WA 98045
www.fs.fed.us



Caring for the land and serving people

From: Schutt, Mike [mailto:MSSchutt@snopud.com]
Sent: Tuesday, April 10, 2018 1:21 PM
To: 'Applegate, Brock A (DFW)' <Brock.Applegate@dfw.wa.gov>; Tim Romanski (Tim_Romanski@fws.gov) <Tim_Romanski@fws.gov>; Michael Sevigny (msevigny@tulaliptribes-nsn.gov) <msevigny@tulaliptribes-nsn.gov>; EGTVEDT, LISA (DNR) <LISA.EGTVEDT@dnr.wa.gov>; Ozog, Eric -FS <eozog@fs.fed.us>; Asman, Lindsay <lindsay_asman@fws.gov>; 'Saw, Geraldine' <geraldine.saw@co.snohomish.wa.us>; Sprague, Rylan N -FS <rsprague@fs.fed.us>
Cc: Binkley, Keith <KMBinkley@SNOPUD.com>; DJPRESLER@SNOPUD.COM; McDonnell, Andrew <AWMcDonnell@SNOPUD.com>; Milner, Ruth L (DFW) <Ruth.Milner@dfw.wa.gov>
Subject: RE: WDFW Comments to Jackson Hydroproject (FERC No. 2157) - Terrestrial Resources 2017 Annual Report for 30-day review and comment

Thanks for your comments Brock. I have incorporated your suggested change into the final document, which will be sent to all stake holders on or about April 27th.

Mike Schutt
Sr. Environmental Coordinator – Wildlife
Snohomish County PUD

From: Applegate, Brock A (DFW) [<mailto:Brock.Applegate@dfw.wa.gov>]
Sent: Monday, April 02, 2018 4:04 PM
To: Schutt, Mike (<MSSchutt@snopud.com>); Tim Romanski (Tim_Romanski@fws.gov) <Tim_Romanski@fws.gov>; Michael Seigny (mseigny@tulaliptribes-nsn.gov) <mseigny@tulaliptribes-nsn.gov>; Shauna Hee (shee@fs.fed.us) <shee@fs.fed.us>; EGTVEDT, LISA (DNR) <LISA.EGTVEDT@dnr.wa.gov>; Eric Ozog (eezog@fs.fed.us) <eezog@fs.fed.us>; Asman, Lindsay <lindsay_asman@fws.gov>; 'Saw, Geraldine' <geraldine.saw@co.snohomish.wa.us>
Cc: Binkley, Keith <KMBinkley@SNOPUD.com>; Presler, Dawn <DJPresler@SNOPUD.com>; McDonnell, Andrew <AWMcDonnell@SNOPUD.com>; Milner, Ruth L (DFW) <Ruth.Milner@dfw.wa.gov>
Subject: FW: WDFW Comments to Jackson Hydroproject (FERC No. 2157) - Terrestrial Resources 2017 Annual Report for 30-day review and comment

CAUTION: THIS EMAIL IS FROM AN EXTERNAL SENDER.
Do not click on links or open attachments if the sender is unknown or the email is suspect.

Hi Mike, WDFW has reviewed the Terrestrial Resources 2017 Annual Report. We have one comment.

2.3.3. Waterfowl Nest Boxes - WDFW has made this comment in past annual reports, so we expect that we have a wording mistake. WDFW recommends that you do not remove any native bird nests, waterfowl or not. We recommend that you change "non-waterfowl" to "non-native birds." We only emphasize this wording, because of the possibility of other birds in the nest box like owls, swallows, and chickadees, which we would like to remain in the box. WDFW likes your description of species that Public Utility District No. 1 of Snohomish County (SnoPUD) would remove in Section 2.2.3 Waterfowl Nest Boxes, if SnoPUD would like to use the language used in this section as well.

Thank you for the chance to review, we appreciate your creation of the annual report and the future site visit on the 5th of June.

Sincerely, Brock

From: Schutt, Mike [<mailto:MSSchutt@snopud.com>]
Sent: Friday, March 9, 2018 2:55 PM
To: Tim Romanski (Tim_Romanski@fws.gov) <Tim_Romanski@fws.gov>; Applegate, Brock A (DFW) <Brock.Applegate@dfw.wa.gov>; Michael Seigny (mseigny@tulaliptribes-nsn.gov) <mseigny@tulaliptribes-nsn.gov>; Shauna Hee (shee@fs.fed.us) <shee@fs.fed.us>; EGTVEDT, LISA (DNR) <LISA.EGTVEDT@dnr.wa.gov>; Eric Ozog (eezog@fs.fed.us) <eezog@fs.fed.us>; Lindsay Wright (Lindsay_Wright@fws.gov); 'Saw, Geraldine' <geraldine.saw@co.snohomish.wa.us>
Cc: Binkley, Keith <KMBinkley@SNOPUD.com>; Presler, Dawn <DJPresler@SNOPUD.com>; McDonnell, Andrew <AWMcDonnell@SNOPUD.com>
Subject: JHP (FERC No. 2157) - Terrestrial Resources 2017 Annual Report for 30-day review and comment

Dear Jackson Project Terrestrial Resource Group Members:

Attached for your 30-day review and comment is the draft report for the Jackson Hydro Project's Terrestrial Resource Management Plan (TRMP), Noxious Weed Management Plan (NWMP), and Marbled Murrelet Habitat Protection Plan (MMHPP). The plans can be found on the District's website at:

<https://www.snopud.com/PowerSupply/hydro/jhp/jhplicense.ashx?p=1978>

The attached report summarizes activities accomplished pursuant to the License and associated terrestrial management plans for the Jackson Hydro Project for 2017 and those activities planned for 2018. If you have any comments on the draft report, please email them to me by CoB Friday April 13, 2018. Comments will be reviewed and responded to as appropriate prior to finalizing the report; the report will not be filed with FERC this year.

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

Snohomish County PUD

Generation Services

Office) 425-783-1712

Cell) 425-210-5816

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Appendix C

Response to Comments Regarding Draft Report

No.	Comment	Response
Brock Applegate WDFW via email dated 04/02/2018		
1	<u>2.3.3. Waterfowl Nest Boxes</u> - WDFW has made this comment in past annual reports, so we expect that we have a wording mistake. WDFW recommends that you do not remove any native bird nests, waterfowl or not. We recommend that you change "non-waterfowl" to "non-native birds." We only emphasize this wording, because of the possibility of other birds in the nest box like owls, swallows, and chickadees, which we would like to remain in the box. WDFW likes your description of species that Public Utility District No. 1 of Snohomish County (SnoPUD) would remove in Section 2.2.3 Waterfowl Nest Boxes, if SnoPUD would like to use the language used in this section as well.	Edits were made to sections 2.2.3 and 2.3.3 to reflect that native birds or their nests will not be removed from nest boxes.