Washington Conservation Science Institute
PO Box 494, Cashmere, WA 98815

January 6, 2020

RE: Mission Ridge Expansion Project
Supplement to SEPA Checklist. Aquatics, Wildlife and Botany Resources Report – Updated December 2019

To Whom it May Concern:

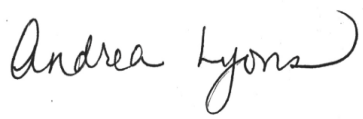
In March 2018, we conducted a Supplemental Assessment of potential impacts to fish, wildlife and plant resources as part of SEPA compliance for the Mission Ridge Expansion Project. Since the time the supplemental report was completed, the proposed project and site plans have been updated with substantial additional detail.

In summary, although refinements to the project proposal and available data provided for more site specific and rigorous analysis, the conclusions were similar to those in the March 2018 report. Some quantitative values related to site design and layout have changed, but the overall conclusions remain the same.

With appropriate mitigation measures as discussed in the Supplemental Assessment, we would expect no significant long-term impacts from construction or operation activities. As such, we would not expect population level effects to any fish, wildlife, or plant species.

Further field surveying and analysis as part of the NEPA Environmental Assessment process has yielded more detailed data regarding northern spotted owl and elk habitat. Those analyses are provided with this submittal for your reference (Attachment 1).

Sincerely,



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ATTACHMENT:1

Attachment 1. Updated analyses relative to northern spotted owl and Rocky Mountain elk in the Mission Ridge Expansion Project Area. The following information builds upon the information provided in the Supplemental Report dated March 2018.

NORTHERN SPOTTED OWL AND CRITICAL HABITAT

Environmental Baseline

The northern spotted owl is federally listed as a Threatened species (USFWS 1990). A recovery plan was completed in 2011 (USFWS 2011) and revised critical habitat was designated in 2012 (USFWS 2012). In 1994, the Northwest Forest Plan amended the Okanogan-Wenatchee Land and Resource Management Plan. One of the primary components of the Northwest Forest Plan was the designation of a system of reserves to provide for the conservation and recovery of wildlife species, such as the northern spotted owl, that are associated with late-successional forests (USDA and USDI 1994). The assessment area for the Mission Ridge Expansion project does not include any designated critical habitat for the northern spotted owl, nor does it include any of the federal reserves that were designated under the Northwest Forest Plan. Outside of reserves or critical habitat, the management of spotted owls focuses on the protection of suitable habitat around spotted owl activity centers.

Forest conditions that provide for nest/roosting functions for northern spotted owls in the eastern Cascades are generally characterized as having a relatively high degree of structural complexity (see Gaines et al. 2015 for a recent summary). These forest conditions generally include a high canopy closure (e.g., >70%) and multiple canopy layers (e.g., multiple age or size classes of trees). These forests are generally composed of grand fir (*Abies grandis*) and Douglas-fir (*Pseudotsuga menziesii*) forested plant associations in dry and mesic forests, and western hemlock (*Tsuga heterophylla*) in moist forest associations (Buchanan et al. 1995, Herter et al. 2002, Irwin et al. 2000, Loehle et al. 2011). The presence of large snags and coarse downed wood is quite variable in spotted owl nesting habitat, but mistletoe appears to be regularly associated with nesting habitat (Buchanan et al. 1995, Loehle et al. 2011, Marshal et al. 2003). Nesting, Roosting, Foraging (NRF) habitat, also referred to as "suitable" habitat, was mapped using high resolution stereo imagery to establish the initial map for the assessment area. This map was evaluated by field surveys and using LiDAR imagery to develop a final "suitable" spotted owl habitat map used in this assessment (Fig. 8).

Forest conditions that provide for spotted owl foraging function is thought to be the most variable of habitats used by territorial spotted owls, and may be most closely tied to forest conditions associated with primary prey species (Irwin et al. 2007, USFWS 2011). The primary prey species for northern spotted owls in the eastern Cascades include northern flying squirrels (*Glaucomys sabrinus*) and bushy-tailed woodrats (*Neotoma cinerea*)(Forsman et al. 2001, 2004; Lehmkuhl et al. 2006a,b). Foraging habitat includes nesting/roosting habitat but also includes forests that are less structurally complex and would not support successful nesting.

Spotted owls begin nesting in early March and extends until juveniles disperse from the nesting area in August and September. Monitoring of spotted owl nests in the eastern Cascades has shown that spotted owl young are generally mobile enough to move away from disturbance by the end of July. Dispersal habitat is used by spotted owls to move between patches of nesting/roosting, and foraging habitats. Dispersal habitat is composed of single or multi-layered forests with moderate sized trees, and canopy closure >40%. There is no dispersal habitat located within the project area and there are 15,430 acres of dispersal habitat within the assessment area.

Surveys for northern spotted owls were conducted throughout the assessment area from the late 1980s through 2006, and again during 2018. A single spotted owl was located within the assessment area in 1996 and a resident single spotted owl within the assessment area in 1998. No spotted owl nesting has been documented within the project area. There is no suitable spotted owl habitat within the project area. There are approximately 1,754 acres of spotted owl habitat within the assessment area and 243 acres occurs on federal lands.

The effects of the Mission Ridge Expansion project will be assessed on spotted owls and their habitats using the following indicators: potential for disturbance during nesting and changes to amount of suitable (nesting, roosting, foraging) and dispersal habitat.

Effect Analysis

Direct and Indirect Effects

There is no suitable spotted owl habitat within the project area. However, there are approximately 6 acres of suitable spotted owl habitat outside the project area but within a ¼ mile of construction activities (these include use of the existing road by construction equipment and construction of the main access road) that may produce noise above ambient levels during the nesting period. Past and recent surveys have not resulted in the location of nesting spotted owls. Additionally, the existing Mission Ridge Road bisects the suitable habitat to the northwest of the Project Area. The fragmented nature of the existing habitat within the assessment area and the location on the extreme eastern edge of the spotted owl range makes it unlikely that a pair or resident territorial spotted owl may be present. The potential for noise from construction activities to disturb spotted owl nesting in very small, however, if a nest is located during surveys, timing restrictions would be implemented.

Interrelated and Interdependent Actions

There is no NRF or dispersal habitat on private lands.

Cumulative Effects

There are 1,754 acres of suitable spotted owl habitat within the assessment area. Approximately 243 acres of this habitat occurs on federal lands, with the remaining habitat on private land (587 acres), WDFW land (435 acres), WDNR land (263 acres) and Chelan County land (226 acres). None of these lands are in a land allocation that would emphasize spotted owl habitat. There are ongoing projects, not associated with the Mission Ridge Ski Expansion, on Chelan County land and WDNR lands for forest thinning and fuel reduction treatments that could reduce spotted owl habitat by 489 acres. This would result in cumulative effects to about 28% of the spotted owl habitat in the assessment area, all on the periphery of the range, and outside critical habitat.

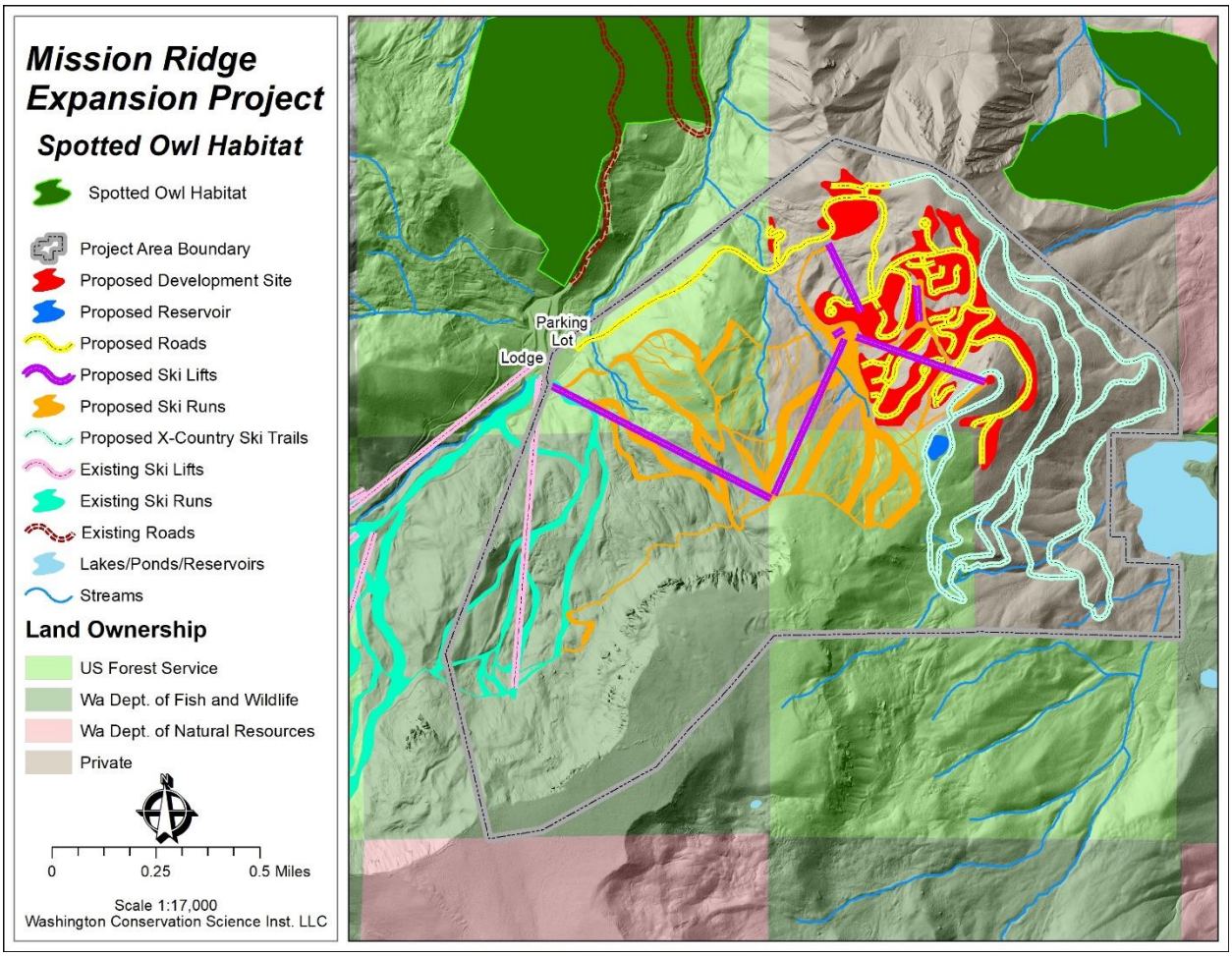

Figure 8. Map showing the suitable (NRF) and dispersal spotted owl habitat within the Mission Ridge Ski Expansion project area.

Determination

Based on the direct, indirect, and cumulative effects, the Mission Ridge Ski Expansion "may affect, but is not likely to adversely affect" spotted owls and their habitat. The reasons for this determination include: The activities associated with the Mission Ridge Ski Expansion on do not occur in an area designated to emphasize spotted owl recovery, on either federal or state lands. The project occurs on the eastern edge of the range of the spotted owl. The project would not degrade or downgrade any suitable spotted owl habitat, dispersal habitat, or potential habitat, either within the project area or in the assessment area. There is a limited potential for disturbance to occur to nesting habitat, however, this potential is low and, surveys and timing restrictions would be implemented.

There is no designated critical habitat for the northern spotted owl in the project area or in the assessment area. Therefore, a determination of "no effect" to spotted owl critical habitat has been made.

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DESCRIPTION OF THE ELK HABITAT QUALITY ASSESSMENT

Introduction

Elk were identified as a Species of Management Interest by the Stemilt Partnership (TPL 2007). Therefore, elk were evaluated as one of several wildlife species in the Stemilt-Squilchuck Landscape Evaluation. The process used to evaluate elk habitat is documented in this appendix.

Some Key Assumptions

- The elk habitat assessment completed as a portion of the Stemilt-Squilchuck Landscape Evaluation provides and ***interim*** assessment of elk habitat quality until ongoing research on elk become available. There are two ongoing efforts of particular importance: the eastern Washington and Oregon elk habitat model that is likely to be adopted by the Forest Service, and the Colockum Elk Study being analyzed by the Washington Department of Fish and Wildlife.
- The elk habitat assessment relies on recent research showing the importance of late-summer/early-fall elk foraging habitat and elk habitat security on elk productivity and survival. This assumption is supported a considerable body of research (Cook et al. 2001, 2004, 2018, McCorquodale 2015) and is the scientific basis for other elk modeling efforts (Cook et al. 2018, Rowland et al. 2018, Wisdom et al. 2018). There are other important elk life history aspects (e.g., calving, winter elk ecology) that are not assessed in the landscape evaluation and would need to be addressed in other research.
- Some aspects of the elk assessment would benefit from additional field evaluation, specifically, the forage quality and quantity components.

Key Components of the Elk Habitat Assessment

There are four interacting components of the elk habitat assessment. These follow closely components described in Rowland et al. (2018) but rely on data available for the Stemilt-Squilchuck subwatersheds from the landscape evaluation. The four components described in more detail below include: nutrition, cover, habitat security, and terrain.

Nutrition

The primary goal of this component of the assessment is to identify the vegetation types that have the greatest potential to meet or exceed the minimum nutritional requirements for an elk cow/calf pair (Cook et al. 2018). Data on forage productivity and elk use from Lehmkuhl et al. (2013) were used to classify vegetation types derived from the landscape evaluation into forage quality categories (Table B-1). These categories are used to assess which vegetation types had the greatest potential to provide the best forage quality and quantity. The vegetation data from the landscape evaluation that were used included cover type, potential vegetation type, structure class, and canopy closure.

Table B-1. The vegetation types derived from the landscape evaluation and the forage quality categories.

Vegetation Type	Forage Category
Herb – Dry Forest PVG	Moderate
Herb – Mesic Forest PVG	High
Herb – Cold Forest PVG	High
Shrub – Dry Forest PVG	Moderate
Shrub – Mesic Forest PVG	High
Shrub – Cold Forest PVG	High
Stand Initiation – Dry Forest PVG	Moderate

Stand Initiation – Mesic Forest PVG	High
Stand Initiation – Cold Forest PVG	High
Stem Exclusion Open Canopy – Dry Forest PVG	Moderate
Stem Exclusion Open Canopy – Mesic Forest PVG	Moderate
Stem Exclusion Open Canopy – Cold Forest PVG	High
Stem Exclusion Closed Canopy – Dry Forest PVG	Low
Stem Exclusion Closed Canopy – Mesic Forest PVG	Low
Stem Exclusion Closed Canopy – Cold Forest PVG	Low
Young Forest Multi-Story >40%CC – Dry Forest PVG	Low
Young Forest Multi-Story >40%CC – Mesic Forest PVG	Low
Young Forest Multi-Story >40%CC – Cold Forest PVG	Low
Young Forest Multi-Story <40%CC – Dry Forest PVG	Low
Young Forest Multi-Story <40%CC – Mesic Forest PVG	Moderate
Young Forest Multi-Story <40%CC – Cold Forest PVG	Moderate
Old Forest Single Story – Dry Forest PVG	Moderate
Old Forest Single Story – Mesic Forest PVG	Moderate
Old Forest Multi Story – Dry Forest PVG	Low
Old Forest Multi Story – Mesic Forest PVG	Low
Old Forest Multi Story – Cold Forest PVG	Moderate
Hardwood	Moderate
Dry Shrub - nonforest	Moderate
Dry Grassland – non forest	Moderate
Agriculture/Cropland	Zero
Non-vegetated/Rock/Water	Zero

Distance-to-Cover

Traditional views of the importance of cover to large ungulates, such as elk, have changed over time as a result of intensive research (Cook et al. 2005). Previously, cover was emphasized as an important component of habitat for elk with little attention paid to forage quality and quantity. Cover was traditionally thought to effect elk productivity and survival by mediating the effects of weather, creating warmer areas with less snow cover in the winter, and cooler, shaded areas in the summer. However, a considerable body of research has cast doubt on the relationship between cover and elk productivity and survival (see Cook et al. 2005 for a summary). Cover is still often shown to be an important variable in models of elk habitat but is usually expressed as a distance-to-cover measure (Rowland et al. 2018). The distance-to-cover metric better expresses the role cover plays in providing area for elk to hide in an seek security in close proximity to non-cover foraging areas. We defined cover as areas with medium to large trees with at least 70% canopy cover and used three distance bands from cover in our habitat quality assessment: >200 meters from cover, 101-200 meters from cover, and <100 meters from cover.

Habitat Security

Habitat security is defined as areas that have a relatively low level of human activities (Hillis et al. 1991). Secure habitats provide places where elk can escape harassment from humans, thus reducing their energy expenditures and increasing their survival. Several studies have shown that elk use areas near human activities less than areas farther from human activities (Gaines et al. 2003, Montgomery et al. 2012, Proffitt et al. 2013, McCorquodale 2013, Ranglack et al. 2017, Thurfjell et al. 2017). We used data provided by the WDFW (W. Moore, pers. comm.) to identify secure and not secure areas. Roads and their status (open vs closed) were attributed in our GIS and then distance buffers (Gaines et al. 2003) were applied to open roads. The size of the buffer along each side of a road was constrained by the adjacent topography so that buffers did not extend over ridges, causing an under representation of secure habitats. The entire planning area was classified as either secure if the area was located outside a buffer or non-secure if located within a buffer.

Terrain Steepness

Elk tend to use gentle terrain more that steep terrain (Rowland et al. 2018). We used digital terrain data to classify the planning area into gentle (<30 degrees), moderate (30-60 degrees), and steep (>60 degrees) slope steepness classes.

Habitat Quality Index

The variables described above were used to score each 30 x 30 m pixel in the planning area from 0-10 to identify areas of low to high habitat quality. The ranking of each of the variables is shown in Table A-2 with areas of the highest potential nutritional value, in close proximity to cover, in secure habitats, and on gentle terrain having the highest habitat quality (Index = 11). Conversely, areas with zero nutrition values, >200 meters from cover, in non-secure areas, and on steep slopes having the lowest habitat quality (Index = 0).

Table B-2. The variables and the variable weighting used to index elk habitat quality.

Variable	Weighting
Nutrition Classes	
Zero	0
Low	1
Moderate	2
High	4
Distance-to-Cover	
>200 m from cover	0
101-200 m from cover	1
<100 m from cover	2
Habitat Security	
Not-Secure	0
Secure	2
Terrain Steepness	
Steep	0
Moderate	1
Gentle	2

Results

The application of the elk habitat quality index showed that 19,370 acres (50%) of the assessment area is in a low habitat quality condition, 17,030 acres (44%) in a moderate habitat quality condition, and 2,575 acres (6%) in a high habitat quality condition (Fig. B-1). Most of the high-quality habitat is currently located in the Stemilt subwatershed portion of the assessment area. The habitat quality could be enhanced by reducing the impacts of roads to create additional security habitat and by creating more openings in mesic and moist forest types to create better forage conditions.

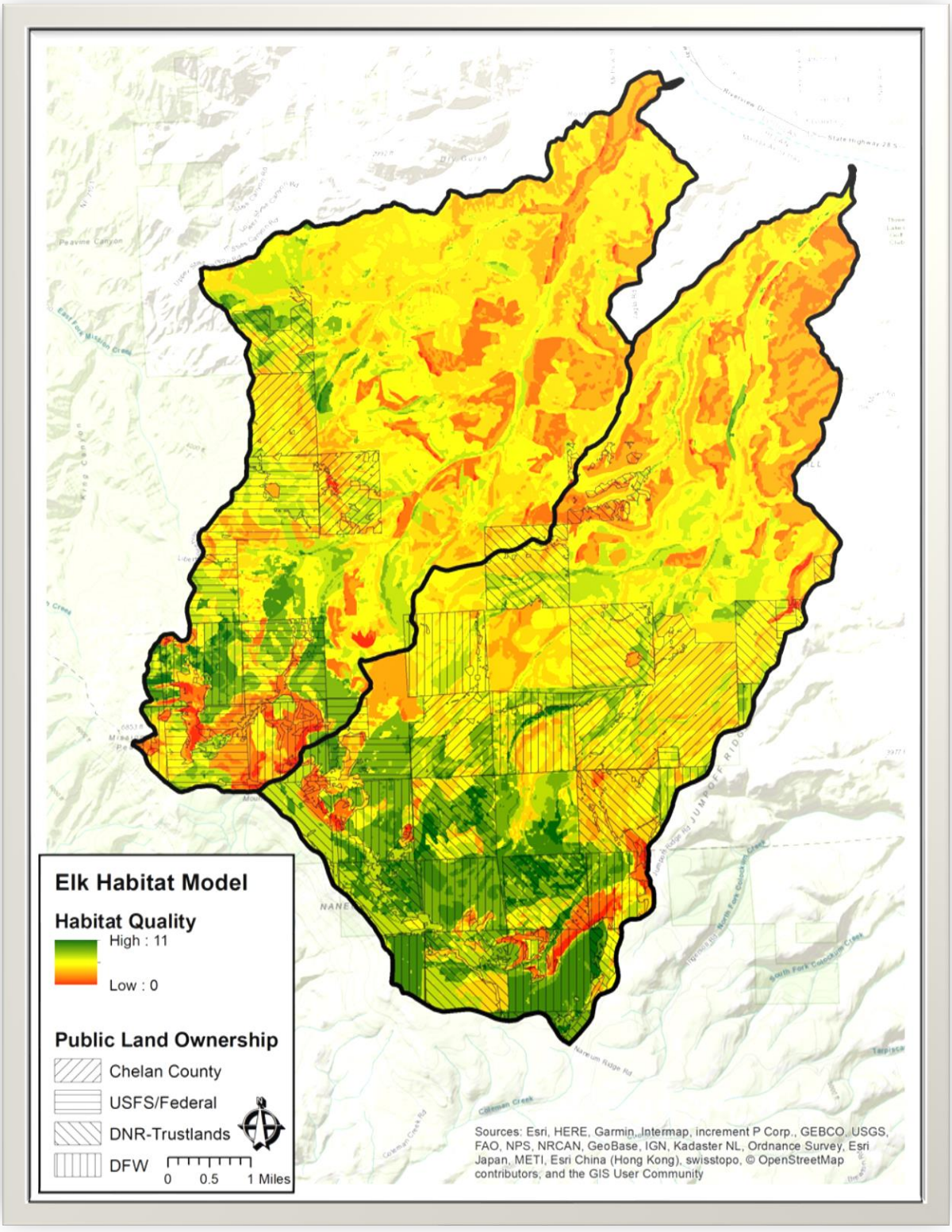

Fig. B-1. Elk habitat quality index score for the Stemilt-Squilchuck landscape evaluation area.

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Mission Ridge Expansion Project

Supplement to SEPA Checklist. Aquatics, Wildlife and Botany Resources Report

Final Report – March 2018

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Table of Contents:

Tables

Figures

EXECUTIVE SUMMARY

The Supplemental Resources Report provides a synthesis of information and data collected within the proposed Mission Ridge expansion area with regard to fish, wildlife and plant species and habitat. It is intended to serve as a Supplemental Assessment to the State Environmental Policy Act (SEPA) Checklist developed for the proposed Project. The purpose of the Supplemental Assessment is to evaluate proposed construction and operation of the Mission Ridge Expansion with respect to species and critical habitats that are protected under the Endangered Species Act (ESA) of 1973 (as amended) or Washington state law, or receive special consideration under federal and state regulations, such as Priority Habitat Species. The Supplemental Assessment is intended to provide state and county regulatory agencies with information to assess potential impacts to fish, wildlife and plant resources to comply with SEPA. Where necessary, the Supplemental Resources Report also includes conditions designed to mitigate impacts to a level of non-significance. Accordingly, these measures would be incorporated into the County's SEPA determination, as well as the permits and approvals necessary to implement the Project as enforceable conditions of development. Our assessment of potential impacts to aquatics, wildlife and plant resources and incorporation of mitigation measures into the project design adhered to all guidance found in Chelan County Code Chapter 11.78 - FISH AND WILDLIFE HABITAT CONSERVATION AREAS OVERLAY DISTRICT (FWOD) and Chapter 11.80 WETLAND AREAS OVERLAY DISTRICT (WOD).

The proposed project area and surrounding lands provide habitat for a wide variety of native wildlife species common to mixed-conifer, high elevation forests. Two non-fishbearing, perennial streams and associated riparian habitat are located within the immediate project area. No aquatic species listed as endangered or threatened are known to occur in the project area or immediate vicinity. Terrestrial species listed as endangered or threatened have some potential to occur in the project area or immediate vicinity, but none were observed during field visits. Two small Class III wetlands were identified and delineated within the project area. The proposed project includes construction of roads, multiple-use buildings, ski runs, ski lifts and associated infrastructure. Implementation of the proposed expansion project may impact some aquatic and terrestrial resources through disturbance and habitat removal and may slightly reduce suitability for some native wildlife species. These impacts may be offset by implementation of ski runs and open space within the site design. No stream crossings or ground disturbance will occur in fish bearing streams. Any work below the ordinary high water mark will be conducted during in-water work windows, and all erosion and pollution control BMPs will be employed. Effects will be further mitigated by established riparian buffers. With appropriate mitigation measures we would expect no significant long-term impacts from construction or operation activities. As such, we would not expect population level effects.

1. Introduction

This Aquatics, Wildlife and Botany Resources Report (Resources Report) provides a synthesis of information and data collected relative to the proposed Mission Ridge Expansion Project (the proposed Project) with regard to fish, wildlife and plant species and habitat. It is intended to serve as a Supplement to the SEPA Checklist developed for the proposed Project. The purpose of this assessment is to discuss potential effects of the proposed project on species that are protected under the Endangered Species Act (ESA) of 1973 (as amended) or Washington state law, or receive special consideration under federal and state regulations. This assessment is intended to provide state and county regulatory agencies with information to assess potential impacts to fish, wildlife and plant resources in order to comply with State Environmental Policy Act (SEPA). This assessment is not intended to fulfill section 7 (c) of the ESA nor meet the requirements of Forest Service Manual direction (FSM 2670) including compliance with Code of Federal Regulations (CFR) 50-402.12. The Okanogan-Wenatchee National Forest (OWNF) will conduct a comprehensive environmental assessment to meet the standards set forth in the National Environmental Policy Act (NEPA), 40 CFR §1500-1508, Forest Service policy (identified in FSH 1909.15) for actions proposed on Federal Lands as well as indirect and cumulative impacts of actions on private lands associated with this project.

2. Project Summary

A complete project description can be found in the Application narrative and details are not repeated here. To summarize, Mission Ridge Resort Inc. is proposing to expand the Mission Ridge Ski Area. Two major components of the expansion include the following: 1) Expand operations in Okanogan-Wenatchee National Forest Sections 24 and 25 and the privately held Sections 19 and 30; and 2) Expand the Special Use Permit Area and permitted operations into the northeast corner of Okanogan-Wenatchee National Forest Section 30. The full proposed project occurs on land under multiple ownerships, including: private, US Forest Service – Okanogan-Wenatchee National Forest (Wenatchee River Ranger District) and Washington Department of Fish and Wildlife. Figure 1 and Figure 2 provide an overview of the location of the proposed Project.

The information presented in this Resources Report is an approximation of the proposed Project activities. Any substantial changes to the following proposed activities will result in additional review. The activities considered here that may potentially impact aquatics, wildlife and/or botany resources include:

- Approximately 4.8 miles of new road.
- Stream crossings.
- Vegetation removal and ground disturbance for construction of building lots, buildings, roads, trails. The private land parcels encompass 773 acres with proposed construction (resulting in ground disturbance) occurring on approximately 160 of those acres. Construction is proposed to occur on approximately 72 acres of public lands. The total area of ground disturbance is approximately 232 acres.
- Operational activity during construction and final operation

3. Methods and Approach

The preparation of this Resources Report included conducting two points of investigation to assess the existing environmental conditions of and the potential impacts of the proposed project to aquatic and terrestrial species and habitats. The two points of investigation included the following: 1) a review of existing information; and 2) field site visits of the potential project footprint of the Mission Ridge Proposed Expansion. Available information was reviewed to determine presence of wetlands, streams, and potential fish, wildlife and plant habitat. A separate Wetland Report summarizes the existing conditions of wetlands and wetland species found in the Project Area (Appendix A).

3.1 Identification of Assessment Area

For the purposes of this assessment we have defined a Project Area, which encompasses all areas of proposed construction and ground disturbance or habitat modification and includes a 100 foot buffer (for analysis purposes).The Project Area includes US Forest Service land within Section 24 (T21NR19E) and Section 30 (T21NR20E), Washington Department of Fish and Wildlife land (Administered by US Forest Service) within Section 25 (T21NR19E), and Private Land within Sections 19 and 30 (T21NR20E). The Project Area encompasses approximately 1,058 acres and will be used to assess direct and indirect effects. The Project Site defines those portions of the Project Area that will likely experience actual ground disturbance or vegetation modification and encompasses approximately 232 acres (Figure 1). The Project Site will be used to assess direct effects of ground or vegetation disturbance.

The overall Assessment Area is the Squilchuck and Stemilt Subwatersheds, within WRIA 40 (Figure 2). The Assessment Area is the area to be affected directly or indirectly by the private party action and not merely the immediate area involved in the action. The Assessment Area provides a basis for describing existing conditions and potential impacts at a scale and within a context appropriate for aquatic species and mobile species such as spotted owls and wide-ranging carnivores. The Squilchuck and Stemilt Subwatersheds encompass approximately 28 square miles (mi^2) and 33 mi^2, respectively.

3.2 Review of Existing Information

We consulted a combination of available species lists and spatial databases to identify species and habitats of concern that are known to occur or have the potential to occur in the study area vicinity. A description is provided for each resource in the following sections. We narrowed down available data to a list of those species and habitats that occur or potentially occur in the vicinity of the proposed Project. Species that are currently on or under consideration for the ESA or state endangered, threatened, or species of concern lists are identified. Additional information on those fish, wildlife and plant species and typical habitat they use is provided below.

3.3 Information and Coordination

The proposed Project is located on multiple ownerships and jurisdictions. As such we have begun coordination with each of the following agencies and entities:

- Washington Department of Fish and Wildlife - biologists were contacted on 18 August 2017 for information about species and habitat concerns relative to the Project Area. Obtained data relative to sensitive species.
- Chelan County Natural Resources - Stream Typing
- Washington State Department of Ecology – input on wetland and riparian habitats.
- Washington State Department of Natural Resources – input on riparian habitat, spotted owl habitat, vegetation management.
- US Forest Service – The Okanogan-Wenatchee National Forest will be conducting a National Environmental Policy Act (NEPA) analysis for actions on federal lands. We are coordinating with the Wenatchee River Ranger District on this process.
- US Fish and Wildlife Service (Wenatchee Field Office) - potential impacts to listed species.
- Confederated Tribes of the Colville Nation – cultural and environmental concerns
- Confederated Tribes and Bands of the Yakama Nation - cultural and environmental concerns

4. Affected Environment

4.1 Location and General Habitat Characteristics

The proposed Project is adjacent to the existing Mission Ridge Ski Area and adjoins the northeast border of the existing ski area boundary. Part of the proposed Project is located on land administered by the Wenatchee River Ranger District, Okanogan-Wenatchee National Forest, while the private parcel is under the jurisdiction of Chelan County, Washington. The proposed Project encompasses: Sections 19, and 30, Township 21N, Range 20E, W.M. and Sections 24, and 25, Township 21N, Range 19E, W.M.

Habitat and topography in the Project Area are similar to the existing ski area with a mix of alpine meadows, primarily subalpine forest (with some small areas of Douglas-fir and ponderosa pine), basalt rock outcrops and talus. The proposed Project is located within the East Cascades Slopes and Foothills Ecoregion. Elevation of the proposed Project Area ranges from 3,100 feet at the junction with the existing Mission Ridge Base Area to 6,700 feet along the highest ridges in the greater Assessment Area. Aspect varies across the Project Area. The terrain is steep, with slopes varying from 0 to 178 percent, and the majority of the slopes less than 60 percent.

Part of the proposed Project is located within the ponderosa pine (*Pinus ponderosa)* cover type (historical database) within the East Cascades Ecoregion (Washington Natural Heritage database, version July 2017). The Eastern Cascades Ecoregion is described as (EPA, 2017):

> "The Eastern Cascade Slopes and Foothills ecoregion is in the rainshadow of the Cascade Range. It has a more continental climate than ecoregions to the west, with greater temperature extremes and less precipitation. Open forests of ponderosa pine and some lodgepole pine distinguish this region from the higher ecoregions to the west where hemlock and fir forests are common, and the lower, drier ecoregions to the east where shrubs and grasslands are predominant. The vegetation is adapted to the prevailing dry, continental climate and frequent fire. Historically, creeping ground fires consumed accumulated fuel and devastating crown fires were less common in dry forests. Volcanic cones and buttes are common in much of the region. A few areas of cropland and pastureland occur in the lake basins or larger river valleys."

Ecological Systems provide a mid-scale ecological classification for uplands and wetlands. Ecological Systems represent recurring groups of terrestrial plant communities that are found in similar climatic and physical environments and are influenced by similar dynamic ecological processes, such as fire or flooding, share similar substrates, and/or environmental gradients (Rocchio and Crawford, 2015).

Ecological System Classes within the Project Area include: Northern Rocky Mountain Dry-Mesic Montane Mixed Conifer Forest and Rocky Mountain Subalpine Dry-Mesic Spruce-Fir Forest and Woodland, with a very small area of Rocky Mountain Subalpine Mesic-Wet Spruce-Fir Forest and Woodland and Northern Rocky Mountain Ponderosa Pine Woodland and Savanna.

Vegetation is primarily closed-canopy single-story stands dominated by Douglas-fir (*Pseudotsuga menziesii*) with a mixed conifer component consisting of grand fir (*Abies grandis*), subalpine fir (*Abies lasiocarpa*), ponderosa pine (*Pinus ponderosa*), lodgepole pine (*Pinus contorta*) and larch (*Larix occidentalis*). The area is a mix of very dense stands with little understory vegetation to more open canopy. Understory vegetation is primarily comprised of upland type vegetation such as pine grass (*Calamagrostis rubescens*), serviceberry (*Amelanchier alnifolia*), twinflower (*Linnaea borealis*), kinnikinnick (*Arctostaphylos uva-ursi*), pipsissewa (*Chimaphila umbellata*), oceanspray (*Holodiscus discolor*), and vine maple (*Acer circinatum*). Bitterbrush (*Purshia tridentata*) and yarrow (*Achillea millefolium*) can be found in the drier parts of the Project Area.

Riparian areas near streams consist of vegetation types such as elderberry (*Sambucus* spp.), bead lily (*Clintonia borealis*), sedges (*Carex* spp.) and mosses. A small, scattered aspen (*Populus tremuloides*) stand is located on the private parcel. A large (greater than 20 inches diameter at breast height (DBH)) tree and snag component is lacking. Much of the Project Area is even-aged resulting from harvest activities in the mid-20th century. More than 250 acres are open, rolling, talus fields with little vegetation.

The proposed Project Area is generally dry with numerous ephemeral hydrologic drainage paths that terminate in perennial creeks on the west side of Section 19. Two small emergent wetlands were identified on the northeast corner of the Project Area (see attached Wetland report, Appendix A). The majority of the soil types within the Project Area consist of Stemilt silt loam series, rubble and rock outcrops, loneridge very stony loam series and naxing very stony loam series.

Lands under US Forest Service jurisdiction are managed to provide developed recreation (RE-1) opportunities per the Wenatchee Land Management Plan (USFS, 1990) and as Administratively Withdrawn or within Riparian Reserves per the Northwest Forest Plan (USDA and USDI, 1994). The proposed Project Area adjoins lands managed by Washington State Department of Natural Resources to the east. The Project Area is located within water resource inventory area (WRIA) 40 and the Squilchuck and Stemilt Sub-watersheds (HUC12).

5. Species and Habitat Assessments

In the following sections we provide resource specific information to describe the existing habitat condition and species occurring or potentially occurring in the vicinity of the proposed Project and evaluate potential impacts to species of special status. A summary of proposed conservation measures, designed to avoid, minimize or mitigate impacts with the intent to prevent any adverse impacts, is also provided for each resource.

Based on our assessments, the Mission Ridge Proposed Expansion Project will have no adverse impacts to special status aquatic, wildlife or plant populations or habitats. The project is consistent with all local, state and federal regulatory guidance. The project is designed to limit impacts and conserve resources when possible and incorporates mitigation and conservation measures to achieve these objectives. In all cases if use by listed species is discovered at any time during the project, conservation measures would be implemented to reduce potential effects to discountable levels.

Figure 1. Landownership and Land Management Allocation relative to Project Site and Project Area within the Mission Ridge Proposed Expansion Project

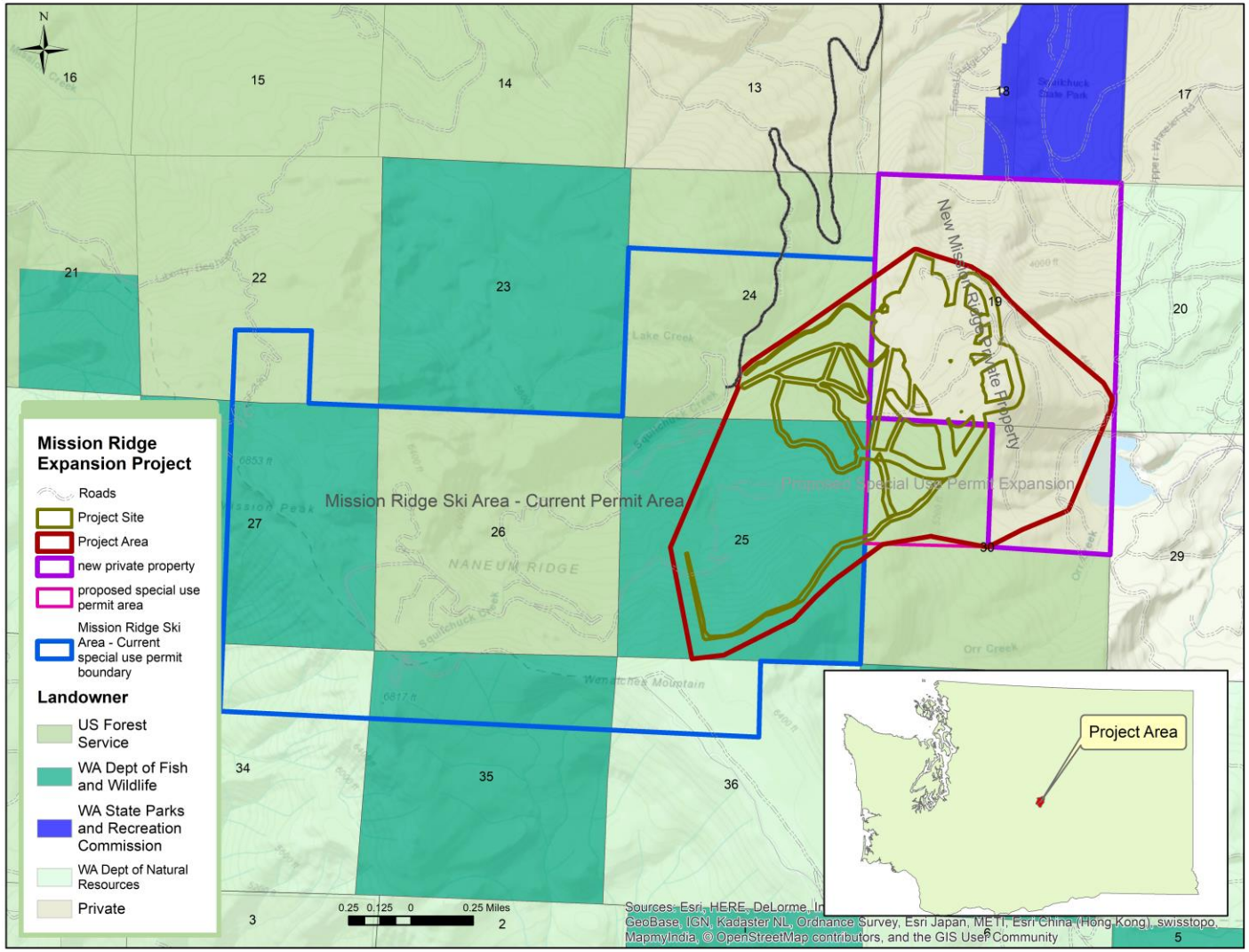
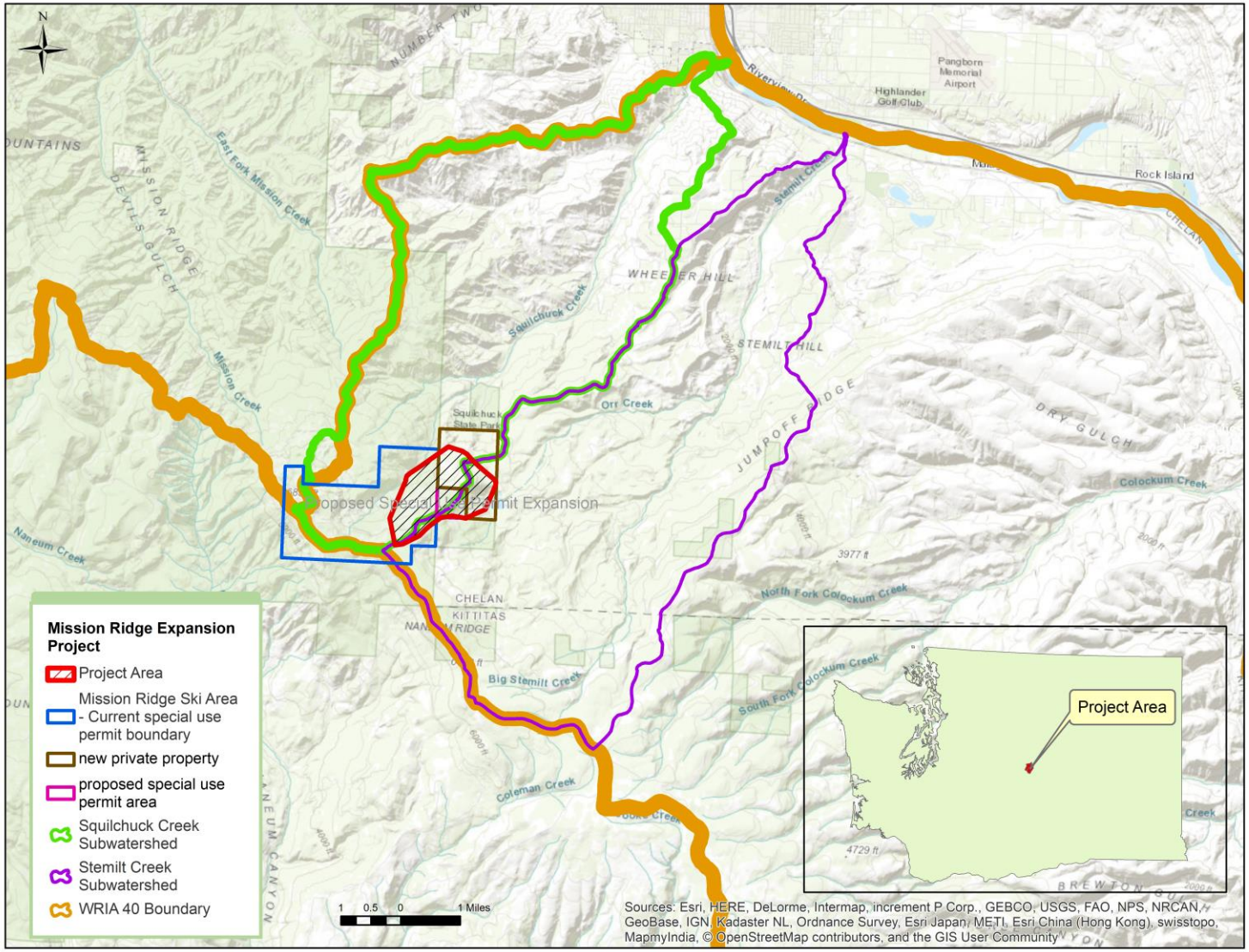


Figure 2. Mission Ridge Proposed Expansion Project Area and Assessment Area in WRIA 40



6. Fisheries and Aquatic Resources

This Resources Report provides a summary of aquatic resources, including federal and state listed fish species and associated habitats, that may be found in the Squilchuck Creek Watershed, the Mission Ridge Proposed Expansion Project Area and larger Assessment Area (Figure 1 and Figure 2).

Review of Existing Information

The preparation of this Resources Report included review of several existing documents, sources of habitat and environmental information and review of various agencies' GIS data and maps. A summary of the review of existing information is provided throughout this Resources Report.

The following provides an example of the types of sources that were included in the review:

- Chelan County Natural Resource Department. 2017. Stream Typing for Parcel Number 212019000000 Report.
- Forest Practices Board. 2002. Forest Practices Board Manual Section 13 Determining Fish Use for the Purpose of Typing Water.
- National Oceanic and Atmospheric Administration Fisheries (NOAA Fisheries). 2017. Species Under the Endangered Species Act (ESA). NMFS Office of Protected Resources. Available at: http://www.nmfs.noaa.gov/pr/species/esa/listed.htm#fish.
- National Oceanic and Atmospheric Administration Fisheries (NOAA Fisheries). 2017. Endangered Species Act Critical Habitat. West Coast Region. Available at: http://www.westcoast.fisheries.noaa.gov/maps_data/endangered_species_act_critical_habitat.html.
- United States Fish and Wildlife Service (USFWS). 2014b. Final Critical Habitat for Bull Trout Upper Columbia River Basins Unit: 10. Available at: https://www.fws.gov/pacific/bulltrout/finalcrithab/index.cfm?unit=10.
- United States Fish and Wildlife Service (USFWS). 2017. National Wetland Inventory (NWI) Wetlands Map. Available at: http://www.fws.gov/wetlands/Data/Mapper.html.
- United States Fish and Wildlife Service (USFWS). 2017. Species Information: Threatened and Endangered Animals and Plants. Available: http://www.fws.gov/oregonfwo/Species/default.asp.
- Upper Columbia Regional Technical Team (RTT). 2003. A Biological Strategy to Protect and Restore Salmonid Habitat in the Upper Columbia Region. Discussion Draft.
- Washington Conservation Commission (WCC). 2001. Salmon, Steelhead and Bull Trout Habitat Limiting Factors Report for the Wenatchee Subbasin (Water Resource Inventory Area 45) and Portions of WRIA 40 within Chelan County (Squilchuck, Stemilt and Colockum drainages)., Olympia, WA.
- Washington Department of Fish and Wildlife (WDFW). 2017. SalmonScape Mapping System. Available at: http://apps.wdfw.wa.gov/salmonscape/.
- Washington Department of Fish and Wildlife (WDFW). 2006. WRIA 40 Diversion Screening and Fish Passage Inventory Report.
- Washington Department of Fish and Wildlife (WDFW). 2017. Wildlife Priority Habitats and Species (PHS), GIS data set. Available at: http://wdfw.wa.gov/mapping/phs/.
- Washington State Department of Natural Resources (WDNR). 2017. Washington Natural Heritage Program GIS data set. Available at: http://www1.dnr.wa.gov/nhp/refdesk/gis/wnhpgis.html.

Site Visits

Several site reconnaissance visits have been conducted to become familiar with and characterize the Project Area and Assessment Area. Two of the site visits, conducted in August 2017, focused on preliminary assessment and documentation of aquatic habitat including streams, riparian buffers, and

wetlands. The first site reconnaissance was conducted on August 3, 2017. During this field visit streams, riparian areas, and wetlands were identified in the Project Area and their locations were documented to create a GIS layer to develop baseline habitat maps. A preliminary assessment of existing conditions was also conducted for these areas.

The first field reconnaissance provided information and maps for the second site visit conducted on August 16, 2017. During the second site visit, the Chelan County Natural Resource Department conducted a stream typing determination for streams in the private land portion of the Project Area.

The intent of the stream typing effort was to locate, and type streams identified as present in the Project Area on the Washington Department of Natural Resources (WDNR) Forest Practices Application Review System (FPARS) mapping tool. Results of the Chelan County stream typing effort and determinations are summarized in the Salmonid and Fish Use in Squilchuck Creek Watershed section of this Resources Report. The complete Chelan County Natural Resource Department 2017 Stream Typing for Parcel Number 212019000000 Report is in Appendix B.

Salmonid and Fish Use in the Columbia River

The Columbia River and its tributaries supports numerous anadromous salmonid species including Chinook, chum, coho, pink, and sockeye salmon; coastal cutthroat, steelhead, and bull trout; as well as resident and migratory lamprey. Other fish include but are not limited to sturgeon, rainbow trout, American shad, smelt and mountain whitefish. The Columbia River also provides rearing, foraging, spawning and adult habitat for numerous resident fish, shellfish, plants, and wildlife species unique to the Pacific Northwest.

The Upper Columbia River provides migration, rearing, foraging, overwintering, and spawning habitat for Chinook and sockeye salmon, steelhead trout, bull trout, lamprey, and mountain whitefish. Coho salmon are considered extirpated from the Upper Columbia River but in recent years the Yakama Nation has started a program to reintroduce them to the system (WCC, 2001). Native and hatchery produced anadromous species of salmon and trout are found in the Upper Columbia River throughout every month of the year.

Several wild salmonid species found in the Upper Columbia River and Chelan County are federally listed as endangered, threatened, or species of concern by the National Oceanic and Atmospheric Administration Fisheries (NOAA Fisheries) and the U.S. Fish and Wildlife Service (USFWS). The listed species, their evolutionary significant unit, and their critical habitat and federal status are provided in Table 1 (NOAA Fisheries, 2017a; USFWS, 2017). Table 2 provides Washington Department of Fish and Wildlife (WDFW) listing status for state candidate and sensitive fish species.

Table 1: Aquatic Federal Endangered, Threatened, and Species of Concern in the Upper Columbia River

Common Name	Scientific Name	Evolutionary Significant Unit	Critical Habitat	Regulatory Agency Status
Chinook salmon	*Oncorhynchus tshawytscha*	Upper Columbia River Spring Run	Yes	NOAA / Endangered
Bull trout	*Salvelinus confluentus*	Washington	Yes	USFWS / Threatened
Steelhead trout	*Oncorhynchus mykiss*	Upper Columbia River	Yes	NOAA / Threatened
Pacific lamprey	*Lampetra tridentata*	Washington	No	USFWS / Species of Concern
Pygmy whitefish	*Prosopium coulteri*	Washington	No	USFWS / Species of Concern

Table 2: Aquatic State Candidate and Sensitive Species in the Upper Columbia River

Common Name	Scientific Name	Evolutionary Significant Unit	Regulatory Agency Status
Chinook salmon	*Oncorhynchus tshawytscha*	Upper Columbia River Spring Run	WDFW / Candidate
Bull trout	*Salvelinus confluentus*	Washington	WDFW / Candidate
Steelhead trout	*Oncorhynchus mykiss*	Upper Columbia River	WDFW / Candidate
Leopard dace	*Rhinichthys falcatus*	Washington	WDFW / Candidate
Mountain sucker	*Catostomus platyrhynchus*	Washington	WDFW / Candidate
Pygmy whitefish	*Prosopium coulteri*	Washington	WDFW / Sensitive
Umatilla dace	*Rhinichthys umatilla*	Washington	WDFW / Candidate

Salmonid and Fish Use in the Squilchuck Creek Watershed

The Project Area and larger Assessment Area are within the Squilchuck and Stemilt Watersheds, which are part of the Alkali-Squilchuck Watershed Resource Inventory Area (WRIA) 40. This northern portion of WRIA 40 is south of the City of Wenatchee, in Chelan County, Washington (Figure 2). All three streams drain directly to the Columbia River, at river mile 464.0, 461.9, and 450.0, respectively. The majority of the Project Area encompasses a portion of the Squilchuck Creek Watershed and a very small portion of the Stemilt Creek Watershed. Ground disturbance and habitat modification is only proposed to occur within the Squilchuck Creek Watershed. Therefore, the Squilchuck Creek Watershed will be the focus of this section of Resources Report. Riparian areas and streams, in both the Squilchuck Creek and Stemilt Creek Watersheds, will have established riparian buffers to protect aquatic resources. Stream crossings and ground disturbance will avoid all fish bearing streams.

From its headwaters, Squilchuck Creek flows just over 1.5 miles through federal lands, including the Mission Ridge Ski Area, and continues to flow for approximately nine miles thru private and state lands to its confluence with the Columbia River. Squilchuck Creek flows from Mission Ridge Ski Area through mountainous forested areas, shrub-steppe areas, orchards and other agricultural, residential, and small industrial areas, and the larger developed City of Wenatchee. Major highways, roads, and railways exist in the watershed.

According to the Salmon, Steelhead and Bull Trout Limiting Factors Report for WRIA 40 (WCC, 2001), Squilchuck Creek is characterized as a naturally low surface water producer with arid geology. While the mouth of Squilchuck Creek at its confluence with the Columbia River is expected to support rearing of Chinook salmon and steelhead trout, the upper extent of Squilchuck Creek habitat is limited to anadromous salmonids by natural fish passage barriers, steep gradients, stream channel size, and insufficient flows. Other habitat limiting factors in Squilchuck Creek include roads, floodplain and riparian buffer conversion to agriculture and residential development, water diversion for irrigation, reduced large wood recruitment and instream habitat complexity, flood control practices such as berms disconnecting floodplain habitat from the stream channel and stream channelization. Compacted fines and gravel and high turbidity found throughout the nine miles of the system further limit habitat.

The WDNR FPARS mapping tool lists 14 streams in the Project Area. Thirteen of the streams are classified as non-fish bearing (N) and one is listed as unknown (U). The Chelan County stream typing effort resulted in the following stream type determinations:

- Ten of the 14 listed streams were determined to not qualify as streams
- Two of the 14 listed streams were determined to qualify as non-fish bearing perennial streams (Np)
- One of the 14 listed steams was determined to qualify as a non-fish bearing seasonal stream (Ns)

- One of the 14 listed streams, Squilchuck Creek, was determined to be on federal land and was not typed. Squilchuck Creek is classified on the WDNR FPARS as a fish bearing stream.

Figure 3 provides an overview of the Project Area showing the location of streams, updated stream type classifications, stream gradients, and riparian buffers. The majority of the streams within the Project Area are considered steep, with gradients greater than 20 percent which is considered a threshold for fish use (FPB, 2002; Washington Administrative Code, WAC-222-031).

In addition to the natural limiting factors described above, Squilchuck Creek has numerous human constructed fish passage barriers throughout the system, particularly in the lower elevations of the watershed. Aside from culverts and water diversions, the major barriers preventing access to spawning and rearing habitat include the Burlington Railroad culvert at RM 0.1, a partial fish passage barrier, and the Wenatchee Avenue culvert at river mile 0.3, a full fish passage barrier to Chinook salmon (WCC, 2001). Approximately 1.2 miles above the mouth, a natural barrier exists that limits migration for adult Chinook and coho salmon (WDFW, 2006). In high water events, steelhead trout may be able to migrate past these barriers, but seasonal low flows and severely degraded habitat limits their productivity (WCC, 2001).

The Biological Strategy to Protect and Restore Salmonid Habitat in the Upper Columbia Region classifies the Squilchuck Creek Watershed as a Category 4 watershed due to fish passage barriers and intermittent stream flows that limit the distribution of anadromous salmonids, and likely isolate populations of inland trout. Category 4 watersheds contain both functional and non-functional habitats that historically supported populations of one or more federally listed species. Exotic species may now be dominant in one or more subwatersheds and native species are typically not present in sustainable numbers (RTT, 2003).

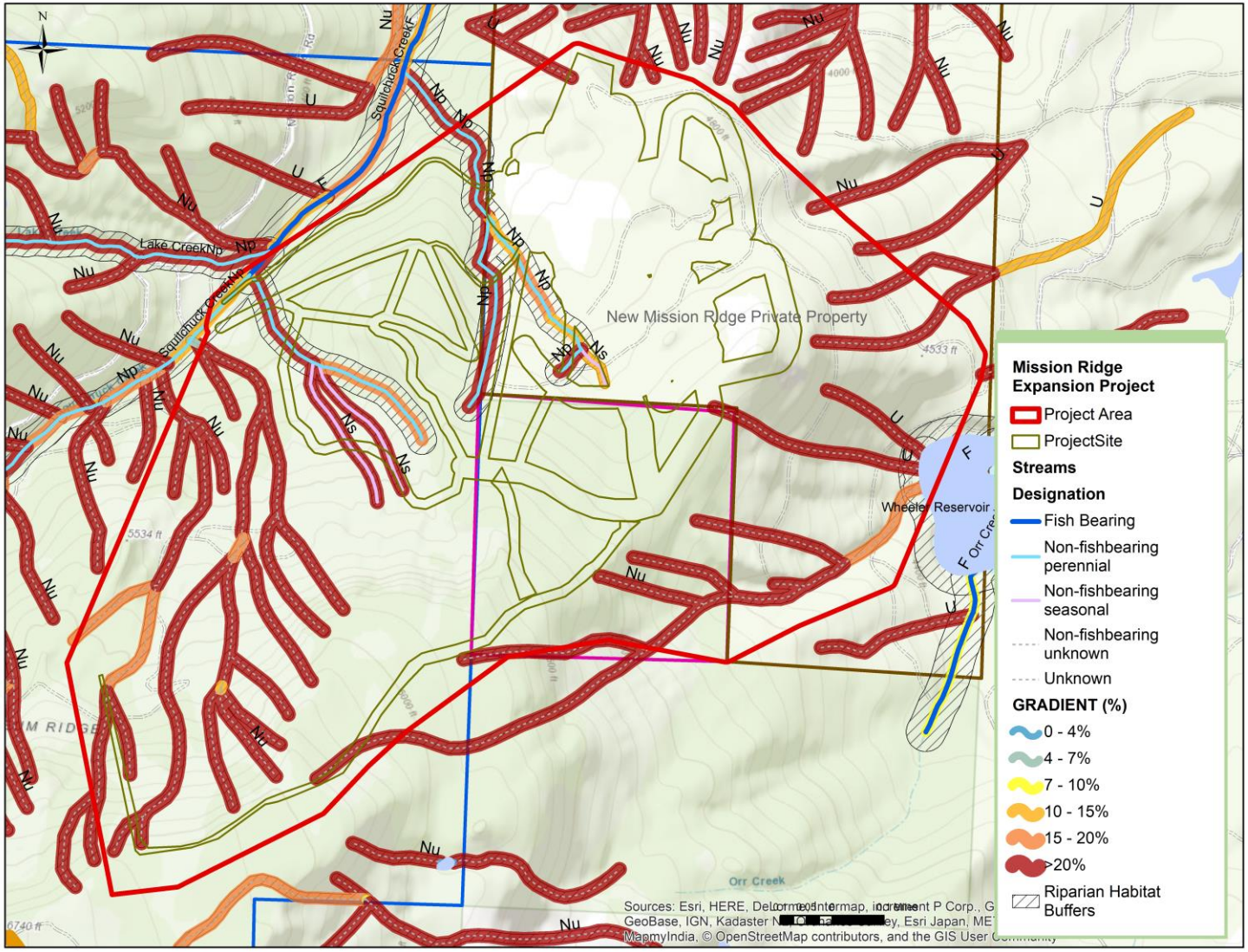
Native salmonid species expected to use Squilchuck Creek include Chinook and coho salmon and steelhead trout, primarily for rearing in the lower elevations below fish passage barriers and at the confluence of the Columbia River. Because of the natural limiting factors, bull trout are not expected to be found in Squilchuck Creek. Resident rainbow trout and west slope cutthroat trout are expected to be found throughout the system but as mentioned above are expected to be isolated populations with limited productivity (RTT, 2003).

The following provides a brief description of federally listed endangered and threatened salmonid species that use the lower portions of Squilchuck Creek. A brief description of mountain sucker, a state listed fish species of concern, and that may have the potential to be in the upper portions of Squilchuck Creek, is also provided. Table 3 provides a summary of effects determinations for the federal and state listed fish species discussed below. In all cases if use by listed species is discovered at any time during the project, conservation measures would be implemented to reduce potential affects to discountable levels.

Chinook Salmon (*Oncorhynchus tshawytscha*) - Endangered

Chinook salmon have a historic range extending from the Ventura River in California to Point Hope, Alaska, in North America and from Hokkaido, Japan, to the Anadyr River in Russia. Chinook salmon require varied habitats during different phases of their life cycle. Spawning habitat typically consists of riffles and the tailouts of pools with clean silt-free substrate dominated by gravel in the mainstem of rivers and large tributaries (WDF et al., 1993). Chinook salmon are most frequently observed spawning in water with a daily average temperature ranging from 4 to 14°Celsius (C). Rearing of juvenile Chinook salmon usually occurs in water with temperatures ranging from 10 to 17°C (EPA, 2003). Chinook salmon spend three months to two years of their lives rearing in fresh water before migrating to the ocean, where they spend six months to seven years maturing.

Figure 3. Stream Type Classifications, Riparian Buffers, and Stream Gradients within Project Area.



Juvenile Chinook salmon require estuarine and nearshore marine habitat for migration, foraging, refuge, and osmoregulation processes. Juveniles spend from several days to months in estuarine habitat before migrating into marine waters (Kerwin, 1999). Juveniles rely on shallow nearshore habitats such as eelgrass meadows, intertidal flats, tidal marshes, and subtidal channels near estuaries (Steelquist, 1992). Once juvenile Chinook are large enough to eat small fish and have grown larger than their prey, they move away from the shore into deeper marine waters.

Chinook salmon are opportunistic feeders. Juveniles prey on a wide variety of food such as benthic, epibenthic, and pelagic crustaceans, as well as insects, fish larva, and juvenile fish. Adult salmon feed on fish such as surf smelt, longfin smelt, Pacific sandlance, and herring while in the estuarine and marine environment.

Squilchuck Creek is expected to support rearing of Chinook salmon in the lower portions at its confluence with the Columbia River. The upper extent of Squilchuck Creek habitat is naturally limited to anadromous salmonids by steep gradients, stream channel size, and insufficient flows. Aside from numerous fish passage barriers in the system, a full passage fish barrier to Chinook salmon exists at RM 0.3. and approximately 1.2 miles above the mouth, a natural barrier exists that limits migration for adult Chinook salmon.

Direct and Indirect Effects

Implementation of the proposed Project is expected to have no effect to Chinook salmon due to the unlikeness of presence in the Project Area and Assessment Area because of lack of suitable habitat and existence of full fish passage barriers. To protect designated critical habitat, NOAA Fisheries has identified three physical and biological requirements or primary constituent elements (PCEs) that are essential for the conservation of Chinook salmon. The freshwater PCEs are related to spawning, rearing, and migration. The proposed project will not negatively impact the long-term quality of critical habitat because it does not exist in the Project Area or Assessment Area (NOAA Fisheries, 2017b).

Bull Trout (*Salvelinus confluentus*) - Threatened

The historical distribution of bull trout extends from northern California to Alaska. In Washington, bull trout are found throughout coastal and inland streams and lakes (WDFW, 1998). Bull trout have a complex life history, with two primary life-history types: a resident form and a migratory form. Bull trout that are considered migratory may be stream-dwelling (fluvial), lake-dwelling (adfluvial), or ocean- or estuarine-dwelling (anadromous) (Behnke, 2002; USFWS, 2006). Individuals of each form may be represented in a single population, although migratory populations may dominate where migration corridors and subadult rearing habitats are in good condition (USFWS, 2006).

As opportunistic feeders, juvenile anadromous bull trout migrate to estuaries in the summer months, when salmon fry and smolts become plentiful. Adult anadromous bull trout migrate between fresh, estuarine, and saltwater environments, depending on food availability. Most inland populations of bull trout are either fluvial or adfluvial, migrating from larger rivers and lakes to spawn in smaller tributary streams from August through October (Wydoski and Whitney, 2003). Bull trout spawn in streams with clean gravel substrates and cold (less than 9°C) water temperatures (Behnke, 2002; USFWS, 2006). Spawn timing is relatively short, occurring from late October through early November. Redds are dug by females in water 8 to 24 inches in depth in substrate gravel 0.2 to 2 inches in diameter (Wydoski and Whitney, 2003); emergence generally occurs in the spring. Bull trout are opportunistic feeders, consuming fish in the water column and insects on the bottom (WDFW, 1998).

While bull trout are in the Upper Columbia River, they are not expected to be found in Squilchuck Creek, the Assessement Area or the Project Area because of natural limiting factors (WCC, 2001).

Direct and Indirect Effects

Implementation of the proposed Project is expected to have no effect to bull trout due to the unlikeness of presence in the Project Area and Assessment Area because of lack of suitable habitat and other natural limiting factors. To protect designated critical habitat, the USFWS has identified nine physical and biological requirements or primary constituent elements (PCEs) that are essential for the conservation of bull trout. The PCEs are related to water quality; migration habitat; food availability; instream habitat; water temperature; substrate characteristics; stream flow; water quantity; and nonnative species. The proposed project will not negatively impact the long-term quality of critical habitat because it does not exist in the Project Area or Assessment Area (USFWS 2014b).

Steelhead Trout (*Oncorhynchus mykiss*) - Threatened

Steelhead are considered by many to have the greatest diversity of life history patterns of any Pacific salmonid species, including varying degrees of anadromy, differences in reproductive biology, and plasticity of life history between generations (Busby et al., 1996). Steelhead spend one to four years in freshwater and one to four years at sea; in Washington, a two year freshwater/two years at sea life history is most common (Steelquist, 1992). Because they can survive spawning, some can spawn a second or third time (Steelquist, 1992). Juvenile steelhead trout utilize estuaries as rearing and foraging habitat.

Steelhead are not expected to be found in the upper extent of Squilchuck Creek because of habitat that is naturally limited to anadromous salmonids by steep gradients, stream channel size, and insufficient flows. While steelhead trout may be able to migrate past the full and partial fish barriers in the lower portions of Squilchuck Creek during high flow events, seasonal low flows and severely degraded habitat are expected to limit their productivity.

Direct and Indirect Effects

Implementation of the proposed Project may affect, but is not likely to adversely affect steelhead trout due to potential turbidities from construction in the local environment. These impacts will be diminished because no stream crossings or ground disturbance will occur in fish bearing streams. While potential turbidity reaching fish bearing streams is unlikely, impacts will be diminished because of species avoidance due to the seasonal low flows and fish passage barriers that would preclude steelhead trout from entering the Project Area and Assessment Area. Any work below the ordinary high water mark will be conducted during in-water work windows, and all erosion and pollution control BMPs will be employed. Effects will be further mitigated by established riparian buffers. To protect designated critical habitat, NOAA Fisheries has identified three physical and biological requirements or primary constituent elements (PCEs) that are essential for the conservation of steelhead trout. The freshwater PCEs are related to spawning, rearing, and migration. The proposed project will not negatively impact the long-term quality of critical habitat because it does not exist in the Project Area or Assessment Area (NOAA Fisheries, 2017b).

Mountain Sucker (*Catostomus platyrhynchus)*

Mountain sucker are found in high elevation mountainous areas in western North America. In Washington, Mountain sucker are only found in the Columbia River basin, east of the Cascade mountain range, in the Columbia River and its tributaries including the Cowlitz, Yakima, Wenatchee, and Palouse River basins (Wydoski and Whitney, 2003). Mountain sucker inhabit small mountain streams, generally less than 40 feet wide with summer water temperatures ranging from 12 to 21°C. They are small fish reaching up to nine inches in length and can live up to nine years. Preferred substrates are comprised of sand, gravel, and boulders. They can also be found in large rivers and lakes and reservoirs. In early to mid-summer, mountain sucker generally spawn in riffles below pools. Mountain sucker feed primarily on algae and diatoms and invertebrate larvae. They may provide a food source for other fish species such as

trout and aquatic birds. In 1998, mountain sucker was listed as a state candidate species by WDFW because of lack of information on its distribution and status in Washington (Wydoski and Whitney, 2003).

Direct and Indirect Effects

The presence of mountain sucker in the upper extent of Squilchuck Creek is unknown. Implementation of the proposed Project may affect, but is not likely to adversely affect mountain sucker due to potential turbidities from construction in the local environment. These impacts will be diminished because no stream crossings or ground disturbance will occur in fish bearing streams. While potential turbidity reaching fish bearing streams is unlikely, impacts will be diminished because of species avoidance due to the seasonal low flows and potential fish passage barriers that would preclude mountain sucker from entering the Project Area and Assessment Area. Any work below the ordinary high water mark will be conducted during in-water work windows, and all erosion and pollution control BMPs will be employed. Effects will be further mitigated by established riparian buffers.

Design Criteria and Mitigation Measures for Aquatic Resources

All work conducted below the ordinary high water mark will require obtaining appropriate permits such as a Hydraulic Project Approval. In general, to address potential impacts from the proposed expansion to aquatic resources and fish species, the following mitigation measures and design criteria will be developed and employed:

1. Riparian areas and streams in the Project Area will have established riparian buffers per Chelan County Code 11.78.090 and US Forest Service Northwest Forest Plan (USDA and USDI 1994). Fish bearing streams on federal lands will be protected by a 300-foot riparian buffer; fish bearing streams on private land will be protected by a 200-foot buffer; and non-fish bearing streams on private land will be protected by a 150-foot buffer.
2. Stream crossings and ground disturbance will avoid and not be conducted near any fish bearing streams.
3. Stream crossings or ground disturbance below the ordinary high water mark on non-fish bearing streams, will be conducted during in-water work windows, and all erosion and pollution control best management practices (BMPs) will be employed.
4. Sediment will be prevented from entering streams and wetlands through the use of BMPs.
5. Equipment and machinery will be maintained and stored in a manner to prevent spread of aquatic invasive species and to protect riparian buffered habitat from hazardous materials (ie. fuel and oil leaks).

Table 3. Summary of Findings for Federal and State Listed Aquatic Species**.**

Evolutionary Significant Unit Common Name	**Scientific Name**	**Life History Stages**	**Effects Determination***
Upper Columbia River Spring Chinook salmon	*Onchorhynchus tshawytscha*	Juvenile rearing-migration	No effect due to the unlikeness of presence in the Project Area and Assessment Area because of lack of suitable habitat and full fish passage barriers.
Bull trout	*Salvelinus confluentus*	Adult-subadult migration	No effect due to the unlikeness of presence in the Project Area and Assessment Area because of lack of suitable habitat and other natural limiting factors.
Upper Columbia River Steelhead Trout	*Oncorhynchus mykiss*	Adult migration and juvenile rearing-migration	May affect but, is not likely to adversely affect due to potential turbidities from construction in the local environment. These impacts will be diminished because no stream crossings or ground disturbance will occur in fish bearing streams. While potential turbidity reaching fish bearing streams is unlikely, impacts will be diminished because of species avoidance due to the seasonal low flows and fish passage barriers that would preclude steelhead trout from entering the Project Area and Assessment Area. Any work below the ordinary high water mark will be conducted during in-water work windows, and all erosion and pollution control BMPs will be employed. Effects will be further mitigated by established riparian buffers.
Mountain Sucker	*Catostomus platyrhynchus*	Adult migration and juvenile rearing-migration	May affect but, is not likely to adversely affect due to potential turbidities from construction in the local environment. These impacts will be diminished because no stream crossings or ground disturbance will occur in fish bearing streams. While potential turbidity reaching fish bearing streams is unlikely, impacts will be diminished because of species avoidance due to the seasonal low flows and potential fish passage barriers that would preclude mountain sucker from entering the Project Area and Assessment Area. Any work below the ordinary high water mark will be conducted during in-water work windows, and all erosion and pollution control BMPs will be employed. Effects will be further mitigated by established riparian buffers.

*In all cases if use by listed species is discovered at any time during the project, conservation measures would be implemented to reduce potential affects to discountable levels.

7. Wildlife Species and Habitat

This section of the Resources Report provides a summary of wildlife species, including federal and state listed species and associated habitats, that may be found in the Mission Ridge Proposed Expansion Project Area (Figure 1 and Figure 2).

Review of Existing Information

The preparation of this Resources Report included review of several existing documents, sources of habitat and environmental information, and review of various agencies' GIS data and maps. A summary of the review of existing information is provided throughout this Resources Report.

The following provides an example of the types of sources that were included in the review:

- United States Fish and Wildlife Service (USFWS). 2017. Species Information: Threatened and Endangered Animals and Plants. Available: http://www.fws.gov/oregonfwo/Species/default.asp.
- Washington Department of Fish and Wildlife (WDFW). 2017. Wildlife Priority Habitats and Species (PHS), GIS data set. Available at: http://wdfw.wa.gov/mapping/phs/.
- Washington Department of Fish and Wildlife (WDFW). 2016. Wildlife Priority Habitats and Species (PHS) Report. Available at: http://wdfw.wa.gov/conservation/phs/.
- Washington Department of Fish and Wildlife (WDFW). 2017. Management Recommendations For Washington's Priority Habitats and Species: various volumes. Available at: http://wdfw.wa.gov/conservation/phs/mgmt_recommendations/
- Washington State Department of Natural Resources (WDNR). 2017. Washington Natural Heritage Program GIS data set. Available at: http://www1.dnr.wa.gov/nhp/refdesk/gis/wnhpgis.html.
- United States Fish and Wildlife Service (USFWS). 2017. Species information and Recovery Plan, Northern Spotted Owl. Available at: https://ecos.fws.gov/ecp0/profile/speciesProfile?spcode=B08B
- United States Fish and Wildlife Service (USFWS). 2017. Critical Habitat - Northern Spotted Owl. Available at: https://ecos.fws.gov/ecp/report/table/critical-habitat.html
- Washington Department of Fish and Wildlife. 2017. Northern Spotted Owl data. Sensitive species data provided by WDFW.
- Washington Department of Natural Resources (WADNR). 2017. Spotted owl emphasis areas, GIS data set. Available at: https://www.dnr.wa.gov/programs-and-services/forest-practices/providing-gis-data-forest-practices-activities-throughout
- United States Forest Service Sensitive Species List (R6 ISSSSP). Available at: https://www.fs.fed.us/r6/sfpnw/issssp/agency-policy/

Site Visits

Walk-through reconnaissance field surveys were conducted in 2017 (June 2, July 27, Aug. 3, Aug. 16 and Oct. 2) to validate spatial data, document existing habitat conditions, identify fish, wildlife and plant habitats and determine presence of listed species and/or their prey base at the proposed expansion site and in surrounding areas. All streams and riparian areas were walked as part of the stream-typing assessment conducted by Chelan County Natural Resources (see Appendix B).

Table 4. presents those wildlife species or habitat that potentially occur in the vicinity of the proposed Project. Species that are currently on or under consideration for the ESA or state endangered, threatened, species of concern or sensitive species lists are identified. Additional information on those likely wildlife species and typical habitat use is provided below.

Table 4. Wildlife species that potentially occur in vicinity of Mission Ridge Proposed Expansion Project.

	Species/ Habitats*	***Scientific Name***	**State Status/ PHS Criteria**	**Priority Area (PHS)**	**Federal Status**
Amphibians	Columbia Spotted Frog	*Rana luteiventris*	Candidate. Species of Concern (due to regional decline)	Any occurrence	none
	Western Toad	*Anaxyrus boreas*	Candidate. Species of Concern (due to regional decline)	Any occurrence	none
Birds	Golden Eagle	*Aquila chrysaetos*	Candidate	Breeding Areas, Foraging Areas	none
	Northern Goshawk	*Accipiter gentilis*	Candidate	Breeding Areas, including alternate nest sites, post-fledging foraging areas	Species of Concern. USFS sensitive
	Dusky Grouse	*Dendragapus obscurus*	PHS - Species of Recreational, Commercial, and/or Tribal Importance	Breeding Areas, Regular Concentrations	none
	Sooty Grouse	*Dendragapus fuliginosus*	PHS - Species of Recreational, Commercial, and/or Tribal Importance	Breeding Areas, Regular Concentrations	none
	Flammulated Owl	*Otus flammeolus*	Candidate	Breeding Areas, Regular Occurrences	none
	Spotted Owl	*Strix occidentalis*	Endangered	Any occurrence	Threatened
	Pileated Woodpecker	*Dryocopus pileatus*	Candidate	Breeding Areas	none
	White-headed Woodpecker	*Picoides albolarvatus*	Candidate	Breeding Sites, Regular Occurrences	FS sensitive
Mammals	Townsend's Big-eared Bat	*Corynorhinus townsendii*	Candidate. PHS - Vulnerable Aggregations	Any occurrence.	Species of Concern. USFS sensitive
	Roosting Concentrations of: Big-brown Bat, Myotis bats, Pallid Bat		PHS - Vulnerable Aggregations.	Regular concentrations in naturally occurring breeding areas and other communal roosts	none
	Cascade Red Fox	*Vulpes vulpes cascadens*	Candidate	Any occurrence	none
	Gray Wolf	*Canis lupus*	Endangered	Regular occurrences	Endangered
	Grizzly Bear	*Ursus arctos*	Endangered	Any occurrences	Threatened

	Lynx	*Lynx canadensis*	Endangered	Any occurrence	Threatened
	Marten	*Martes americana*	PHS-Species of Recreational, Commercial, and/or Tribal Importance	Regular occurrences	none
	Wolverine	*Gulo gulo*	Candidate	Any occurrence	Candidate, proposed threatened
	Elk	*Cervus elaphus*	PHS-Species of Recreational, Commercial, and/or Tribal Importance	Calving Areas, Migration Corridors, Regular concentrations in winter and in foraging areas along coastal waters	none
	Rocky Mountain Mule Deer	*Odocoileus hemionus hemionus*	PHS-Species of Recreational, Commercial, and/or Tribal Importance	Breeding Areas, Migration Corridors, Regular Concentrations in Winter	none

*Species listed were obtained from USFWS Federally Listed species, USFS Sensitive Species and WDFW Priority species list for species in Washington and Chelan County.

The PHS interactive website indicated only spotted owl and elk as PHS species that occur in the Project Area. Freshwater emergent wetland habitats were identified on the PHS database more than one mile west of the Project Area. Wheeler Reservoir is identified as a wetland and is located adjacent to the southeast part of the Project Area (Appendix C). Of the species described in Table 4., only grouse were observed, although evidence of elk and mule deer (tracks, scat, wallow) were observed within the Project Site. No federal- or state-listed threatened or endangered species were observed during field visits. As described previously, two unmapped wetlands were identified in the Project Area during field visits.

Wildlife Species and Habitat

In this section, the habitat resources and wildlife identified within the vicinity of the proposed Project Area are described. This description includes identification of suitable habitat types, identification of wildlife species that are known to or potentially occur in the area, and identification of endangered, threatened, proposed, and candidate species for protection on state and federal species lists. We examined direct and indirect effects and identify measures that will be implemented to minimize or mitigate specific anticipated impacts.

Federally Listed Species

Four wildlife species that are currently protected under the ESA have potential to occur within the vicinity of the proposed Project. These species include: gray wolf, Canada lynx, northern spotted owl and grizzly bear. Effects determinations are summarized in Table 5, followed with detailed summaries for each of the four species in the following pages. In all cases if use by listed species is discovered at any time during the project, conservation measures would be implemented to reduce potential affects to discountable levels.

Table 5. Summary of Findings for Federal and State Listed Wildlife Species.

Evolutionary Significant Unit Common Name	Scientific Name	Effects Determination*
Gray wolf	*Canis lupus*	May affect, but is not likely to adversely affect the gray wolf. Effects will be negligible because although habitat for both wolves and their prey exists in the Project Area, wolves have not been documented using the area, impacts to ungulate habitat would be minimal and increases in road density are minimal at the watershed scale. Any negative effects to wolves would be due to disturbance from noise and human presence during project implementation and subsequent increased human activity. This project would be consistent with recovery regulations; there would be no effect to known denning habitat or rendezvous sites.
Canada lynx	*Lynx canadensis*	May affect, but is not likely to adversely affect the Canada lynx. The Project Area is on the edge of the range of Canada lynx within designated peripheral habitat. Although habitat conditions may be suitable in patches, lynx are highly unlikely to use the Project Area due to the fragmented and isolated nature of the habitat.
Northern Spotted Owl	*Strix occidentalis*	May affect, but is not likely to adversely affect the northern spotted owl. This determination was made because approximately eight acres of potential suitable habitat may be degraded, and noise created above ambient conditions in suitable habitat could cause disturbance, although the likelihood of occupancy at this elevation on the fringe of spotted owl range is minimal.
Critical Habitat - Northern Spotted Owl (Designated)		Designated critical habitat for the northern spotted owl does not occur within the Project Area. Therefore, project implementation would have no effect on spotted owl critical habitat.
Grizzly bear	*Ursus arctos*	May affect but is not likely to adversely affect grizzly bear. The addition of 4.8 miles of road would have no effect on core habitat for grizzly bears because implementation would occur outside of a BMU. Although the Project Area is located outside of Grizzly Bear Management Units, and is on the fringe of grizzly bear range in the North Cascades, the site is near BMUs and may provide potential habitat. The project will result in an increase in human activity in the area. Because grizzly bears are wide-ranging, disturbance could occur during project activities from noise. The likelihood of this is extremely small though, including potential disturbance to denning habitat, because bears have not been reported near the Project Area in decades.

*In all cases if use by listed species is discovered at any time during the project, conservation measures would be implemented to reduce potential affects to discountable levels.

Gray Wolf (*Canis lupus*) – Endangered

The gray wolf in Washington is listed as an endangered species under the ESA (USFWS, 1967) west of U.S. Highway 97 (USFWS, 2003). Recovery regulations require consideration of potential impacts to known denning habitat or rendezvous sites (USFWS 2003). Wolves in Washington are also managed under the Wolf Conservation and Management Plan of Washington State (finalized in December 2011, Wiles et al., 2011).

Although gray wolves historically occurred in Washington, wolves were nearly extirpated by the 1940s through aggressive predator control (Laufer and Jenkins 1989; Gaines et al. 2000). Wolves have since been documented in Washington (Fritts 1992; Gaines et al., 1995) with at least 90 known wolves in 18 known packs (Becker et al. 2016). A new pack was detected west of Wenatchee in 2013 near the Project Area but has since disbanded and is no longer considered a pack by WDFW. Wolves have been reported in the vicinity of the Project Area and likely cross the area periodically.

Project effects that are generally considered relative to wolves include potential disturbance, effects to security habitat, and effects to prey base. Wolves generally den between April and June, then move pups to a series of rendezvous sites for the remainder of the summer. They are believed to be sensitive to disturbance during this time (Mech et al., 1991), particularly early in the denning period when pups are more vulnerable (Frame et al., 2007). Roads can influence security of habitat for wolves (Thiel, 1985; Mech et al., 1988; Mladenoff et al., 1995). Security habitat for wolves is defined as areas with open road and motorized trail densities less than one mile/square mile of habitat.

Deer and/or elk are common in the area and could provide a suitable prey base. Roads and human activity can also influence habitat effectiveness and reproductive capacity for ungulates. The fawning/calving period for mule deer is 15 May to 30 June; and for elk 15 May to 15 July (W. Meyers, pers. comm. 2002). Because deer and elk are considered a priority species please see page 31 for further discussion.

Direct and Indirect Effects

Roads were analyzed within the Squilchuck and Stemilt Watersheds to determine their potential effects on gray wolves (Gaines et al., 2003). Currently Chelan County Road 711 (Mission Ridge Road) is the only open road in the immediate vicinity of the Project Area. There are a number of roads that access the property from the east. These roads are technically closed but still receive public use. Mission Ridge Road is 0.2 to 0.4 miles west of the proposed Project Area. The proposed action would allow motorized access along a 0.6 mile access road, that originates from the existing Mission Ridge Ski Area parking lot, and approximately 4.2 miles of road within Section 19. Implementation of this project would not cause disturbance to any known gray wolf den or rendezvous site in the area.

The Project Area provides summer range for mule deer and elk (prey base for wolves). Fawning and calving habitat is also present in the Project Area, typically in areas with little disturbance and heavy cover, such as riparian vegetation away from more heavily travelled roads. It is unlikely that the Project Area provides spring and fall migration habitat. During the winter season, part of the Project Area is currently under the Mission Ridge Ski Area Operating permit and gets some use by skiers and snowshoers. The Project Area is not considered winter range for deer or elk.

Wolves are not currently known to reside in the Project Area. However, because wolves are wide-ranging, and the Project Area does provide potential habitat, disturbance could occur during project activities from noise caused by heavy equipment during construction and increased human activity during and after completion of the project. The duration, intensity and extent of these activities will vary depending on the phase of construction. Completion of the project would result in long-term human use along roads and within the development footprint. Although the project would increase the amount of human activity in

the area and could cause disturbance, the likelihood of additional disturbance is small, including the potential disturbance to denning habitat, because the Project Area is already impacted by human activity and noise (Thiel 1985; Mech et al., 1988).

The project would increase the amount of motorized human activity in the area. Project implementation would result in an increase of approximately 4.8 miles of new road, concentrated within the Project Site, potentially impacting less than one acre of potential calving or fawning habitat in riparian areas. Effects to riparian areas will be limited to crossings. Within the 28 mi^2 Squilchuck Creek Watershed and 33 mi^2 Stemilt Watershed, open road density would change by less than 0.2 mi/mi^2. Although gray wolf security habitat may decrease slightly due to increased motorized use, impacts will be negligible at the scale detected by wide-ranging carnivores.

Table 6. Road changes proposed within the Mission Ridge Proposed Expansion Project.

Analysis Area	Size of Area (mi^2)	Total Open Road (miles)		Open Road Density (mi/mi^2)	
		Existing Condition	Proposed Action	Existing Condition	Proposed Action
Squilchuck Watershed	28.0	112	116.8	4.03	4.20
Stemilt Watershed	33.1	174	178.8	5.26	5.40

Implementation of the proposed Project may affect, but is not likely to adversely affect the gray wolf. Effects to gray wolf will be negligible because although habitat for both wolves and their prey exists in the Project Area, wolves are not presently known to be using the area, impacts to ungulate habitat would be minimal and increases in road density are minimal at the watershed scale. Any negative effects to wolves would be due to disturbance from noise and human presence during project implementation and subsequent increased human activity. This project would be consistent with recovery regulations (USFWS 2003) as there would be no effect to known denning habitat or rendezvous sites. If wolf use is discovered at any time during the project, conservation measures such as area closures, would be implemented to reduce potential effects to discountable levels.

Canada Lynx (*Lynx canadensis*) – Threatened

The Canada lynx was listed as a Washington State threatened species in 1993, and became a Threatened species under the ESA in April 2000 (USFWS, 2000). State management guidance was originally found in the *Washington State Recovery Plan* for the Lynx (Stinson, 2001) and included designated Lynx Management Zones (LMZ). Washington Department of Fish and Wildlife up-listed lynx to Endangered in December 2016. US Fish and Wildlife Service (USFWS) designated critical habitat - revised as of 2014 (USFWS 2014a).

The lynx recovery outline stratified lynx habitat into three categories: core, secondary, and peripheral areas (USFWS, 2005). The Project Area is located within peripheral habitat. Lynx guidance also stratifies the landscape into Lynx Analysis Units (LAU), although it is no longer necessary to delineate LAUs in secondary/peripheral areas (Figure 4). The conservation measures in the recovery outline are intended to provide a greater degree of flexibility for management activities in secondary/peripheral areas as compared with the core areas. The focus of management is on providing a mosaic of forest structure to

support snowshoe hare prey resources for individual lynx that infrequently may move through or reside temporarily in the area and maintaining landscape connectivity to allow for lynx movement and dispersal.

Lynx are generally associated with moist boreal forests with cold, snowy winters. The forest vegetation types consist of predominantly Engelmann spruce (*P.engelmanii*), subalpine fir (*A. lasiocarpa*) and lodgepole pine (*P. contorta*) (von Kienast 2003; Maletzke 2004; Koehler et al. 2008). Lynx avoid Douglas-fir, ponderosa pine forests, openings, recent burns, open canopy, and steep slopes (Koehler et al., 2008). In Washington, lynx are found above 1,250 meters (4,101 feet) (McKelvey et al., 2000; von Kienast, 2003; Maletzke, 2004). Lynx habitat includes dense understories of young trees, shrubs or overhanging boughs that protrude above the snow, and mature multi-story stands with conifer boughs touching the snow surface (Interagency Lynx Biology Team, 2013). Lynx habitat is generally classified into foraging, denning and travel habitat. Lynx rely on a prey base that is primarily snowshoe hares. Foraging habitat consists of dense horizontal understory that provides food, cover and security from predators. Hares feed on conifers, deciduous trees, and shrubs (Hodges, 2000) and are often more dense in 20-year-old lodgepole pine stands with high tree and shrub densities (6,415 stems per acre) and a dense understory (Koehler, 1990). Lynx denning habitat consists of coarse woody debris, such as downed logs and windfalls, that provide security and thermal cover for lynx kittens (McCord and Cardoza, 1982; Koehler, 1990; Slough, 1999; Squires and Laurion, 2000).

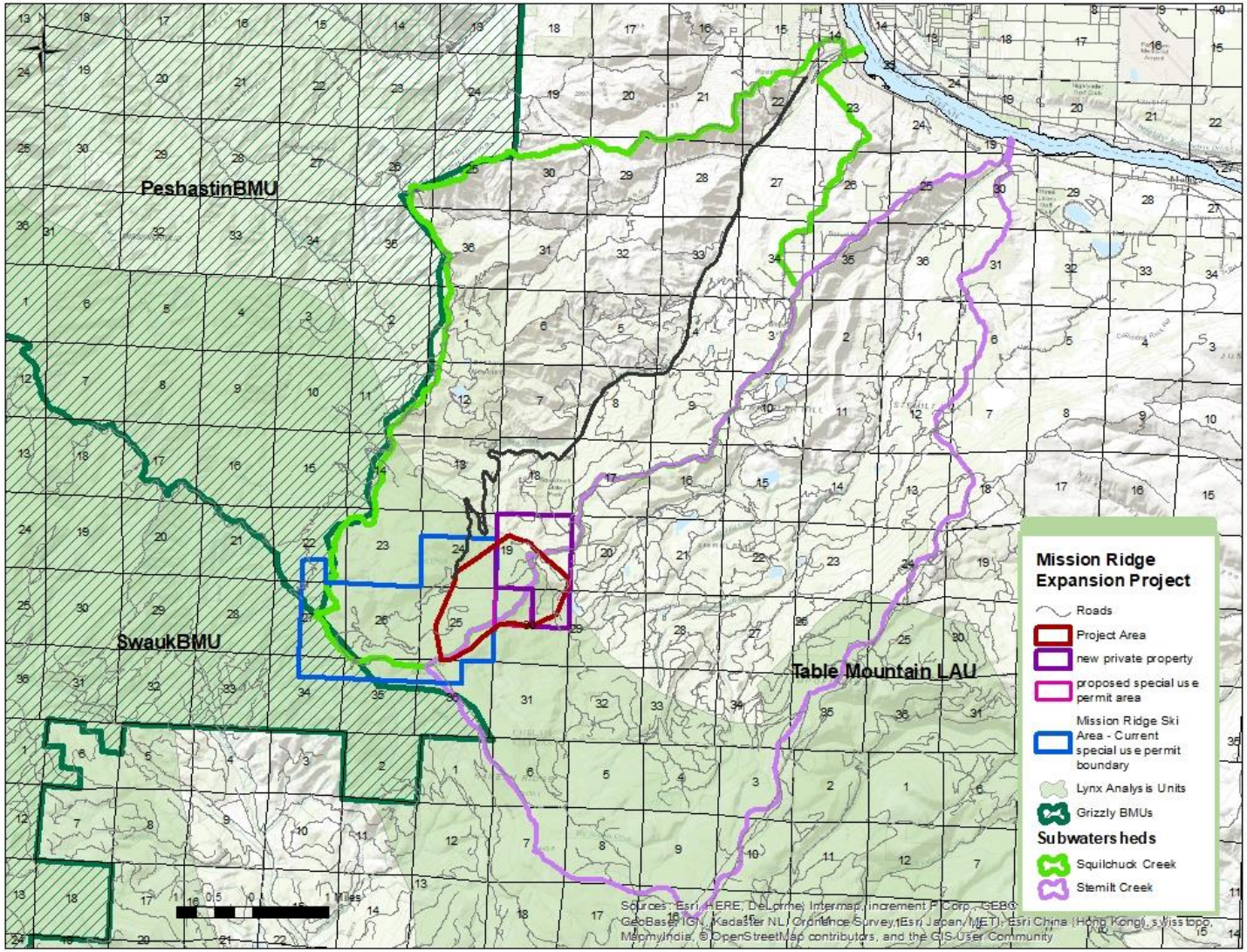
The boreal forest landscape is naturally dynamic. Forest stands within the landscape change as they undergo succession after natural or human-caused disturbances such as fire, insect epidemics, wind, ice, disease, and forest management (Elliot-Fisk, 1988; Agee 2000). Because wildfire, pathogens, wind, etc. lead to a naturally dynamic landscape within the boreal forest, lynx habitat is typically patchy. The boreal forest contains stands of differing ages and conditions, some of which are suitable as lynx foraging or denning habitat (or will become suitable in the future due to forest succession) and some of which serve as travel routes for lynx moving between foraging and denning habitat (McKelvey et al., 2000).

Lynx surveys following the national protocol (McDaniel et al., 2000) were conducted during the summers of 1998 to2003 on the Okanogan-Wenatchee National Forest, including the Wenatchee River Ranger District. Lynx presence has not been documented on the Wenatchee River Ranger District or the Project Area.

Direct and Indirect Effects

Portions of the Project Area occur within the Table Mountain LAU (Figure 4). The propose Project is not within a Washington State Lynx Management Zone. Mapped potential lynx habitat within the Project Area is classified as peripheral (unoccupied) (USFWS, 2005). Peripheral habitat areas are defined as follows: 1) Quality and quantity of habitat to support adequate snowshoe hare or lynx populations are questionable; 2) Habitat may occur in small patches and is not well-connected to larger patches of high quality habitat; and 3) May sustain short-term survival during lynx dispersal. Although LAUs are not required in peripheral habitat and there are no federal requirements to manage for lynx in unoccupied habitat, the Table Mountain LAU was delineated in the early 90's and is used for analysis purposes. The effects on lynx prey (snowshoe hare) habitat is still considered within unoccupied lynx habitat. A large percentage of vegetation in the Project Area is made up of non-prey habitat and consists of more mature, heavily stocked, decadent stands of Douglas-fir and lodgepole pine with little understory, open conifer stands or talus slopes.

Figure 4. Location of grizzly bear management units, lynx analysis units and roads in the vicinity of the Mission Ridge Proposed Expansion Project. Road data was obtained from DNR and is approximate.



The proposed project has the potential to affect the Canada lynx indirectly by altering prey habitat, primarily snowshoe hare, or directly through disturbance. However, the potential for lynx to be disturbed by project activities is very unlikely due to the lack of known lynx anywhere near the Project Area. In summary, implementation of the proposed Project may affect but is not likely to adversely affect the Canada lynx. The Project Area is on the edge of the range of Canada lynx within designated peripheral habitat. Although habitat conditions may be suitable in patches, lynx are highly unlikely to use the Project Area due to the fragmented and isolated nature of the habitat.

Grizzly Bear *(Ursus arctos)* – Threatened

The grizzly bear is listed as a Threatened species, with a determination of warranted for endangered status in the North Cascades (USFWS, 1975, 1998). Although grizzly bears once occurred throughout the North Cascades, their population has declined due to intensive historical trapping, hunting, predator control, and habitat loss (USFWS, 1997, 2011). The North Cascades Grizzly Bear Recovery Zone (NCGBRZ) was designated in 1997 (USFWS, 1997) and includes portions of the Okanogan-Wenatchee National Forest. The Project Area straddles the Recovery Zone boundary with the federal portion within the Recovery Zone and the private parcel adjacent but outside of the Recovery Zone. Although part of the Project Area is within the Recovery Zone, the entire Project Area is located outside of any Bear Management Unit (BMU) (Figure 4). The Project Area is 1.5 miles east of the Peshastin BMU and 1.5 miles north of the Swauk BMU. Core area for grizzly is defined as areas that are greater than 500 meters from an open road, motorized trail or high-use trail (IGBC, 1998) and is one metric to assess potential impacts to grizzly bears. However, because the project occurs outside of the recovery zone and any BMU, core was not evaluated.

A key component of grizzly bear management is sanitation planning. Careful planning and implementation of appropriate sanitation measures can reduce potential for wildlife-human conflicts and not only benefits bears but other wildlife species as well. The Applicant plans to include wildlife resistant sanitation measures in design plans for Resort operations and CCRs.

Direct and Indirect Effects

The addition of 4.8 miles of road would have no effect on core habitat for grizzly bears because implementation would occur outside of a BMU. Although the Project Area is located outside of grizzly BMUs, and is on the fringe of grizzly bear range in the North Cascades, the site is near BMUs and may provide potential habitat. The proposed Project will result in an increase in human activity in the area. Because grizzly bears are wide-ranging, disturbance could occur during project activities from noise. The likelihood of this is very small though due to the extremely low numbers of grizzly bears in the North Cascades, the long-term presence of human activities in the area, and the Project Area occurring outside areas deemed important for grizzly bear recovery. Project implementation may affect but is not likely to adversely affect grizzly bear.

If grizzly bear use is discovered at any time in the Project Area, conservation measures would be implemented to reduce potential affects to discountable levels. Conservation measures for the specific situation would be designed in cooperation with the USFWS and the WDFW, and could include an area closure.

Northern Spotted Owl (*Strix occidentalis caurina*) – Threatened

The spotted owl was federally listed as threatened on June 26, 1990 (USFWS, 1990). A revised recovery plan was signed on June 28, 2011 (USFWS, 2011). The spotted owl was listed within Washington in 1988 and is considered a state endangered species. WDFW completed a Periodic Status Review of the spotted owl in February 2016 (Buchanan, 2016) with a determination that in the absence of management

that effectively addresses competitive interactions with barred owls it is likely the spotted owl could become functionally extirpated in Washington in the near-term future and should maintain the endangered designation.

Despite over 25 years of federal protection, spotted owl populations have declined due to continued widespread habitat loss across the species range resulting from timber harvest and wildfire, and more recently due to competition from the barred owl (Livezey and Fleming, 2007; USDI Fish & Wildlife Service, 2011). For the Eastern Washington Cascades physiographic province, ongoing loss of habitat to wildfire and the effects of fire exclusion on vegetation were ranked as the greatest current threats (USDI Fish & Wildlife Service, 2011).

Management of spotted owl habitat focuses on suitable nesting, roosting, and foraging habitat and dispersal habitat types. A general definition of nesting and roosting habitat includes multi-layered, multi-species forests with closed-canopies (60 to 90 percent), with a component of Douglas-fir, and some old forest structural attributes (eg; large trees (greater than 30 inches DBH), Class IV snags) (Buchanan et al., 1993). Suitable nesting and roosting habitat was defined as having greater than 60 percent canopy closure for this project (USDI Fish and Wildlife, 1990; USFWS, 2011). Most nests occur in mistletoe platforms and/or abandoned goshawk nests in Douglas-fir (Buchanan, 1991; Sovern et al., 2011). Nesting habitat is generally below 5,000 feet in elevation (USFS, 2000). Nesting and roosting habitat are considered very similar (USFWS, 2011) although a decrease in the size and cover of overstory trees is associated with diminished habitat suitability (WAC 222-16-085). Foraging habitat may be similar to nesting and roosting habitat but not to the extent that may support successfully nesting owl pairs. Foraging habitat provides a mix of dry and mesic forest types that provide habitat for spotted owl prey species such as the northern flying squirrel, bushy-tailed woodrat, deer mouse, and voles (Richards, 1989; Forsman et al., 2001; Lehmkuhl et al., 2006a, b).

Spotted owls begin nesting activities in early March with juvenile dispersal from natal areas in August and September. Site specific monitoring has shown that within the Eastern Washington Cascades Province, after July 31, spotted owl young are mobile and generally considered to be able to move from disturbance. Dispersal habitat has been used to define the conditions necessary for spotted owls to move between patches of nesting, roosting and foraging habitats. Dispersal habitat does not contain the structural attributes, such as high canopy closure, and presence of large trees, and snags, associated with nesting and roosting habitats. In general, dispersal habitat is composed of single or multi-layered forests with moderate sized trees (10 to15 inches DBH), and canopy closure greater than 40 percent. Little research has been conducted to quantitatively define dispersal habitat for spotted owls. In general, nesting and roosting habitat provides all or most of spotted owl's habitat requirements, whereas foraging and dispersal habitats provide only a subset of the habitat requirements (USFWS, 2011).

The Project Area does not fall within designated spotted owl critical habitat or spotted owl emphasis areas. Designated spotted owl critical habitat is located two miles northwest of the Project Area. WDNR has designated spotted owl special emphasis areas (SOSEA) to provide for demographic and/or dispersal support as necessary to complement the northern spotted owl protection strategies on federal land within or adjacent to the SOSEA (Washington State's Forest Practices Rules, 222-16-086). The Project Area is approximately six miles southwest of the nearest SOSEA.

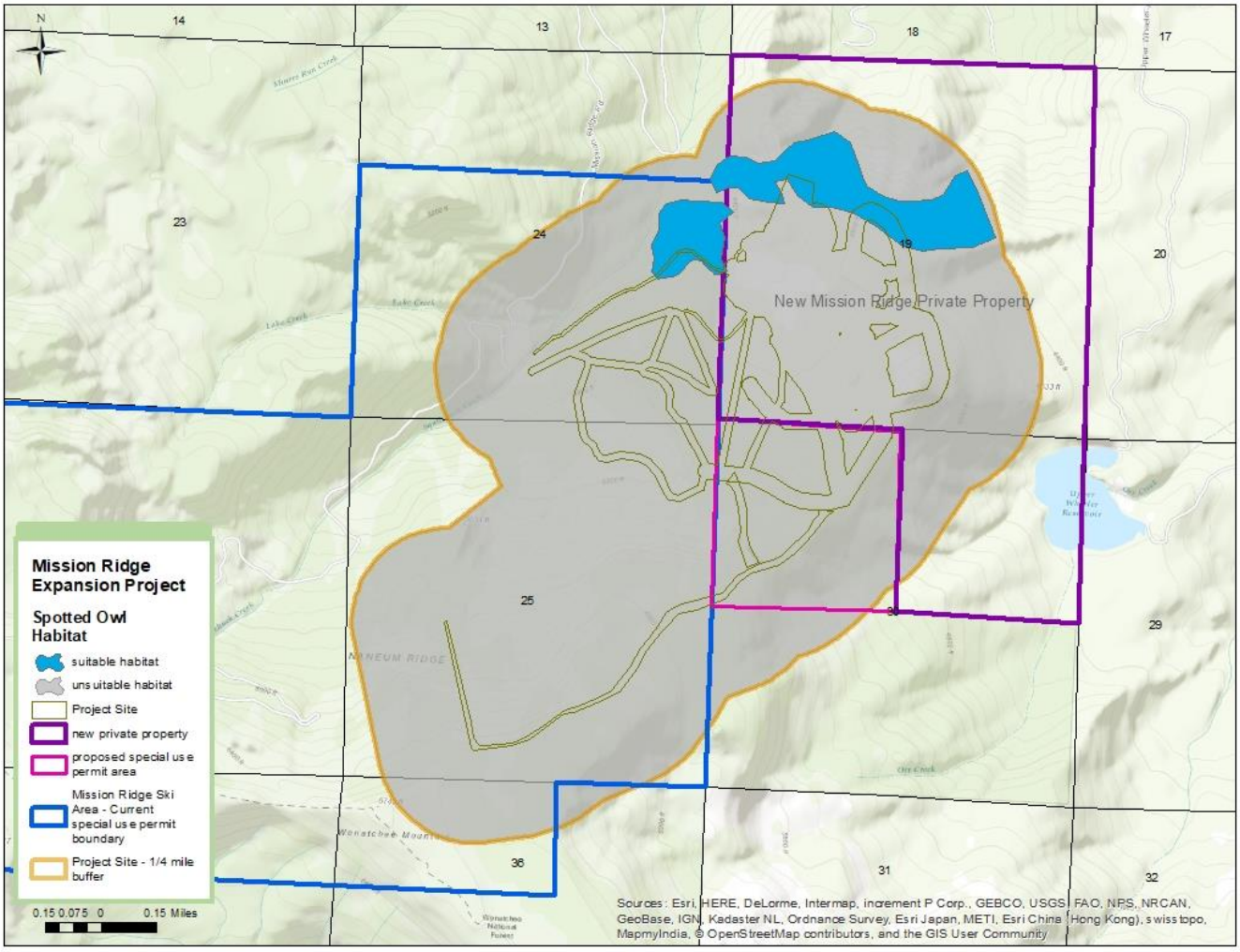
Habitat Conditions Assessment

Because spotted owl habitat had not been previously mapped in fine-scale detail in the Project Area we conducted a photo-interpretation and field verification to identify areas with suitable spotted owl habitat conditions. The habitat definition we used (USFS, 2012) is comparable to the habitat definition in WAC 222-16-085. We delineated habitat within one quarter mile of the Project Site to assess for potential habitat removal or disturbance.

We photo-interpreted vegetation polygons and attributed each polygon with detailed estimates of key spotted owl habitat components. These habitat components included: tree species, tree size classes, canopy cover, number of canopy layers, and presence of snags. From these data we derived a habitat map that was then taken to the field to validate the habitat mapping delineations. We then adjusted the habitat map based on our field verification to develop a final suitable spotted owl habitat map (Figure 5).

Because this map provides fine-scale habitat details, it was used to assess potential project impacts to spotted owl habitat in lieu of broader-scale habitat mapping done for regional spotted owl habitat mapping (Davis et al., 2016).

Figure 5. Northern spotted owl suitable habitat within the vicinity of the Mission Ridge Proposed Expansion Project.



Stands within the Project Area primarily consist of even aged, single story trees. The necessary large and old tree component and multi-layer canopy is often missing and there is little mistletoe that could support a nest, likely due to the younger age of the trees and preponderance of lodgepole pine. Based on our

habitat mapping, approximately 85 acres within a quarter mile area around the Project Site would qualify as suitable spotted owl habitat (Table 7, Figure 5). These stands are all under 50 percent overstory canopy and do not have many large trees or mistletoe so would be considered moderate to low quality suitable habitat. These stands are most likely used for dispersal and do not have the characteristics of nesting or roosting habitat, although they may provide foraging opportunities. Of those 85 acres, approximately eight acres may be impacted by project implementation and vegetation removal which could result in a degrade of habitat. Changes to the habitat quality of the stand would not result in a downgrade of the habitat classification.

We obtained historical spotted owl data from WDFW (October 2017) that indicated a single owl (unknown status) was located approximately 0.4 miles north of the Project Area in 1996, and a single resident owl was located approximately 0.6 miles to the southeast in 1998. Aerial imagery indicates the latter location has been heavily harvested since then. Surveys were conducted throughout the area from the late 1980s through 2006, and no spotted owls were detected on Forest Service land within 1.8 miles of the Project Area at that time. The closest spotted owl on Federal land was located 3.5 miles to the northwest in 1997. Surveys for northern spotted owls were not conducted in the area for the Mission Ridge Proposed Expansion because of poor habitat quality.

Table 7. Spotted owl habitat within the Mission Ridge Proposed Expansion Project.

	Potential for Disturbance (Within 0.25 mile of Project Site)			**Potential for Vegetation Removal** (Within Project Site Boundary)		
Habitat Type	acres (proportion)			acres (proportion)		
Landowner	Private	Federal	WDFW/ WADNR	Private	Federal	WDFW/ WADNR
Suitable	62	23	0	7	1	0
Unsuitable	420	450	559	148	58	18

Direct and Indirect Effects

The likelihood of resident, territorial spotted owls being present in the Project Area is extremely low. Although there are some small patches of forest along the northern boundary of the project that may be classified as lower quality suitable spotted owl habitat, there is generally an insufficient amount of suitable habitat in this landscape to support resident, territorial pairs. Spotted owls occupy large territories that encompass thousands of acres of suitable habitat. Although Forest Practice Rules require a minimum of 2,605 acres of suitable habitat within a home range (or 40 percent of the home range), Forsman et al. (2015) found home ranges consisted of much more suitable habitat (62 percent of home range). The small, fragmented patches of habitat, juxtaposed with larger areas of unsuitable habitat, at this elevation currently only function as dispersal habitat for transient spotted owls dispersing across the landscape, with limited foraging opportunities. Although dispersal habitat is important to spotted owls to provide habitat connectivity, the Project Area is located along the fringe of spotted owl range and at an elevation that is generally not occupied by owls. Implementation of the proposed Project will not change the function of suitable habitat and will not reduce the capacity of this landscape to support dispersing spotted owls.

Noise disturbance could affect owls during construction activities and increased human activity. The likelihood of disturbance would be small, and any impacts would be minor because suitable nesting habitat conditions do not occur within a 0.25 mile disturbance buffer of the project activities.

Based upon the available information and the evaluation of the direct and indirect effects, implementation of the Proposed Action "may affect, but is not likely to adversely affect" the northern spotted owl. This determination was made because approximately eight acres of potential habitat may be degraded. In addition, the potential for disturbance to nesting spotted owls from noise created above ambient conditions is low due to the lack of suitable nesting habitat conditions within a 0.25 mile disturbance buffer of project activities. Designated critical habitat for the northern spotted owl does not occur within the Project Area (USFWS 2012). Therefore, project implementation would have no effect on spotted owl critical habitat.

WDFW Priority Species with potential for occurrence

The Washington Department of Fish and Wildlife has identified fish, wildlife and habitat resources that are important for conservation through the Priority Habitats and Species (PHS) Program. We examined the PHS species list (WDFW, 2016b) for the Project Area to identify species and habitats that are likely to be in the vicinity. The following species were determined to have a high likelihood of occurrence in the Project Area: elk and mule deer, dusky and sooty grouse, western toad and northern goshawk.

Rocky Mountain Elk and Mule Deer

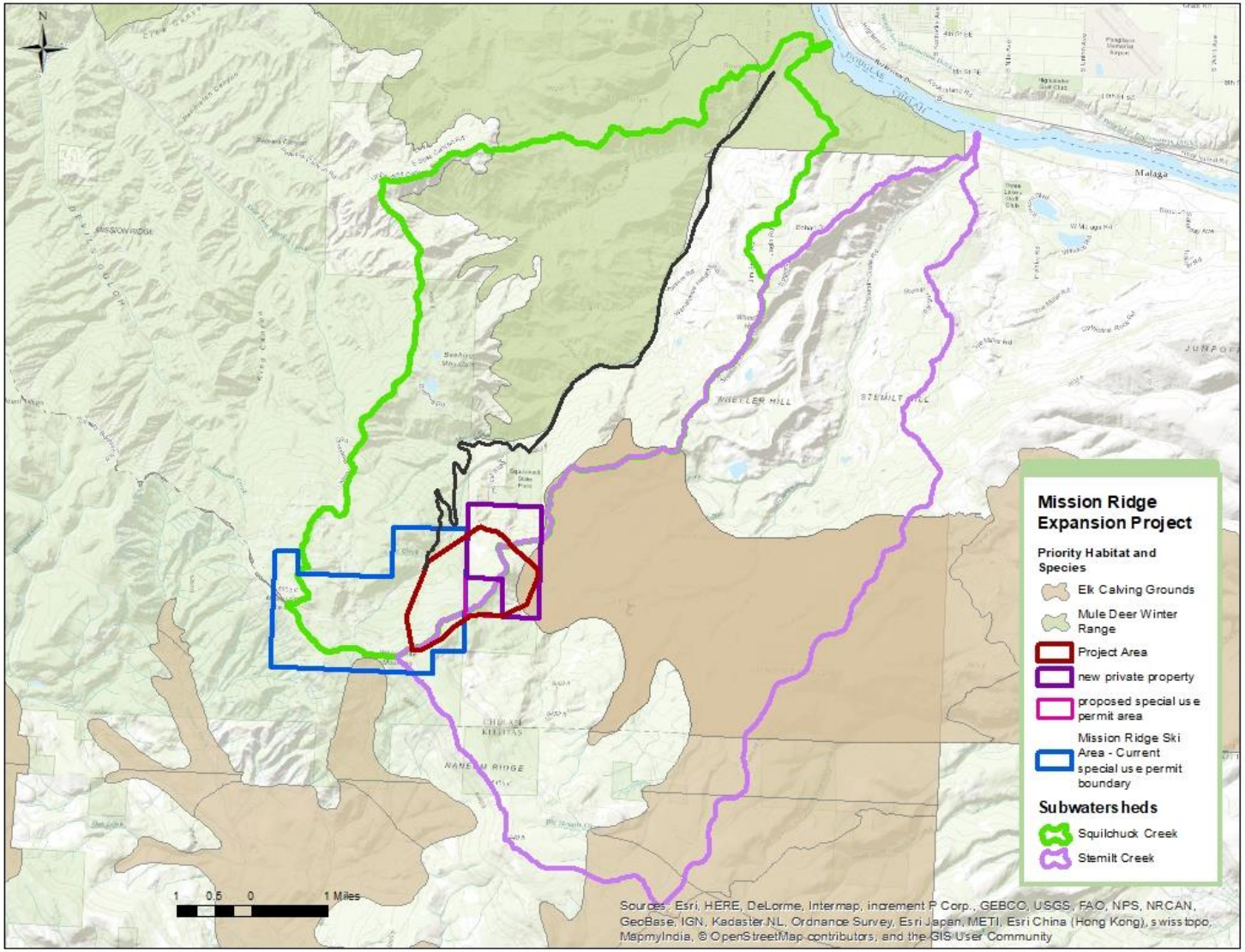
Rocky mountain elk (*Cervus elaphus*) and mule deer (*Odocoileus hemionus hemionus*) are considered priority species by WDFW and fall within the category of Species of Recreational, Commercial, and/or Tribal Importance. Priority areas include calving and fawning areas, migration corridors and winter range. Both elk and deer are classified as game animals (WAC 232-12-007) in Washington.

Mule deer are abundant in the East Cascades. Mule deer use a mosaic of habitat types that provide cover and forage in lower elevation winter ranges and higher elevation summer ranges. Habitat quality in these summer and winter ranges has a great effect on potential mule deer abundance and recruitment. The majority of summer range in the East Slope Cascades Mule Deer Management Zone is managed by the Okanogan-Wenatchee National Forest and WDNR, and high elevation summer range is readily available (WDFW, 2016). Mule deer populations in north-central and eastern Washington are stable to increasing (WDFW, 2014). Unlike elk, mule deer fawning is much more closely associated with riparian areas and often occurs where there is protective cover in the form of dense shrubs or forest that offer access to both water and abundant forage (NRCS, 2005). Fawns are born May through July, peaking in mid-June in the eastern Cascades (WDFW, 2016).

Similar to mule deer, elk are found in a wide variety of habitats, using alpine and mixed forest types for cover and more open areas that provide foraging habitat. Calving areas are not particularly different from general habitat. The calving season in Washington is from mid-May to mid-July (W. Meyers, pers. comm. 2002). Both elk and deer migrate to lower elevations in winter.

Elk and mule deer are common in the Stemilt and Squilchuck subwatersheds. The Project Area provides summer range for mule deer and elk in the Colockum Elk Herd. The WDFW Elk Management Plan Herd Population Objective for the Colockum elk herd is 4,050 to 4,950 and the herd is estimated at 6,018 individuals (WDFW 2014). Although the Colockum herd currently exceeds population objectives, WDFW has identified available habitat, hunting, and lethal removals related to resolving agricultural damage as limiting factors (WDFW, 2014). WDFW has set priorities for the Colockum herd around habitat conservation, habitat enhancement, resolving wildlife damage conflicts, and bull escapement. Fawning and calving habitat is present in the Project Area, typically in areas with little disturbance and heavy cover, such as riparian vegetation away from more heavily travelled roads. It is unlikely that the Project Area provides spring and fall migration habitat. The Project Area is not considered winter range for deer or elk. The closest winter range identified by the Okanogan-Wenatchee National Forest is over

Figure 6. Proximity of Mission Ridge Proposed Expansion Project relative to Rocky Mountain elk and mule deer winter range and calving areas as mapped by the Okanogan-Wenatchee National Forest and WDFW Priority Habitat and Species.



3.5 miles northwest of the Project Area. Mule deer winter range has been mapped just over two miles north of the Project Area in the Squilchuck Watershed (Figure 6).

Potential Impacts

There is a great deal of information on the effects of human activity, particularly roads and recreation, on ungulates (see Gaines et al., 2003 for review). Effects to elk vary from displacement due to human activity on hiking and ski trails, (Schultz and Bailey, 1978; Ferguson and Keith, 1982; Cassier et al., 1992) as well as roads (Johnson et al., 2000), to elevated levels of stress hormones (Creel et al., 2002, Millspaugh et al., 2001). Elk reproductive success has been shown to decrease following human disturbance to calving areas (Phillips and Alldredge, 2000). However, all disturbances are not created equal. Motorized vehicles, including ATVs, are more disruptive than hiking and mountain biking (Naylor et al., 2009) and road density has been implicated in increased hunting mortality (Hayes et al., 2002).

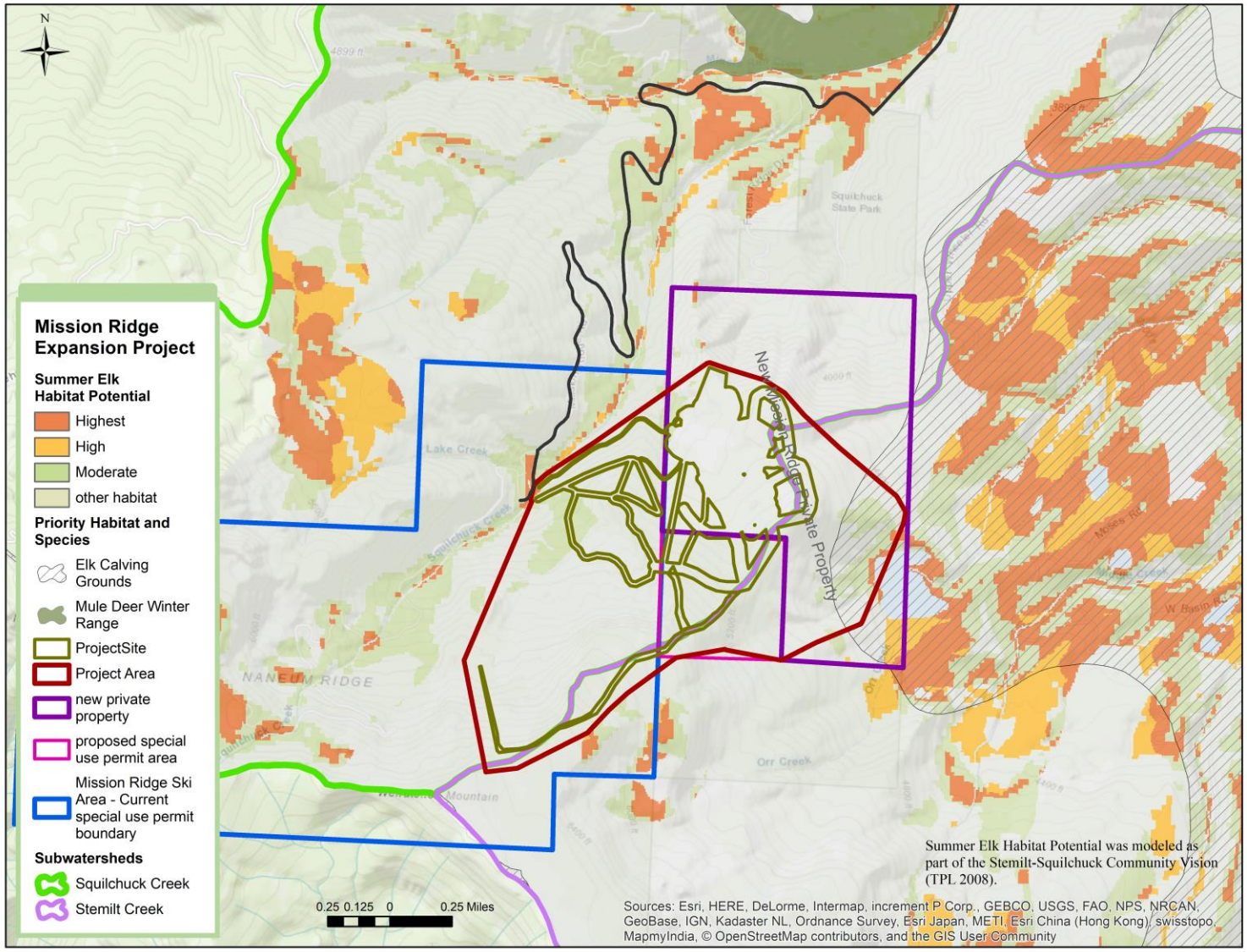
Because of the impact of human access on elk, assessing habitat effectiveness for summer elk range is a useful index to examine potential effects. Similar to gray wolves and grizzly bears, the addition of 4.8 miles of road to this landscape will have a negligible effect on the local mule deer and elk populations as road density within the subwatersheds would increase by less than 0.2 mi/mi^2. The area currently has road access from the east and is frequented by recreationists on motorized vehicles.

Human development has been shown to have mixed effects on elk. Morrison et al. (1995) found ski area development reduced elk use in specific areas. However, elk use increased following completion. Ciuti et al. (2012) found effects of human disturbance on elk behavior exceeded those of habitat and natural predators. In a human dominated landscape elk displayed increased vigilance and decreased foraging. However, they also discovered that it is not just the number of people but also the type of human activity that influences elk behavior (e.g. hiking vs. hunting). The greatest influence was recorded on public lands where hunting and motorized recreational activities were cumulative as compared to the national park in summer, where influence was less.

Potential summer elk habitat has been mapped for the Stemilt-Squilchuck subwatersheds as part of the Stemilt-Squilchuck Community Vision (Figure 7; TPL, 2008). Summer elk habitat was mapped based on proximity to water and food supply, slope and tree cover. Within the Project Area, 90 percent of the area is classified as “other habitats”, nine percent is classified as “moderate potential” and approximately one percent is classified as “high/highest potential” (Figure 7). Project implementation has potential to modify some summer habitat. Habitat removal may occur through construction of roads and infrastructure. Habitat loss may be mitigated however through creation of new foraging habitat within new ski runs. There could be an increase in noxious weeds as a result of construction activities. Weeds could compete with forage species, lowering forage habitat quality. Project activities would follow design criteria and mitigation measures for prevention of invasive weed spread, minimizing any effects.

A small area in the southeast portion of Section 19 and northeast corner of Section 30 is considered part of the Colockum Elk Calving Area – a priority habitat and species designation (Figure 6). Approximately 70 acres of the Calving Area would be within the Project Area. This area will not be part of proposed resort development but may be considered for Nordic skiing and summer activities such as hiking and mountain biking. As such habitat is this area will not be modified, but human activities in the area may necessitate seasonal restrictions to protect calving. Nordic skiing would generally be done by the time elk calving takes place, however, seasonal restrictions on summer hiking or biking on these trails may be necessary. In order to avoid disturbances and impacts to elk and deer during calving and fawning season the Applicant will coordinate with WDFW to incorporate best management practices, including seasonal trail restrictions.

Figure 7. Potential summer habitat for Rocky Mountain elk in the vicinity of the Mission Ridge Proposed Expansion Project (TPL, 2008).



The Project Area overlays a small portion of the Colockum Elk Herd and East Slope Cascade Mule Deer ranges. Although project implementation has the potential to displace these ungulate species and slightly decrease available habitat, increased forage availability in new ski runs may offset habitat loss and conservation measures to limit impacts to calving will protect elk during an important time period. Although project implementation may temporarily displace ungulates from parts of the Project Area, it is unlikely to have population level effects.

Western toad, Dusky and Sooty grouse, and northern goshawk

The western toad is a medium to large sized toad that is found throughout Washington. Although local populations may be healthy, populations across the range have declined precipitously. Western Toads occur in a variety of terrestrial habitats including prairies, forests, canyon grasslands and ponderosa pine-Oregon Oak habitat. They appear absent from most of the shrub steppe and steppe zones with the exception of the canyon grasslands in southeast Washington. Adult toads are primarily terrestrial, but often occur near permanent water bodies, especially in drier climates and during breeding (Hallock and McAllister, 2005). Riparian habitats will be protected by buffers and effects to toads should be minimal.

Dusky grouse and sooty grouse (previously known as blue grouse) are found in mountainous areas with open coniferous forests. The grouse in the Project Area are most likely Dusky grouse or a hybrid of the two subspecies (Schroeder 2006), and have been observed on the site. They are closely associated with true fir (*Abies* spp.) and Douglas fir (*Pseudotsuga menziesii*) forests that provide streams, springs and meadows. Nesting habitat covers a range of types and includes shrub-steppe, mountain shrub, open coniferous forest, clearcuts, old growth forest, and alpine tundra (Schroeder 2006). There is quite a bit of this habitat available within the Project Area, only a portion of which will be impacted. Effects to grouse populations would be minimal.

Northern goshawk are generally associated with forested areas with a large and old tree component. Northern goshawk select for mature conifer forests for nesting (USFS, 2012). We mapped approximately 110 acres of potential northern goshawk habitat within the Project Area, with less than one acre located on the private parcel. This habitat is considered lower quality because it does not provide the large and old forest structure northern goshawk use for nesting. Goshawk surveys were conducted within the Mission Ridge Ski Area in the late 1990's and no goshawk were located. Project implementation may result in limited habitat impacts on approximately 13 acres of lower quality habitat for construction of access roads and ski runs. The Project Area has very little old forest structure and impacts to lower quality goshawk habitat would not negatively impact goshawk populations.

PHS Species with low potential for occurrence

Of the list of potential wildlife species, several species were identified with a low likelihood of occurrence in the Project Area. These species included: Columbia spotted frog, golden eagle, flammulated owl, pileated woodpecker, white-headed woodpecker, American marten, roosting concentrations of bat species, Cascade red fox, white-tailed jackrabbit and wolverine.

The Columbia spotted frog is associated with riparian habitat along permanent bodies of water and wetlands. Columbia spotted frogs are generally located in habitats from 520 to 950 meters (Leonard et al., 1993). Although it is possible that the Columbia spotted frog may occur within the riparian habitat along the perennial creeks and in the depressional wetlands when they hold water,

the Project Area is likely too high in elevation. They are *not* likely to be residents of the wetland habitat due to the ephemeral nature of the wetlands.

The golden eagle is associated with dry, open canopy plateaus with deep canyons, shrub steppe and grassland communities and transition zones between shrub, grassland and forested habitat. Nests generally are located on cliffs and occasionally in trees. Foraging habitat consist of shrub-steppe and grassland communities (Watson and Whalen, 2003). Golden eagle nesting and foraging habitats are very limited and are found only in an isolated patch in the north-east portion of the Project Area. The majority of the Project Area is located above the transition zone from shrub/grasslands to forest.

Flammulated owls and pileated woodpeckers are generally found in mountainous, mature, older forests with large snags and fallen trees at low to mid-elevations (Hays and Rodrick, 2003; Lewis and Azerrad, 2003). American marten also select for undisturbed mature coniferous or mixed forest, with snags/stumps and dead or live trees or stumps and coarse woody debris that provides subnivean sites in winter (Halfpenny et al., 1995). A large part of the Project Area on the private parcel was harvested and is now composed of single-age stands of trees less than 100 years old. Large and old trees and snags were largely removed during harvest operations.

White-headed woodpecker is found in areas with open canopy (i.e. less than 40 percent closed canopy) pine and fir forests with large decayed snags used for nesting and foraging (Garret et al., 1996; Gaines et al. 2017). Habitat in the majority of the Project Area is too dense for white-headed woodpecker, with overstory canopy cover of ponderosa pine forested areas greater than 25 percent and total canopy covers of 65 to 75 percent. Additionally, large and old trees and snags important for nesting and foraging habitat are lacking.

Roosting concentrations of Big-brown Bat, Myotis bats, Pallid Bat, or Townsend's Big-eared Bat may possibly be located in large trees, or within cliff like habitat (Hayes and Wiles, 2013), although both habitat types are limited within the Project Area. Bat roosts are often located within human created structures such as old barns and buildings, however, there are no structures currently on the site.

The known range of the Cascade Red Fox is restricted to the upper mountain forest, subalpine parkland, and alpine meadows of the Cascade Range, primarily in Mount Rainier National Park. The park provides excellent habitat for the fox and ample prey such as pocket gopher, snowshoe hare, songbirds, and huckleberries (Akins, 2017). Aubry (1984) indicated that they may also occupy the open forests on the eastern slope of the Cascades. As such, we have included the species here because data is lacking to determine extent of their range. Habitat for Cascade red fox may be available in the southern part of Section 19 and into current ski area although use is highly unlikely given current distribution and unlikely presence.

Wolverines are wide-ranging and can wander through a wide variety of habitat. They are primarily associated with alpine and subalpine habitats. Ongoing research projects and recent carnivore surveys have detected wolverines in the North Cascades of Washington. Wolverines did not historically occur on the Olympic Peninsula or in southwest Washington (WDFW, 2013). Although the Project Area is approximately one mile north of the closest habitat (within the existing ski area), it is approximately 20 miles east of the nearest wolverine observations from the past few years, so it's highly unlikely they would visit the area. The Project Area quickly transitions out of subalpine habitat types to lower elevation habitat types.

Because of the low probability of occurrence in the Project Area, there will be no effect to Columbia spotted frog, golden eagle, flammulated owl, pileated woodpecker, white-headed

woodpecker, American marten, roosting concentrations of bat species, Cascade red fox and wolverine.

Land birds (Including Neotropical Migratory Birds)

In January 2001, President Clinton issued an executive order on migratory birds directing federal agencies to avoid or minimize the negative impact of their actions on migratory birds, and to take active steps to protect birds and their habitat. The U.S. Fish and Wildlife Service released the "Birds of Conservation Concern" (USFWS, 2008) which lists those species the USFWS feels are in greatest need of conservation action at different geographic scales. It does not include conservation measures. The Project Area is located within the Pacific Flyway and Bird Conservation Region 9 – Great Basin. Of the 28 species listed for the Great Basin, only the golden eagle and calliope hummingbird potentially occur in the Project Area. White-headed woodpecker and peregrine falcon are also on the list, but nesting habitat associations limit the likelihood of resident populations. Golden eagle nesting habitat would be limited as well. No raptor nest sites have been located within the Project Area. The calliope hummingbird is fairly common but vulnerable to habitat loss. Habitat loss as a result of this project would not likely impact these bird species at a population level. The remaining species prefer more open grasslands and pine forests, mudflats, large marsh, large hardwood riparian, or waterfall habitat and do not have habitat within the Project Area, so there would be no effect to them from project activities.

WDFW Priority Habitats and Features

Wetlands

Wetlands are important landscape features that provide habitat for many plants and animals such as water lilies, sedges, amphibians and reptiles, as well as waterfowl, migrating birds, fish, and mammals (EPA, 2004). Wetlands function to absorb floodwaters, nutrients, sediments and pollutants before they reach other waterbodies. They also provide recreational opportunities for outdoor enthusiasts.

The two previously unmapped wetlands were assessed and delineated within the Project Area by qualified professional wetland biologists. It was determined that the wetlands fit the Class III category. Category III wetlands are wetlands with a moderate level of functions and can often be adequately replaced with a well-planned mitigation project (Hruby, 2014). The wetlands are within the Project Site and will be impacted. Per Chelan County Code (11.80.070) the Applicant will coordinate with Chelan County, WDFW and Washington Department of Ecology (11.80.110) to mitigate impacts to wetland habitats and species.

Aspen

Aspen is the most widely distributed native North American tree species (NRCS, 2017). Aspen provide habitat for a wide variety of wildlife, including hare, moose, black bear, elk, deer, grouse, migratory birds, and a variety of smaller animals. Aspen stands greater than one acre are considered priority habitats by WDFW. A small aspen stand (less than one acre) with scattered trees was identified within the Project Area. The stand does not meet the definition of a priority habitat but still provides a unique habitat feature on this landscape. The Applicant has proposed to minimize impacts to the aspen stand through site design.

Talus

Talus habitat is the accumulation of broken rocks and scree, often at the base of cliffs. Talus habitat is usually open with little vegetation cover (less than 10 percent). Talus has been shown to be habitat for larch mountain and Van Dyke's salamanders as well as the American pika (*Ochotona princeps*). The Project Area contains a substantial amount of talus, as does the

adjoining Mission Ridge Ski Area. More than 250 acres within the Project Area are open, rolling, talus fields with little vegetation, just over 40 acres of which are on the private parcel. Approximately 30 acres of talus will potentially be impacted within the Project Site. The level of impact will vary, from designation as a new ski run with no changes to the talus, to ground disturbance and talus redistribution as part of resort development. The Project Area is outside of the range of both larch mountain and Van Dyke's salamanders. The Project Area is on the margin of pika range and is likely too low in elevation for pika. As such talus habitat is not limited in this area and wildlife species associated with talus will not be affected.

Snags and Logs

Snags are standing dead trees that provide important habitat for numerous cavity nesting birds, such as woodpeckers and nuthatches, and mammals, such as squirrels and bears (Brown, 2002). Logs arise from fallen trees, large branches and snags. Log habitat, also referred to as downed wood or coarse woody debris, often serves a function similar to snags and provides nesting, denning, foraging habitat, hiding cover and shelter from inclement weather for a plethora of species. Snag habitat is limited on the site, particularly large snags, as a result of past timber harvest. The Applicant will incorporate design standards to limit large snag removal where it is safe to do so. Significant wind events have created a substantial amount of downed wood in portions of the Project Area and log habitat is not limited. Much of the log habitat is located in the southwest corner of Section 19 and will not be impacted by development.

Design Criteria and Mitigation Measures for Wildlife Species

Open Space

The project design includes open space areas adjacent and intermingled within the site plan. The proposed open space covers a total of 363 acres and consists of a mix of classifications, including: ski runs (41 ac), undesignated open space (49 ac), natural open space (258 ac), and managed open space (15 ac). Open space lands shall be preserved and managed to buffer native environments from intensive development or activities; to retain native plant communities; and, for developed areas, to provide an aesthetically pleasing landscape, provide habitat connections, and minimize risk of fire (Chelan County Code Chapter 11.89.060). Ski runs will be maintained for winter skiing. Maintenance may include removal of trees and some shrubs. Ski runs create openings in the forest that can function as foraging habitat for a number of species, including elk and deer, and can act as fuel breaks within the contiguous canopy. Undesignated open space connects the natural open space to the ski runs and provides a buffer between the developed space and the natural open space. The area within the natural open space designation is adjacent to the proposed development site to the north, east and south. This is the largest open space designation and consists of a variety of habitat types and terrain. Natural open space will be retained predominantly for its wildlife habitat and recreational opportunities compatible with wildlife objectives. The natural open space will not be actively managed or maintained other than potentially to minimize risk of fire. Managed open space would be interspersed among the residential and business development and includes maintained landscaped areas. This open space will likely provide habitat for those species with a high tolerance for human activity and will provide a park-like setting within the development area.

Additional mitigation measures and design criteria were developed to address potential impacts of the proposed action.

1. Protect all known listed Threatened, Endangered, and Sensitive species sites, and those discovered prior to or during implementation of project activities. Modify implementation activities, if protective measures prove inadequate, listed species are discovered, or new species are listed that could be affected.

2. If an active wolf den or rendezvous site is discovered in the vicinity of the project, modify activities to avoid disturbance while being used during the breeding season.
3. In order to avoid disturbances and impacts to elk and deer during calving and fawning season the Applicant will coordinate with WDFW to incorporate best management practices.
4. Applicant will coordinate with Chelan County Natural Resources and Washington State Department of Ecology to mitigate for impacts to Category III wetlands identified on the private parcel (Section 19) per guidance in "Wetland Mitigation in Washington State – Part 1: Agency Policies and Guidance (Version 1)" (WADOE et al. 2006).
5. Because old growth and mature forests are extremely limited in this area, Applicant will leave trees and snags greater than 21 inches DBH whenever possible.
6. Applicant will incorporate sanitation measures to reduce potential for wildlife-human conflicts during construction and as part of community operations.

8. Plant Species and Habitat

This section of the Resources Report provides a summary of plant species and habitat, including federal and state listed species and associated habitats, that may be found in the vicinity of the Mission Ridge Proposed Expansion Project Area (Figure 1 and Figure 2).

Review of Existing Information

We consulted a combination of available species lists and spatial data sets to identify potential plant species and habitat areas of concern occurring in the Project Area vicinity.

The following provides an example of the types of sources that were included in the review:

- Washington Natural Heritage database. 2017. Ecoregions and Ecological Systems. Available at: https://www.dnr.wa.gov/NHPdata.
- US Environmental Protection Agency (EPA). Level III and IV Ecoregions of the Continental United States. Available at: https://www.epa.gov/eco-research/level-iii-and-iv-ecoregions-continental-united-states
- Review of Endemic Plants of the Wenatchee Mountains and Adjacent Areas September 10, 2012 E2 Segment 67 Prepared for The U.S. Fish and Wildlife Service Western Washington Fish and Wildlife Office Through Section 6 funding, Region 1 by Joseph Arnett Washington Natural Heritage Program Washington Department of Natural Resources PO Box 47014 Olympia, WA 98504-7014
- Washington Natural Heritage Program (WNHP) rare plant and nonvascular species and plant communities dataset. Features represent current element occurrences. Accessed July 19, 2017. Available at: https://www.dnr.wa.gov/NHPdata.
- US Fish and Wildlife Service. 2017. Listed plants database. Available at: https://ecos.fws.gov/ecp0/reports/species-listed-by-state-report?state=WA&status=listed
- Washington Department of Fish and Wildlife (WDFW). 2017. Wildlife Priority Habitats and Species (PHS), GIS data set. Available at: http://wdfw.wa.gov/mapping/phs/.
- Washington Department of Fish and Wildlife (WDFW). 2016. Wildlife Priority Habitats and Species (PHS) Report. Available at: http://wdfw.wa.gov/conservation/phs/.
- US Forest Service Sensitive Species (R6 ISSSSP). Available at: https://www.fs.fed.us/r6/sfpnw/issssp/agency-policy/

Special Status plant species and habitats in Project Area

We narrowed down available data to a list of those species that occur or potentially occur in the vicinity of the Project Area (Table 8). Species that are currently on or under consideration for the ESA or state endangered, threatened, or species of concern lists are identified. Review of the current Natural Heritage database and current Forest Service records indicated that there are *no* federally or state listed, or proposed for listing, endangered, or threatened plant species in the Project Area. There is also no listed critical habitat for any endangered or threatened plant species in the Project Area. We assessed the rare plant list for Chelan County to identify those species that might occur within the Project Area and suggest rare/sensitive plant species. According to habitat associations and topography we have identified a subset of plant species that may be present in the Project Area. Observations were recorded for Wenatchee larkspur *(Delphinium viridescens)* in 1996 and pasqueflower (*Anemone patens var. multifida*) in 2004, approximately three miles to the west and southwest of the Project Area.

We acknowledge the WNHP data set represents an ongoing and incomplete inventory of the state and does not eliminate the need for field surveys. Additionally, the US Forest Service requires

analysis of potential impacts to Sensitive Species (R6 ISSSSP). As such, surveys will be conducted for listed and sensitive species where potential habitat is identified on Forest Service and private lands as part of the NEPA/SEPA process. Surveys for these sensitive plant species will be conducted in coordination with the Wenatchee River Ranger District botanist and WNHP. If any listed species are found during project activities, a District botanist would be notified and appropriate mitigation measures taken.

Table 8. Plant species that potentially occur in the vicinity of the Project Area.

Scientific Name	**Common Name**	**State Status**	**Federal Status***
Species with high probability of occurrence**			
Anemone patens var. multifida	pasqueflower	Threatened	none
Carex proposita	Smoky Mountain sedge	Threatened	Sensitive
Pellaea breweri	Brewer's cliffbrake	Sensitive	Sensitive
Species with low probability of occurrence - riparian buffer protections in place to protect associated habitat			
Carex magellanica ssp. irrigua	poor sedge	Sensitive	Sensitive
Cicuta bulbifera	bulb-bearing water-hemlock	Sensitive	Sensitive
Dermatocarpon meiophyllizum	silverskin lichen	Threatened	Sensitive
Peltigera hydrothyria	hydrothyria lichen	Sensitive	Strategic
Potentilla glaucophylla var. perdissecta	diverse-leaved cinquefoil	Sensitive	none
Salix pseudomonticola	false mountain willow	Sensitive	Sensitive
Salix tweedyi	Tweedy's willow	Sensitive	none
Scouleria marginata	marginate splashzone moss	Threatened	Sensitive
Swertia perennis	swertia	Sensitive	Sensitive
Species with unlikely occurrence but limited data suggests possible surveys			
Agoseris elata	tall agoseris	Sensitive	none
Alectoria nigricans	witch's hair lichen	Threatened	none
Chaenactis thompsonii	Thompson's chaenactis	Sensitive	Sensitive
Delphinium viridescens	Wenatchee larkspur	Threatened	Sensitive
Hackelia venusta	showy stickseed	Endangered	Endangered
Iliamna longisepala	longsepal globemallow	Sensitive	Sensitive
Saxifraga hyperborea	pygmy saxifrage	Sensitive	none
Saxifragopsis fragarioides	strawberry saxifrage	Threatened	Sensitive
Sidalcea oregana var. calva	Wenatchee Mountain checker-mallow	Endangered	Endangered
Silene seelyi	Seely's silene	Sensitive	Sensitive

*A federal sensitive status refers to US Forest Service Region 6.
**Due to limited data relative to species distribution, plant species are classified relative to the likelihood of occurrence and need to conduct field surveys to confirm.

Potential Impacts

The Project Site will require clearing for construction of roads and buildings and some vegetation modifications under chair lifts and in ski runs. Some vegetation management will also be implemented to address forest health and the potential for wildfire. Trees will be harvested within the Project Area on an as-needed basis for facilitating the next construction phase of the project.

The Applicant will coordinate with WDNR to harvest trees on the private parcel in accordance with the Washington Forest Practices Act and will coordinate with the US Forest Service on tree removal within the US Forest Service parcel.

Invasive Species

The Applicant recognizes the importance of managing for invasive species. As such, Applicant will develop a plan to insure invasive species are not brought into the site on construction equipment, and all disturbed sites will be promptly reseeded and/or replanted to deter invasive species. If critical or otherwise valuable habitat and plant species are identified during construction, Applicant will adjust plans to protect or replace those areas.

Design Criteria and Mitigation Measures for Plant Species and Habitats

The following measures are proposed to preserve or enhance vegetation on the site:

1. Applicant proposes to minimize vegetation removal when possible.
2. Noxious weeds will be controlled within the Project Area.
3. Clean all heavy equipment (bulldozers, graders, backhoes, dump trucks, excavators, etc.) prior to entering National Forest System Lands. Inspect, remove, and properly dispose of weed seed and plant parts found by construction crews on their clothing and equipment on a daily basis.
4. Use only weed-free straw and mulch for all projects conducted or authorized by the Forest Service, on National Forest System Lands. If State certified straw and/or mulch is not available, use sources certified to be weed free using the North American Weed Free Forage Program standards or a similar certification process.
5. Use only gravel, fill, sand, and rock that are judged to be weed free by District or Forest weed specialists.
6. Use native plant materials as the first choice for re-vegetation, where timely natural regeneration of the native plant community is not likely to occur.

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APPENDIX A

Wetland Delineation Report

Mission Ridge

WETLAND DELINEATION REPORT

Dennis Beich, Ecosystems North West,
Suzanne Tomassi, Avia Environmental

September 2017

(Formatting of original report was modified to fit within this resource report. No content was modified.)

Contents

Introduction

Ecosystems North West was contracted by Washington Conservation Science (WCS) to conduct wetland determination and delineation on three specific site within a property owned by Mission Ridge in Section 19 of Township 21N, Range 20E in Chelan County. The subject property and adjacent Mission Ridge Ski and Board Resort are proposed and current special use permit areas, respectively.

Base information for this report was obtained from WCS; publically available aerial photographs; and planning, zoning, and critical areas information databases from local, State, federal, and non-governmental websites.

This investigation was conducted to determine whether three specific locations qualify as regulatory wetlands as defined in Chelan County Code (CCC) Chapter 14.10, and to delineate any wetland areas identified in these locations.

Portions of this work were subcontracted to Avia Environmental.

Methods

A documentation search was conducted and included County inventories, the Washington Department of Fish and Wildlife (WDFW) Priority Habitats and Species (PHS) database, State and federal threatened and endangered species lists, the National Wetland Inventory (NWI), and the Washington Department of Natural Resources (WDNR) Natural Heritage Program database.

Three small areas of the property were investigated in detail during a September 6, 2017 field visit by Dennis Beich, PWS. Methodology used for wetland determination was that of the Washington State Department of *Ecology's Wetland Identification and Delineation Manual* (Manual) and *Western Mountains, Valleys, and Coast Regional Supplement*. Soil, hydrology, and vegetation were examined throughout the property to determine whether they fit criteria set forth in the Manual. Data were recorded at four of these points (Appendix A). Wetland boundaries were marked with pink pin flags.

Wetlands were rated using the Washington State Wetland Rating System for Eastern Washington: 2014 Update and buffers determined per CCC 11.80.

Property Description

The area of investigation is generally sloping with many depressions, including the wetland areas described herein. Average slope is approximately 2 t0 10 percent. Non-wetlands in the area are a mosaic of mid-age Ponderosa pine forest with areas of meadow and emergent vegetation. These areas are described in more detail in Section IV.

The USDA Soil Survey for the area indicates the possible presence of Loneridge very stony loam, Stemilt silt loam, and rock outcrop in the area (see Appendix B for details and soils map).

Findings

DOCUMENT SEARCH

Threated and endangered species for which records exist in the study area vicinity are as follows:

- Northern spotted owl (*Strix occidentalis*)
- Gray wolf (*Canis lupus*)
- Grizzly bear (*Ursus arctos*)
- Lynx (*Lynx canadensis*)
- Fisher (*Pekania pennanti*)

Northern spotted owl is the only one of these species noted within approximately two miles of the study site. Other mammal species are unlikely to occur on the site, as it is located at the far extents of their ranges. WDFW PHS species noted in the wider vicinity are:

- Elk (*Cervus elaphus*)
- Mule deer (*Odocoileus hemionus*)
- Northern goshawk (*Accipiter gentilis*)
- Western cutthroat (*Oncorhynchus clarki lewisi*)
- Rainbow trout (*Oncorhynchus mykiss*) (resident)

See Appendix C for the full PHS report.

The NWI online database does not depict any wetlands on the study area. Chelan County uses NWI in lieu of a County-specific inventory.

WDNR's website does not indicate the presence of Natural Heritage sites on the study area.

FIELD INVESTIGATION

Two small emergent wetlands were discovered on the study site. These are referred to herein as Wetland A and Wetland B, and located approximately as depicted in Figure 1. As well, a small aspen (*Populus tremuloides*) stand was investigated to determine whether it met wetland criteria.

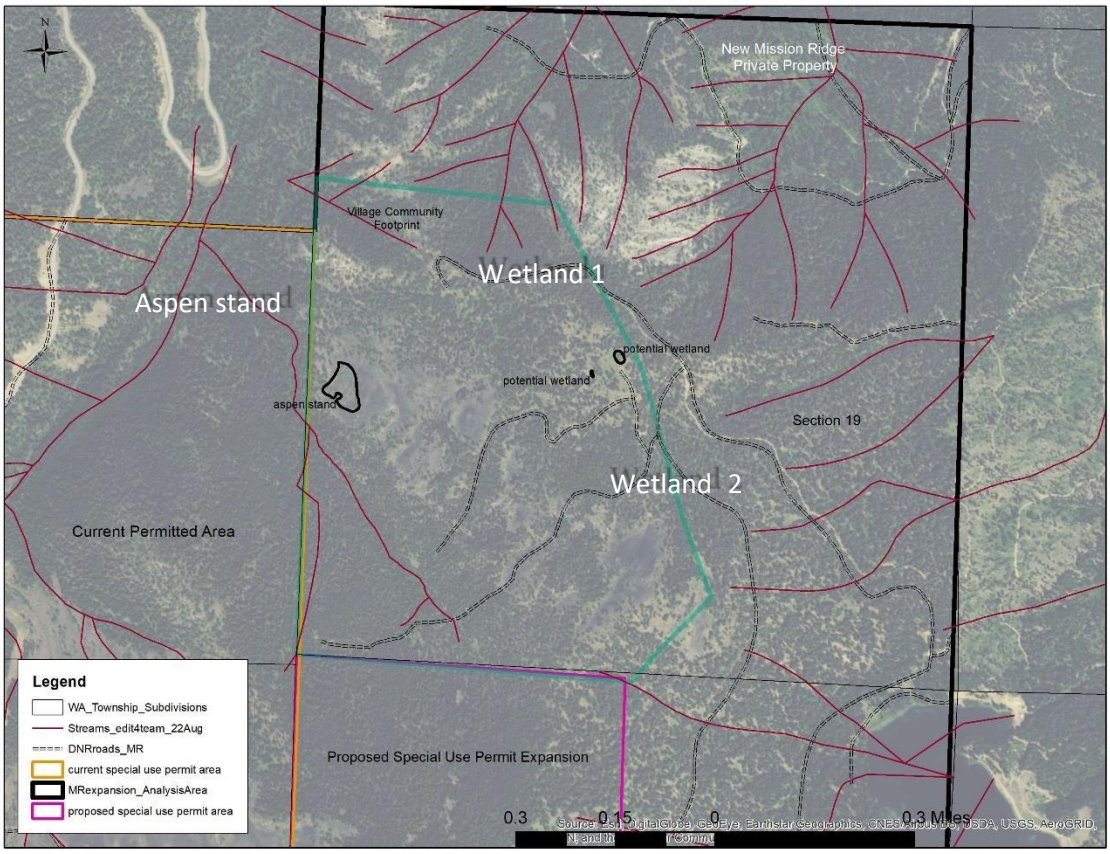


Figure 1. Approximate locations of wetlands and aspen stand in the study area.

Wetland 1

Wetland 1 is a small depression with emergent vegetation (Photo 1). Vegetation in Wetland 1 is dominated by common spikerush (*Eleocharis palustris*) and an unidentified sedge (*Carex* sp.), with analogue sedge (*C. simulata*) and meadow foxtail (*Alopecurus pratensis*) also common. Two soil strata were observed: black (10YR 2/1) loamy clay (0-7 inches) and grayish brown (2.5Y 5/2) clay (7-13 inches).

No redoximorphic features were observed. Wetland hydrology is supported primarily by groundwater, and no outlet is present. Although no ponding was present during the site visit, field indicators for seasonal ponding exceeding ½ of the wetland area were observed. Few habitat features are present and the wetland has low structural and compositional diversity. Please see Appendix D for details of wetland function and potential.

The buffer of Wetland 1 is typical mid-age Ponderosa pine dominated eastside forest with and understory of Wood's rose, pine grass (Calamagrostis rubescens), fescue grasses (*Festuca* sp.), and legumes (Fabaceae-Leguminosae).

Wetland 1 rates as Category III with water quality, hydrologic, and habitat function scores of 5, 6, and 7, respectively.

Photo 1. Wetland 1

Wetland 2

A second small depression, Wetland 2, was identified roughly 350 feet WSW of Wetland 1 (Photo 2). Approximately twice the size of Wetland 1, Wetland 2 is dominated by sedges (*Carex* sp.), blue joint grass (*Calamagrostis canadensis*), and cinquefoil (*Popentilla* sp.). Soils consist of black (10YR 2/1) clay loam (0-4 inches), brown (10YR 3/2) clay loam (4-7 inches), and dark gray (2.5Y 4/1) clay loam (7-12 inches) with oxidized roots in the soil matrix with 10 inches of the surface.

Wetland hydrology is indicated by both the oxidized rhizospheres along living roots and the presence of drift deposits.

The buffer of Wetland 1 is Ponderosa forest with subalpine fir (Abies lasiocarpa) and an understory of pine grass, fescue grasses, and strawberry (*Fragasia vesca*).

Wetland 2 is also Category III and score similarly to Wetland 1, although water quality and hydrology scores are each lower by one point. Habitat features in the wetland include loose rock and standing snags. Total score for Wetland 2 is 16.

Photo 2. Wetland 2

Aspen Stand

An area of quaking aspen was investigated as a possible wetland. Although the species' facultative status is FACU, it has been assigned special status when it is found within wetlands. The area investigated is in upland habitat located on a talus slope with no exposed soil and several layers of rock. The rock layers were at least 16 inches deep in test pits dug in an unsuccessful attempt to find soil substrate. No wetland hydrologic indicators were present at the time of the site visit. Dominant vegetation is quaking aspen, juniper (*Juniperus communis*) (UPL), and bitter brush (*Purshia tridentata*) (UPL), each constituting approximately 20% coverage. The remaining area is bare rock.

Regulatory Implications

LOCAL REGULATIONS

Chelan County regulates wetlands through CCC 11.80, Wetland Areas Overlay District. Wetland buffers are determined based on the wetland category associated with the wetland. Buffer widths also vary depending on the intensity of planned land use. Some exemptions apply to standards regulations, including some passive, educational, maintenance, and noxious species control uses (CCC 11.80.020).

As Category III wetlands, Wetlands 1 and 2 require standard buffers of 75 and 150 feet for low- and high-impact adjacent activities, respectively (CCC 11.80.060(6)). Regulatory buffers are required to be maintained in their natural condition. Buffer widths may be modified only when approved by the County and pursuant to the conditions in CCC 80.11.070. Under this code provision, the applicant but demonstrate:

"(1) That width averaging will not degrade the wetland structure, function and values; and

(2) The total area contained within the wetland buffer after averaging is no less than that contained within the wetland buffer, outlined by the requirements of this chapter, prior to averaging. The revised wetland buffer width shall not be less than seventy-five percent of the wetland buffer widths outlined within this chapter, or be less than twenty-five feet, whichever is greater; and

(3) Failure to adjust the buffer would result in a hardship to the property owner; and

(4) The need for buffer averaging is not due to the landowner's own actions; and

(5) That low-intensity land uses would be located adjacent to areas where buffer width is reduced, and that such low-intensity land uses are guaranteed in perpetuity by covenant, deed restriction, easement, or other legally binding mechanism; and

(6) A wetland report pursuant to Section 11.80.100, if required by the administrative authority, supporting the newly delineated wetland buffer, has been prepared and submitted."

The County administrator may increase the required buffer if it is determined that a wider buffer is needed to protect a wetland (CCC 80.11.090). Buffer widths may be varied by the County on lots, tracts, and parcels legally created prior to January 5, 1999, provided the applicant can demonstrate that standard requirements significantly interferes with reasonable use of the property, the need for variance is not the result of the applicants own actions, the shoreline environmental (if applicable) will not be impacted, the project is compatible with the Chelan County Comprehensive Plan and Shoreline Master Program, and the public will not be negatively impacted (CCC 11.80.090).

Buffer reduction may be no greater than 50% of the standard, and may not be less than 25 feet for Category II, III, and IV wetlands and 150 feet for Category I wetlands. The County administrator may require a mitigation plan to be implemented to avoid or compensate for any buffer impacts.

STATE AND FEDERAL REGULATIONS

Wetlands are also regulated by the U.S. Army Corps of Engineers (Corps) under section 404 of the Clean Water Act. Any filling of Waters of the State, including wetlands (except isolated wetlands), would likely require notification and permits from the Corps. Wetlands 1 and 2 would likely be considered isolated by the Corps, as no hydrologic connection to other aquatic areas are evident. Federally permitted actions that could affect endangered species may also require consultation with the U.S. Fish and Wildlife Service and/or the National Marine Fisheries Service.

Please note that the findings of this report are subject to the verification and agreement of local, State and/or federal regulatory authorities.

Appendix A. – Wetland Determination Data Forms

WETLAND DETERMINATION DATA FORM – Arid West Region

Project Site: Mission Ridge | City/County: Chelan County/ | Sampling Date: 9/6/16

Applicant/Owner: Mission Ridge Resort | State: WA | Sampling Point: TH-1

Investigator(s): Dennis Beich | Section, Township, Range: Sec 19 T21N R20E

Landform (hillslope, terrace, etc.): hilly | Local relief (concave, convex, none): concave | Slope (%): -2

Subregion (LRR): LRRB Lat: 47,2965 Long: -120,3777 Datum: ___ Soil Map Unit Name: ___ NWI classification: N/A

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)

Are Vegetation ☐, Soil ☐, or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐

Are Vegetation ☐, Soil ☐, or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ☐	No ☒		
Hydric Soil Present?	Yes ☐	No ☒	**Is the Sampled Area within a Wetland?**	**Yes ☐ No ☒**
Wetland Hydrology Present?	Yes ☐	No ☒		

Remarks:

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size:10m)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Pinus ponderosa* 2.	30	yes	UPL
3.			
4.			
50% = ___, 20% =	30	= Total Cover	
Sapling/Shrub Stratum (Plot size:5m)			
1. *Rosa woodsii*	5	yes	FACU
2.			
3.			
4.			
5.			
50% = ___, 20% =	5	= Total Cover	
Herb Stratum (Plot size:2m)			
1. *Calamagrostis rubescens*	50	yes	UPL
2. *Fescue sp*	30	yes	UPL
3. *Legume sp*	5	no	
4.			
5.			
6.			
7.			
8.			
50% = ___, 20% =	85	= Total Cover	
Woody Vine Stratum (Plot size:___)			
1.			
2.			
50% = ___, 20% =			
% Bare Ground in Herb Stratum 0		= Total Cover	
		over of Biotic Crust	

Dominance Test Worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 4 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0 (A/B)

Prevalence Index worksheet:

Total % Cover of :	Multiply by:
OBL species	x1 =
FACW species	x2 =
FAC species	x3 =
FACU species	x4 =
UPL species	x5 =
Column Totals: ___ (A)	___ (B)

Prevalence Index = B/A =

Hydrophytic Vegetation Indicators:

☐ Dominance Test is >50%

☐ Prevalence Index is ≤3.0[1]

☐ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

☐ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes No ☐ ☒

Remarks:

SOIL Sampling Point: TH-1

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (Moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-12	10YR 3/2	100						LOAMY CLAY

[1]Type: C= Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ **(LRR C)** Histosol (A1)
- ☐ **(LRR B)** Histic Epipedon (A2)
- ☐ (F18) Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☒ Stratified Layers (A5) (**LRR C**)
- ☐ 1 cm Muck (A9) (**LRR D**) Redox Dark Surface (F6)
- ☐ Depleted Below Dark Surface (A11) Depleted Dark Surface (F7)
- ☐ Thick Dark Surface (A12) Redox Depressions (F8)
- ☐ Sandy Mucky Mineral (S1) Vernal Pools (F9)
- ☐ Sandy Gleyed Matrix (S4)

Indicators for Problematic Hydric Soils[3]:

- ☐ Sandy Redox (S5) 1 cm Muck (A9)
- ☐ Stripped Matrix (S6) 2 cm Muck (A10)
- ☐ Loamy Mucky Mineral (F1) Reduced Vertic
- ☐ Loamy Gleyed Matrix (F2) Red Parent
- ☐ Depleted Matrix (F3) Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type:

Depth (Inches):

Hydric Soils Present? Yes ☐ No ☒

Remarks: some rocks present

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1) **(Nonriverine)**
- ☐ Sediment Deposits (B2) **(Nonriverine)**
- ☐ Drift Deposits (B3) **(Nonriverine)**
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9)
- ☐ Salt Crust (B11)
- ☐ Biotic Crust (B12)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Water Marks (B1) **(Riverine)**
- ☐ Sediment Deposits (B2) **(Riverine)**
- ☐ Drift Deposits (B3) **(Riverine)**
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes	☐	No	☒	Depth (inches):
Water Table Present?	Yes	☐	No	☒	Depth (inches):
Saturation Present? (includes capillary fringe)	Yes	☐	No	☒	Depth (inches):

Wetland Hydrology Present? Yes ☐ No ☒

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Arid West Region

Project Site: Mission Ridge | City/County: Chelan County/ | Sampling Date: 9/6/16

Applicant/Owner: Mission Ridge Resort | State: WA | Sampling Point: TH-2

Investigator(s): Dennis Beich | Section, Township, Range: Sec 19 T21N R20E

Landform (hillslope, terrace, etc.): hilly | Local relief (concave, convex, none): concave | Slope (%): -2

Subregion (LRR): LRRB Lat: 47,2965 Long: -120,3777 Datum: ___ Soil Map Unit Name: ___ NWI classification: N/A

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)

Are Vegetation ☐, Soil ☐, or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐

Are Vegetation ☐, Soil ☐, or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ☒	No ☐		
Hydric Soil Present?	Yes ☒	No ☐	**Is the Sampled Area within a Wetland?**	**Yes ☒ No ☐**
Wetland Hydrology Present?	Yes ☒	No ☐		

Remarks:

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size:10m)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
50% = ___, 20% =		= Total Cover	
Sapling/Shrub Stratum (Plot size:5m)			
1.			
2.			
3.			
4.			
5.			
50% = ___, 20% =		= Total Cover	
Herb Stratum (Plot size:2m)			
1. *Carex sp*	30	yes	FACW
2. *Eleocharis palustris*	50	yes	OBL
3. *Carex simulata*	10	yes	OBL
4. *Alopecurus pratensis*	10	yes	FACW
5.			
6.			
7.			
8.			
50% = ___, 20% =	100	= Total Cover	
Woody Vine Stratum (Plot size:___)			
1.			
2.			
50% = ___, 20% =			
% Bare Ground in Herb Stratum 0		= Total Cover	
		over of Biotic Crust	

Dominance Test Worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 4 (A)

Total Number of Dominant Species Across All Strata: 4 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of :	Multiply by:
OBL species	x1 =
FACW species	x2 =
FAC species	x3 =
FACU species	x4 =
UPL species	x5 =
Column Totals: ___ (A)	___ (B)

Prevalence Index = B/A =

Hydrophytic Vegetation Indicators:

☐ Dominance Test is >50%

☐ Prevalence Index is ≤3.0[1]

☐ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

☐ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ☒ No ☐

Remarks:

SOIL Sampling Point: TH-2

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (Moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-7	10YR 2/1	100						LOAMY CLAY
7-13	2.5Y 5/2	70	7.5YR 5/6	30	C	M		CLAY LOAM

[1]Type: C= Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ **(LRR C)** Histosol (A1)
- ☐ **(LRR B)** Histic Epipedon (A2)
- ☐ (F18) Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☒ Stratified Layers (A5) (**LRR C**)
- ☐ 1 cm Muck (A9) (**LRR D**)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)

Indicators for Problematic Hydric Soils[3]:

- ☐ Sandy Redox (S5) 1 cm Muck (A9)
- ☐ Stripped Matrix (S6) 2 cm Muck (A10)
- ☐ Loamy Mucky Mineral (F1) Reduced Vertic
- ☐ Loamy Gleyed Matrix (F2) Red Parent
- ☐ Depleted Matrix (F3) Other (Explain in

- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Vernal Pools (F9)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type:

Depth (Inches):

Hydric Soils Present? **Yes** ☒ **No** ☐

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1) **(Nonriverine)**
- ☐ Sediment Deposits (B2) **(Nonriverine)**
- ☒ Drift Deposits (B3) **(Nonriverine)**
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9)

- ☐ Salt Crust (B11)
- ☐ Biotic Crust (B12)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☒ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Water Marks (B1) **(Riverine)**
- ☐ Sediment Deposits (B2) **(Riverine)**
- ☐ Drift Deposits (B3) **(Riverine)**
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes	☐	No	☒	Depth (inches):
Water Table Present?	Yes	☐	No	☒	Depth (inches):
Saturation Present? (includes capillary fringe)	Yes	☐	No	☒	Depth (inches):

Wetland Hydrology Present? **Yes** ☒ **No** ☐

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Arid West Region

Project Site: Mission Ridge | City/County: Chelan County/ | Sampling Date: 9/6/16

Applicant/Owner: Mission Ridge Resort | State: WA | Sampling Point: TH-3

Investigator(s): Dennis Beich | Section, Township, Range: Sec 19 T21N R20E

Landform (hillslope, terrace, etc.): hilly | Local relief (concave, convex, none): concave | Slope (%): -2

Subregion (LRR): LRRB Lat: 47,2965 Long: -120,3777 Datum: ___ Soil Map Unit Name: ___ NWI classification: N/A

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)

Are Vegetation ☐, Soil ☐, or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐

Are Vegetation ☐, Soil ☐, or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ☐	No ☒		
Hydric Soil Present?	Yes ☐	No ☒	**Is the Sampled Area within a Wetland?**	**Yes ☐ No ☒**
Wetland Hydrology Present?	Yes ☐	No ☒		

Remarks:

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size:10m)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Abies lasiocarpa* 2.	20	yes	UPL
3.			
4.			
50% = ___, 20% =	20	= Total Cover	
Sapling/Shrub Stratum (Plot size:5m)			
1.			
2.			
3.			
4.			
5.			
50% = ___, 20% =		= Total Cover	
Herb Stratum (Plot size:2m)			
1. *Calamagrostis rubescens*	80	yes	UPL
2. *Fescue sp*	10	yes	UPL
3. *Fragasia vesca*	10	yes	UPL
4.			
5.			
6.			
7.			
8.			
50% = ___, 20% =	90	= Total Cover	
Woody Vine Stratum (Plot size:___)			
1.			
2.			
50% = ___, 20% =			
% Bare Ground in Herb Stratum 0		= Total Cover	
		over of Biotic Crust	

Dominance Test Worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 4 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0 (A/B)

Prevalence Index worksheet:

Total % Cover of :	Multiply by:
OBL species	x1 =
FACW species	x2 =
FAC species	x3 =
FACU species	x4 =
UPL species	x5 =
Column Totals: ___ (A)	___ (B)

Prevalence Index = B/A =

Hydrophytic Vegetation Indicators:

☐ Dominance Test is >50%

☐ Prevalence Index is ≤3.0[1]

☐ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

☐ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes No ☐ ☒

Remarks:

SOIL Sampling Point: TH-3

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (Moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-6	10YR 4/2	100					LOAM	
6-12	10YR 4/3	100					LOAM	

[1]Type: C= Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ **(LRR C)** Histosol (A1)
- ☐ **(LRR B)** Histic Epipedon (A2)
- ☐ (F18) Black Histic (A3)
- ☐ Material (F21) Sulfide (A4)
- ☒ Stratified Layers (A5) (**LRR C**)
- ☐ 1 cm Muck (A9) (**LRR D**) Redox Dark Surface (F6)
- ☐ Depleted Below Dark Surface (A11) Depleted Dark Surface (F7)
- ☐ Thick Dark Surface (A12) Redox Depressions (F8)
- ☐ Sandy Mucky Mineral (S1) Vernal Pools (F9)
- ☐ Sandy Gleyed Matrix (S4)

Indicators for Problematic Hydric Soils[3]:

- ☐ Sandy Redox (S5) 1 cm Muck (A9)
- ☐ Stripped Matrix (S6) 2 cm Muck (A10)
- ☐ Loamy Mucky Mineral (F1) Reduced Vertic
- ☐ Loamy Gleyed Matrix (F2) Red Parent
- ☐ Depleted Matrix (F3) Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type:

Depth (Inches):

Hydric Soils Present? **Yes** ☐ **No** ☒

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)		Secondary Indicators (2 or more required)
☐ Surface Water (A1)	☐ Salt Crust (B11)	☐ Water Marks (B1) **(Riverine)**
☐ High Water Table (A2)	☐ Biotic Crust (B12)	☐ Sediment Deposits (B2) **(Riverine)**
☐ Saturation (A3)	☐ Aquatic Invertebrates (B13)	☐ Drift Deposits (B3) **(Riverine)**
☐ Water Marks (B1) **(Nonriverine)**	☐ Hydrogen Sulfide Odor (C1)	☐ Drainage Patterns (B10)
☐ Sediment Deposits (B2) **(Nonriverine)**	☐ Oxidized Rhizospheres along Living Roots (C3)	☐ Dry-Season Water Table (C2)
☐ Drift Deposits (B3) **(Nonriverine)**	☐ Presence of Reduced Iron (C4)	☐ Crayfish Burrows (C8)
☐ Surface Soil Cracks (B6)	☐ Recent Iron Reduction in Tilled Soils (C6)	☐ Saturation Visible on Aerial Imagery (C9)
☐ Inundation Visible on Aerial Imagery (B7)	☐ Thin Muck Surface (C7)	☐ Shallow Aquitard (D3)
☐ Water-Stained Leaves (B9)	☐ Other (Explain in Remarks)	☐ FAC-Neutral Test (D5)

Field Observations:

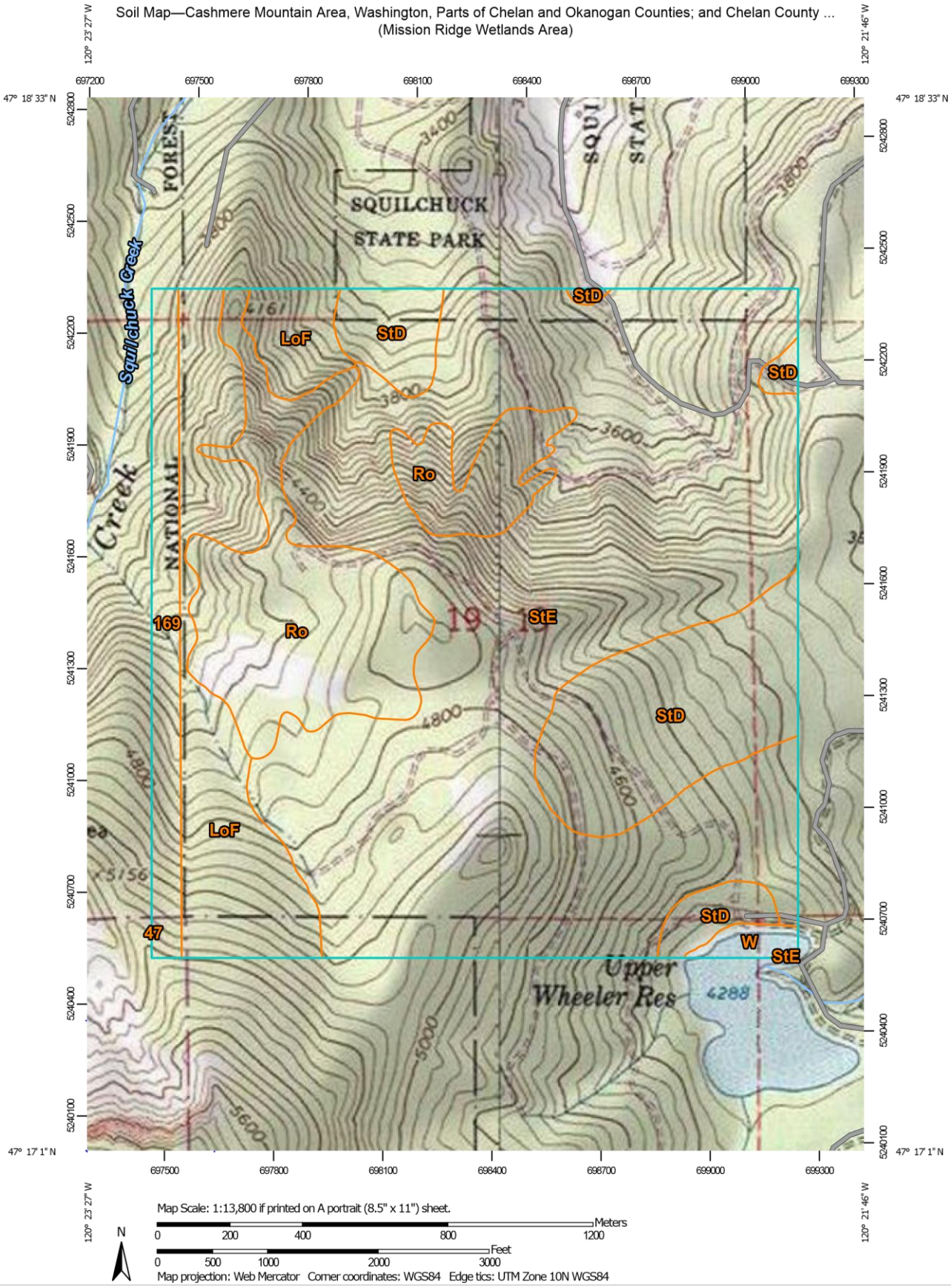
Surface Water Present?	Yes	☐	No	☒	Depth (inches):
Water Table Present?	Yes	☐	No	☒	Depth (inches):
Saturation Present? (includes capillary fringe)	Yes	☐	No	☒	Depth (inches):

Wetland Hydrology Present? **Yes** ☐ **No** ☒

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Appendix B. Soil Map



MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils
- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Topographic Map
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at scales ranging from 1:20,000 to 1:24,000.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Cashmere Mountain Area, Washington, Parts of Chelan and Okanogan Counties
Survey Area Data: Version 15, Sep 8, 2016

Soil Survey Area: Chelan County Area, Washington (Parts of Chelan and Kittitas Counties)
Survey Area Data: Version 12, Sep 8, 2016

Your area of interest (AOI) includes more than one soil survey area. These survey areas may have been mapped at different scales, with a different land use in mind, at different times, or at different levels of detail. This may result in map unit symbols, soil properties, and interpretations that do not completely agree across soil survey area boundaries.

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Aug 24, 2012—Sep 21, 2016

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
47	Blewett-Rock outcrop complex, 30 to 60 percent slopes	0.1	0.0%
169	Loneridge very stony loam, 30 to 60 percent slopes	34.7	4.4%
Subtotals for Soil Survey Area		**34.7**	**4.4%**
Totals for Area of Interest		**791.2**	**100.0%**

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
LoF	Loneridge very stony loam, 25 to 65 percent slopes	93.9	11.9%
Ro	Rock outcrop	115.3	14.6%
StD	Stemilt silt loam, 0 to 25 percent slopes	104.4	13.2%
StE	Stemilt silt loam, 25 to 45 percent slopes	437.4	55.3%
W	Water	5.4	0.7%
Subtotals for Soil Survey Area		**756.5**	**95.6%**
Totals for Area of Interest		**791.2**	**100.0%**

Appendix C. PHS Vicinity report and map

WASHINGTON DEPARTMENT OF FISH AND WILDLIFE
PRIORITY HABITATS AND SPECIES REPORT

SOURCE DATASET: PHSPlusPublic
REPORT DATE: 10/07/2017 5.47

Query ID: P171007174703

Common Name / Scientific Name / Notes	Site Name / Source Dataset / Source Record / Source Date	Priority Area / Occurrence Type / More Information (URL) / Mgmt Recommendations	Accuracy	Federal Status / State Status / PHS Listing Status	Sensitive Data / Resolution	Source Entity / Geometry Type
Columbia spotted frog Rana luteiventris	WS_OccurPoint 18285 September 16, 1999	Occurrence Biotic detection http://wdfw.wa.gov/publications/pub.php?	1/4 mile (Quarter	N/A Candidate PHS LISTED	N AS MAPPED	WA Dept. of Fish and Wildlife Points
Columbia spotted frog Rana luteiventris	WS_OccurPoint 18280 September 16, 1999	Occurrence Biotic detection http://wdfw.wa.gov/publications/pub.php?	1/4 mile (Quarter	N/A Candidate PHS LISTED	N AS MAPPED	WA Dept. of Fish and Wildlife Points
Elk Cervus elaphus	NONEUM BASIN CALVING PHSREGION 901504	Breeding Area Parturition http://wdfw.wa.gov/publications/pub.php?	1/4 mile (Quarter	N/A N/A PHS LISTED	N AS MAPPED	WA Dept. of Fish and Wildlife Polygons
Elk Cervus elaphus	COLOCKUM MIGRATION PHSREGION 901510	Migration Migration http://wdfw.wa.gov/publications/pub.php?	1/4 mile (Quarter	N/A N/A PHS LISTED	N AS MAPPED	WA Dept. of Fish and Wildlife Polygons
Elk Cervus elaphus	COLOCKUM ELK CALVING PHSREGION 901501	Breeding Area Parturition http://wdfw.wa.gov/publications/pub.php?	1/4 mile (Quarter	N/A N/A PHS LISTED	N AS MAPPED	WA Dept. of Fish and Wildlife Polygons
Freshwater Emergent	N/A NWIWetlands	Aquatic Habitat Aquatic habitat http://www.ecy.wa.	NA	N/A N/A PHS Listed	N AS MAPPED	US Fish and Wildlife Service Polygons
Freshwater Emergent	N/A NWIWetlands	Aquatic Habitat Aquatic habitat http://www.ecy.wa.	NA	N/A N/A PHS Listed	N AS MAPPED	US Fish and Wildlife Service Polygons

10/07/2017 5.47 1

Common Name Scientific Name Notes	Site Name Source Dataset Source Record Source Date	Priority Area Occurrence Type More Information (URL) Mgmt Recommendations	Accuracy	Federal Status State Status PHS Listing Status	Sensitive Data Resolution	Source Entity Geometry Type
Freshwater Emergent	N/A NWIWetlands	Aquatic Habitat Aquatic habitat http://www.ecy.wa.	NA	N/A N/A PHS Listed	N AS MAPPED	US Fish and Wildlife Service Polygons
Freshwater Emergent	N/A NWIWetlands	Aquatic Habitat Aquatic habitat http://www.ecy.wa.	NA	N/A N/A PHS Listed	N AS MAPPED	US Fish and Wildlife Service Polygons
Freshwater Emergent	N/A NWIWetlands	Aquatic Habitat Aquatic habitat http://www.ecy.wa.	NA	N/A N/A PHS Listed	N AS MAPPED	US Fish and Wildlife Service Polygons
Freshwater Emergent	N/A NWIWetlands	Aquatic Habitat Aquatic habitat http://www.ecy.wa.	NA	N/A N/A PHS Listed	N AS MAPPED	US Fish and Wildlife Service Polygons
Freshwater Emergent	N/A NWIWetlands	Aquatic Habitat Aquatic habitat http://www.ecy.wa.	NA	N/A N/A PHS Listed	N AS MAPPED	US Fish and Wildlife Service Polygons
Freshwater Emergent	N/A NWIWetlands	Aquatic Habitat Aquatic habitat http://www.ecy.wa.	NA	N/A N/A PHS Listed	N AS MAPPED	US Fish and Wildlife Service Polygons
Freshwater Forested/Shrub	N/A NWIWetlands	Aquatic Habitat Aquatic habitat http://www.ecy.wa.	NA	N/A N/A PHS Listed	N AS MAPPED	US Fish and Wildlife Service Polygons
Freshwater Forested/Shrub	N/A NWIWetlands	Aquatic Habitat Aquatic habitat http://www.ecy.wa.	NA	N/A N/A PHS Listed	N AS MAPPED	US Fish and Wildlife Service Polygons

Common Name Scientific Name Notes	Site Name Source Dataset Source Record Source Date	Priority Area Occurrence Type More Information (URL) Mgmt Recommendations	Accuracy	Federal Status State Status PHS Listing Status	Sensitive Data Resolution	Source Entity Geometry Type
Freshwater Forested/Shrub	N/A NWIWetlands	Aquatic Habitat Aquatic habitat http://www.ecy.wa.	NA	N/A N/A PHS Listed	N AS MAPPED	US Fish and Wildlife Service Polygons
Freshwater Forested/Shrub	N/A NWIWetlands	Aquatic Habitat Aquatic habitat http://www.ecy.wa.	NA	N/A N/A PHS Listed	N AS MAPPED	US Fish and Wildlife Service Polygons
Freshwater Forested/Shrub	N/A NWIWetlands	Aquatic Habitat Aquatic habitat http://www.ecy.wa.	NA	N/A N/A PHS Listed	N AS MAPPED	US Fish and Wildlife Service Polygons
Freshwater Forested/Shrub	N/A NWIWetlands	Aquatic Habitat Aquatic habitat http://www.ecy.wa.	NA	N/A N/A PHS Listed	N AS MAPPED	US Fish and Wildlife Service Polygons
Freshwater Forested/Shrub	N/A NWIWetlands	Aquatic Habitat Aquatic habitat http://www.ecy.wa.	NA	N/A N/A PHS Listed	N AS MAPPED	US Fish and Wildlife Service Polygons
Lake	N/A NWIWetlands	Aquatic Habitat Aquatic habitat http://www.ecy.wa.	NA	N/A N/A PHS Listed	N AS MAPPED	US Fish and Wildlife Service Polygons
Lake	N/A NWIWetlands	Aquatic Habitat Aquatic habitat http://www.ecy.wa.	NA	N/A N/A PHS Listed	N AS MAPPED	US Fish and Wildlife Service Polygons
Mule deer Odocoileus hemionus	MISSION CREEK DEER PHSREGION 901318	Regular Concentration Regular concentration http://wdfw.wa.gov/publications/pub.php?	1/4 mile (Quarter	N/A N/A PHS LISTED	N AS MAPPED	WA Dept. of Fish and Wildlife Polygons

Common Name Scientific Name Notes	Site Name Source Dataset Source Record Source Date	Priority Area Occurrence Type More Information (URL) Mgmt Recommendations	Accuracy	Federal Status State Status PHS Listing Status	Sensitive Data Resolution	Source Entity Geometry Type
Northern Spotted Owl Strix occidentalis	WS_OccurPoint 102022 May 21, 1998	Breeding Area Nest http://wdfw.wa.gov/publications/pub.php?	Map 1:100,000 <=	Threatened Endangered PHS LISTED	Y TOWNSHIP	WA Dept. of Fish and Wildlife Points
Northern Spotted Owl Strix occidentalis	WS_OwlStatus_Buf	Management Buffer Management buffer http://wdfw.wa.gov/publications/pub.php?	NA	Threatened Endangered PHS Listed	Y TOWNSHIP	WA Dept. of Fish and Wildlife Polygons
Northern Spotted Owl Strix occidentalis	WS_OwlStatus_Buf	Management Buffer Management buffer http://wdfw.wa.gov/publications/pub.php?	NA	Threatened Endangered PHS Listed	Y TOWNSHIP	WA Dept. of Fish and Wildlife Polygons
Northern Spotted Owl Strix occidentalis	WS_OwlStatus_Buf	Management Buffer Management buffer http://wdfw.wa.gov/publications/pub.php?	NA	Threatened Endangered PHS Listed	Y TOWNSHIP	WA Dept. of Fish and Wildlife Polygons
Northern Spotted Owl Strix occidentalis	WS_OccurPoint 102001 June 13, 1992	Occurrence Biotic detection http://wdfw.wa.gov/publications/pub.php?	Map 1:100,000 <=	Threatened Endangered PHS LISTED	Y TOWNSHIP	WA Dept. of Fish and Wildlife Points
Northern Spotted Owl Strix occidentalis	WS_OccurPoint 92889 May 16, 2001	Breeding Area Nest http://wdfw.wa.gov/publications/pub.php?	Map 1:100,000 <=	Threatened Endangered PHS LISTED	Y TOWNSHIP	WA Dept. of Fish and Wildlife Points
Northern Spotted Owl Strix occidentalis	WS_OccurPoint 105435 June 05, 1996	Occurrence Biotic detection http://wdfw.wa.gov/publications/pub.php?	Map 1:100,000 <=	Threatened Endangered PHS LISTED	Y TOWNSHIP	WA Dept. of Fish and Wildlife Points
Northern Spotted Owl Strix occidentalis	WS_OwlStatus_Buf	Management Buffer Management buffer http://wdfw.wa.gov/publications/pub.php?	NA	Threatened Endangered PHS Listed	Y TOWNSHIP	WA Dept. of Fish and Wildlife Polygons

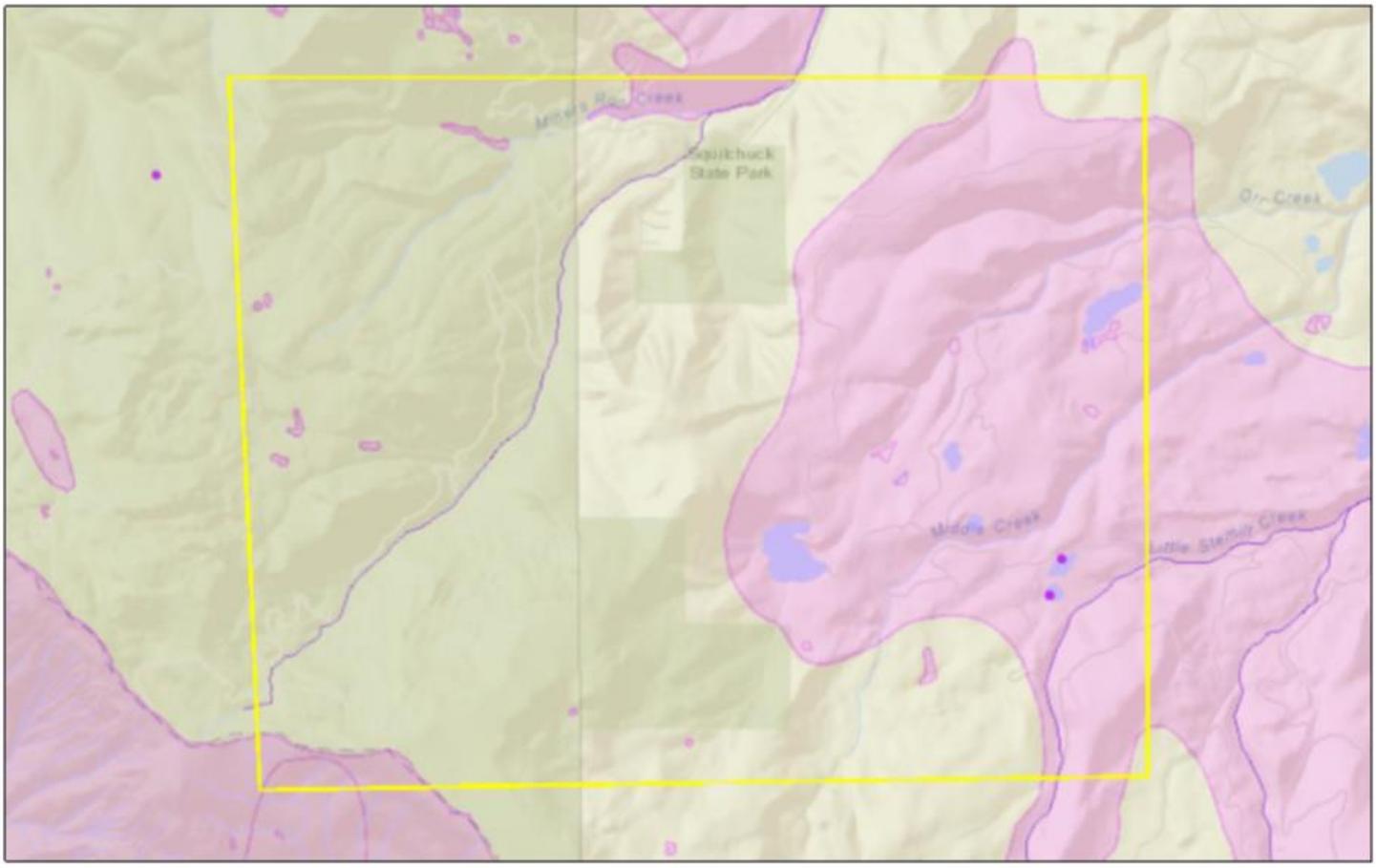
Common Name Scientific Name Notes	Site Name Source Dataset Source Record Source Date	Priority Area Occurrence Type More Information (URL) Mgmt Recommendations	Accuracy	Federal Status State Status PHS Listing Status	Sensitive Data Resolution	Source Entity Geometry Type
Northern Spotted Owl Strix occidentalis	WS_OwlStatus_Buf	Management Buffer Management buffer http://wdfw.wa.gov/publications/pub.php?	NA	Threatened Endangered PHS Listed	Y TOWNSHIP	WA Dept. of Fish and Wildlife Polygons
Northern Spotted Owl Strix occidentalis	WS_OwlStatus_Buf	Management Buffer Management buffer http://wdfw.wa.gov/publications/pub.php?	NA	Threatened Endangered PHS Listed	Y TOWNSHIP	WA Dept. of Fish and Wildlife Polygons
Northern Spotted Owl Strix occidentalis	WS_OwlStatus_Buf	Management Buffer Management buffer http://wdfw.wa.gov/publications/pub.php?	NA	Threatened Endangered PHS Listed	Y TOWNSHIP	WA Dept. of Fish and Wildlife Polygons
Northern Spotted Owl Strix occidentalis	WS_OwlStatus_Buf	Management Buffer Management buffer http://wdfw.wa.gov/publications/pub.php?	NA	Threatened Endangered PHS Listed	Y TOWNSHIP	WA Dept. of Fish and Wildlife Polygons
Northern Spotted Owl Strix occidentalis	WS_OccurPoint 100673 May 12, 1992	Breeding Area Nest http://wdfw.wa.gov/publications/pub.php?	Map 1:100,000 <=	Threatened Endangered PHS LISTED	Y TOWNSHIP	WA Dept. of Fish and Wildlife Points
Northern Spotted Owl Strix occidentalis	WS_OccurPoint 105701 May 27, 1998	Occurrence Biotic detection http://wdfw.wa.gov/publications/pub.php?	Map 1:100,000 <=	Threatened Endangered PHS LISTED	Y TOWNSHIP	WA Dept. of Fish and Wildlife Points
Rainbow Trout Oncorhynchus mykiss	Squilchuck Creek SWIFD 3531	Occurrence/Migration Occurrence/migration http://wdfw.wa.gov/wlm/diversty/soc/soc.htm	NA	N/A N/A PHS LISTED	N AS MAPPED	Lines
Western toad Anaxyrus boreas	WS_OccurPoint 18278 September 16, 1999	Occurrence Biotic detection http://wdfw.wa.gov/publications/pub.php?	1/4 mile (Quarter	N/A Candidate PHS LISTED	N AS MAPPED	WA Dept. of Fish and Wildlife Points

10/07/2017 5.47 5

Common Name Scientific Name Notes	Site Name Source Dataset Source Record Source Date	Priority Area Occurrence Type More Information (URL) Mgmt Recommendations	Accuracy	Federal Status State Status PHS Listing Status	Sensitive Data Resolution	Source Entity Geometry Type
Western toad Anaxyrus boreas	WS_OccurPoint 18283 September 16, 1999	Occurrence Biotic detection http://wdfw.wa.gov/publications/pub.php?	1/4 mile (Quarter	N/A Candidate PHS LISTED	N AS MAPPED	WA Dept. of Fish and Wildlife Points
Westslope Cutthroat Oncorhynchus clarki lewisi	Little Stemilt Creek SWIFD 3572	Occurrence/Migration Occurrence/migration http://wdfw.wa.gov/wlm/diversty/soc/soc.htm http://wdfw.wa.gov/publications/pub.php?	NA	N/A N/A PHS LISTED	N AS MAPPED	 Lines
Wetlands	STEFFEN POND PHSREGION 901534	Aquatic Habitat N/A http://www.ecy.wa.	1/4 mile (Quarter	N/A N/A PHS LISTED	N AS MAPPED	WA Dept. of Fish and Wildlife Polygons

DISCLAIMER. This report includes information that the Washington Department of Fish and Wildlife (WDFW) maintains in a central computer database. It is not an attempt to provide you with an official agency response as to the impacts of your project on fish and wildlife. This information only documents the location of fish and wildlife resources to the best of our knowledge. It is not a complete inventory and it is important to note that fish and wildlife resources may occur in areas not currently known to WDFW biologists, or in areas for which comprehensive surveys have not been conducted. Site specific surveys are frequently necesssary to rule out the presence of priority resources. Locations of fish and wildlife resources are subject to vraition caused by disturbance, changes in season and weather, and other factors. WDFW does not recommend using reports more than six months old.

WDFW Test Map



October 7, 2017

PHS Report Clip Area
PT
LN

POLY
AS MAPPED
SECTION

QTR-TWP
TOWNSHIP

1:59,509

0 0.5 1 2 mi
0 0.75 1.5 3 km

Sources: Esri, HERE, DeLorme, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand),

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RATING SUMMARY – Eastern Washington

Name of wetland (or ID #): ____Mission Ridge 1_____ Date of site visit: ____9-6-17_

Rated by_____Dennis Beich, PWS____ Trained by Ecology? _x_ Yes ___ No Date of training __2014

HGM Class used for rating___Depressional_____ Wetland has multiple HGM classes?____Y ___x_N

NOTE: **Form is not complete without the figures requested** (*figures can be combined*). Source of base aerial photo/map_____Google maps_____

OVERALL WETLAND CATEGORY _III_ (based on functions___ or special characteristics___)

1. Category of wetland based on FUNCTIONS

_____**Category I** – Total score = 22-27
_____**Category II** – Total score = 19-21
____X__**Category III** – Total score = 16-18
_____**Category IV** – Total score = 9-15

FUNCTION	Improving Water Quality	Hydrologic	Habitat	
	Circle the appropriate ratings			
Site Potential	(H) M L	(H) M L	H (M) L	
Landscape Potential	H M (L)	H M (L)	(H) M L	
Value	H M (L)	H (M) L	H (M) L	**TOTAL**
Score Based on Ratings	5	6	7	18

Score for each function based on three ratings *(order of ratings is not important)*

9 = H,H,H
8 = H,H,M
7 = H,H,L
7 = H,M,M
6 = H,M,L
6 = M,M,M
5 = H,L,L
5 = M,M,L
4 = M,L,L
3 = L,L,L

2. Category based on SPECIAL CHARACTERISTICS of wetland

CHARACTERISTIC	CATEGORY *Circle the appropriate category*
Vernal Pools	**II III**
Alkali	**I**
Wetland of High Conservation Value	**I**
Bog and Calcareous Fens	**I**
Old Growth or Mature Forest – slow growing	**I**
Aspen Forest	**I**
Old Growth or Mature Forest – fast growing	**II**
Floodplain forest	**II**

None of the above	

Maps and figures required to answer questions correctly for Eastern Washington

Depressional Wetlands

Map of:	To answer questions:	Figure #
Cowardin plant classes and classes of emergents	D 1.3, H 1.1, H 1.5	1
Hydroperiods (including area of open water for H 1.3)	D 1.4, H 1.2, H 1.3	N/A
Location of outlet (*can be added to map of hydroperiods)*	D 1.1, D 4.1	N/A
Boundary of area within 150 ft of the wetland *(can be added to another figure)*	D 2.2, D 5.2	1
Map of the contributing basin	D 5.3	2
1 km Polygon: Area that extends 1 km from entire wetland edge - including polygons for accessible habitat and undisturbed habitat	H 2.1, H 2.2, H 2.3	1
Screen capture of map of 303(d) listed waters in basin (from Ecology website)	D 3.1, D 3.2	N/A
Screen capture of list of TMDLs for WRIA in which wetland is found (website)	D 3.3	N/A

Riverine Wetlands

Map of:	To answer questions:	Figure #
Cowardin plant classes and classes of emergents	H 1.1, H 1.5	
Hydroperiods	H 1.2, H 1.3	
Ponded depressions	R 1.1	
Boundary of area within 150 ft of the wetland *(can be added to another figure)*	R 2.4	
Map of the contributing basin	R 2.2, R 2.3, R 5.2	
Plant cover of trees, shrubs, and herbaceous plants	R 1.2, R 4.2	
Width of wetland vs. width of stream *(can be added to another figure)*	R 4.1	
1 km Polygon: Area that extends 1 km from entire wetland edge - including polygons for accessible habitat and undisturbed habitat	H 2.1, H 2.2, H 2.3	
Screen capture of map of 303(d) listed waters in basin (from Ecology website)	R 3.1	
Screen capture of list of TMDLs for WRIA in which wetland is found (website)	R 3.2, R 3.3	

Lake Fringe Wetlands

Map of:	To answer questions:	Figure #
Cowardin plant classes and classes of emergents	L 1.1, L 4.1, H 1.1, H 1.5	
Plant cover of trees, shrubs, and herbaceous plants	L 1.2	
Boundary of area within 150 ft of the wetland *(can be added to another figure)*	L 2.2	
1 km Polygon: Area that extends 1 km from entire wetland edge - including polygons for accessible habitat and undisturbed habitat	H 2.1, H 2.2, H 2.3	
Screen capture of map of 303(d) listed waters in basin (from Ecology website)	L 3.1, L 3.2	
Screen capture of list of TMDLs for WRIA in which wetland is found (website)	L 3.3	

Slope Wetlands

Map of:	To answer questions:	Figure #
Cowardin plant classes and classes of emergents	H 1.1, H 1.5	
Hydroperiods	H 1.2, H 1.3	
Plant cover of **dense** trees, shrubs, and herbaceous plants	S 1.3	
Plant cover of **dense, rigid** trees, shrubs, and herbaceous plants (*can be added to figure above)*	S 4.1	
Boundary of area within 150 ft of the wetland (*can be added to another figure*)	S 2.1, S 5.1	
1 km Polygon: Area that extends 1 km from entire wetland edge - including polygons for accessible habitat and undisturbed habitat	H 2.1, H 2.2, H 2.3	
Screen capture of map of 303(d) listed waters in basin (from Ecology website)	S 3.1, S 3.2	
Screen capture of list of TMDLs for WRIA in which wetland is found (website)	S 3.3	

HGM Classification of Wetland in Eastern Washington

For questions 1-4, the criteria described must apply to the entire unit being rated.

If the hydrologic criteria listed in each question do not apply to the entire unit being rated, you probably have a unit with multiple HGM classes. In this case, identify which hydrologic criteria in questions 1-4 apply, and go to Question 5.

1. Does the entire unit **meet both** of the following criteria?
___The vegetated part of the wetland is on the water side of the Ordinary High Water Mark of a body of permanent open water (without any plants on the surface) that is at least 20 ac (8 ha) in size ___At least 30% of the open water area is deeper than 10 ft (3 m)

(NO) – go to 2 **YES –** The wetland class is **Lake Fringe** (Lacustrine Fringe)

2. Does the entire wetland unit **meet all** of the following criteria?
___The wetland is on a slope (*slope can be very gradual*),
___The water flows through the wetland in one direction (unidirectional) and usually comes from seeps. It may flow subsurface, as sheetflow, or in a swale without distinct banks; ___The water leaves the wetland **without being impounded**.

(NO) - go to 3 YES – The wetland class is **Slope**
NOTE: Surface water does not pond in these type of wetlands except occasionally in very small and shallow depressions or behind hummocks (depressions are usually <3 ft diameter and less than 1 foot deep).

3. Does the entire wetland unit **meet all** of the following criteria?
___ The unit is in a valley, or stream channel, where it gets inundated by overbank flooding from that stream or river;
___ The overbank flooding occurs at least once every 10 years.

(NO) - go to 4 YES – The wetland class is **Riverine**
NOTE: The Riverine wetland can contain depressions that are filled with water when the river is not flooding.

4. Is the entire wetland unit in a topographic depression in which water ponds, or is saturated to the surface, at some time during the year. *This means that any outlet, if present, is higher than the interior of the wetland.*

NO – go to 5 (YES) – The wetland class is **Depressional**

5. Your wetland unit seems to be difficult to classify and probably contains several different HGM classes. For example, seeps at the base of a slope may grade into a riverine floodplain, or a small stream within a Depressional wetland has a zone of flooding along its sides. GO BACK AND IDENTIFY WHICH OF THE HYDROLOGIC REGIMES DESCRIBED IN QUESTIONS 1-4 APPLY TO DIFFERENT

AREAS IN THE WETLAND UNIT (make a rough sketch to help you decide). Use the following table to identify the appropriate class to use for the rating system if you have several HGM classes present within the wetland unit being scored.

NOTE: Use this table only if the class that is recommended in the second column represents 10% or more of the total area of the wetland unit being rated. If the area of the HGM class listed in column 2 is less than 10% of the wetland unit; classify the wetland using the class that represents more than 90% of the total area.

HGM classes within the wetland unit being rated	HGM Class to use in rating
Slope + Riverine	Riverine
Slope + Depressional	Depressional
Slope + Lake Fringe	Lake Fringe
Depressional + Riverine (the riverine portion is within the boundary of depression)	Depressional
Depressional + Lake Fringe	Depressional
Riverine + Lake Fringe	Riverine

*If you are still unable to determine which of the above criteria apply to your wetland, or if you have **more than 2 HGM classes** within a wetland boundary, classify the wetland as Depressional for the rating.*

Wetland name or number 1

DEPRESSIONAL WETLANDS

Water Quality Functions - Indicators that the site functions to improve water quality

Points (only 1 score per box)

D 1.0. Does the site have the potential to improve water quality?

1.1. Characteristics of surface water outflows from the wetland:		
Wetland has no surface water outlet	points = 5 (circled)	5
Wetland has an intermittently flowing outlet	points = 3	
Wetland has a highly constricted permanently flowing outlet	points = 3	
Wetland has a permanently flowing, unconstricted, surface outlet	points = 1	
D 1.2. The soil 2 in below the surface (or duff layer) is true clay or true organic *(use NRCS definitions of soils)* YES = 3 NO = 0		0
D 1.3. Characteristics of persistent vegetation (Emergent, Scrub-shrub, and/or Forested Cowardin classes)		
Wetland has persistent, ungrazed, vegetation for > 2/3 of area	points = 5 (circled)	
Wetland has persistent, ungrazed, vegetation from 1/3 to 2/3 of area	points = 3	5
Wetland has persistent, ungrazed vegetation from 1/10 to < 1/3 of area	points = 1	
Wetland has persistent, ungrazed vegetation < 1/10 of area	points = 0	
D 1.4. Characteristics of seasonal ponding or inundation: *This is the area of ponding that fluctuates every year. Do not count the area that is permanently ponded.*		
Area seasonally ponded is > ½ total area of wetland	points = 3 (circled)	3
Area seasonally ponded is ¼ - ½ total area of wetland	points = 1	
Area seasonally ponded is < ¼ total area of wetland	points = 0	
Total for D 1	Add the points in the boxes above	13

Rating of Site Potential If score is: **__x__12- 16 = H ___6- 11 = M ___ 0- 5 = L** *Record the rating on the first page*

D 2.0. Does the landscape have the potential to support the water quality function of the site?

D 2.1. Does the wetland receive stormwater discharges?	Yes = 1 No = 0	0
D 2.2. Is > 10% of the area within 150 ft of the wetland in land uses that generate pollutants?	Yes = 1 No = 0	0
D 2.3. Are there septic systems within 250 ft of the wetland?	Yes = 1 No = 0	0
D 2.4. Are there other sources of pollutants coming into the wetland that are not listed in questions D 2.1- D 2.3? Source_____	Yes = 1 No = 0	0
Total for D 2	Add the points in the boxes above	0

Rating of Landscape Potential If score is: **___3 or 4 = H ___1 or 2 = M __x__0 = L** *Record the rating on the first page*

D 3.0. Is the water quality improvement provided by the site valuable to society?

D 3.1. Does the wetland discharge directly (i.e., within 1 mi) to a stream, river, or lake that is on the 303(d) list? Yes = 1 No = 0	0
D 3.2. Is the wetland in a basin or sub-basin where water quality is an issue in some aquatic resource [303(d) list, eutrophic lakes, problems with nuisance and toxic algae]? Yes = 1 No = 0	0
D 3.3. Has the site been identified in a watershed or local plan as important for maintaining water quality (*answer YES if there is a TMDL for the drainage or basin in which the wetland is found*)? Yes = 2 No = 0	0
Total for D 3 Add the points in the boxes above	0

Rating of Value If score is: **___2-4 = H ___1 = M ___x 0 = L** *Record the rating on the first page*

Wetland name or number 1

DEPRESSIONAL WETLANDS

Hydrologic Functions - Indicators that the site functions to reduce flooding and erosion.		Points (only 1 score per box)
D 4.0. Does the site have the potential to reduce flooding and erosion?		
D 4.1. Characteristics of surface water outflows from the wetland:		8
Wetland has no surface water outlet	points = 8	
Wetland has an intermittently flowing outlet	points = 4	
Wetland has a highly constricted permanently flowing outlet	points = 4	
Wetland has a permanently flowing unconstricted surface outlet	points = 0	
(If outlet is a ditch and not permanently flowing treat wetland as "intermittently flowing")		
D 4.2. Depth of storage during wet periods: *Estimate the height of ponding above the bottom of the outlet. For wetlands with no outlet, measure from the surface of permanent water or deepest part (if dry).*		
Seasonal ponding: > 3 ft above the lowest point in wetland or the surface of permanent ponding	points = 8	8
Seasonal ponding: 2 ft - < 3 ft above the lowest point in wetland or the surface of permanent ponding	points = 6	
The wetland is a headwater wetland	points = 4	
Seasonal ponding: 1 ft - < 2 ft	points = 4	
Seasonal ponding: 6 in - < 1 ft	points = 2	
Seasonal ponding: < 6 in or wetland has only saturated soils	points = 0	
Total for D 4	Add the points in the boxes above	16

Rating of Site Potential If score is: **x 12-16 = H** **6-11 = M** **0-5 = L** *Record the rating on the first page*

D 5.0. Does the landscape have the potential to support the hydrologic functions of the site?		
D 5.1. Does the wetland receive stormwater discharges?	Yes = 1 No = 0	0
D 5.2. Is > 10% of the area within 150 ft of the wetland in a land use that generates runoff?	Yes = 1 No = 0	0
D 5.3. Is more than 25% of the contributing basin of the wetland covered with intensive human land uses?	Yes = 1 No = 0	0
Total for D 5	Add the points in the boxes above	0

Rating of Landscape Potential If score is: **3 = H** **1 or 2 = M** **x 0 = L** *Record the rating on the first page*

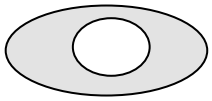
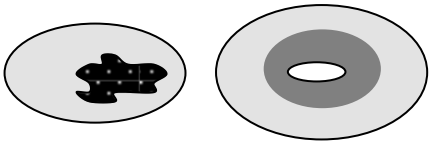
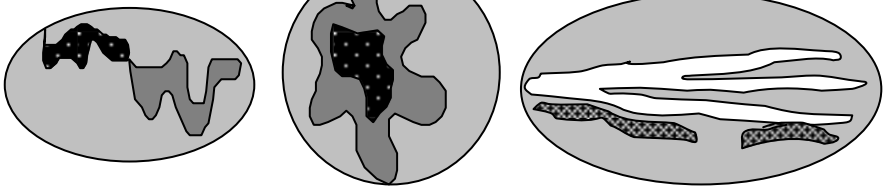
D 6.0. Are the hydrologic functions provided by the site valuable to society?		
D 6.1. The wetland is in a landscape that has flooding problems.		1
Choose the description that best matches conditions around the wetland being rated. *Do not add points. Choose the highest score if more than one condition is met.*		
The wetland captures surface water that would otherwise flow down-gradient into areas where flooding has damaged human or natural resources (e.g., houses or salmon redds), AND		
Flooding occurs in sub-basin that is immediately down-gradient of wetland	points = 2	
Surface flooding problems are in a sub-basin farther down-gradient	points = 1	
The existing or potential outflow from the wetland is so constrained by human or natural conditions that the water stored by the wetland cannot reach areas that flood. *Explain why* _____	points = 0	
There are no problems with flooding downstream of the wetland	points = 0	
D 6.2. Has the site has been identified as important for flood storage or flood conveyance in a regional flood control plan?	Yes = 2 No = 0	0
Total for D 6	Add the points in the boxes above	1

Rating of Value If score is: **2-4 = H** **x 1 = M** **0 = L** *Record the rating on the first page*

Wetland name or number 1

These questions apply to wetlands of all HGM classes. (only 1 score per box) **HABITAT FUNCTIONS** - Indicators that site functions to provide important habitat	
H 1.0. Does the wetland have the potential to provide habitat for many species?	
H 1.1. Structure of the plant community: *Check the Cowardin vegetation classes present and categories of emergent plants. Size threshold for each category is >= ¼ ac or >= 10% of the wetland if wetland is < 2.5 ac.* ____Aquatic bed _x_ Emergent plants 0-12 in (0-30 cm) high are the highest layer and have > 30% cover __x_Emergent plants >12-40 in (>30-100 cm) high are the highest layer with >30% cover ____Emergent plants > 40 in (> 100 cm) high are the highest layer with >30% cover ____Scrub-shrub (areas where shrubs have >30% cover) ____Forested (areas where trees have >30% cover) 4 or more checks: points = 3 3 checks: points = 2 2 checks: points = 1 1 check: points = 0	1
H 1.2. Is one of the vegetation types Aquatic Bed? Yes = 1 No = 0	0
H 1.3. Surface water H 1.3.1. Does the wetland have areas of open water (without emergent or shrub plants) over at least ¼ ac **OR** 10% of its area during the March to early June **OR** in August to the end of September? ***A****nswer YES for Lake Fringe wetlands*. Yes = 3 points & go to H 1.4 No = go to H 1.3.2 H 1.3.2. Does the wetland have an intermittent or permanent, and unvegetated stream within its boundaries, or along one side, over at least ¼ ac or 10% of its area? *Answer yes only if H 1.3.1 is No*. Yes = 3 No = 0	3
H 1.4. Richness of plant species Count the number of plant species in the wetland that cover at least 10 ft^2. D*ifferent patches of the same species can be combined to meet the size threshold. You do not have to name the species.* *Do not include Eurasian milfoil, reed canarygrass, purple loosestrife, Russian olive, Phragmites, Canadian thistle, yellow-flag iris, and saltcedar (Tamarisk)* # of species __7__ Scoring: > 9 species: points = 2 4-9 species: points = 1 < 4 species: points = 0	1

Wetland name or number 1

H 1.5. Interspersion of habitats Decide from the diagrams below whether interspersion among types of plant structures (described in H 1.1), and unvegetated areas (open water or mudflats) is high, moderate, low, or none. *Use map of Cowardin and emergent plant classes prepared for questions H 1.1 and map of open water from H 1.3. If you have four or more plant classes or three classes and open water, the rating is always high.*  **None** = 0 points  **Low** = 1 point  **Moderate** = 2 points  Riparian braided channels with 2 classes All three diagrams in this row are **High** = 3 points	Figure__ 1

H 1.6. Special habitat features *Check the habitat features that are present in the wetland. The number of checks is the number of points.* ____Loose rocks larger than 4 in OR large, downed, woody debris (> 4 in diameter) within the area of surface ponding or in stream. ____Cattails or bulrushes are present within the wetland. ____Standing snags (diameter at the bottom > 4 in) in the wetland or within 30 m (100 ft) of the edge. ____Emergent or shrub vegetation in areas that are permanently inundated/ponded. ____Stable steep banks of fine material that might be used by beaver or muskrat for denning (> 45 degree slope) OR signs of recent beaver activity __X_ Invasive species cover less than 20% in each stratum of vegetation *(canopy, sub-canopy, shrubs, herbaceous, moss/ground cover)*	1
Total for H 1 Add the points in the boxes above	7

Rating of Site Potential If score is:___**15-18 = H** __**x**__**7-14 = M** ___**0-6 = L** *Record the rating on the first page*

Wetland name or number 1

H 2.0. Does the landscape have the potential to support habitat functions of the site?	
H 2.1. Accessible habitat (only area of habitat abutting wetland). If total accessible habitat is: *Calculate:* % undisturbed habitat _____ **+** [(% moderate and low intensity land uses)/2] ____ **=**_____% > 1/3 (33.3%) of 1 km Polygon points = 3 20-33% of 1km Polygon points = 2 10-19% of 1km Polygon points = 1 <10% of 1km Polygon points = 0	3
H 2.2. Undisturbed habitat in 1 km Polygon around wetland. *Calculate:* % undisturbed habitat _____ **+** [(% moderate and low intensity land uses)/2] ____ **=**_____% Undisturbed habitat > 50% of Polygon points = 3 Undisturbed habitat 10 - 50% and in 1-3 patches points = 2 Undisturbed habitat 10 - 50% and > 3 patches points = 1 Undisturbed habitat < 10% of Polygon points = 0	3
H 2.3. Land use intensity in 1 km Polygon: > 50% of Polygon is high intensity land use points = (- 2) Does not meet criterion above points = 0	0
H 2.4. The wetland is in an area where annual rainfall is less than 12 in, and its water regime is not influenced by irrigation practices, dams, or water control structures. *Generally, this means outside boundaries of reclamation areas, irrigation districts, or reservoirs* Yes = 3 No = 0	0
Total for H 2 Add the points in the boxes above	6

Rating of Landscape Potential If score is: **__x__ 4-9 = H ___1-3 = M ___< 1 = L** *Record the rating on the first page*

H 3.0. Is the habitat provided by the site valuable to society?	
H 3.1. Does the site provide habitat for species valued in laws, regulations, or policies? *Choose the highest score that applies to the wetland being rated* Site meets ANY of the following criteria: points = 2 ☐ It has 3 or more priority habitats within 100 m (see Appendix B) ☐ It provides habitat for Threatened or Endangered species (any plant or animal on state or federal lists) ☐ It is mapped as a location for an individual WDFW species ☐ It is a Wetland of High Conservation Value as determined by the Department of Natural Resources ☐ It has been categorized as an important habitat site in a local or regional comprehensive plan, in a Shoreline Master Plan, or in a watershed plan Site has 1 or 2 priority habitats within 100 m (see Appendix B) points = 1 Site does not meet any of the criteria above points = 0	1

Rating of Value If score is: **___2 = H __x_1 = M ___0 = L** *Record the rating on the first page*

Wetland name or number 1

CATEGORIZATION BASED ON SPECIAL CHARACTERISTICS

Please determine if the wetland meets the attributes described below and circle the appropriate category. NOTE: A wetland may meet the criteria for more than one set of special characteristics. Record all those that apply. NOTE: All wetlands should also be characterized based on their functions.

Wetland Type *Check off any criteria that apply to the wetland. Circle the category when the appropriate criteria are met.*	**Category**
SC 1.0. Vernal pools Is the wetland **less than 4000 ft²**, and does it meet at least **two** of the following criteria? ☐ Its only source of water is rainfall or snowmelt from a small contributing basin and has no groundwater input. ☐ Wetland plants are typically present only in the spring; the summer vegetation is typically upland annuals. *If you find perennial, obligate, wetland plants, the wetland is probably NOT a vernal pool*. ☐ The soil in the wetland is shallow [< 1 ft (30 cm)deep] and is underlain by an impermeable layer such as basalt or clay. ☐ Surface water is present for less than 120 days during the wet season. Yes **–** Go to **SC 1.1** No = **Not a vernal pool** SC 1.1. Is the vernal pool relatively undisturbed in February and March? Yes **–** Go to **SC 1.2** No = **Not a vernal pool with special characteristics**	
SC 1.2. Is the vernal pool in an area where there are at least 3 separate aquatic resources within 0.5 mi (other wetlands, rivers, lakes etc.)? Yes = **Category II** No = **Category III**	**Cat. II** **Cat. III**
SC 2.0. Alkali wetlands Does the wetland meet **one** of the following criteria? ☐ The wetland has a conductivity > 3.0 mS/cm. ☐ The wetland has a conductivity between 2.0 and 3.0 mS, and more than 50% of the plant cover in the wetland can be classified as "alkali" species (see Table 4 for list of plants found in alkali systems). ☐ If the wetland is dry at the time of your field visit, the central part of the area is covered with a layer of salt. **OR** does the wetland unit meet two of the following three sub-criteria? ☐ Salt encrustations around more than 75% of the edge of the wetland ☐ More than ¾ of the plant cover consists of species listed on Table 4 ☐ A pH above 9.0. All alkali wetlands have a high pH, but please note that some freshwater wetlands may also have a high pH. Thus, pH alone is not a good indicator of alkali wetlands. Yes = **Category I** No= **Not an alkali wetland**	**Cat. I**
SC 3.0. Wetlands of High Conservation Value (WHCV) SC 3.1. Has the WA Department of Natural Resources updated their website to include the list of Wetlands of High Conservation Value? Yes – Go to **SC 3.2** No – Go to **SC 3.3** SC 3.2. Is the wetland listed on the WDNR database as a Wetland of High Conservation Value? Yes = **Category I** No = **Not a WHCV** SC 3.3. Is the wetland in a Section/Township/Range that contains a Natural Heritage wetland? http://www1.dnr.wa.gov/nhp/refdesk/datasearch/wnhpwetlands.pdf Yes – **Contact WNHP/WDNR and go to SC 3.4** No = **Not a WHCV**	**Cat. I**

Wetland name or number 1

SC 3.4. Has WDNR identified the wetland within the S/T/R as a Wetland of High Conservation Value and it is listed on their website? Yes = **Category I** No =**Not a WHCV**	

SC 4.0 Bogs and Calcareous Fens Does the wetland (or any part of the wetland unit) meet both the criteria for soils and vegetation in bogs or calcareous fens? *Use the key below to identify if the wetland is a bog or calcareous fen.* ***If you answer yes you will still need to rate the wetland based on its functions.*** SC 4.1. Does an area within the wetland have organic soil horizons (i.e., layers of organic soil), either peats or mucks, that compose 16 in or more of the first 32 in of the soil profile? *See Appendix C for a field key to identify organic soils*. Yes – Go to **SC 4.3** No – Go to **SC 4.2** SC 4.2. Does an area within the wetland have organic soils, either peats or mucks, that are less than 16 in deep over bedrock or an impermeable hardpan such as clay or volcanic ash, or that are floating on top of a lake or pond? Yes – Go to **SC 4.3** No = **Is not a bog for rating** SC 4.3. Does an area within the wetland have more than 70% cover of mosses at ground level AND at least 30% of the total plant cover consists of species in Table 5? Yes = **Category I bog** No – Go to **SC 4.4 NOTE:** If you are uncertain about the extent of mosses in the understory, you may substitute that criterion by measuring the pH of the water that seeps into a hole dug at least 16 in deep. If the pH is less than 5.0 and the plant species in Table 5 are present, the wetland is a bog. SC 4.4. Is an area with peats or mucks forested (> 30% cover) with subalpine fir, western red cedar, western hemlock, lodgepole pine, quaking aspen, Engelmann spruce, or western white pine, AND any of the species (or combination of species) listed in Table 5 provide more than 30% of the cover under the canopy? Yes = **Category I bog** No – Go to **SC 4.5** SC 4.5. Do the species listed in Table 6 comprise at least 20% of the total plant cover within an area of peats and mucks? Yes = **Is a Calcareous Fen for purpose of rating** No – Go to **SC 4.6** SC 4.6. Do the species listed in Table 6 comprise at least 10% of the total plant cover in an area of peats and mucks, AND one of the two following conditions is met: ☐ Marl deposits [calcium carbonate ($CaCO_3$) precipitate] occur on the soil surface or plant stems ☐ The pH of free water is ≥ 6.8 AND electrical conductivity is ≥ 200 uS/cm at multiple locations within the wetland Yes = **Is a Category I calcareous fen** No = **Is not a calcareous fen**	**Cat. I** **Cat. I**

SC 5.0. Forested Wetlands Does the wetland have an area of forest rooted within its boundary that meets **at least one** of the following three criteria? (*Continue only if you have identified that a forested class is present in question H 1.1*) ☐ The wetland is within the 100 year floodplain of a river or stream ☐ Aspen (*Populus tremuloides*) represents at least 20% of the total cover of woody species ☐ There is at least ¼ ac of trees (even in wetlands smaller than 2.5 ac) that are "mature" or "old-growth" according to the definitions for these priority habitats developed by WDFW *(see definitions in question H3.1)* Yes – Go to **SC 5.1** No = **Not a forested wetland with special characteristics**	

Wetland name or number 1

SC 5.1. Does the wetland have a forest canopy where more than 50% of the tree species (by cover) are slow growing native trees (*see Table 7*)? Yes = **Category I** No – Go to **SC 5.2**	**Cat. I**
SC 5.2. Does the wetland have areas where aspen (*Populus tremuloides*) represents at least 20% of the total cover of woody species? Yes = **Category I** No – Go to **SC 5.3**	**Cat. I**
SC 5.3. Does the wetland have at least ¼ acre with a forest canopy where more than 50% of the tree species (by cover) are fast growing species (*see Table 7*)? Yes = **Category II** No – Go to **SC 5.4**	**Cat. II**
SC 5.4. Is the forested component of the wetland within the 100 year floodplain of a river or stream? Yes = **Category II** No = **Not a forested wetland with special characteristics**	**Cat. II**
Category of wetland based on Special Characteristics *Choose the highest rating if wetland falls into several categories* If you answered No for all types, enter "Not Applicable" on Summary Form	

Wetland name or number_____

Appendix B: WDFW Priority Habitats in Eastern Washington

Priority habitats listed by WDFW (see complete descriptions of WDFW priority habitats, and the counties in which they can be found, in: Washington Department of Fish and Wildlife. 2008. Priority Habitat and Species List. Olympia, Washington. 177 pp. http://wdfw.wa.gov/publications/00165/wdfw00165.pdf or access the list from here: http://wdfw.wa.gov/conservation/phs/list/)

Count how many of the following priority habitats are within 330 ft (100 m) of the wetland: ***NOTE:*** *This question is independent of the land use between the wetland and the priority habitat.*

☐ **Aspen Stands:** Pure or mixed stands of aspen greater than 1 ac (0.4 ha).

☐ **Biodiversity Areas and Corridors**: Areas of habitat that are relatively important to various species of native fish and wildlife (*full descriptions in WDFW PHS report*).

☐ **Old-growth/Mature forests:** Old-growth east of Cascade crest – Stands are highly variable in tree species composition and structural characteristics due to the influence of fire, climate, and soils. In general, stands will be >150 years of age, with 10 trees/ac (25 trees/ha) that are > 21 in (53 cm) dbh, and 1-3 snags/ac (2.5-7.5 snags/ha) that are > 12-14 in (30-35 cm) diameter. Downed logs may vary from abundant to absent. Canopies may be single or multi-layered. Evidence of human-caused alterations to the stand will be absent or so slight as to not affect the ecosystem's essential structures and functions. Mature forests – Stands with average diameters exceeding 21 in (53 cm) dbh; crown cover may be less than 100%; decay, decadence, numbers of snags, and quantity of large downed material is generally less than that found in oldgrowth; 80-200 years old west and 80-160 years old east of the Cascade crest.

☐ **Oregon White Oak:** Woodland stands of pure oak or oak/conifer associations where canopy coverage of the oak component is important (*full descriptions in WDFW PHS report p. 158 – see web link above*).

☐ **Riparian**: The area adjacent to aquatic systems with flowing water that contains elements of both aquatic and terrestrial ecosystems which mutually influence each other.

☐ **Instream:** The combination of physical, biological, and chemical processes and conditions that interact to provide functional life history requirements for instream fish and wildlife resources.

☐ **Caves:** A naturally occurring cavity, recess, void, or system of interconnected passages under the earth in soils, rock, ice, or other geological formations and is large enough to contain a human.

☐ **Cliffs:** Greater than 25 ft (7.6 m) high and occurring below 5000 ft elevation.

☐ **Talus:** Homogenous areas of rock rubble ranging in average size 0.5 - 6.5 ft (0.15 - 2.0 m), composed of basalt, andesite, and/or sedimentary rock, including riprap slides and mine tailings. May be associated with cliffs.

☐ **Snags and Logs:** Trees are considered snags if they are dead or dying and exhibit sufficient decay characteristics to enable cavity excavation/use by wildlife. Priority snags have a diameter at breast height of > 12 in (30 cm)in eastern Washington and are > 6.5 ft (2 m) in height. Priority logs are > 12 in (30 cm) in diameter at the largest end, and > 20 ft (6 m) long.

☐ **Shrub-steppe:** A nonforested vegetation type consisting of one or more layers of perennial bunchgrasses and a conspicuous but discontinuous layer of shrubs (see Eastside Steppe for sites with little or no shrub cover).

- **Eastside Steppe:** Nonforested vegetation type dominated by broadleaf herbaceous flora (i.e., forbs), perennial bunchgrasses, or a combination of both. Bluebunch wheatgrass (*Pseudoroegneria spicata*) is often the prevailing cover component along with Idaho fescue (*Festuca idahoensis*), Sandberg bluegrass (*Poa secunda*), rough fescue (*F. campestris*), or needlegrasses (*Achnatherum* spp.).

- **Juniper Savannah:** All juniper woodlands.

Note: All vegetated wetlands are by definition a priority habitat but are not included in this list because they are addressed elsewhere.

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Wetland name or number 2

RATING SUMMARY – Eastern Washington

Name of wetland (or ID #): Mission Ridge 2 Date of site visit: 9-6-17

Rated by Dennis Beich, PWS Trained by Ecology? x Yes No Date of training 2014

HGM Class used for rating Depressional *Wetland has multiple HGM classes?* Y x N

NOTE: **Form is not complete without the figures requested** (*figures can be combined*). Source of base aerial photo/map Google maps

OVERALL WETLAND CATEGORY III (based on functions or special characteristics)

3. Category of wetland based on FUNCTIONS

Score for each function based on three ratings *(order of ratings is not important)*

9 = H,H,H
8 = H,H,M
7 = H,H,L
7 = H,M,M
6 = H,M,L
6 = M,M,M
5 = H,L,L
5 = M,M,L
4 = M,L,L
3 = L,L,L

_____**Category I** – Total score = 22-27

_____**Category II** – Total score = 19-21

X **Category III** – Total score = 16-18

_____**Category IV** – Total score = 9-15

FUNCTION	Improving Water Quality	Hydrologic	Habitat	
	Circle the appropriate ratings			
Site Potential	H (M) L	(H) M L	H (M) L	
Landscape Potential	H M (L)	H M (L)	(H) M L	
Value	H M (L)	H M (L)	H (M) L	**TOTAL**
Score Based on Ratings	4	5	7	16

4. Category based on SPECIAL CHARACTERISTICS of wetland

CHARACTERISTIC	CATEGORY *Circle the appropriate category*
Vernal Pools	**II** **III**
Alkali	**I**
Wetland of High Conservation Value	**I**
Bog and Calcareous Fens	**I**
Old Growth or Mature Forest – slow growing	**I**
Aspen Forest	**I**
Old Growth or Mature Forest – fast growing	**II**
Floodplain forest	**II**
None of the above	

Maps and figures required to answer questions correctly for Eastern Washington

Depressional Wetlands

Map of:	To answer questions:	Figure #
Cowardin plant classes and classes of emergents	D 1.3, H 1.1, H 1.5	1
Hydroperiods (including area of open water for H 1.3)	D 1.4, H 1.2, H 1.3	N/A
Location of outlet (*can be added to map of hydroperiods)*	D 1.1, D 4.1	N/A
Boundary of area within 150 ft of the wetland *(can be added to another figure)*	D 2.2, D 5.2	1
Map of the contributing basin	D 5.3	2
1 km Polygon: Area that extends 1 km from entire wetland edge - including polygons for accessible habitat and undisturbed habitat	H 2.1, H 2.2, H 2.3	1
Screen capture of map of 303(d) listed waters in basin (from Ecology website)	D 3.1, D 3.2	N/A
Screen capture of list of TMDLs for WRIA in which wetland is found (website)	D 3.3	N/A

Riverine Wetlands

Map of:	To answer questions:	Figure #
Cowardin plant classes and classes of emergents	H 1.1, H 1.5	
Hydroperiods	H 1.2, H 1.3	
Ponded depressions	R 1.1	
Boundary of area within 150 ft of the wetland *(can be added to another figure)*	R 2.4	
Map of the contributing basin	R 2.2, R 2.3, R 5.2	
Plant cover of trees, shrubs, and herbaceous plants	R 1.2, R 4.2	
Width of wetland vs. width of stream *(can be added to another figure)*	R 4.1	
1 km Polygon: Area that extends 1 km from entire wetland edge - including polygons for accessible habitat and undisturbed habitat	H 2.1, H 2.2, H 2.3	
Screen capture of map of 303(d) listed waters in basin (from Ecology website)	R 3.1	
Screen capture of list of TMDLs for WRIA in which wetland is found (website)	R 3.2, R 3.3	

Lake Fringe Wetlands

Map of:	To answer questions:	Figure #
Cowardin plant classes and classes of emergents	L 1.1, L 4.1, H 1.1, H 1.5	
Plant cover of trees, shrubs, and herbaceous plants	L 1.2	
Boundary of area within 150 ft of the wetland *(can be added to another figure)*	L 2.2	
1 km Polygon: Area that extends 1 km from entire wetland edge - including polygons for accessible habitat and undisturbed habitat	H 2.1, H 2.2, H 2.3	
Screen capture of map of 303(d) listed waters in basin (from Ecology website)	L 3.1, L 3.2	
Screen capture of list of TMDLs for WRIA in which wetland is found (website)	L 3.3	

Slope Wetlands

Map of:	To answer questions:	Figure #
Cowardin plant classes and classes of emergents	H 1.1, H 1.5	
Hydroperiods	H 1.2, H 1.3	
Plant cover of **dense** trees, shrubs, and herbaceous plants	S 1.3	
Plant cover of **dense, rigid** trees, shrubs, and herbaceous plants (*can be added to figure above)*	S 4.1	
Boundary of area within 150 ft of the wetland (*can be added to another figure*)	S 2.1, S 5.1	

1 km Polygon: Area that extends 1 km from entire wetland edge - including polygons for accessible habitat and undisturbed habitat	H 2.1, H 2.2, H 2.3	
Screen capture of map of 303(d) listed waters in basin (from Ecology website)	S 3.1, S 3.2	
Screen capture of list of TMDLs for WRIA in which wetland is found (website)	S 3.3	

HGM Classification of Wetland in Eastern Washington

For questions 1-4, the criteria described must apply to the entire unit being rated.

If the hydrologic criteria listed in each question do not apply to the entire unit being rated, you probably have a unit with multiple HGM classes. In this case, identify which hydrologic criteria in questions 1-4 apply, and go to Question 5.

6. Does the entire unit **meet both** of the following criteria?
   ____The vegetated part of the wetland is on the water side of the Ordinary High Water Mark of a body of permanent open water (without any plants on the surface) that is at least 20 ac (8 ha) in size
   ____At least 30% of the open water area is deeper than 10 ft (3 m)

   (NO) – go to 2 **YES –** The wetland class is **Lake Fringe** (Lacustrine Fringe)

7. Does the entire wetland unit **meet all** of the following criteria?
   ____The wetland is on a slope (*slope can be very gradual*),
   ____The water flows through the wetland in one direction (unidirectional) and usually comes from seeps. It may flow subsurface, as sheetflow, or in a swale without distinct banks; The water leaves the wetland **without being impounded**.

   (NO) - go to 3 YES – The wetland class is **Slope**

NOTE: Surface water does not pond in these type of wetlands except occasionally in very small and shallow depressions or behind hummocks (depressions are usually <3 ft diameter and less than 1 foot deep).

8. Does the entire wetland unit **meet all** of the following criteria?
   ____The unit is in a valley, or stream channel, where it gets inundated by overbank flooding from that stream or river;
   ____The overbank flooding occurs at least once every 10 years.

   (NO) - go to 4 YES – The wetland class is **Riverine**

NOTE: The Riverine wetland can contain depressions that are filled with water when the river is not flooding.

9. Is the entire wetland unit in a topographic depression in which water ponds, or is saturated to the surface, at some time during the year. *This means that any outlet, if present, is higher than the interior of the wetland.*

   NO – go to 5 (YES) – The wetland class is **Depressional**

10. Your wetland unit seems to be difficult to classify and probably contains several different HGM classes. For example, seeps at the base of a slope may grade into a riverine floodplain, or a small stream within a Depressional wetland has a zone of flooding along its sides. GO BACK AND IDENTIFY WHICH OF THE HYDROLOGIC REGIMES DESCRIBED IN QUESTIONS 1-4 APPLY TO DIFFERENT AREAS IN THE WETLAND UNIT (make a rough sketch to help you decide). Use the following table to identify the appropriate class to use for the rating system if you have several HGM classes present within the wetland unit being scored.

NOTE: Use this table only if the class that is recommended in the second column represents 10% or more of the total area of the wetland unit being rated. If the area of the HGM class listed in column 2 is less than 10% of the wetland unit; classify the wetland using the class that represents more than 90% of the total area.

HGM classes within the wetland unit being rated	HGM Class to use in rating
Slope + Riverine	Riverine
Slope + Depressional	Depressional
Slope + Lake Fringe	Lake Fringe
Depressional + Riverine (the riverine portion is within the boundary of depression)	Depressional
Depressional + Lake Fringe	Depressional
Riverine + Lake Fringe	Riverine

If you are still unable to determine which of the above criteria apply to your wetland, or if you have more* than 2 HGM classes *within a wetland boundary, classify the wetland as Depressional for the rating.

Wetland name or number 2

DEPRESSIONAL WETLANDS **Water Quality Functions** - Indicators that the site functions to improve water quality	Points (only 1 score per box)
D 1.0. Does the site have the potential to improve water quality?	
D 1.1. Characteristics of surface water outflows from the wetland: Wetland has no surface water outlet — points = (5) Wetland has an intermittently flowing outlet — points = 3 Wetland has a highly constricted permanently flowing outlet — points = 3 Wetland has a permanently flowing, unconstricted, surface outlet — points = 1	5
D 1.2. The soil 2 in below the surface (or duff layer) is true clay or true organic *(use NRCS definitions of soils)* YES = 3 NO = 0	0
D 1.3. Characteristics of persistent vegetation (Emergent, Scrub-shrub, and/or Forested Cowardin classes) Wetland has persistent, ungrazed, vegetation for > 2/3 of area — points = (5) Wetland has persistent, ungrazed, vegetation from 1/3 to 2/3 of area — points = 3 Wetland has persistent, ungrazed vegetation from 1/10 to < 1/3 of area — points = 1 Wetland has persistent, ungrazed vegetation < 1/10 of area — points = 0	5
D 1.4. Characteristics of seasonal ponding or inundation: *This is the area of ponding that fluctuates every year. Do not count the area that is permanently ponded.* Area seasonally ponded is > ½ total area of wetland — points = 3 Area seasonally ponded is ¼ - ½ total area of wetland — points = (1) Area seasonally ponded is < ¼ total area of wetland — points = 0	1
Total for D 1 — Add the points in the boxes above	11

Rating of Site Potential If score is: **__x__ 12- 16 = H _____ 6- 11 = M _____ 0- 5 = L** *Record the rating on the first page*

D 2.0. Does the landscape have the potential to support the water quality function of the site?	
D 2.1. Does the wetland receive stormwater discharges? Yes = 1 No = 0	0
D 2.2. Is > 10% of the area within 150 ft of the wetland in land uses that generate pollutants? Yes = 1 No = 0	0
D 2.3. Are there septic systems within 250 ft of the wetland? Yes = 1 No = 0	0
D 2.4. Are there other sources of pollutants coming into the wetland that are not listed in questions D 2.1- D 2.3? Source_____ Yes = 1 No = 0	0
Total for D 2 — Add the points in the boxes above	0

Rating of Landscape Potential If score is: **___ 3 or 4 = H _____ 1 or 2 = M __x__ 0 = L** *Record the rating on the first page*

D 3.0. Is the water quality improvement provided by the site valuable to society?	
D 3.1. Does the wetland discharge directly (i.e., within 1 mi) to a stream, river, or lake that is on the 303(d) list? Yes = 1 No = 0	0
D 3.2. Is the wetland in a basin or sub-basin where water quality is an issue in some aquatic resource [303(d) list, eutrophic lakes, problems with nuisance and toxic algae]? Yes = 1 No = 0	0
D 3.3. Has the site been identified in a watershed or local plan as important for maintaining water quality (*answer YES if there is a TMDL for the drainage or basin in which the wetland is found*)? Yes = 2 No = 0	0
Total for D 3 — Add the points in the boxes above	0

Rating of Value If score is: **___ 2-4 = H _____ 1 = M _____ x 0 = L** *Record the rating on the first page*

Wetland name or number 2

DEPRESSIONAL WETLANDS

Hydrologic Functions - Indicators that the site functions to reduce flooding and erosion.

Points (only 1 score per box)

D 4.0. Does the site have the potential to reduce flooding and erosion?

D 4.1. Characteristics of surface water outflows from the wetland: **8**

- Wetland has no surface water outlet — points = 8 (circled)
- Wetland has an intermittently flowing outlet — points = 4
- Wetland has a highly constricted permanently flowing outlet — points = 4
- Wetland has a permanently flowing unconstricted surface outlet — points = 0

(If outlet is a ditch and not permanently flowing treat wetland as "intermittently flowing")

D 4.2. Depth of storage during wet periods: *Estimate the height of ponding above the bottom of the outlet. For wetlands with no outlet, measure from the surface of permanent water or deepest part (if dry).* **4**

Seasonal ponding: > 3 ft above the lowest point in wetland or the surface of permanent ponding points = 8 Seasonal ponding: 2 ft - < 3 ft above the lowest point in wetland or the surface of permanent pondingpoints = 6 The wetland is a headwater wetland — points = 4

- Seasonal ponding: 1 ft - < 2 ft — points = 4 (circled)
- Seasonal ponding: 6 in - < 1 ft — points = 2
- Seasonal ponding: < 6 in or wetland has only saturated soils — points = 0

Total for D 4	Add the points in the boxes above	12

Rating of Site Potential If score is: **__x_ 12-16 = H_____6-11 = M_____0-5 = L** *Record the rating on the first page*

D 5.0. Does the landscape have the potential to support the hydrologic functions of the site?

D 5.1. Does the wetland receive stormwater discharges?	Yes = 1 No = 0	0
D 5.2. Is > 10% of the area within 150 ft of the wetland in a land use that generates runoff?	Yes = 1 No = 0	0
D 5.3. Is more than 25% of the contributing basin of the wetland covered with intensive human land uses?	Yes = 1 No = 0	0
Total for D 5	Add the points in the boxes above	0

Rating of Landscape Potential If score is: **___3 = H_____1 or 2 = M ___x_0 = L** *Record the rating on the first page*

D 6.0. Are the hydrologic functions provided by the site valuable to society?

D 6.1. The wetland is in a landscape that has flooding problems. **0**

Choose the description that best matches conditions around the wetland being rated. *Do not add points. Choose the highest score if more than one condition is met.*

The wetland captures surface water that would otherwise flow down-gradient into areas where flooding has damaged human or natural resources (e.g., houses or salmon redds), AND

- Flooding occurs in sub-basin that is immediately down-gradient of wetland — points = 2
- Surface flooding problems are in a sub-basin farther down-gradient — points = 1 (circled)

The existing or potential outflow from the wetland is so constrained by human or natural conditions that the water stored by the wetland cannot reach areas that flood. *Explain why*_____points = 0

There are no problems with flooding downstream of the wetland points = 0

D 6.2. Has the site has been identified as important for flood storage or flood conveyance in a regional flood control plan? Yes = 2 No = 0 — **0**

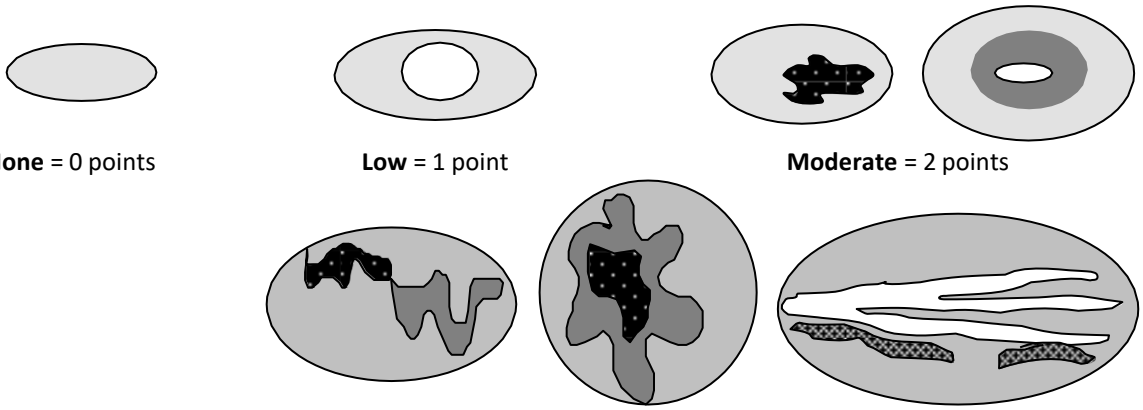
Total for D 6	Add the points in the boxes above	0

Rating of Value If score is: **___2-4 = H ___x_1 = M_____0 = L** *Record the rating on the first page*

Wetland name or number 2

These questions apply to wetlands of all HGM classes. (only 1 score per box) **HABITAT FUNCTIONS** - Indicators that site functions to provide important habitat	
H 1.0. Does the wetland have the potential to provide habitat for many species?	
H 1.1. Structure of the plant community: *Check the Cowardin vegetation classes present and categories of emergent plants. Size threshold for each category is >= ¼ ac or >= 10% of the wetland if wetland is < 2.5 ac.* ____Aquatic bed _x_ Emergent plants 0-12 in (0-30 cm) high are the highest layer and have > 30% cover __x_Emergent plants >12-40 in (>30-100 cm) high are the highest layer with >30% cover ____Emergent plants > 40 in (> 100 cm) high are the highest layer with >30% cover ____Scrub-shrub (areas where shrubs have >30% cover) ____Forested (areas where trees have >30% cover) 4 or more checks: points = 3 3 checks: points = 2 2 checks: points = 1 1 check: points = 0	1
H 1.2. Is one of the vegetation types Aquatic Bed? Yes = 1 No = 0	0
H 1.3. Surface water H 1.3.1. Does the wetland have areas of open water (without emergent or shrub plants) over at least ¼ ac **OR** 10% of its area during the March to early June **OR** in August to the end of September? ***A****nswer YES for Lake Fringe wetlands*. Yes = 3 points & go to H 1.4 No = go to H 1.3.2 H 1.3.2. Does the wetland have an intermittent or permanent, and unvegetated stream within its boundaries, or along one side, over at least ¼ ac or 10% of its area? *Answer yes only if H 1.3.1 is No*. Yes = 3 No = 0	3
H 1.4. Richness of plant species Count the number of plant species in the wetland that cover at least 10 ft^2. D*ifferent patches of the same species can be combined to meet the size threshold. You do not have to name the species.* *Do not include Eurasian milfoil, reed canarygrass, purple loosestrife, Russian olive, Phragmites, Canadian thistle, yellow-flag iris, and saltcedar (Tamarisk)* # of species __7 Scoring: > 9 species: points = 2 4-9 species: points = 1 < 4 species: points = 0	1

Wetland name or number 2

H 1.5. Interspersion of habitats Decide from the diagrams below whether interspersion among types of plant structures (described in H 1.1), and unvegetated areas (open water or mudflats) is high, moderate, low, or none. *Use map of Cowardin and emergent plant classes prepared for questions H 1.1 and map of open water from H 1.3. If you have four or more plant classes or three classes and open water, the rating is always high.*  **None** = 0 points **Low** = 1 point **Moderate** = 2 points Riparian braided channels with 2 classes All three diagrams in this row are **High** = 3 points	Figure___ 1

H 1.6. Special habitat features *Check the habitat features that are present in the wetland. The number of checks is the number of points.* ____Loose rocks larger than 4 in OR large, downed, woody debris (> 4 in diameter) within the area of surface ponding or in stream. ____Cattails or bulrushes are present within the wetland. _X_Standing snags (diameter at the bottom > 4 in) in the wetland or within 30 m (100 ft) of the edge. ____Emergent or shrub vegetation in areas that are permanently inundated/ponded. ____Stable steep banks of fine material that might be used by beaver or muskrat for denning (> 45 degree slope) OR signs of recent beaver activity _X Invasive species cover less than 20% in each stratum of vegetation *(canopy, sub-canopy, shrubs, herbaceous, moss/ground cover)*	3
Total for H 1 Add the points in the boxes above	9

Rating of Site Potential If score is:___**15-18 = H** __**x**__**7-14 = M**_____**0-6 = L** *Record the rating on the first page*

Wetland name or number 2

H 2.0. Does the landscape have the potential to support habitat functions of the site?	
H 2.1. Accessible habitat (only area of habitat abutting wetland). If total accessible habitat is: *Calculate:* % undisturbed habitat_____**+** [(% moderate and low intensity land uses)/2]_____**=**_____% > 1/3 (33.3%) of 1 km Polygon points = 3 20-33% of 1km Polygon points = 2 10-19% of 1km Polygon points = 1 <10% of 1km Polygon points = 0	3
H 2.2. Undisturbed habitat in 1 km Polygon around wetland. *Calculate:* % undisturbed habitat_____**+** [(% moderate and low intensity land uses)/2]_____**=**_____% Undisturbed habitat > 50% of Polygon points = 3 Undisturbed habitat 10 - 50% and in 1-3 patches points = 2 Undisturbed habitat 10 - 50% and > 3 patches points = 1 Undisturbed habitat < 10% of Polygon points = 0	3
H 2.3. Land use intensity in 1 km Polygon: > 50% of Polygon is high intensity land use points = (- 2) Does not meet criterion above points = 0	0
H 2.4. The wetland is in an area where annual rainfall is less than 12 in, and its water regime is not influenced by irrigation practices, dams, or water control structures. *Generally, this means outside boundaries of reclamation areas, irrigation districts, or reservoirs* Yes = 3 No = 0	0
Total for H 2 Add the points in the boxes above	6

Rating of Landscape Potential If score is: **x 4-9 = H 1-3 = M < 1 = L** *Record the rating on the first page*

H 3.0. Is the habitat provided by the site valuable to society?	
H 3.1. Does the site provide habitat for species valued in laws, regulations, or policies? *Choose the highest score that applies to the wetland being rated* ☒ Site meets ANY of the following criteria: points = 2 It has 3 or more priority habitats within 100 m (see Appendix B) ☐ It provides habitat for Threatened or Endangered species (any plant or animal on state or federal lists) ☐ It is mapped as a location for an individual WDFW species ☐ It is a Wetland of High Conservation Value as determined by the Department of Natural Resources ☐ It has been categorized as an important habitat site in a local or regional comprehensive plan, in a Shoreline Master Plan, or in a watershed plan Site has 1 or 2 priority habitats within 100 m (see Appendix B) points = 1 Site does not meet any of the criteria above points = 0	1

Rating of Value If score is: **2 = H x 1 = M 0 = L** *Record the rating on the first page*

Wetland name or number 2

CATEGORIZATION BASED ON SPECIAL CHARACTERISTICS

Please determine if the wetland meets the attributes described below and circle the appropriate category. NOTE: A wetland may meet the criteria for more than one set of special characteristics. Record all those that apply. NOTE: All wetlands should also be characterized based on their functions.

Wetland Type *Check off any criteria that apply to the wetland. Circle the category when the appropriate criteria are met.*	**Category**
SC 1.0. Vernal pools Is the wetland **less than 4000 ft²**, and does it meet at least **two** of the following criteria? ☐ Its only source of water is rainfall or snowmelt from a small contributing basin and has no groundwater input. Wetland plants are typically present only in the spring; the summer vegetation is typically upland annuals. *If you find perennial, obligate, wetland plants, the wetland is probably NOT a vernal pool*. The soil in the wetland is shallow [< 1 ft (30 cm)deep] and is underlain by an impermeable layer such as basalt or clay. ☐ Surface water is present for less than 120 days during the wet season. Yes **–** Go to **SC 1.1** No = **Not a vernal pool** SC 1.1. Is the vernal pool relatively undisturbed in February and March? ☐ Yes **–** Go to **SC 1.2** No = **Not a vernal pool with special characteristics**	
SC 1.2. Is the vernal pool in an area where there are at least 3 separate aquatic resources within 0.5 mi (other wetlands, rivers, lakes etc.)? Yes = **Category II** No = **Category III**	**Cat. II** **Cat. III**
SC 2.0. Alkali wetlands Does the wetland meet **one** of the following criteria? The wetland has a conductivity > 3.0 mS/cm. The wetland has a conductivity between 2.0 and 3.0 mS, and more than 50% of the plant cover in the wetland can be classified as "alkali" species (see Table 4 for list of plants found in alkali systems). If the wetland is dry at the time of your field visit, the central part of the area is covered with a layer of salt. **OR** does the wetland unit meet two of the following three sub-criteria? ☐ Salt encrustations around more than 75% of the edge of the wetland More than ¾ of the plant cover consists of species listed on Table 4 A pH above 9.0. All alkali wetlands have a high pH, but please note that some freshwater wetlands may also have a high pH. Thus, pH alone is not a good indicator of alkali wetlands. Yes = **Category I** No= **Not an alkali wetland**	**Cat. I**
SC 3.0. Wetlands of High Conservation Value (WHCV) SC 3.1. Has the WA Department of Natural Resources updated their website to include the list of Wetlands of High Conservation Value? Yes – Go to **SC 3.2** No – Go to **SC 3.3** SC 3.2. Is the wetland listed on the WDNR database as a Wetland of High Conservation Value? Yes = **Category I** No = **Not a WHCV** SC 3.3. Is the wetland in a Section/Township/Range that contains a Natural Heritage wetland? http://www1.dnr.wa.gov/nhp/refdesk/datasearch/wnhpwetlands.pdf Yes – **Contact WNHP/WDNR and go to SC 3.4** No = **Not a WHCV**	**Cat. I**

SC 3.4. Has WDNR identified the wetland within the S/T/R as a Wetland of High Conservation Value and it is listed on their website? Yes = **Category I** No =**Not a WHCV**	

SC 4.0 Bogs and Calcareous Fens Does the wetland (or any part of the wetland unit) meet both the criteria for soils and vegetation in bogs or calcareous fens? *Use the key below to identify if the wetland is a bog or calcareous fen.* ***If you answer yes you will still need to rate the wetland based on its functions.*** SC 4.1. Does an area within the wetland have organic soil horizons (i.e., layers of organic soil), either peats or mucks, that compose 16 in or more of the first 32 in of the soil profile? *See Appendix C for a field key to identify organic soils*. Yes – Go to **SC 4.3** No – Go to **SC 4.2** SC 4.2. Does an area within the wetland have organic soils, either peats or mucks, that are less than 16 in deep over bedrock or an impermeable hardpan such as clay or volcanic ash, or that are floating on top of a lake or pond? Yes – Go to **SC 4.3** No = **Is not a bog for rating** SC 4.3. Does an area within the wetland have more than 70% cover of mosses at ground level AND at least 30% of the total plant cover consists of species in Table 5? Yes = **Category I bog** No – Go to **SC 4.4 NOTE:** If you are uncertain about the extent of mosses in the understory, you may substitute that criterion by measuring the pH of the water that seeps into a hole dug at least 16 in deep. If the pH is less than 5.0 and the plant species in Table 5 are present, the wetland is a bog. SC 4.4. Is an area with peats or mucks forested (> 30% cover) with subalpine fir, western red cedar, western hemlock, lodgepole pine, quaking aspen, Engelmann spruce, or western white pine, AND any of the species (or combination of species) listed in Table 5 provide more than 30% of the cover under the canopy? Yes = **Category I bog** No – Go to **SC 4.5** SC 4.5. Do the species listed in Table 6 comprise at least 20% of the total plant cover within an area of peats and mucks? Yes = **Is a Calcareous Fen for purpose of rating** No – Go to **SC 4.6** SC 4.6. Do the species listed in Table 6 comprise at least 10% of the total plant cover in an area of peats and mucks, AND one of the two following conditions is met: ☐ Marl deposits [calcium carbonate ($CaCO_3$) precipitate] occur on the soil surface or plant stems ☐ The pH of free water is ≥ 6.8 AND electrical conductivity is ≥ 200 uS/cm at multiple locations within the wetland Yes = **Is a Category I calcareous fen** No = **Is not a calcareous fen**	**Cat. I** **Cat. I**

SC 5.0. Forested Wetlands Does the wetland have an area of forest rooted within its boundary that meets **at least one** of the following three criteria? (*Continue only if you have identified that a forested class is present in question H 1.1*) ☐ The wetland is within the 100 year floodplain of a river or stream ☐ Aspen (*Populus tremuloides*) represents at least 20% of the total cover of woody species ☐ There is at least ¼ ac of trees (even in wetlands smaller than 2.5 ac) that are "mature" or "old-growth" according to the definitions for these priority habitats developed by WDFW *(see definitions in question H3.1)* Yes – Go to **SC 5.1** No = **Not a forested wetland with special characteristics**	

Wetland name or number 2

SC 5.1. Does the wetland have a forest canopy where more than 50% of the tree species (by cover) are slow growing native trees (*see Table 7*)? Yes = **Category I** No – Go to **SC 5.2**	**Cat. I**
SC 5.2. Does the wetland have areas where aspen (*Populus tremuloides*) represents at least 20% of the total cover of woody species? Yes = **Category I** No – Go to **SC 5.3**	**Cat. I**
SC 5.3. Does the wetland have at least ¼ acre with a forest canopy where more than 50% of the tree species (by cover) are fast growing species (*see Table 7*)? Yes = **Category II** No – Go to **SC 5.4**	**Cat. II**
SC 5.4. Is the forested component of the wetland within the 100 year floodplain of a river or stream? Yes = **Category II** No = **Not a forested wetland with special characteristics**	**Cat. II**
Category of wetland based on Special Characteristics *Choose the highest rating if wetland falls into several categories* If you answered No for all types, enter "Not Applicable" on Summary Form	

Appendix B: WDFW Priority Habitats in Eastern Washington

Priority habitats listed by WDFW (see complete descriptions of WDFW priority habitats, and the counties in which they can be found, in: Washington Department of Fish and Wildlife. 2008. Priority Habitat and Species List. Olympia, Washington. 177 pp. http://wdfw.wa.gov/publications/00165/wdfw00165.pdf or access the list from here: http://wdfw.wa.gov/conservation/phs/list/)

Count how many of the following priority habitats are within 330 ft (100 m) of the wetland: ***NOTE:*** *This question is independent of the land use between the wetland and the priority habitat.*

 Aspen Stands: Pure or mixed stands of aspen greater than 1 ac (0.4 ha).

 Biodiversity Areas and Corridors: Areas of habitat that are relatively important to various species of native fish and wildlife (*full descriptions in WDFW PHS report*).

 Old-growth/Mature forests: Old-growth east of Cascade crest – Stands are highly variable in tree species composition and structural characteristics due to the influence of fire, climate, and soils. In general, stands will be >150 years of age, with 10 trees/ac (25 trees/ha) that are > 21 in (53 cm) dbh, and 1-3 snags/ac (2.5-7.5 snags/ha) that are > 12-14 in (30-35 cm) diameter. Downed logs may vary from abundant to absent. Canopies may be single or multi-layered. Evidence of human-caused alterations to the stand will be absent or so slight as to not affect the ecosystem's essential structures and functions. Mature forests – Stands with average diameters exceeding 21 in (53 cm) dbh; crown cover may be less than 100%; decay, decadence, numbers of snags, and quantity of large downed material is generally less than that found in oldgrowth; 80-200 years old west and 80-160 years old east of the Cascade crest.

 Oregon White Oak: Woodland stands of pure oak or oak/conifer associations where canopy coverage of the oak component is important (*full descriptions in WDFW PHS report p. 158 – see web link above*).

 Riparian: The area adjacent to aquatic systems with flowing water that contains elements of both aquatic and terrestrial ecosystems which mutually influence each other.

 Instream: The combination of physical, biological, and chemical processes and conditions that interact to provide functional life history requirements for instream fish and wildlife resources.

 Caves: A naturally occurring cavity, recess, void, or system of interconnected passages under the earth in soils, rock, ice, or other geological formations and is large enough to contain a human.

 Cliffs: Greater than 25 ft (7.6 m) high and occurring below 5000 ft elevation.

 Talus: Homogenous areas of rock rubble ranging in average size 0.5 - 6.5 ft (0.15 - 2.0 m), composed of basalt, andesite, and/or sedimentary rock, including riprap slides and mine tailings. May be associated with cliffs.

 Snags and Logs: Trees are considered snags if they are dead or dying and exhibit sufficient decay characteristics to enable cavity excavation/use by wildlife. Priority snags have a diameter at breast height of > 12 in (30 cm)in eastern Washington and are > 6.5 ft (2 m) in height. Priority logs are > 12 in (30 cm) in diameter at the largest end, and > 20 ft (6 m) long.

 Shrub-steppe: A nonforested vegetation type consisting of one or more layers of perennial bunchgrasses and a conspicuous but discontinuous layer of shrubs (see Eastside Steppe for sites with little or no shrub cover).

- **Eastside Steppe:** Nonforested vegetation type dominated by broadleaf herbaceous flora (i.e., forbs), perennial bunchgrasses, or a combination of both. Bluebunch wheatgrass (*Pseudoroegneria spicata*) is often the prevailing cover component along with Idaho fescue (*Festuca idahoensis*), Sandberg bluegrass (*Poa secunda*), rough fescue (*F. campestris*), or needlegrasses (*Achnatherum* spp.).

- **Juniper Savannah:** All juniper woodlands.

Note: All vegetated wetlands are by definition a priority habitat but are not included in this list because they are addressed elsewhere.

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APPENDIX B

Chelan County Natural Resources Stream Typing for Parcel Number 212019000000 Report

Chelan County Natural Resource Department
411 Washington Street, Suite 201, Wenatchee, WA 98801 Phone (509) 667-6640 Fax (509) 667-6527

August 17, 2017

Stream Typing for Parcel Number 212019000000

On August 16, 2017 a site visit was made to Chelan County parcel #**212019000000**, at the request of Josh Jorgensen, on behalf of Tamarack Saddle LLC. The parcel is the site of a potential future development and expansion of Mission Ridge Ski Area. The stream type request was part of an effort to understand natural resource considerations and potential permitting requirements before submitting designs and permit applications to the County. The stream typing was only done within the conceptual expansion area within parcel 212019000000 (see Figures 1 and 2, maps of parcel and conceptual expansion area). According to the Washington Department of Natural Resources (DNR) FPARS mapping tool, many stream segments are present within the conceptual expansion area. The streams located in the conceptual expansion area are all listed as

"N" streams, or non-fish bearing (with the exception of one "U", or unknown stream). Each stream within the expansion area was typed and recorded.

For the purposes of this report, the conceptual expansion area was divided into two sections, sections A and B. Within these sections, streams showing on the DNR FPARs layer were numbered as a tracking system for reporting. The numbers and letters shown in Figure 2 correspond to the streams discussed in this report. Photos for each stream typed are inserted in the report with the determination.

Section A: Section A showed 8 streams according to the FPARs map; 7 "N' and 1 "U". The results of the stream typing in Section A are as follows.

Stream 1: Stream 1 is shown on the FPARs map in an area of complex terrain, with depressions that suggest the presence of water. Short sections of channelized terrain were noted, but these sections typically end in berms or ridges that water could not pass over. An old road grade follows the general path of the largest of these depressions, with no drainage structures present in the road grade (culverts, ditches, waterbars, etc). The road is still intact, indicating that water does not flow in the path of the depression often. Vegetation in these depressions and short sections of channel-like topography is upland-type vegetation (kinnikinnick, pipsissewa, oceanspray, vine maple). Though it is likely that water collects in these depressions during wet seasons or snow melt-off, **this stream does not qualify as a stream** due to lack of a continuous, defined and measurable channel, riparian vegetation, and surface connection with a larger stream.

Photo 1. A typical section of channel-like depression, terminating in a berm.

Photo 2. Another section of channel-like depression, showing lack of riparian vegetation and defined, measureable channel. The complex topography in this area results in many of these channel-like features which likely collect water during snowmelt, but do not qualify as a stream.

Stream 2: According to FPARs map, this stream begins on a steep side hill, just below the road on the northern edge of the expansion area. Upon inspection, there were no indicators of any type of stream in this area. The area is uniformly forested with thick dog-hair stands, with virtually no understory vegetation. No topographic features, defined channels, or riparian vegetation exist in this area. The stream shown on the map is likely a modeled extension of a topographical feature lower on the hillslope that appears as a gully or draw. **This stream does not qualify as a stream.**

Photo 3. The vicinity of stream 2, no evidence of a stream.

Stream 3: See notes for stream 2; this stream has no indicators of being a stream, for all of the same reasons stated in the stream 2 description. **This stream does not qualify as a stream.**

Photo 4. The vicinity of stream 3, no evidence of a stream.

Stream 4: See notes for stream 2; this stream has no indicators of being a stream, for all of the reasons stated in the stream 2 description. **This stream does not qualify as a stream.**

Photo 5. The vicinity of stream 4. The vegetation is growing at the edge of the road, but there is a distinct lack of understory vegetation on the forest floor, and no indicators of riparian vegetation or a defined channel of any kind.

Stream 5: See notes for stream 2; this stream has no indicators of being a stream, for the same reasons stated in the stream 2 description. **This stream does not qualify as a stream.**

Photo 6. The vicinity of stream 5. There is no evidence of a defined measureable channel or riparian vegetation in this area.

Stream 6: See notes for stream 2; this stream has no indicators of being a stream, for the same reasons stated in the stream 2 description. **This stream does not qualify as a stream.**

Photo 7. The vicinity of stream 6. There are no indicators of presence of a stream in this area.

Note: Streams 2-6 were assessed by traversing across the hillslope about 150 below the road shown on the area map. This assessment provided adequate evidence that there are no streams located north of the road in the expansion area.

Photos 8. This photo shows the typical terrain in this area; steep hillside dropping off very steeply into sandstone cliff/gully formations above the housing community of Forest Ridge. There were no indications of streams on this section.

Stream 7: Stream 7 is shown on the FPARs map to enter the expansion area at the beginning of its path, and cross the road on the eastern edge of the expansion area. The road was searched for any evidence of water conveyance under the road or water passage over the road. No evidence of water conveyance was found. The sides of the road were also examined for evidence of a channel and/or riparian vegetation intersecting the road, and neither were found. The area of the stream shown on the map was searched, and no evidence of a measurable defined channel or riparian vegetation was found. **This stream does not qualify as a stream.**

Photo 9. The road along the eastern edge of the expansion area, in the vicinity of where stream 7 is shown on the map. There is no evidence of water conveyance under, over, or alongside the road in the form of ditches, culverts, or waterbars; nor is there any other evidence of a stream in the area.

Stream 8: Stream 8 is mapped as a "U", or Unknown stream on the FPARs map. The vicinity of this stream was investigated thoroughly, and no evidence of a measurable defined channel or any riparian vegetation was found. The topography of the area does not have an obvious water conveyance route, and is rolling and complex. **This stream does not qualify as a stream.**

Section B: Section B shows 6 streams according to the FPARs map, all of which are labeled as "N" streams. The results of the stream typing of the 6 streams in Section B are as follows.

Stream 1: Stream 1 does not actually enter the parcel identified for this stream typing, and is located on US Forest Service land. Stream 2, as discussed below, was typed as an Np stream, and any associated setback for Stream 2 would overlap and extend beyond any setback from Stream 1 that may extend into the expansion area, negating the need to type this stream for the purposes of this report.

Stream 2: Stream 2 was found to have a wetted, defined channel, with associated riparian vegetation, that begins just outside the southwest corner of the parcel. While stream characteristics were not in evidence above where the wetted channel begins just outside of the parcel boundary (making the actual stream slightly shorter than what is shown on the FPARs map, see Figure 3), the stream inside the parcel and within the expansion area was found to have flowing water, a defined channel, and riparian vegetation. The stream

appears to begin as a spring just below a steep hillside, and continues down on the path labeled as Stream 2 on the attached FPARs map. **This stream does qualify as an Np (non fish-bearing perineal) stream.**

Photo 10. Looking downslope to the start of Stream 2, which appears to begin from a spring on a steep hillside just outside of the parcel. Riparian vegetation is evident from this angle.

Photo 11. Flowing water appears below the steep hillside pictured above. The hillside above contains riparian vegetation, but the flowing water and defined channel appear about 50 feet lower than the start of the riparian vegetation.

Stream 3: Stream 3 does exhibit characteristics of an Np stream, but the stream as evidenced by a wetted channel and riparian vegetation begins below (downstream, north) of the road grade in the southwest corner of the parcel shown on the FPARs map. Just below the road grade, a depression occurs and riparian vegetation is evident. About 100 feet below the road grade, groundwater collects at the surface in a few small ponds; the water then travels in an easterly direction to meet with Stream 4. This easterly direction varies from what is shown on the FPARs map; rather than traveling north before merging with Stream 4, the wetted channel travels north east and merges with stream 4 higher up than what is shown on the FPARs map. See Figure 3 for mapping detail. **This stream does qualify as an Np stream.**

Photo 12. Water collects in a few small ponds before continuing its flow down and into a defined wetted channel. The stream below the intersection of Streams 3 and 4 is labeled as Stream 3, and meets the qualifications of being an Np stream. Stream 3 above the intersection with Stream 4 is also an Np stream, but only up to the road grade.

Photo13. Stream 2 continues to flow below the small ponds in a northeasterly direction before intersecting with Stream 4.

Stream 4: Stream 4 was observed as a short section of defined, measurable channel with riparian vegetation but no water, present from just outside the boundary of the expansion area to the intersection with Stream 3. The channel was observed to be of variable width with sections of about 3 feet at the widest, and have riparian vegetation present. The channel tapers out and disappears just north of the southern parcel boundary. The characteristics of this stream, including a defined measurable channel, riparian vegetation, a surface connection with a larger stream, but no water present indicate that **this stream qualifies as a Ns (non fish-bearing seasonal) stream.**

Photo 14. The measurable channel of Stream 4 is about 3 feet at its widest. As seen in this photo, the channel did not have running water at the time of this stream typing.

Photo 15. Riparian vegetation growing in the channel. While these species, including elderberry, bead lily, and mosses are not considered entirely riparian dependent species, vegetation in the channel differs significantly from the surrounding forest, indicating presence of more moisture in the channel. This fact, combined with the presence of the channel, indicates this is at least a seasonal, non-fish bearing stream.

Stream 5: Stream 5 shows on the FPARs map as a short stream section that quickly joins a larger stream. Upon inspection, no visible channel or riparian vegetation was located in this area. The area is covered by a talus field, which supports an aspen stand. The aspen stand is unusual as it grows directly from the talus, indicating presence of water below the rock. However, as there is no evidence of surface water or any kind of channel here, **this stream does not qualify as a stream**. The aspen stand will be examined by a wetlands biologist, as aspen qualifies as a wetland species.

Photo 16. The vicinity of Stream 5, showing the talus field with a small aspen community. There is no channel or any other riparian vegetation present in this area, negating the presence of a stream. However, the area will be assessed by a wetland biologist due to the presence of the aspen.

Stream 6: Stream 6 is shown on the FPARs map to begin in low angle terrain near the center of the parcel. Upon inspection, there is no evidence of a channel or riparian vegetation in the central area of the parcel. About halfway between where the stream is shown to begin on the FPARs map, and the confluence with Stream 2, the benchy terrain begins to exhibit short sections of channel-like features. However, these features do not connect with each other (nor are they in line), and do not contain riparian vegetation. Most of the depressions contain upland species such as kinnikinnick, pipsissewa, pine grass, and ponderosa pine, with the lower section containing bitterbrush. These terrain features are similar to those of Stream 1 in Section A, and tend to appear as dishes or depressions that often end in berms that water could not travel over.

The FPARs map shows the stream taking a sharp left bend before joining Stream 2, but this is impossible as water would have to travel side-hill to accomplish this bend. Rather, there is a larger depression leading directly downslope that does hold a semi-defined channel and some vegetation that could be considered riparian (elderberry), but this depression also ends in a large berm with no evidence of water passing over or under it, before reaching Stream 2. The complex terrain in this area makes the determination of a stream typing difficult, but due to the lack of a defined, measurable, contiguous channel, presence of obvious riparian vegetation, and surface connection with a larger stream, it is determined that **this stream does not qualify as a stream.** The terrain features here likely collect water during snow melt, but they are most likely present because of the geology and complexity of the terrain rather than water conveyance.

Photo 17. The vicinity of the central area of the parcel, where Stream 6 is shown to begin on the FPARs map. There is no indication of any channel or riparian vegetation in this area.

Photo. Lower down, after following the path of Stream 6 as shown on the FPARs map, terrain features such as the one pictured above begin to appear. These terrain features are disconnected and do not hold riparian vegetation or measurable, defined channels.

Photo 18. Another terrain feature with a channel-like section, but with no riparian vegetation and not connected to a channel feature below.

Photo 19. The area near where Stream 6 is shown to take a sharp left bend on the FPARs map. This type of bend is impossible here, as the stream would have to travel side-hill. There is also no evidence of riparian vegetation here, but rather distinctly upland species such as bitterbrush.

This stream typing was undertaken with the help of Andrea Lyons, a consultant with WA Conservation Science Institute, who is assisting Tamarack Saddle LLC with preparation of a resource management plan for the conceptual expansion of Mission Ridge Ski Area. Andrea's familiarity with the conceptual expansion area was of great help in locating and typing the streams shown on the FPARs map. All stream type determinations were made solely by me and were based on visual inspections of the vicinities of all streams shown on the FPARs map. If there are any questions please contact me @ 509-630-5303 or erin.mckay@co.chelan.wa.

Sincerely,

Erin McKay, Chelan County Natural Resource Specialist

Figure 1.

Chelan County GIS Parcel Search

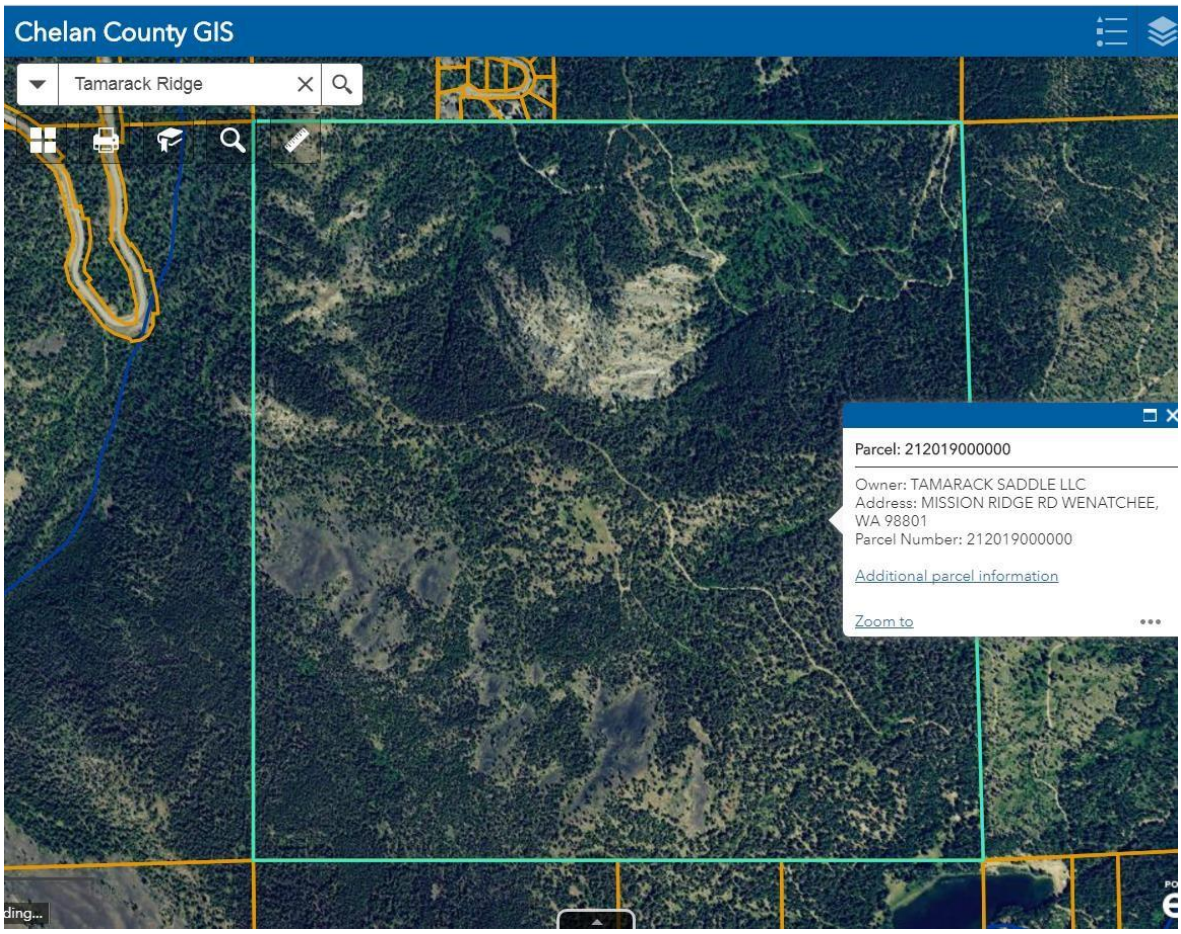


Figure 2.

FPARs map with Sections A and B drawn and labeled, and with each stream numbered as a tracking system for reporting.

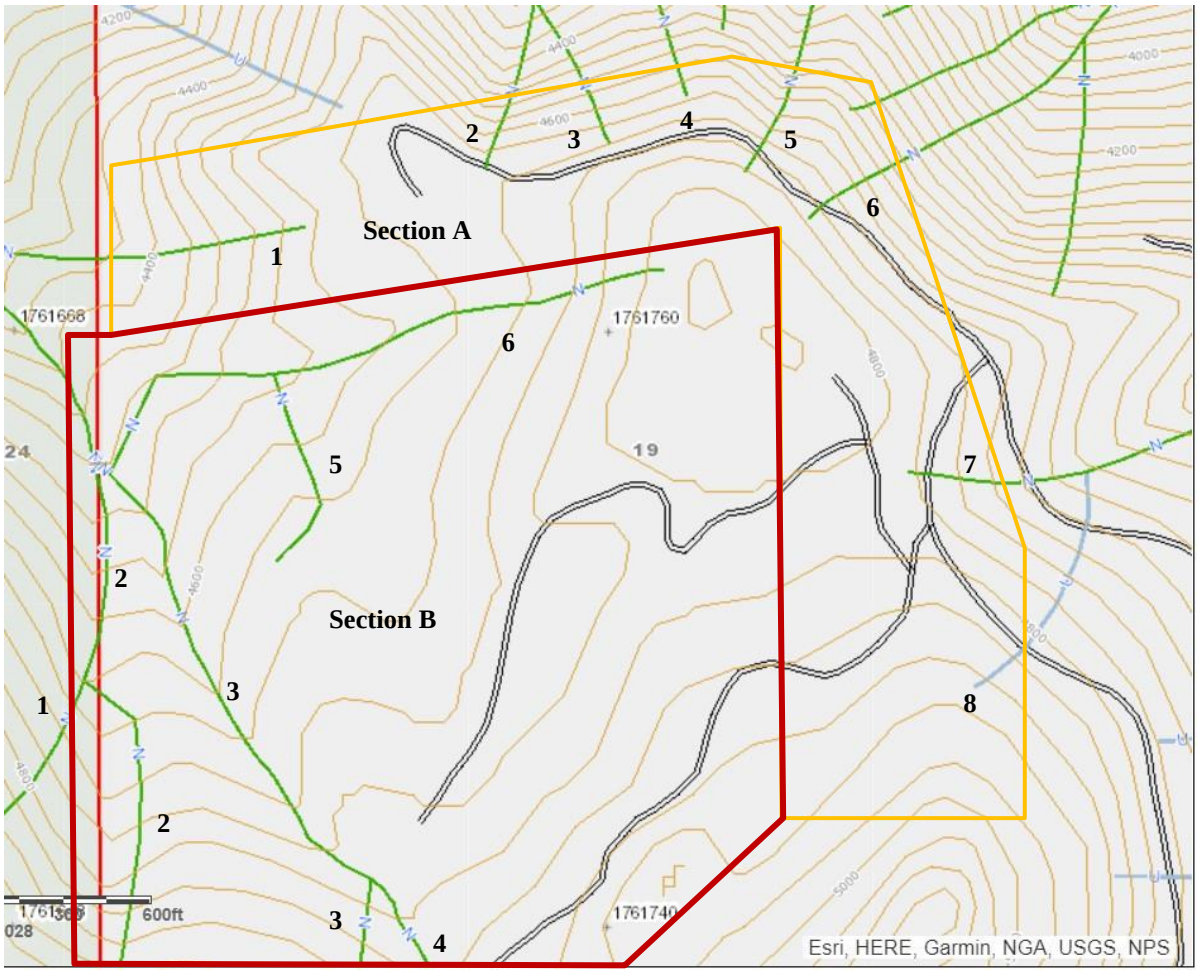
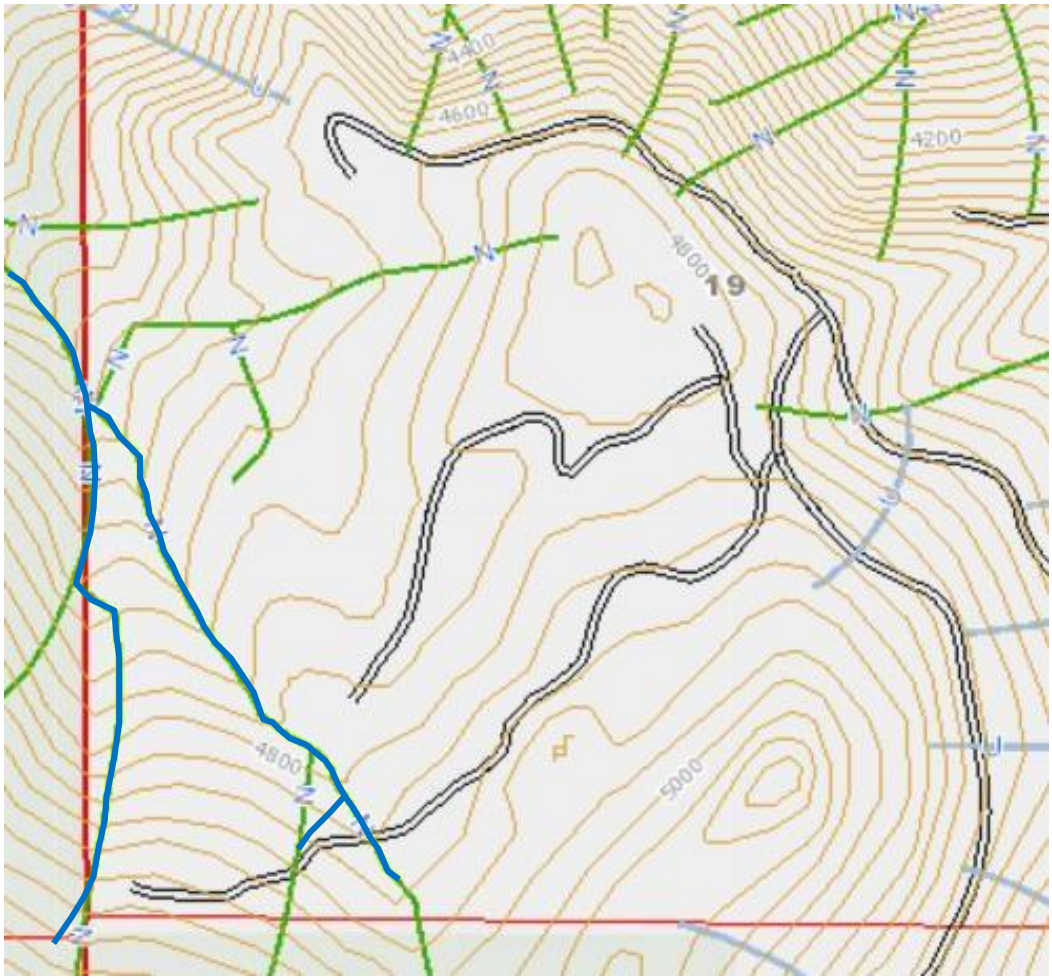


Figure 3.

Streams determined to actually qualify as streams, shown in dark blue. Only Streams 2 (Np), 3 (Np), and 4 (Ns), were found to qualify as streams. Corrections to FPARs streams are shown here as well.



FPARs mapping tool, Washington Department of Natural Resources. 2017.

resource management plan for the conceptual expansion of Mission Ridge Ski Area. Andrea's familiarity with the conceptual expansion area was of great help in locating and typing the streams shown on the FPARs map. All stream type determinations were made solely by me and were based on visual inspections of the vicinities of all streams shown on the FPARs map. If there are any questions please contact me @ 509-630-5303 or erin.mckay@co.chelan.wa.

Sincerely,
Erin McKay, Chelan County Natural Resource Specialist

Figure 1.
Chelan County GIS Parcel Search

APPENDIX C

Priority Habitat and Species Report and Map for the Mission Ridge Expansion Project Area.

WASHINGTON DEPARTMENT OF FISH AND WILDLIFE PRIORITY HABITATS AND SPECIES REPORT

SOURCE DATASET: PHSPlusPublic Query ID: P170327105804

REPORT DATE: 03/27/2017 10.58

Common Name / Scientific Name / Notes	Site Name / Source Dataset / Source Record / Source Date	Priority Area / Occurrence Type / More Information (URL) / Mgmt Recommendations	Accuracy	Federal Status / State Status / PHS Listing Status	Sensitive Data / Resolution	Source Entity / Geometry Type
Elk Cervus elaphus	NONEUM BASIN CALVING PHSREGION 901504	Breeding Area Parturition http://wdfw.wa.gov/publication s/pub.php?	1/4 mile (Quarter	N/A N/A PHS LISTED	N AS MAPPED	WA Dept. of Fish and Wildlife Polygons
Elk Cervus elaphus	COLOCKUM ELK CALVING PHSREGION 901501	Breeding Area Parturition http://wdfw.wa.gov/publications/pub.php?	1/4 mile (Quarter	N/A N/A PHS LISTED	N AS MAPPED	WA Dept. of Fish and Wildlife Polygons
Elk Cervus elaphus	COLOCKUM MIGRATION PHSREGION 901510	Migration Migration http://wdfw.wa.gov/publications/pub.php?	1/4 mile (Quarter	N/A N/A PHS LISTED	N AS MAPPED	WA Dept. of Fish and Wildlife Polygons
Freshwater Emergent	N/A NWIWetlands	Aquatic Habitat Aquatic habitat http://www.ecy.wa.	NA	N/A N/A PHS Listed	N AS MAPPED	US Fish and Wildlife Service Polygons
Freshwater Emergent	N/A NWIWetlands	Aquatic Habitat Aquatic habitat http://www.ecy.wa.	NA	N/A N/A PHS Listed	N AS MAPPED	US Fish and Wildlife Service Polygons

Common Name Scientific Name Notes	Site Name Source Dataset Source Record Source Date	Priority Area Occurrence Type More Information (URL) Mgmt Recommendations	Accuracy	Federal Status State Status PHS Listing Status	Sensitive Data Resolution	Source Entity Geometry Type
Freshwater Emergent	N/A NWIWetlands	Aquatic Habitat Aquatic habitat http://www.ecy.wa.	NA	N/A N/A PHS Listed	N AS MAPPED	US Fish and Wildlife Service Polygons
Freshwater Emergent	N/A NWIWetlands	Aquatic Habitat Aquatic habitat http://www.ecy.wa.	NA	N/A N/A PHS Listed	N AS MAPPED	US Fish and Wildlife Service Polygons
Freshwater Emergent	N/A NWIWetlands	Aquatic Habitat Aquatic habitat http://www.ecy.wa.	NA	N/A N/A PHS Listed	N AS MAPPED	US Fish and Wildlife Service Polygons
Freshwater Emergent	N/A NWIWetlands	Aquatic Habitat Aquatic habitat http://www.ecy.wa.	NA	N/A N/A PHS Listed	N AS MAPPED	US Fish and Wildlife Service Polygons
Freshwater Emergent	N/A NWIWetlands	Aquatic Habitat Aquatic habitat http://www.ecy.wa.	NA	N/A N/A PHS Listed	N AS MAPPED	US Fish and Wildlife Service Polygons
Freshwater Emergent	N/A NWIWetlands	Aquatic Habitat Aquatic habitat http://www.ecy.wa.	NA	N/A N/A PHS Listed	N AS MAPPED	US Fish and Wildlife Service Polygons
Freshwater Emergent	N/A NWIWetlands	Aquatic Habitat Aquatic habitat http://www.ecy.wa.	NA	N/A N/A PHS Listed	N AS MAPPED	US Fish and Wildlife Service Polygons
Freshwater Emergent	N/A NWIWetlands	Aquatic Habitat Aquatic habitat http://www.ecy.wa.	NA	N/A N/A PHS Listed	N AS MAPPED	US Fish and Wildlife Service Polygons

Common Name Scientific Name Notes	Site Name Source Dataset Source Record Source Date	Priority Area Occurrence Type More Information (URL) Mgmt Recommendations	Accuracy	Federal Status State Status PHS Listing Status	Sensitive Data Resolution	Source Entity Geometry Type
Freshwater Emergent	N/A NWIWetlands	Aquatic Habitat Aquatic habitat http://www.ecy.wa.	NA	N/A N/A PHS Listed	N AS MAPPED	US Fish and Wildlife Service Polygons
Freshwater Emergent	N/A NWIWetlands	Aquatic Habitat Aquatic habitat http://www.ecy.wa.	NA	N/A N/A PHS Listed	N AS MAPPED	US Fish and Wildlife Service Polygons
Freshwater Forested/Shrub	N/A NWIWetlands	Aquatic Habitat Aquatic habitat http://www.ecy.wa.	NA	N/A N/A PHS Listed	N AS MAPPED	US Fish and Wildlife Service Polygons
Freshwater Forested/Shrub	N/A NWIWetlands	Aquatic Habitat Aquatic habitat http://www.ecy.wa.	NA	N/A N/A PHS Listed	N AS MAPPED	US Fish and Wildlife Service Polygons
Freshwater Forested/Shrub	N/A NWIWetlands	Aquatic Habitat Aquatic habitat http://www.ecy.wa.	NA	N/A N/A PHS Listed	N AS MAPPED	US Fish and Wildlife Service Polygons
Freshwater Forested/Shrub	N/A NWIWetlands	Aquatic Habitat Aquatic habitat http://www.ecy.wa.	NA	N/A N/A PHS Listed	N AS MAPPED	US Fish and Wildlife Service Polygons
Freshwater Forested/Shrub	N/A NWIWetlands	Aquatic Habitat Aquatic habitat http://www.ecy.wa.	NA	N/A N/A PHS Listed	N AS MAPPED	US Fish and Wildlife Service Polygons
Freshwater Forested/Shrub	N/A NWIWetlands	Aquatic Habitat Aquatic habitat http://www.ecy.wa.	NA	N/A N/A PHS Listed	N AS MAPPED	US Fish and Wildlife Service Polygons

Common Name Scientific Name Notes	Site Name Source Dataset Source Record Source Date	Priority Area Occurrence Type More Information (URL) Mgmt Recommendations	Accuracy	Federal Status State Status PHS Listing Status	Sensitive Data Resolution	Source Entity Geometry Type
Freshwater Forested/Shrub	N/A NWIWetlands	Aquatic Habitat Aquatic habitat http://www.ecy.wa.	NA	N/A N/A PHS Listed	N AS MAPPED	US Fish and Wildlife Service Polygons
Freshwater Forested/Shrub	N/A NWIWetlands	Aquatic Habitat Aquatic habitat http://www.ecy.wa.	NA	N/A N/A PHS Listed	N AS MAPPED	US Fish and Wildlife Service Polygons
Mule deer Odocoileus hemionus	MISSION CREEK DEER PHSREGION 901318	Regular Concentration Regular concentration http://wdfw.wa.gov/publications/pub.php?	1/4 mile (Quarter	N/A N/A PHS LISTED	N AS MAPPED	WA Dept. of Fish and Wildlife Polygons
Northern goshawk Accipiter gentilis	KING CANYON WS_OccurPoint 52590 August 19, 1992	Breeding Area Nest http://wdfw.wa.gov/publications/pub.php?	1/4 mile (Quarter	N/A Candidate PHS LISTED	N AS MAPPED	WA Dept. of Fish and Wildlife Points
Northern Spotted Owl Strix occidentalis	WS_OccurPoint 92889 May 16, 2001	Breeding Area Nest http://wdfw.wa.gov/publications/pub.php?	Map 1:100,000 <=	Threatened Endangered PHS LISTED	Y TOWNSHIP	WA Dept. of Fish and Wildlife Points
Northern Spotted Owl Strix occidentalis	WS_OccurPoint 100673 May 12, 1992	Breeding Area Nest http://wdfw.wa.gov/publications/pub.php?	Map 1:100,000 <=	Threatened Endangered PHS LISTED	Y TOWNSHIP	WA Dept. of Fish and Wildlife Points
Northern Spotted Owl Strix occidentalis	WS_OccurPoint 102001 June 13, 1992	Occurrence Biotic detection http://wdfw.wa.gov/publications/pub.php?	Map 1:100,000 <=	Threatened Endangered PHS LISTED	Y TOWNSHIP	WA Dept. of Fish and Wildlife Points
Northern Spotted Owl Strix occidentalis	WS_OccurPoint 102022 May 21, 1998	Breeding Area Nest http://wdfw.wa.gov/publications/pub.php?	Map 1:100,000 <=	Threatened Endangered PHS LISTED	Y TOWNSHIP	WA Dept. of Fish and Wildlife Points

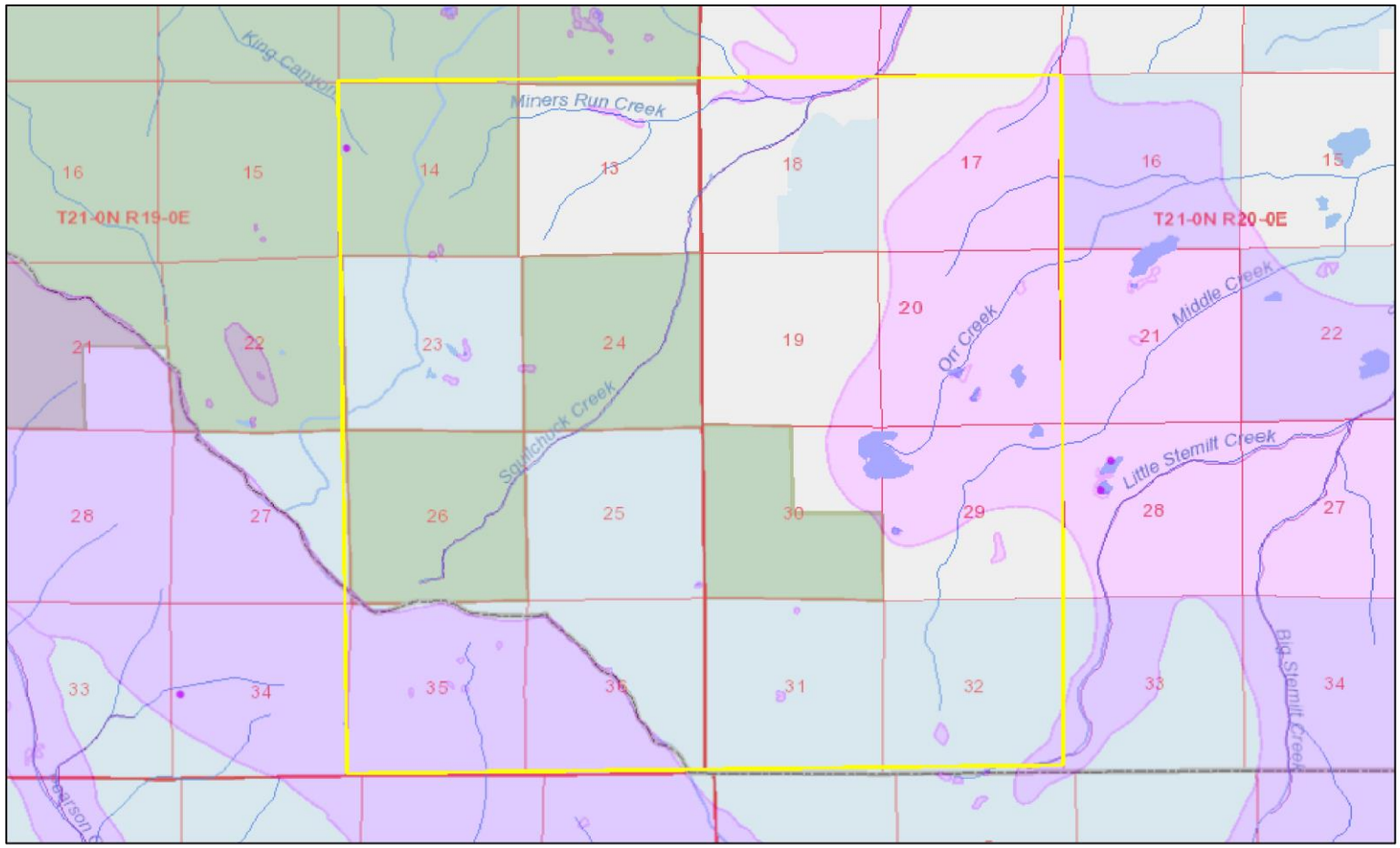
Common Name Scientific Name Notes	Site Name Source Dataset Source Record Source Date	Priority Area Occurrence Type More Information (URL) Mgmt Recommendations	Accuracy	Federal Status State Status PHS Listing Status	Sensitive Data Resolution	Source Entity Geometry Type
Northern Spotted Owl Strix occidentalis	WS_OccurPoint 105435 June 05, 1996	Occurrence Biotic detection http://wdfw.wa.gov/publications/pub.php?	Map 1:100,000 <=	Threatened Endangered PHS LISTED	Y TOWNSHIP	WA Dept. of Fish and Wildlife Points
Northern Spotted Owl Strix occidentalis	WS_OccurPoint 105701 May 27, 1998	Occurrence Biotic detection http://wdfw.wa.gov/publications/pub.php?	Map 1:100,000 <=	Threatened Endangered PHS LISTED	Y TOWNSHIP	WA Dept. of Fish and Wildlife Points
Northern Spotted Owl Strix occidentalis	WS_OwlStatus_Buf	Management Buffer Management buffer http://wdfw.wa.gov/publication s/pub.php?	NA	Threatened Endangered PHS Listed	Y TOWNSHIP	WA Dept. of Fish and Wildlife Polygons
Northern Spotted Owl Strix occidentalis	WS_OwlStatus_Buf	Management Buffer Management buffer http://wdfw.wa.gov/publications/pub.php?	NA	Threatened Endangered PHS Listed	Y TOWNSHIP	WA Dept. of Fish and Wildlife Polygons
Northern Spotted Owl Strix occidentalis	WS_OwlStatus_Buf	Management Buffer Management buffer http://wdfw.wa.gov/publications/pub.php?	NA	Threatened Endangered PHS Listed	Y TOWNSHIP	WA Dept. of Fish and Wildlife Polygons
Northern Spotted Owl Strix occidentalis	WS_OwlStatus_Buf	Management Buffer Management buffer http://wdfw.wa.gov/publications/pub.php?	NA	Threatened Endangered PHS Listed	Y TOWNSHIP	WA Dept. of Fish and Wildlife Polygons
Northern Spotted Owl Strix occidentalis	WS_OwlStatus_Buf	Management Buffer Management buffer http://wdfw.wa.gov/publications/pub.php?	NA	Threatened Endangered PHS Listed	Y TOWNSHIP	WA Dept. of Fish and Wildlife Polygons
Northern Spotted Owl Strix occidentalis	WS_OwlStatus_Buf	Management Buffer Management buffer http://wdfw.wa.gov/publications/pub.php?	NA	Threatened Endangered PHS Listed	Y TOWNSHIP	WA Dept. of Fish and Wildlife Polygons

Common Name Scientific Name Notes	Site Name Source Dataset Source Record Source Date	Priority Area Occurrence Type More Information (URL) Mgmt Recommendations	Accuracy	Federal Status State Status PHS Listing Status	Sensitive Data Resolution	Source Entity Geometry Type
Northern Spotted Owl Strix occidentalis	WS_OwlStatus_Buf	Management Buffer Management buffer http://wdfw.wa.gov/publications/pub.php?	NA	Threatened Endangered PHS Listed	Y TOWNSHIP	WA Dept. of Fish and Wildlife Polygons
Northern Spotted Owl Strix occidentalis	WS_OwlStatus_Buf	Management Buffer Management buffer http://wdfw.wa.gov/publications/pub.php?	NA	Threatened Endangered PHS Listed	Y TOWNSHIP	WA Dept. of Fish and Wildlife Polygons

Common Name Scientific Name Notes	Site Name Source Dataset Source Record Source Date	Priority Area Occurrence Type More Information (URL) Mgmt Recommendations	Accuracy	Federal Status State Status PHS Listing Status	Sensitive Data Resolution	Source Entity Geometry Type
Rainbow Trout Oncorhynchus mykiss	Squilchuck Creek SWIFD 3531	Occurrence/Migration Occurrence/migration http://wdfw.wa.gov/wlm/divers	NA :y/soc/soc.htm	N/A N/A PHS LISTED	N AS MAPPED	Lines
Westslope Cutthroat Oncorhynchus clarki lewisi	Little Stemilt Creek SWIFD 3572	Occurrence/Migration Occurrence, http://wdfw.wa.gov/v:y/soc/soc.htm http://wdfw.wa.gov/publications,	NA	N/A N/A PHS LISTED	N AS MAPPED	Lines
Westslope Cutthroat Oncorhynchus clarki lewisi	SWIFD 3650	Occurrence/Migration Occurrence/migration http://wdfw.wa.gov/wlm/diversty/soc/soc.htm http://wdfw.wa.gov/publications/pub.php?	NA	N/A N/A PHS LISTED	N AS MAPPED	Lines

Common Name Scientific Name Notes	Site Name Source Dataset Source Record Source Date	Priority Area Occurrence Type More Information (URL) Mgmt Recommendations	Accuracy	Federal Status State Status PHS Listing Status	Sensitive Data Resolution	Source Entity Geometry Type

WDFW Test Map



March 27, 2017

PHS Report Clip Area
PT
LN

POLY
AS MAPPED
SECTION

QTR-TWP
TOWNSHIP

1:71,647

0 0.5 1 2 mi
0 1 2 4 km

WDFW