Critical Area Report
Wildlife Habitat Mapping & Management Plan

Wheeler Ridge, LLC
Chelan County



November 2019

SCJ ALLIANCE
CONSULTING SERVICES

Wheeler Ridge Critical Area Report & Wildlife Habitat Mapping and Management Plan

Project Information

Project:	**Wheeler Ridge LLC Critical Area Report & Wildlife Habitat Mapping and Management Plan** **Wheeler Ridge LLC**
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Reviewing Agency

Jurisdiction:	Chelan County Community Development 316 Washington Street, Suite 301 Wenatchee, WA 98801

Project Representative

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1. EXECUTIVE SUMMARY

This November 2019 Critical Area Report and Conceptual Mitigation Plan is an update to the Critical Area Report submitted in October 2018. This update is provided to address several questions and clarifications requested by the resource agencies during the State Environmental Policy Act (SEPA) review period with special attention to mitigating for elk habitat within the Project Site.

Per Chelan County Code 11.78.060, the Project Area has been classified as a Minor Development within Class II Wildlife Habitat Conservation Area. This proposal is an allowable use, per Chelan County Code, as long as Critical Area impacts are identified and mitigated.

The Project consists of the construction of three (3) orchards (260 total acres) on Section 17 (TPN 212017000000, T21N, R20E), including seasonal housing for workers (24 anticipated) and associated orchard processing buildings (~5000 sqft) and gas pumps; loading docks. To prepare the orchard areas for planting, forest trees will be harvested under a Forest Practices permit. Other supporting infrastructure includes:

- Installation of buried waterlines and power conduit in an existing utility easement extension from Section 9;
- A new 9.9-acre reservoir (filled from the existing reservoir on Section 9)
- Repair/replacement of two culverts at Ns streams;
- Upgrading the existing County road across Section 16 and 17 to support truck traffic.
- 8-ft tall wildlife perimeter fencing around orchards

As defined by Chelan County Code Chapter 11, the following critical areas are present within the proposed Project Area:

1.1 CRITICAL AREAS IMPACTS

1.1.1 *Wetlands (refer to the Wetland Summary in Appendix II for additional information)*

Three (3) Category III wetlands associated with three Ns stream sections in the southern portion of Section 17 were delineated in the Project Site. No direct fill impacts to these wetlands or buffer are proposed other than replacement of an existing culvert; installation of a new culvert at an existing crossing, and realignment of an existing road to minimize buffer impacts. Otherwise, only wetland and buffer restoration and enhancement are proposed.

In response to reviewers' questions about onsite wetland conditions, the following additional resources are discussed. Other riparian wetlands onsite are directly associated with a downstream Np system (a side tributary of offsite Orr Creek). These riparian wetlands were not delineated, for two reasons:

(1) The riparian wetlands are typically less than 10 feet wide and are Category III systems with 75 ft buffers. The Np stream buffers are 100 ft wide, and therefore wider than the wetland buffers. Per code, the stream buffers will control since they are larger and more protective than the wetland buffers.

(2) The Np riparian corridor ravine is embedded in a much wider proposed wildlife habitat corridor – a protected area, and therefore, has significantly wider functional buffers in any case.

1.1.2 *Streams (regulated in the Fish and Wildlife Habitat Conservation Areas chapter)*

- There are 15 Ns stream tributaries mapped within the Project Site.
- WDNR Stream Type maps and field work to assess and verify Typing of stream within the project area was conducted in 2017/2018 by a team of WDNR and WDFW staff. The extents and locations of various stream types in the Project Site were defined and formally revised following the standard WDNR process, documenting results of the WDNR and WDFW team field work. The updated Stream Type mapping was used to lay out the proposed orchard boundaries, and intentionally avoid or minimize direct stream and buffer impacts.
- All but one of the onsite streams were Type Ns (50-ft standard Low-Intensity buffer). This preponderance of Type Ns streams is because Wheeler Ridge forms an onsite drainage divide. As a result, there is minimal upslope collection area for most of the onsite streams.
- Some of the Ns streams adjacent to one of the proposed orchards are eroding severely. Erosion control measures will be implemented to reduce existing problems.
- The only onsite Np stream (100 ft standard Low-Intensity buffer) was mapped by the WDNR/WDFW field team as starting in the south-central portion of Section 17, near the confluence of the three upslope Ns streams discussed above in the wetland section. That Np stream flows east in a ravine, exiting Section 17 about midway along the eastern boundary.
- A WDNR Hydraulic Permit Application (HPA) process will be required to permit and install two (2) 15-inch culverts within existing road crossings at Ns streams.

1.1.3 *Fish and Wildlife Habitat Conservation Areas (FWHCAs)*

- The Project Area includes areas mapped as Class II FWHCA. The Project Site and surrounding areas provide elk habitat during summer months. WDFW considers Rocky Mountain Elk as a species of recreational, commercial, and/or tribal importance; and elk are classified as game animals (WAC 232-12-007). The Project is proposing 260 acres of permanent elk habitat impacts.
- There will be 360 acres set aside within the Project Site as viable elk habitat
- There are no listed fish species within the Project Site.
- No Spotted owl habitat or individuals were detected on Section 17 (Washington Conservation Science Institute, 2018; Appendix VII.
- No Spotted owl habitat or individual were detected within the Section 16 pipeline easement (Lehmkuhl, J., 2019; Appendix IV).

1.1.4 *Geologically Hazardous Areas*

- Chelan County Maps indicated that there are potentially unstable slopes, i.e., old landslide areas mapped on USGS geology maps, and USDA/NRCS soil map units that indicate potential for "severe" erosion hazard within the greater geographical area (including Mission Ridge and Squilchuck drainage). The geology and soil map units include the Project Area.
- Aspect Consulting visited the site to observe and document evidence of onsite geological hazards in 2018 and 2019. They noted that the site showed signs of past slope instability from natural processes. Evidence of past failures was documented in some areas with slopes of 20 degrees and greater, specifically, in the northeastern corner of the Project Site, the northwestern third of the Project Site, and along an Orr Creek tributary in the southeast portion of the Project Site. The primary mechanism for past slope failure within the Project Site was from over steepening of sidewalls resulting from long-term drainage incision.
- No active or recent slope failures were observed.

- All of these areas are outside the proposed orchard units, and proposed roads have been located to avoid potential slope failure areas except for a small section near orchard unit #1 (Aspect, 2018 & 2019; Appendix V).

1.2 PROPOSED MITIGATION – HABITAT ENHANCEMENT AND RESTORATION:

More than half of Section 17 is proposed to be set aside as wildlife habitat. Upland vegetation communities in the Conservation Area will be evaluated and managed to create a mosaic with more open meadow habitats and open canopy forest areas – preferred elk habitat.

Wetlands areas that are disturbed from past recreational 4WD impacts will be restored and enhanced to protect water quality and to improve riparian habitat functions that support elk use.

1.3 MONITORING OVERVIEW:

The primary goals of onsite mitigation will be to improve elk habitat conditions in the Conservation Area. Once the conceptual Mitigation Proposal has been accepted by reviewing agencies, a detailed Monitoring Plan will be prepared to document locations where existing forested plant communities may be thinned to create more grassland dominated openings preferred by elk during summer months, and where other degraded areas (defined later during onsite vegetation community mapping) will require restoration plantings and erosion control actions.

Areas with new native vegetation plantings will be monitored at the end of each growing season for 5 years following initial installation to document that the planting areas have met the approved Performance Standards for percent survival and cover. Areas with erosion control installations. will be monitored on the same timeline to determine if the defined erosion control goals have been met.

Standard monitoring techniques (such as Line or Point Intercept transects) will be used to determine percent survival and cover in the replanted areas. Erosion control areas will be checked for evidence of scouring and sediment movement.

2. INTRODUCTION

2.1 PURPOSE

The purpose of this report is to describe existing conditions at the Project Site; to assess impacts of the proposed orchard development; to identify and describe environmental enhancement opportunities and/or mitigation options; and to describe how mitigation sequencing was followed when creating and revising the site development plan.

The orchard development plan is designed to comply with applicable local, state, and federal law and regulations, and to meet standards required to obtain the necessary permits for orchard development. The report is also designed to provide conceptual mitigation plans describing work that will be done to carry out proposed environmental enhancements, including enhancing elk habitat in the proposed Conservation uplands; restoration of currently degraded wetland and riparian areas; and including monitoring as needed to document success of the mitigation work.

2.2 PROJECT LOCATION

The Project Site is located on Wheeler Ridge, within the Stemilt Basin, Chelan County, Washington State. The proposed 260-acre orchard project is located on private property owned by Wheeler Ridge, LLC in the Township 21N; Range 20 EW; Section 17 (See Figure 1). Offsite impacts will include upgrading an existing County road and extension of underground utilities from Section 9, and across Section 16 east

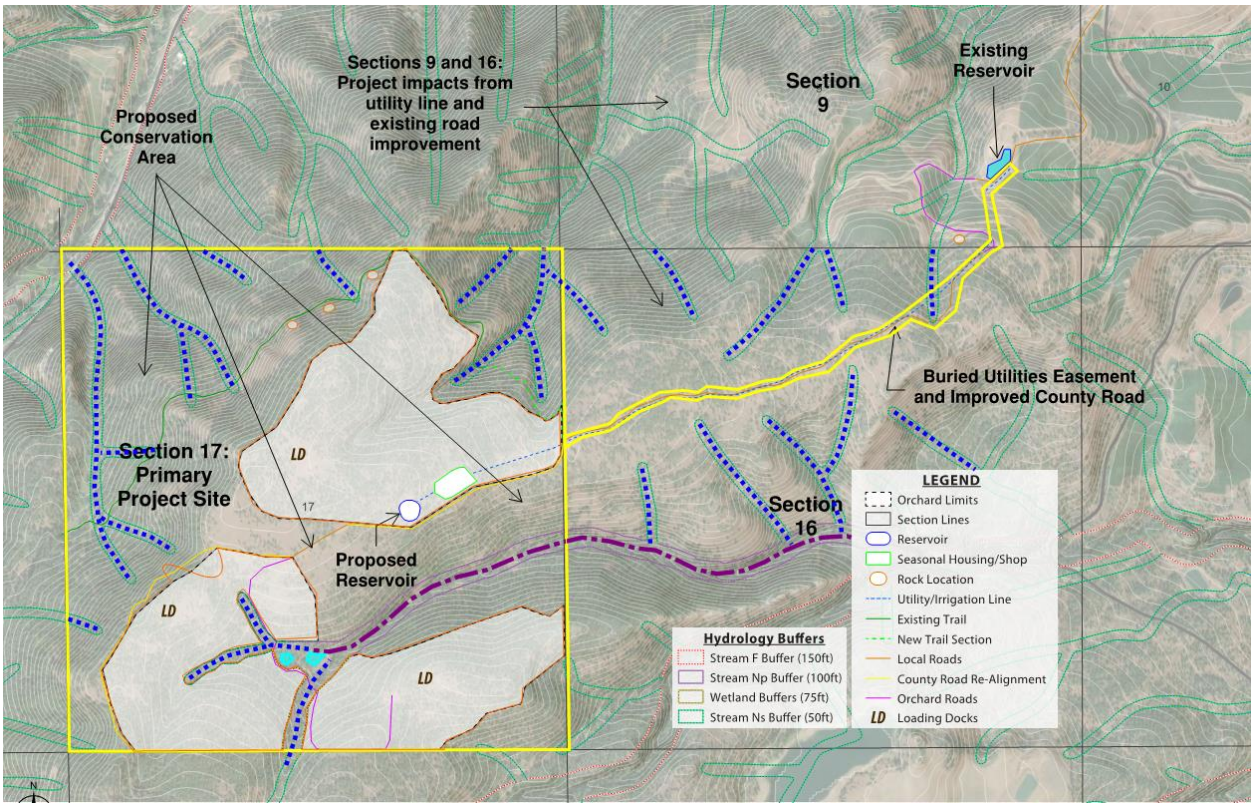

Figure 1. Project Site (Sec. 17) and Project Area (including road and utility impacts on Sec. 9 and 16).

of the Project Site at Section 17. The Project Site plus the area defined by the improved road and utility easement will be referred to as the Project Area.

Section 17 is zoned RR 20, and is not designated as Open Space, Historic Property, or for Multi-Family Redevelopment. The Land use Code is 88 (Forest Resource), and the Owner ID is 96173. The elevation range of the Project Site is 3,700 to 3,800 feet.

2.3 PROJECT AREA DESCRIPTION

The Project Area includes the Project Site (Section 17) and also road improvement and underground utility impacts on Section 16 (TPN 212016000000) and Section 9 (TPN 212009430010 & 212009440050). Section 16 is directly east of the Project Site and is owned by WDFW. Section 9 is northeast of the Project Site and is privately owned with partial orchard development.

The Project Area is primarily forested but includes open prairie areas dominated by Ponderosa pine and a small mix of Douglas fir. The understory of the Ponderosa pine plant community includes native plants such as lupine and balsamroot.

The area proposed for orchard development on Section 17 includes three separate orchards (total of 260 acres) laid out across a high elevation central ridge. This site was specifically chosen because it is about 500 feet higher than the nearest orchards on Section 9, which allows for a later growing season and extended cherry harvest. The orchards will be surrounded by 8 ft tall wildlife fencing, to exclude elk and deer, divert them into the preserved Conservation Area wildlife corridor. The forested upland currently supports a mixed vegetation community including grassland meadows, open canopy forest and some areas of dense canopy forest.

An existing utility easement crosses Section 16 to the Project Site. This utility easement will be used to install an irrigation water pipeline extension and electrical power to the proposed Project Site reservoir and orchard facilities. In addition, an existing public road that extends from the Section 9 reservoir through Section 16 and the Project Site will be improved to provide more dependable truck access to the proposed orchards. Section 9 is currently developed, and has no critical areas that would be impacted by this project.

2.4 PROJECT SITE JUSTIFICATION

As mentioned above, Wheeler Ridge is about 500 feet higher than the nearest orchards on section 9. The Section 17 orchard location is unique in that it is higher elevation than other nearby orchards, and has mostly north and east-facing slopes. This unique combination of elevation and aspect allows growing a variety of cherry that will mature slightly later than is possible in lower elevation orchards, thereby extending the harvest season. The three orchards currently proposed on Section 17 are sited on slopes and aspects with soils with high clay and organic matter content and are best suited for growing cherries.

The proposed orchard area includes a mixture of dense and open canopy forest with smaller areas of grasslands. These dense and open canopy forest areas are less preferred by elk, and thus impacts to habitat are reduced. The proposed Conservation Area includes grasslands as well as open canopy forest that can be easily thinned to create more grassland habitat.

The proposed orchard development is in an area designated by the USDA Natural Resources

Conservation Service (NRCS) as "Farmland of Statewide Importance", and as such is considered to have characteristics favorable to certain kinds of farming that can be used to meet the Nation's short- and long-range needs for food and fiber.

2.5 PROJECT HISTORY

This revised Critical Area Report and Conceptual Mitigation Plan is an update to the Critical Area Report submitted in October 2018. Some of the special studies that were previously embedded in the report text have been extracted and are provided instead in the Appendices.

This update is also provided to address several questions and clarifications requested by resource agencies during the State Environmental Policy Act (SEPA) review period, as well as to remove the previous proposal to pipe two degraded Ns streams in the southern portion of Section 17.

The discussion below includes an updated description of existing conditions, potential project impacts, and mitigation sequencing that was followed when creating the site development and mitigation plans.

The conceptual mitigation plan (described in more detail below) describes the current proposal to revegetate and enhance habitat in native forest and uplands on Section 17. It also includes a proposal to restore and revegetate previously impacted riparian/wetland areas, and to impellent erosion control measures on the two streams where piping was previously proposed.

Once this conceptual mitigation plan is approved by regulators, it will be used as a basis to develop final, detailed, site specific habitat restoration and vegetation planting plans for final review and approval.

2.5.1 Changes from the 2018 proposal (Figure 1):

Due to concerns expressed by agencies, the following changes were made to the orchard development plan:

- The proposal to pipe severely eroding sections of two Ns streams has been removed from the project.
- The Orchard #2 boundary has been revised to comply with Chelan County Code stream and wetland protection standards and buffers (related to the above change).
- The Orchard #1 eastern boundary has been revised adjacent to a proposed two track trail re-route.
- Associated technical reports and figures have been updated to reflect these changes.
- Locations of potential rock pits for road building purposes have been updated and added to the project map.

3. METHODS AND MATERIALS

3.1 WETLAND DELINEATION REGULATIONS (FEDERAL AND STATE)

Under the Washington Administrative Code (WAC) section 173-22-035, the Washington State Department of Ecology (Ecology) requires wetland identification and delineation be completed following the approved federal wetland delineation manual and applicable regional supplements, including but not limited to the 1987 Corps of Engineers Wetland Delineation Manual and the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Western Mountains, Valleys, and Coast Region (Version 2.0)* (U.S. Army Corps of Engineers 2010). Wetlands are included in the definition of Class II FWHCAs but are generally regulated primarily through Chapter 11.80.

3.2 WETLAND RATING, CLASSIFICATION, AND BUFFERS (COUNTY)

Chelan County Code defines wetland protection standards in Chapter 11.80 Wetland Areas Overlay District (WOD), which includes requirements for rating the wetland and making buffer width determinations based on rating score results. Standard mitigation sequencing applies.

As required by Chelan County code, the Washington State Wetland Rating System for Eastern Washington (WRSEW) has been applied. The version of the WRSEW referenced in code was Hruby 2004a but code also indicates "as amended" therefore wetlands associated with the project site were rated according to the 2014 WRSEW (Ecology Publication #14-06-030).

Wetlands identified as part of this project were classified according to the USFWS Cowardin classification system (Cowardin et al. 1979) and the USACE Hydrogeomorphic (HGM) classification system (Brinson 1993). Wetland buffers width are assigned relative to Wetland Category rating results, as provided below in Table 1.

Table 1. Wetland buffer widths required per wetland category.

	Buffer Width (feet)	
Wetland Category	**High Intensity (feet)**	**Low Intensity (feet)**
Category 1	300	200
Category 2	200	100
Category 3	150	75
Category 4	50	50

3.3 HABITAT MANAGEMENT PLAN REGULATIONS (COUNTY)

Chelan County Code, Chapter 11.78, Fish and Wildlife Habitat Conservation Areas, Section 11.78.100, Critical Areas Ordinance, requires a wildlife habitat mapping and management plan. The Washington State Department of Fish and Wildlife (WDFW) must review and approve the conceptual habitat management and mitigation plan within the context of the scope of the project footprint. This section of the report is organized to align with Section 11.78.100 requirements.

The Chelan County Critical Areas Ordinance, Chapter 11.78, Fish and Wildlife Habitat Conservation Areas Overlay District (FWOD) regulates development located within a Fish and Wildlife Habitat Conservation

Area (FWHCA) or within 1000 feet of a mapped point location of a priority species. Standard mitigation sequencing applies.

FWHCAs include streams, riparian areas, mapped point locations of priority species wildlife habitat, and mule deer and/or elk winter range and migration corridors. Class I FWHCAs include or are within 1000 feet of documented habitat for state or federally listed species; Class II FWHCAs include or are within 1000 feet of documented habitat for priority species

Stream buffers width are assigned based on Stream Type, as provided below (Table 2). Stream Type S is a Shoreline, a large, fish-bearing river system, which is also regulated under the County Shoreline Master Plan. Stream Type F is a smaller fish-bearing stream, relative to a Type S. Stream Type Np is not fish bearing but flows year-round (is a perennial stream). Stream Type Ns is a seasonal stream, with no fish.

Table 2. Stream type buffer widths.

	Buffer Width (feet)	
Stream Type	**High Intensity (feet)**	**Low Intensity (feet)**
Type S	250	200
Type F	200	150
Type Np	150	100
Type Ns	50	50

3.4 HABITAT QUALITY ASSESSMENT PROTOCOL

Several habitat condition schemes are commonly used to classify the condition of overall habitat from pristine to poor. The Nature Conservancy's (TNC) habitat (vegetation) ecological conditions classifications were used for this assessment because the classifications have a quantitative, measurable consequence. However, it is important to note that this protocol does not directly apply to assessment of elk habitat quality. Therefore, other protocols below are used to adapt this protocol to specifically assist with elk habitat quality evaluation.

The TNC ecological conditions are:

A. Pristine: Evidence of post-industrial human-caused disturbance is absent. Exotic species are absent.
B. Good: Little evidence of post-industrial human-caused disturbance is present. Stand composition and structure is predominantly natural. Exotic species are uncommon (<5 % cover).
C. Satisfactory: Postindustrial human-caused disturbance is apparent. Stand composition structure is altered. Exotic species are well represented to abundant (5-25% cover).
D. Marginal: Evidence of post-industrial human-caused disturbance is prevalent. Stand composition and structure is altered. Native species are present, but in peril of loss. Increasers dominate the stand. Invader species are a significant compositional component.
E. Poor: Native stand composition, structure, and function are significantly altered. Reestablishment of native stand composition, structure and function will require large energy inputs.

3.5 BACKGROUND MATERIALS

To help determine the site conditions that might affect upland habitats, SCJ Alliance staff reviewed the following information:

- Chelan County GIS mapping database
- US Fish and Wildlife Service (USFWS) National Wetland Inventory (NWI)
- US Department of Agriculture (USDA) Natural Resources Conservation Service (NRCS) Soil Survey Geographic database online Web Soil Service.
- Washington State Department of Fish and Wildlife (WDFW) Priority Habitat and Species (PHS). Database (WDFW PHS 2018)
- Google Earth historic timeline aerial photos of the project area
- Elk habitat literature, studies, and models (several consulted)
- Northern Spotted Owl Survey Results from Washington Conservation Science and Dr. John Lehmkuhl

4. RESULTS AND DISCUSSION

4.1 EXISTING CONDITIONS

The proposed project is located in Section 17 on Wheeler Ridge, approximately 8 miles from the City of Wenatchee. There are no current structures on Section 17. There is an existing Chelan County Road that runs through part of Section 9 (northeast of Section 17), and crosses through Section 16 (east of Section 17). This road runs along Wheeler Ridge and crosses through the Project Site in Section 17. The road is currently deeply rutted, eroded, and not well maintained. There is an existing reservoir associated with orchards and developed access roads in the southeastern portion of Section 9, adjacent to Section 16 (Figure 2).

Approximately half of Section 17 along the southern side of Wheeler Ridge is flat to gently sloped. The land surfaces northwest and northeast of Wheeler Ridge are steeper (>50%) (Schellhaas, 2015). There have been two major logging entries, one in about 1935 and again in about 1996. Both entries removed most of the large Ponderosa pine and left behind many relic logging roads. The relic roads are highly eroded with significant ruts where water upslope sheet flows into the ruts and is conveyed downgradient. These rutted roads cut off the historic hydrologic patterns.

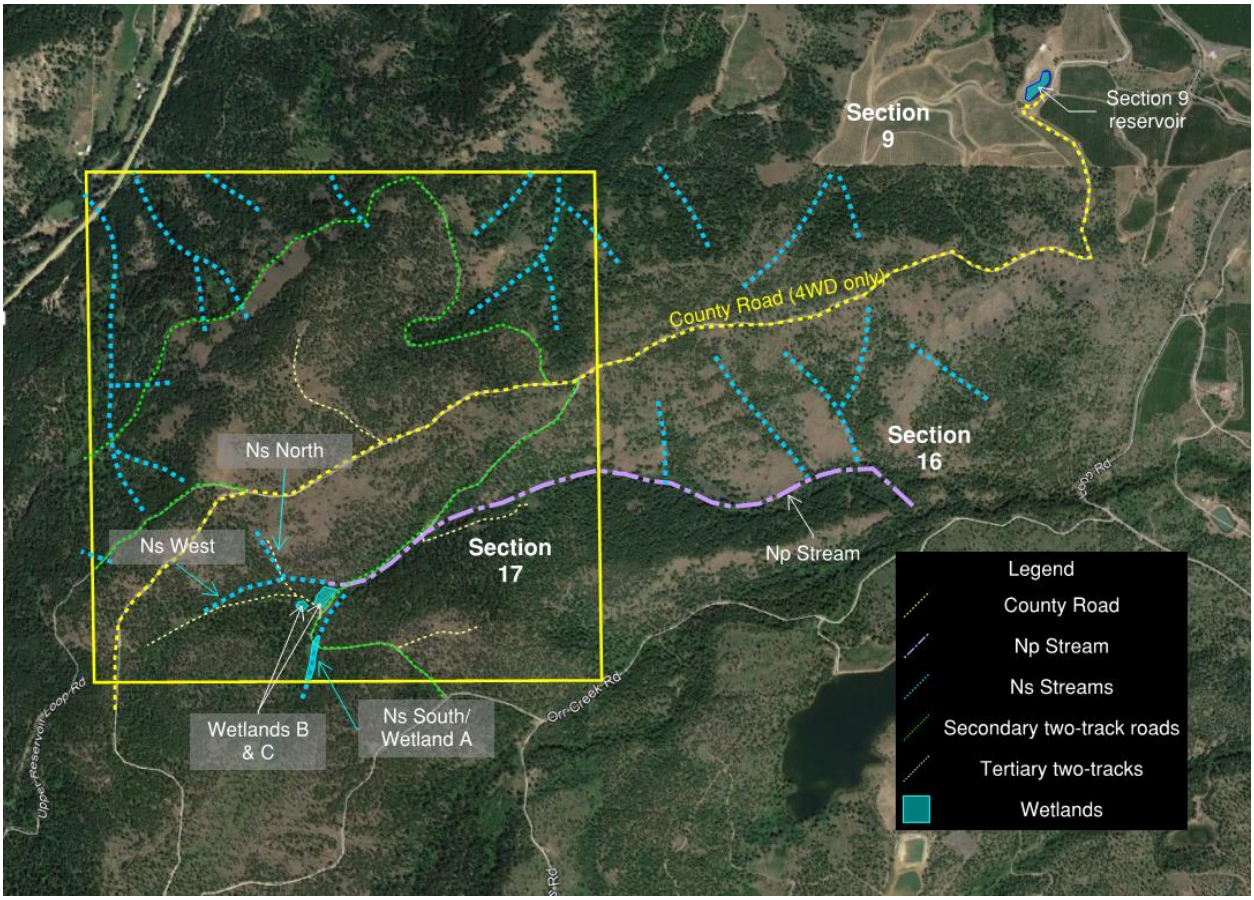

Figure 2. Existing Conditions across the Project Area.

4.2 SOIL AND GEOLOGY

4.2.1 Soil

The dominant soil type mapped on the Project Area is the Stemilt silt loam (map units StD and StE), slope classes 0-25% and 25-45%, very well-drained soils (Figure 3). This soil is clay-dominated and rated high for use in agricultural applications.

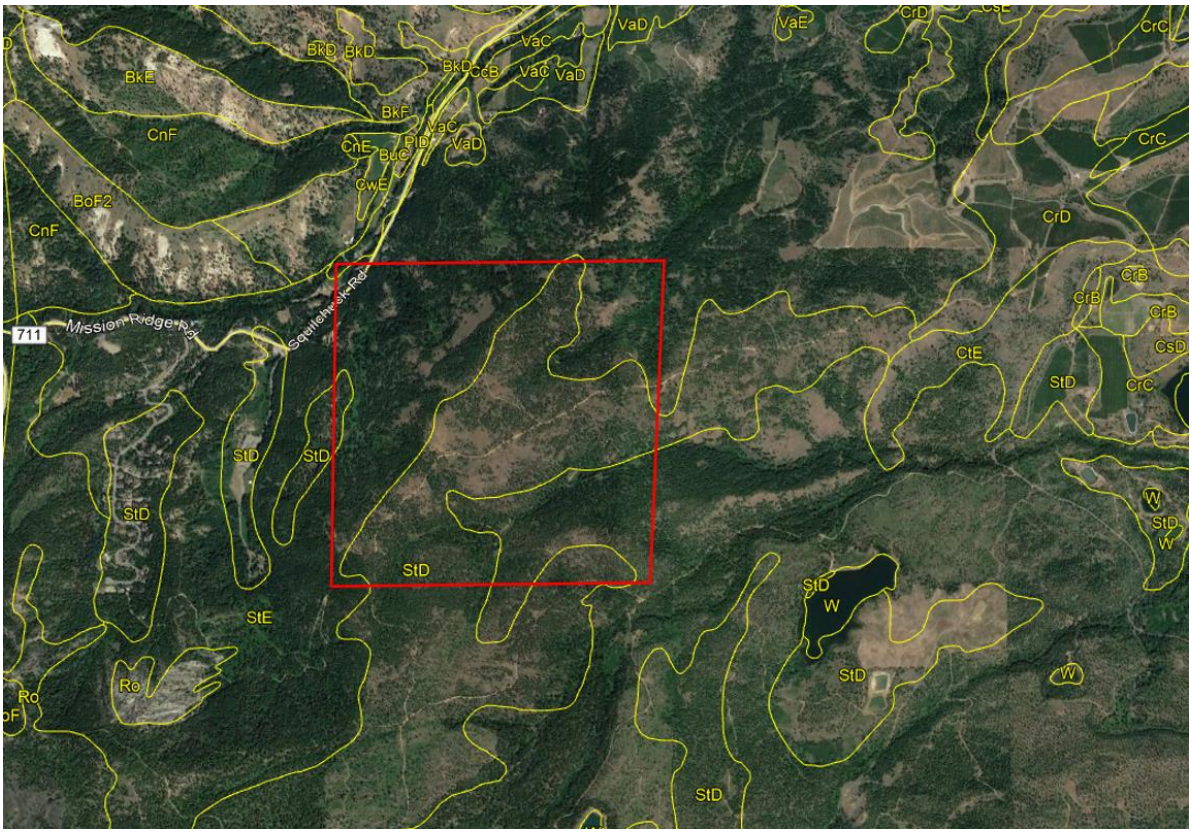

Figure 3. Soil map of area in and around Section 17.

4.2.2 Geology

The dominant geology within the Project Area is mapped as Quaternary Landslide (Qls), with block slide movement toward the relatively rare Tdyo map unit. Its landscape position suggests it could have formed from a unique combination of river flow impacts from the north in concert with lava flow impacts from the southeast. This unit is not necessarily indicative of current landslide hazard conditions. Refer to Appendix V for Aspect Consulting report describing landslide hazard conditions onsite.

4.3 VEGETATION COMMUNITY

4.3.1 Forested Vegetation Community:

According to Schellhaas, approximately 80% of the Project Area has a mature forest community. The dominate tree species are Ponderosa pine and Douglas fir. For a comprehensive list (Schellhaas 2015, Appendix VI).

Forest species composition along the Section 16 road and utility easements is similar to that of Section 17 (Figure 4).

Figure 4. Upland forest vegetation, Section 17, 2018.

4.3.2 Mixed Upland & Grassland Vegetation Community:

Mixed shrub, grass and forb communities occur across uplands on Section 17 and along the Section 16 road and utility easements. Species include wildrye, native bunchgrasses, wildflowers, annual grasses and native forbs such as Bingen lupine, arrow-leaf balsamroot, violet, wild geranium, bleeding heart, trillium and buckwheats growing between bitterbrush, big sage brush, and forest trees.

Trees associated with these understory communities are primarily Ponderosa pine, red alder, and in some areas, quaking aspen. Other shrubs include Oregon grape, ocean spray, snowberry, and wild rose (Figure 5).

Figure 5. Meadow adjacent to forested stands

4.3.3 Riparian & Wetland Meadow Vegetation Community:

These wet areas primarily support two dominant trees species, quaking aspen and red alder. The dominant shrub and herbaceous species are: in the wetter areas included several different willows, twinberry, red osier dogwood, wild crabapple, and wild rose. Herbs, ferns and vine species included water parsley, wild columbine, yellow lily, wild iris, sedge spp, coltsfoot, small-fruited bulrush, horsetail, spike rush, and spreading buttercup. The vegetation from within to outside of the wetland areas reflected a fast transition from wetland to upland conditions (Figure 6). For a comprehensive list of species, refer to Wetland Summary in Appendix II.

Figure 6. Scrub-Shrub Wetland (Wetland A).

4.4 HABITAT FUNCTIONS AND WILDLIFE PRESENCE

The Project Area currently provides good forested habitat but has only very limited coverage of riparian and wetlands habitat. The overall habitat functions are provided in large part by the presence of native vegetation, but also affected by access to the adjacent 91,603-acre Colockum Wildlife Area (Figure 7), which is offsite to the southeast. This association is most important during spring months when elk are calving, and may use Section 17, which is located at the northwest edge of this greater habitat area. The Colockum Wildlife Area includes many different habitat types (herbaceous, shrub/scrub, and forested). Wildlife using the Project Area could potentially include deer, elk, cougars, black bears, wild turkey, smaller mammals and a variety of birds, including northern pygmy owls.

Current habitat functions on the Project Site have been diminished due to previous logging activities and remnant logging roads, and also from illegal recreational uses, such as mud bogging, and most notably the presence of a heavily accessed Chelan County Road (i.e. regular human disturbance).

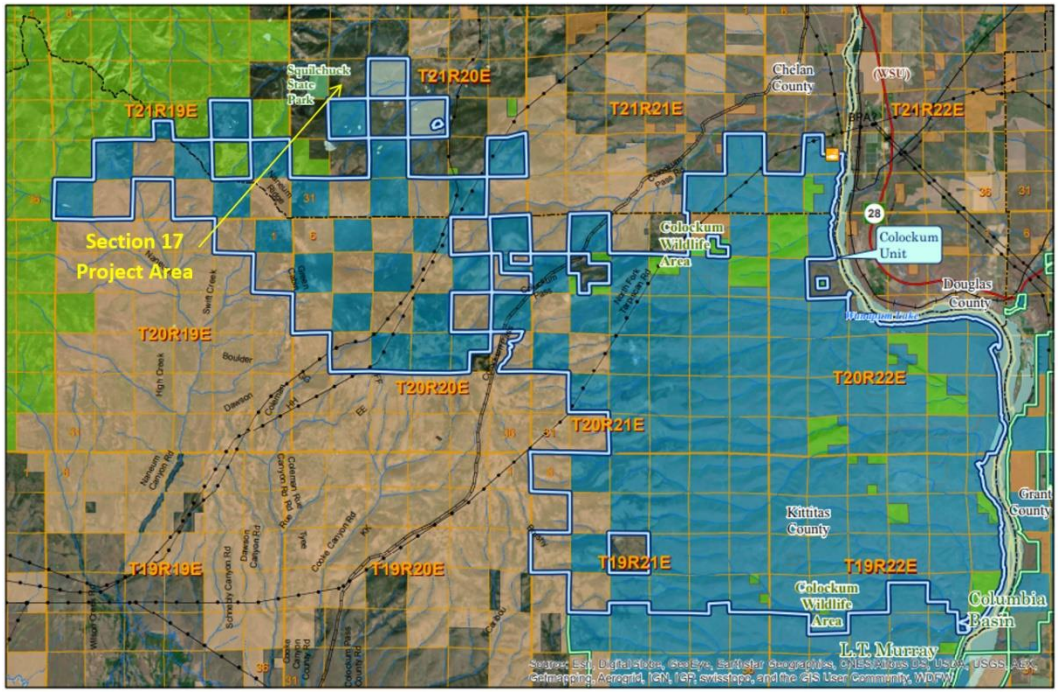

Figure 7. Colockum Wildlife Area (blue outline) in relation to the Project Site.

4.4.1 WDFW Special Status Species

WDFW oversees the listing and recovery of wildlife species in the state. WDFW recently purchased Section 16 and Section 22 (1,200 acres) from WDNR Commercial Forest Lands for the protection of Oncorhynchus mykiss (wild steelhead), habitat for the Endangered Species Act (ESA) Listed Gray Wolf and their prey species mule deer and elk and to protect suitable habitat for ESA Listed northern spotted owl conservation opportunities. This includes protection of prey species -- mule deer and elk. This newly acquired acreage has been incorporated into the Colockum Wildlife Area.

Gray wolves have not been observed on or near Section 17 (WDFW public disclosure request confirmation, 2018), therefore are not considered further in this assessment.

Section 17 and Section 16 have been designated as breeding areas for elk; management buffer for northern spotted owls. Old studies (1996) recorded a past sighting of a northern spotted owl nearby.

4.4.2 Location of Priority Habitat Types and Priority Species Point Location

Some areas within the Section 17 project footprint are designated by WDFW as Class II Fish and Wildlife Areas, based on the presence of elk breeding/calving habitat. There are no fish bearing streams within Section 17, therefore impacts to fish habitat will not be discussed.

The WDFW Priority Habitat and Species (PHS) database was queried and identified the following Priority species and their associated Priority Habitats on Section 17

(1) Northern Spotted owl management buffer;
(2) Northern Spotted Owl occurrence (1996); and
(3) Elk breeding area

Northern Spotted Owl Habitat and Presence: The proposed project is located along the western edge of the mapped range of the northern spotted owl in the vicinity of two historical northern spotted owl activity centers and potentially suitable owl habitat (Lyons, et.al. 2018). An Activity Center Assessment and survey was completed in 2018 to identify whether Northern spotted owls were currently present within the Project Site.

Results of the assessment and subsequent survey concluded that there are no current spotted owls on the site or nearby, and there are only isolated pockets of suitable spotted owl habitat remaining in Section 17. Therefore, no viable spotted owl habitat will be removed or impacted as a result of this proposed project (WCSI, 2018), or along the Section 16 pipeline easement (Wildwood Consulting 2019). Refer to Appendix III and Appendix IV for additional information.

Colockum Elk Habitat: WDFW considers Rocky Mountain Elk as a species of recreational, commercial, and/or tribal importance. Elk are classified as game animals (WAC 232-12-007).

Notes provided by WDFW staff in the PHS database describe the following: “elk calving area – Colockum, approx. 1200 elk calves in this area annually; polygon is a mosaic of suitable calving habitat and open ridge tops”.

However, of the 105,662 acres of lands identified by WDFW as breeding areas for elk, less than 0.4% of potential elk calving habitat is located within Section 17. The Colockum elk herd range covers more than 1,600 square miles (Figure 8) with an estimated population of 6,500 (WDFW, 2018).

Most of the elk herd use summer range areas located in the Naneum, Swauk, and Teanaway drainages (WDFW, 2005), which are not near the proposed Project Site.

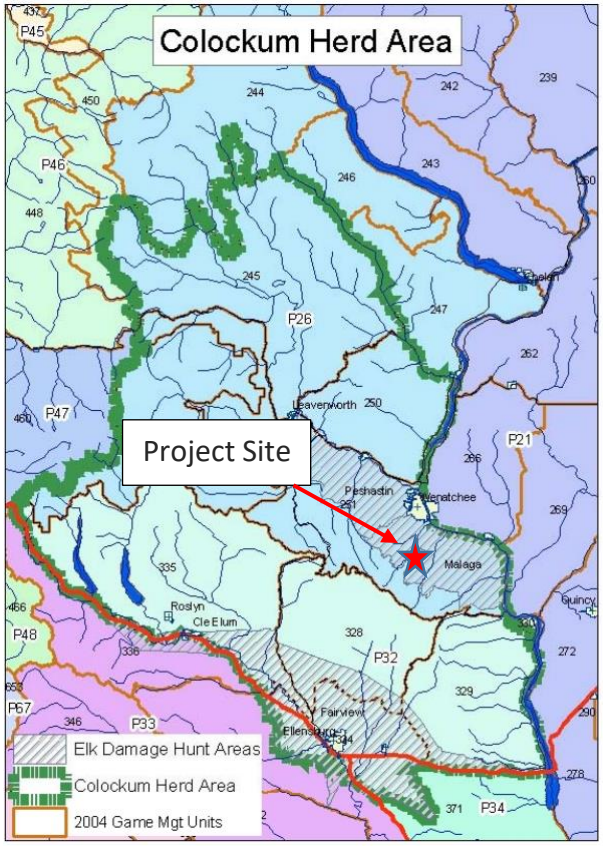

Figure 8. Colockum Herd Area in relation to Project Site

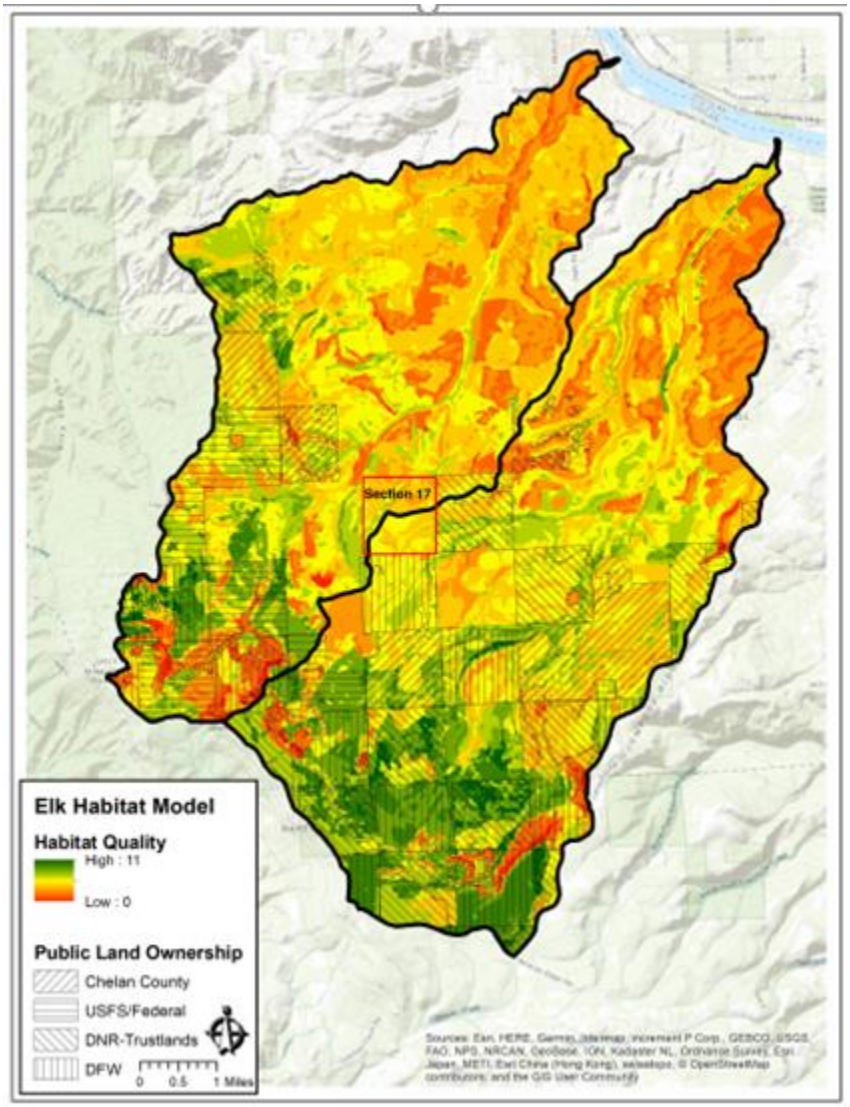

Figure 9. Elk habitat index score for the Stemilt-Squilchuck landscape evaluation area (Washington Conservation Science, 2019)

4.5 EXISTING ELK HABITAT QUALITY ASSESSMENT

WCSI, 2019 Study: In 2019, Washington Conservation Science Institute (WCSI) modeled and assessed the quality of elk habitat in the Stemilt-Squilchuck Basin and results indicated that ~19,370 acres (50%) of the assessment area is in a low habitat quality condition; ~17,000 acres (44%) in a moderate habitat quality condition, and ~2,600 acres (6%) in a high quality condition" (Figure 9).

For additional information on the models and studies, refer to Appendix III.

WCSI results indicate that the majority of the elk habitat within the Project Area ranges from moderate to low.

Potential summer elk habitat quality was also modeled by SCJ Alliance in 2018 for Section 17 and Section 16. Results from the 2018 model indicated there is some good, moderate, and low quality habitat available to elk during spring and summer months (Figure 10; Appendix VIII).It should be noted that the 2018 model results identify some good quality habitat adjacent to the public road on Section 16, due to high vehicular traffic during spring and summer months from recreators elk are unlikely to be in this area. The Project Site does not provide over-wintering habitat for elk or deer because the elevation is too high, therefore is not discussed further.

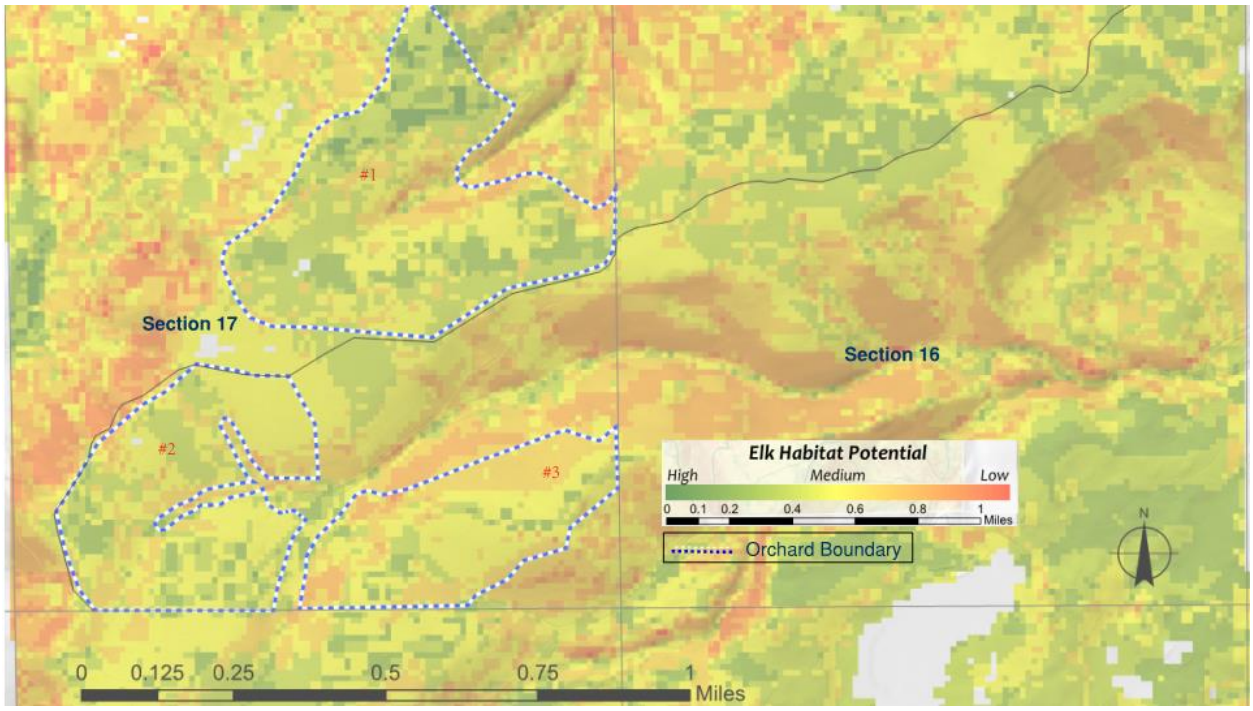

Figure 10. Elk summer habitat potential, Section 17 and Section within the proposed project area (SCJ Alliance, 2018).

S. Shiflett – Wheeler Ridge staff, personal communication, observations from 1978-2018:

> "*In the spring time when the bull elk are in Section 16 and Section 17, they stay on the south side of the canyons in little benches about ¾ up the hillside, so the sun is shining on them. … they eat the new green grass on the south side of the canyon in the spring. As it gets hotter, the bull elk move to the north side of the canyons in Section 16 and 17 to get shade and keep cool. The bulls and cows move around a lot in the summer time going through Sections 9, 10, 11, 14, 15, 16, 17, 20, 21, 22 and 23. The majority of the cow elk normally do not get into Section 17 until after calving, most of the cow elk do their calving in sections 9, 10, 11, 14, 15, 16, 21, 22 and 23.*"

Field observations by SCJ Alliance: provide additional verification documenting known elk habitat use and presence in certain areas in spring and summer months within the Project Area.

4.6 WATER RESOURCES

4.6.1 Streams

The Project Area spans a drainage divide between two watersheds, the Stemilt Creek watershed to the southeast and the Squilchuck Creek watershed to the northwest. Both watersheds drain to the Columbia River about 6.5 miles north of Section 17. Three (3) Ns tributaries in the southern half of section 17 (vicinity of proposed orchard project) combine to form an Np stream. The most southerly Ns tributary in the south-central portion of Section 17 has a narrow band of associated Category III riparian wetlands.

There are two existing wetland/stream road crossings in this area. There are no stream crossings along the Section 16 roads and utility easements; therefore Section 16 impacts to streams will not be discussed any further.

4.6.2 Stream Type Revision

WDNR Stream Type maps were consulted to provide an initial assessment of potential stream types in the project area. The extents and locations of various stream types in Section 17 were formally revised and updated through a standard DNR stream type assessment process following field work carried out with DNR and DFW staff assistance. The corrected and approved Stream Type classifications have been shared with Chelan County, and have been used to lay out the orchard areas – ensuring that the orchard does not result in new impacts to onsite stream systems.

The result of this work shows that there are no Fish-bearing streams (Type F) within Section 17. There is a fish-bearing stream located just outside of the northwest corner of Section 17, and another located just outside of the southeast corner of Section 17. Those two Type F streams have standard 150 ft buffers, and both the streams and their standard buffers are well outside of the proposed orchard development boundaries.

4.6.3 Water Quality

None of the streams within the Project Area are out of compliance with Washington State Water Quality Standards (WAC 173-201A), refer to Four Peaks Consulting Water Quality/ Quantity testing results in Appendix X.

4.6.4 Wetlands

There are three (3) wetlands associated with Ns stream sections in the southern portion of Section 17 adjacent to proposed orchard areas. Two of the wetlands are connected by a diverted stream which currently drains from one to the other in ruts down a logging road. These wetlands and streams are discussed in greater detail below and in Appendix II.

There are no wetland impacts in the Section 16 easement area.

4.6.5 Reservoir

There is an existing reservoir in Section 9, which is the water source for the proposed 9.9 acre-ft reservoir to be built in section 17.

4.7 PROPOSED DEVELOPMENT

4.7.1 Onsite Assessment

SCJ carried out onsite assessment of wetland and stream conditions on May 2018, and in July and October 2019. On several other occasions, upland areas were evaluated in relation to elk habitat and elk use.

The existing vegetation within the proposed orchard development units on Section 17 and adjacent to the existing Section 16 road and utility easements consists of a mosaic of grassland meadows, open canopy Ponderosa pine forest, and more dense forest. Other areas onsite include riparian and wetland plant communities. These communities have been mapped on aerial photos to date; site-specific mapping of vegetation communities related to elk habitat needs will be completed later, once the conceptual mitigation plan has been approved.

4.7.2 Site Development Plan

It is proposed to convert a portion of the upland forest on Wheeler Ridge to orchard – an allowed use per County code as long as Critical Area impacts are adequately avoided and addressed.

Work within the orchard areas will include spring maintenance each year -- i.e. pruning, weed control and a period dedicated to harvest fruit toward the end of each summer. Inflatable "dancers" will be installed throughout the orchard to deter seed eating birds from the orchard during late summer and fall. Fall maintenance each year will involve pruning, topping, compost application, fertilizing, and etc. in preparation for the next summer growing season.

The proposed impacts include:

- In Section 16: Utility installation and road improvement within existing easements.
- In Section 17:
    - Approx. 260-acres of orchard development out of 640 total acres
    - Preserve 20 acres in private ownership along the western Section boundary.
    - Proposed buildings and orchard infrastructure: spray sheds, carpool parking, loading docks, and seasonal housing; No buildings are proposed outside the fenced orchard development area.
    - Creation of a 9.9-acre-foot reservoir
    - Improvement of and relocation of 2.3 total miles of County road – 1 mile in Section 17 and 1.3 miles in Section 16.
    - Habitat enhancements:
        - Wetland and stream restoration and expansion, and preserving and enhancing vegetation in wetland and riparian area buffers
        - Conservation Area set-aside (360-ares): Preserving and enhancing existing forested and grassland areas for wildlife cover and forage; providing for wildlife corridors around and through orchard areas that are designed to connect to larger habitat concentrations on and offsite
        - Providing passive habitat protection through restriction of uncontrolled off-road traffic
        - Removal and restoration of 5,200 feet of illegal roads to protect and enhance elk habitat "green up" areas/ meadows – approx. 48 acres.

4.8 DESCRIPTION OF CRITICAL AREAS AND IMPACTS

4.8.1 Streams and Buffers

Wheeler Ridge crosses the middle of Section 17 and forms a drainage divide with one north side sloping to the northwest and the other sloping to the southeast (Figure 1). Therefore, there is very little upslope area to collect precipitation. As a result, most of the onsite streams starting near the ridge are small Non-Fish, Seasonal (Ns) systems (with standard 50 ft buffers).

Three of these Ns Tributaries (Ns North, Ns West and Ns South) are closely associated with the proposed orchard development, and are discussed in more detail below. Previously, Ns North and Ns West were proposed to be piped, due to severe erosion and downstream water quality impacts. That proposal has been abandoned and the streams will be retained and buffered per code. The original flow pathway of

Ns West will be redirected from an adjacent logging road and restored to its original natural pathway. Ns South is associated with a wetland, which will be discussed below.

These three Ns streams are the headwaters for the only Non-fish, Perennial (Np) stream in Section 17. This Np system was designated as a stream (by DNR and WDFW staff, discussed above). The Np stream does flow longer than the upslope systems, most of which had no flow when SCJ Alliance staff were onsite in May 2018. However, it had no flow by mid to late summer in 2018 and 2019. Therefore, even though designated and regulated as perennial, in at least some seasons, it may not flow year-round – which affects elk habitat quality (discussed in more detail below).

The Np stream has a standard buffer of 100 feet. It is associated with seasonal riparian wetlands farther downstream (Cat III, 75ft standard buffers); but the 100 ft stream buffer is wider (i.e., extends beyond the wetland buffer), and thus is the more protective buffer and controls under Chelan County Code.

4.8.2 Other FWHCAs on Section 17

The orchard area in Section 17 will be cleared of existing native vegetation in preparation for planting cherry trees. This will impact 260 acres of upland forest habitat that is potentially used by elk during breeding/calving season (May through June, in most years). Approximately 1,500 mbf of timber will be cleared under a Forest Practices Permit. Associated work will include clearing some trees, filling ruts and grading along 2.3 miles of the existing County road ROW (including the utility easement) which extends from Section 9 through Section 16 and into Section 17. Designated rock pits on Section 9 and in Section 17 will be use in road improvements (see Figure 1 for locations). This work is necessary to allow for safe passage from logging trucks during forest harvest and later for trucks hauling the cherry harvest in late Fall (well after calving season is over). Slash piles on landings may be burned during the fall or chipped and spread out in the orchard areas as mulch.

Water and power service will be extended to Section 17 along an existing utility easement running from Section 9 through Section 16. This easement more or less parallels Upper Wheeler Road, i.e., the existing County road. A 12-inch buried irrigation pipeline feeding to an 8-inch buried irrigation pipeline will start at the existing reservoir in Section 9 and will extend through Section 16 within the utility easement to a new, proposed Section 17 reservoir. In addition, three buried power distribution utility lines and associated vaults will be installed along the Section 16 utility easement to provide power to the proposed shop and seasonal housing to be located on Section 17.

An 8-foot tall wildlife habitat protection fence will be built around each orchard unit, to isolate the orchard from the 360-acre Conservation Area, which will be recorded to protect and maintain habitat for elk and other wildlife on Section 17.

4.8.3 Wetlands and Buffers

Wetlands and streams On Section 17 were delineated in May of 2018, and after rating the wetlands and defining the stream types, standard buffers (per Chelan County code) were applied to determine the boundaries of the orchard. The site was revisited in July 2019 and again in October of 2019 to collect additional information and collaborate with state agency staff about jurisdictional wetland conditions in areas that needed additional documentation, per feedback from the County's 3rd party review consultant. No changes were made to the wetland and stream delineation maps that were created after the original May 2018 work. Please refer to Appendix II for the Wetland Summary.

Figure 12. Showing flagging along Wetland A, a small riparian wetland corridor with green wetland flagging about 1-2 feet upslope from stream bed.

One of the Ns stream sections (Ns South) discussed above in the south-central portion of Section 17 has an associated Category III wetland (Wetland A, Figure 11), which is assigned a standard buffer of 75 feet in low intensity development areas. For the combined Ns stream/Cat III wetland system, the 75 ft wetland buffer is greater than the 50 ft Ns stream buffer, and therefore the wetland buffer controls as it is wider and more protective.

Two other wetlands (Wetlands B and C) were delineated in the southern portion of Section 17. They are associated with the other two Ns streams (North and West). Ns West jumped from its normal channel to flow down a rutted logging road parallel to the original channel. The new stream channel bisects Wetland B from Wetland C, and diverts flows into a severely damaged downslope area that also receives flow from Ns North, and is impacted by years of past mud-bogging activities.

This entire area at the confluence of the three Ns streams is severely impacted and requires restoration as a wetland area (Figure 12). As mentioned above,

Figure 11. Example of logging road diversion of Type Ns stream near Wetland B/C

the original flow pathway of Ns West will be redirected from the logging road and restored to its original natural pathway.

4.8.4 Miscellaneous Impacts

Noise Impacts: During early phases, noise on Section 17 will be generated from harvesting trees, hauling timber, removing roads, planting trees, and orchard construction.

After completion of orchard construction, there will be annual, short-term, seasonal impacts from orchard harvest operations, which will include human voices, carpooling, hauling fruit, and maintenance activities. Sounds from orchard operations are expected to be minimal, seasonal (i.e., late Summer to early Fall), and are limited to between sunrise and late afternoon. Noise from typical bird sound deterrents are minimal and are used in conjunction with non-noise deterrents such as Falconers, bird ribbons, and bird shields.

Invasive & Noxious Plant Species Impacts: Invasive and noxious plant species may be introduced to the Project Site from logging vehicles and orchard trucks that potentially carry seeds from invasive plants. Standard orchard operations will include monitor disturbed and roadside areas to minimize and control invasive plants. As needed, invasive and weedy species will be controlled as defined in a site-specific Integrated Pest Management Plan to reduce potential for germination and/or spreading of noxious weeds.

Traffic Impacts: Short-term traffic impacts on Section 17 will increase during timber harvest and hauling, as well as during orchard construction.

Long-term traffic impacts on Section 17 will be short-duration and seasonal, occurring primarily during harvest activities in the late Summer and Fall – outside of elk calving season, which occurs during May and June in most years.

In the surrounding area, these traffic impacts will be an extension of existing orchard harvest traffic throughout the County. Therefore, traffic in the general Stemilt Basin area is not expected to increase during seasonal operations (per Traffic Impacts Analysis, provided in Appendix XI).

Speed of travel within Sections 16 and 17 by seasonal employees and orchard trucks will be relatively slow, because orchard employees are required to drive at lower speeds both for safety and to avoid potential collisions with wildlife. Impacts to wildlife from short-term and seasonal traffic increases on Section 17 and Section 16 are expected to be minimal, due to the slow speeds. Elk are crepuscular, meaning they are most active during dawn and dusk when trucks are not typically on the road. No known collisions with big game have occurred previously on Section 17 or Section 16.

Wildland Fire Impacts: During the summer and fall months, Section 17 and Section 16 are dry and prone to wildfire. Chelan County, in partnership with WDNR and WDFW have been actively thinning forests within the Stemilt Basin to reduce fire risk. The orchard development will provide a wildfire break, as cherry trees are less flammable than a native Ponderosa pine for plant community. In addition, some of the habitat improvements that will be described in greater detail below will involve thinning the native forest to enhance elk habitat. Therefore, the orchard will reduce some wildland fire risk on Section 17 and possibly on adjacent public/private lands. In addition, orchard development includes creating a 9.9-acre-foot water reservoir on Section 17 which will be available for fire suppression, and thus will further reduce potential impacts.

It is proposed to remove and replant illegal roads on Section during Project mitigation work (discussed in more detail below). These roads have been used in the past for dispersed camping and associated campfires; therefore, this proposed mitigation measure will reduce fire risk.

Orchard development will result in increased short-term and seasonal presence of humans, which could increase fire potential. However, it is expected that orchard development will have an overall positive impact on reducing the potential for wildlife fire in and around Section 17.

4.9 CONCEPTUAL MITIGATION/RESTORATION PROPOSAL

The proposed 260-acre orchard project is located on private property owned by Wheeler Ridge, LLC at Township 21N; Range 20 EW; Section 17. Of the 640 acres on Section 17, 360 acres will be set aside in a permanent Conservation Easement and managed for wildlife habitat.

This conceptual mitigation proposal will address mitigation requirements for project impacts resulting from the conversion of forest land to orchard development, in accordance with Chelan County Code, including:

- Sections 11.78.015: Mitigation sequencing,11.78.080: Class II wildlife habitat conservation standards, subsection (3) Minor development within Class II wildlife conservation areas; and
- 11.80.110: Mitigation plan (wetlands).

The proposal described below included conceptual mitigation measures that can be used to compensate for project impacts. Once County and stage agency reviewers have commented and conceptually approved this proposal, Wheeler Ridge LLC will have enough guidance to develop detailed, site-specific mitigation plans which will be implemented to offset the loss of native vegetation and associated elk habitat in some parts of Section 17, and to ensure that elk habitat functions are replaced, following WDFW technical guidance.

Within this context, it is proposed to:

- enhance and restore existing degraded wetland and riparian buffer areas;
- implement erosion control measures in two severely degraded Ns streams;
- replace/install two culverts at existing, eroding road crossings needed to access orchard areas;
- enhance elk calving habitat in the 360-acre Conservation Area set aside, and
- remove illegal roads to control future public access to protected Conservation Area habitats.

The future detailed Mitigation Planting Plan will be developed in consultation with and approved by WDFW to ensure that the proposed elk habitat enhancement/ restoration in upland areas is effective.

4.9.1 Goals

The mitigation plan goals will be to increase low and medium elk habitat functions to high elk habitat functions -- particularly related to elk calving habitat needs – in the 360-acre Conservation Area; and to enhance and restore specific wetlands, streams and riparian areas that were damaged from past logging and recreational uses.

4.9.2 Mitigation sequencing

The orchard development plans were implemented following standard Mitigation Sequencing -- *"avoid, minimize, and mitigate",* per Chelan County Code 11.80.015. These concepts are listed below:

(1) Avoiding the impact altogether by not taking a certain action or parts of an action;
(2) Minimizing impacts by limiting the degree or magnitude of the action and its implementation, by using appropriate technology, or by taking affirmative steps, such as project redesign, relocation or timing, to avoid or reduce impacts;

(3) Rectifying the impact to fish and wildlife conservation areas by repairing, rehabilitating, or restoring the affected environment to the historic conditions or the conditions at the time of the initiation of the project;
(4) Minimizing the impact by restoring or stabilizing the area through engineered or other methods;
(5) Reducing the impact over time by preservation and maintenance operation during the life of the action;
(6) Compensating for the impact by replacing, enhancing or providing substitute resources or environments; and
(7) Monitoring the required mitigation and taking remedial action when necessary. (Res. 2007-97 (part), 7/2/07).

4.9.3 Proposed Wetland, Stream and Buffer Mitigation

Most wetland, stream and buffer impacts are avoided. However, two existing crossings will be preserved and upgraded (following WDFW standards for culvert sizing and crossing design), as they are necessary to provide access to the proposed orchard areas. One crossing at Wetland A (Ns South) is at an old logging road which will be realigned during orchard development to minimize the crossing distance (as required in code). The second crossing will be at the original confluence of Ns West and Ns North, where an existing road will be retained to provide access to the north. Impacts at those crossings will be mitigated by enhancing areas around each crossing, as well as already planned wetland habitat restoration nearby in the Conservation Area (Figure 13).

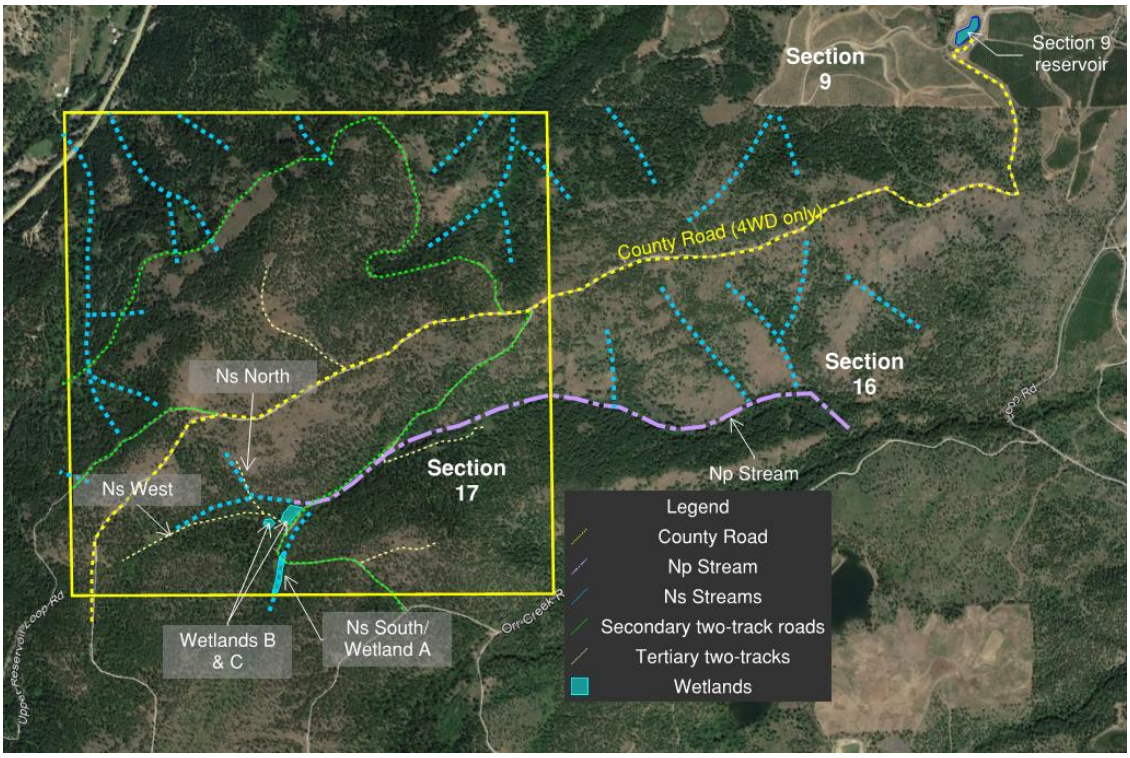

Figure 13. Showing locations of Streams and Wetland to be restored.

All other roads currently within wetland and stream buffers will be removed or realigned to move outside of the buffer, minimizing buffer impacts (Figure 14).

Previously, it was proposed to pipe Ns West and Ns North (shown above in Figure 13), and mitigate by enhancing damaged riparian and wetland areas downstream. This was proposed because these two

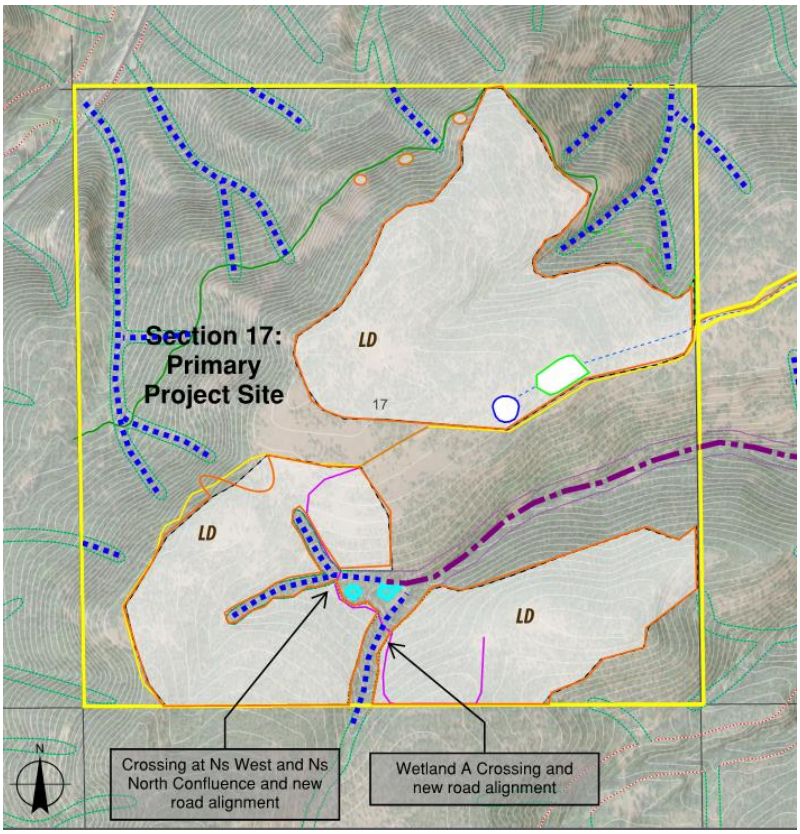

Figure 14. Showing preserved stream crossings and new road alignment outside of other buffers.

streams impact a proposed orchard area, making orchard operations more difficult. In addition, they are highly incised and actively eroding due to old logging road impacts, making it very difficult to restore natural stream functions. However, County Code does not allow for piping Ns streams if it can be avoided. Therefore, the proposal was revised to minimize impacts to Ns streams. Instead, Ns West and Ns North will be preserved, fenced, enhanced and buffered, as required in Chelan County Code.

Ns West will require special attention and restoration actions. Ns West was diverted from its natural channel at least a few decades in the past. It currently drains down ruts in an old logging road which is located ~100 ft south of the original channel.

We are proposing to restore streams and wetlands in the entire area downslope of Ns West and Ns North, and in that process will restore Ns West to its original flow pathway (Figure 15), which will make it easier to restore the severe erosion in the adjacent logging road surface which drains toward downslope wetland in the proposed Conservation Area. This erosion impacts water quality, hydrologic functions and habitat in downslope wetlands.

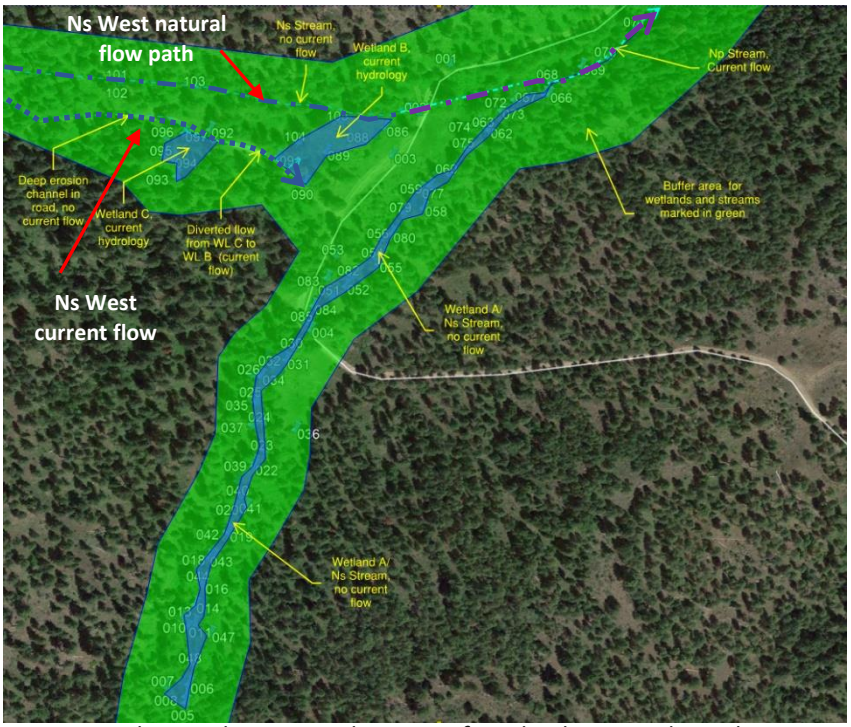

Figure 15. Showing location and extents of Wetlands A, B and C and associated streams – proposed wetland and stream restoration area.

The downstream wetlands (Wetlands B and C) and surrounding areas are specifically targeted for restoration and replanting activities, as they are also damaged from past off-road

"mud-bogging" activities. Restoration will result in expansion of current wetland acreage, as mud-bog areas will be restored into Palustrine Scrub-Shrub wetlands. This is assumed to be the historic plant community of this wet area at the confluence of three Ns streams, and will reflect similar surrounding native wetland and buffer vegetation communities. The enhanced stream corridors will require careful application of a variety of terrain restoration and erosion control measures designed to reduce or eliminate the current erosion problems. Thus, the proposed mitigation will involve reducing erosion in the Ns West and Ns North, as well as replanting and restoring downstream wetland areas.

In other areas nearby, some of the existing roads within the proposed Conservation Area easement were created illegally in the past by off-road enthusiasts. Some of these road sections are in wetlands, streams and buffers; some extend outside of buffers, but still fall within the greater proposed Conservation Area.

As one phase of the proposed wetland and wildlife habitat restoration plan in the Conservation Area, all of these secondary and tertiary roads south of the main County Road will be ripped and replanted, restoring natural habitat and terrain. In some areas, this restoration will be specifically planned to create "Green Up" areas designed to enhance elk calving habitat – i.e., planting open grassland areas for browsing adjacent to forested or shrubby areas ideal for hiding calves for the first few weeks of their lives.

An example area for applying this proposed vegetation management measure would be the Np stream ravine, which includes several of the illegal roads as well as a stream crossing that would benefit from restoration (Figure 16). This area is also ideal for this purpose as the Np stream flows later in the summer than other streams onsite, ensuring adequate water supply during calving season.

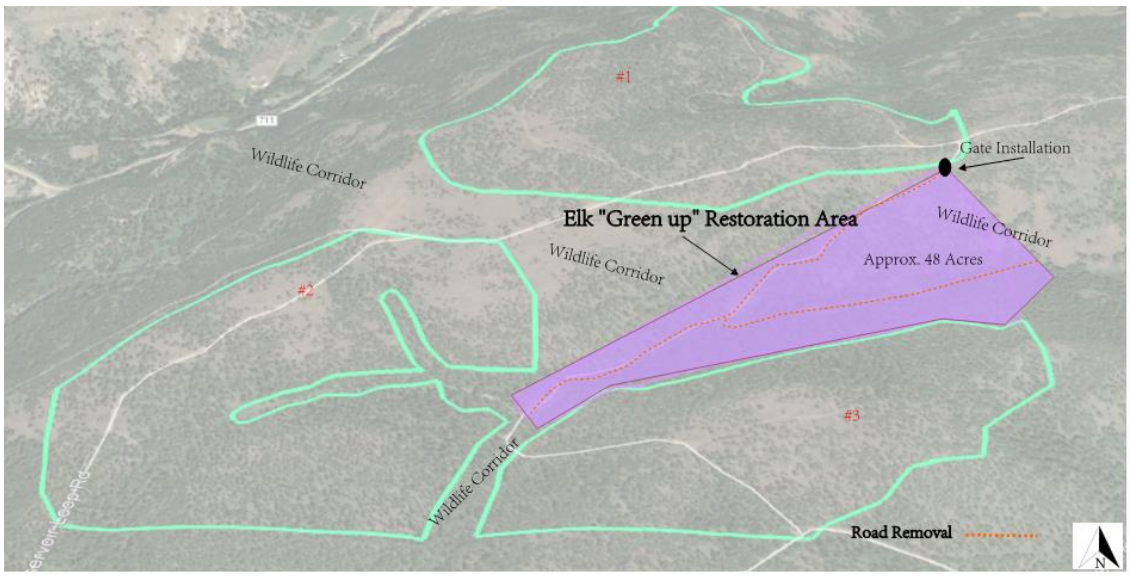

Figure 16. Example "Green Up" area surrounding Np Stream.

4.9.4 Overview of Proposed Elk Habitat Mitigation

The primary focus of onsite mitigation is for Rocky Mountain Elk breeding/calving habitat – the primary elk habitat functions ascribed to the Project Site by studies already referenced above and provided in the appendices (Figure 17).

Figure 17. Elk presence on Section 17 and Section 16.

No impacts to listed species, such as spotted owl, wolves and salmonids, are expected at the Project Site, and therefore no mitigation is proposed for those species.

Rocky Mountain Elk habitat onsite will be affected by clearing orchard areas and by associated impacts related to long-term orchard management.

Proposed mitigation includes creation of a 360-acre Conservation Area set aside designed to serve as a wildlife habitat corridor across the central ridge between orchard areas, preserving wildlife migratory access to other offsite areas to the northwest and southeast.

In relation to the quality of elk habitat on the Project Site, the Ns streams onsite are generally dry by mid-May in most years. Limited access to water on Section 17 generally means that elk are not occupying the Project Site by early to midsummer in most years. For this reason, elk habitat onsite is primarily valued as calving habitat during early spring – May to June. Once the calves are mature enough to move with the herd, the cows generally migrate to access nearby perennial streams, which are mapped offsite to the northwest and southeast.

In addition the lack of water, elk habitat use is limited by proximity to the County Road which runs across the central ridge. Areas within ¼ mile on either side of the Chelan County road are not typically used by elk, as determined during past studies.

Additional proposed mitigation includes managing native forest plant communities in the Conservation Area to increase cover by meadows, which are valued for forage during breeding/calving season. Generally the cows will forage in meadows adjacent to forested areas, where they hide their calves for three to four weeks after birth – until the calves are old enough to travel with the herd. Existing area forested areas will be thinned to increase acres of "Green-Up" areas, as discussed in the previous section. This level of vegetation community management will require site specific studies and design work, which will be carried out once the conceptual plan has been approved, and in response to direction from the regulatory agencies.

As mentioned previously, about a mile of illegal roads on Section 17 created by off road enthusiasts will be ripped, to de-compact the soils, and replanted in native vegetation, designed to provide either elk

forage or hiding habitat for calves. In damaged wetland and stream areas, ripping will be used carefully, only when hydrology is lacking (by mid to late summer). Figure 18 shows one of these mud bogging areas near Wetland B and C.

During calving season (May-June), orchard management activities are minimal, as it is early in the growing season, and work will be limited to minor maintenance activities. Workers will be educated about the purpose and function of the Conservation Area, in order to minimize inadvertent wildlife disturbances during calving season.

Figure 18. Showing severe damage from off-road vehicles at a wetland crossing.

4.9.5 Habitat Quality Assessment Processes

Per Nature Conservancy Protocols (described in in Section 3), there are no "pristine" habitat areas within either Section 17 or Section 16, because both areas are a historic, working forest with a mosaic of illegal roads and a major Chelan County road crossing. However, other models have been developed specifically to asses elk habitat quality, and are applied to develop this conceptual mitigation proposal.

SCJ GIS modeling (Figure 19, provided previously in this report) carried out in 2018/2019 applied the same elk habitat quality assessment parameters as previous WDFW models, which are more directly applicable to this habitat assessment than the generalized Nature Conservancy protocol, and can be

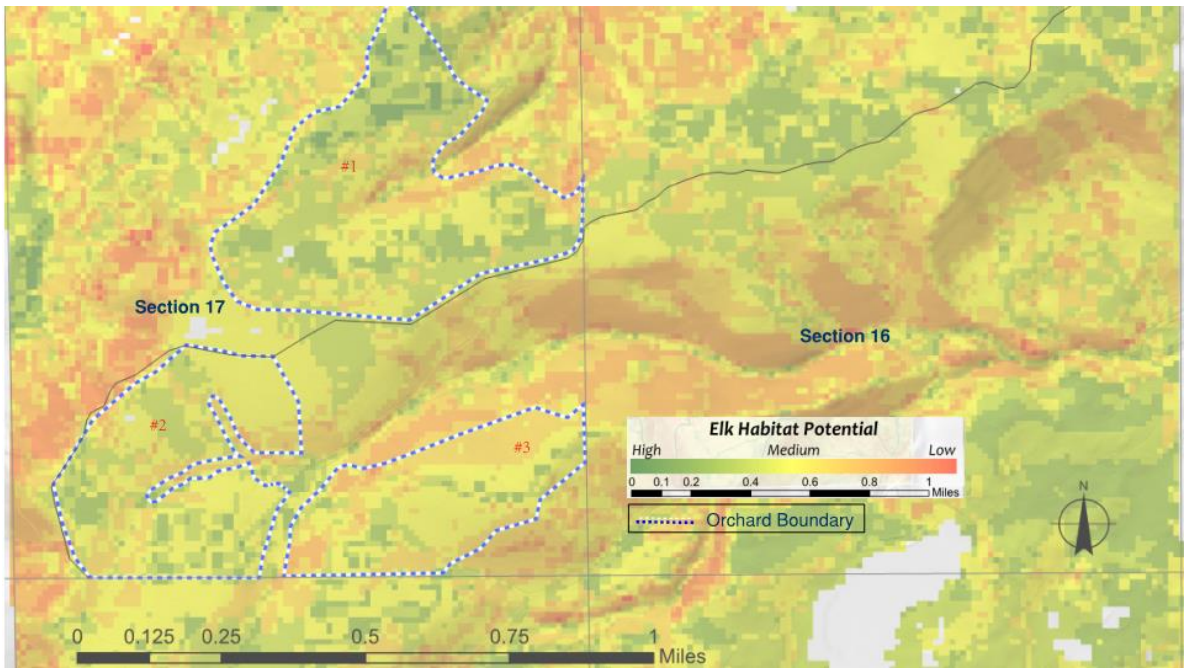

Figure 19. Elk summer habitat potential, Section 17 and Section 16 within the proposed project area.

used to determine mitigation replacement ratios. Figure 19 shows the orchard areas compared to the Conservation Areas in terms of habitat quality based on a combination of aspect, proximity to roads, canopy cover and slope.

Results of this work for Section 17 are shown below in Tables 3 and 4. Table 3 shows only the acreage information. Table 4 adapts Table 3 and shows opportunities for mitigation. Table 4 shows that the Conservation area has about 20 fewer acres of High quality habitat compared to the Orchard areas. However, the Conservation area also has about 45 more acres of Medium quality habitat, and about 85 more acres of Low quality habitat. The Medium to Low quality habitat areas can be enhanced to create High quality habitat. In particular, we note that the area described previously in Figure 16, which is proposed as a "Green Up" area, is mapped as Medium to Low quality habitat in Figure 19. This provides a great mitigation opportunity, and allows a greater than 1:1 mitigation replacement ratio for habitat lost by clearing the Orchard areas. **At least 20.2 acres (~20 acres) of the 45 acres of Medium quality habitat must be enhanced to compensate for the 20.2 acre deficiency in High quality habitat.**

Table 3. SCJ GIS Habitat Quality Model, showing acreage of High, Medium and Low quality elk habitat.

Section 17 Orchard Development 260 Acres		**Section 17 Road Impacts**	**Total Orchard + Road**	**Proposed Habitat Conservation Lands**		**Total**
Modeled Results	**Est. Acres**	**Est. Acres**	**Est. Acres.**	**Modeled Results**	**Est. Acres**	
High	32.8	1.3	34.1	High	13.9	48
Medium	213.8	8.1	221.9	Medium	266.9	488.8
Low	15.3	0.0	15.3	Low	89.2	104.5
Total	**261.9****	**9.4**	**271.3**	**Total**	**370***	**641.3**

*Approx. 360 acres are proposed for conservation lands/conservation easement; **Section line discrepancies in County GIS.

Table 4. Table 3 converted to show targeted Habitat Enhancement Opportunities.

Total Acreage		**Section 17 Orchard Development 260 Acres**		**Section 17 Road Impacts**	**Total Orchard + Road**	**Proposed Habitat Conservation Lands**		**Mitigation (1:1)**
Modeled Results	**Est. acres**	**Modeled Results**	**Est. Acres.**			**Modeled Results**	**Est. Acres**	**Acres Difference**
High	48	High	32.8	1.3	34.1	High	13.9	-20.2
Medium	488.8	Medium	213.8	8.1	221.9	Medium	266.9	+45
Low	104.5	Low	15.3	0.0	15.3	Low	89.2	+81.2
Total	**641.3**	**Total**	**261.9**	**9.4**	**271.3**	**Total**	**370**	**+126.2 net acres***

This indicates an opportunity to enhance Medium and Low Habitat Areas in the Conservation Area and convert to High Quality habitat and achieve great than 1:1 replacement of lost habitat.

*Approx. 360 acres are proposed for conservation lands/conservation easement

Additional mitigation will be needed to compensate for road clearing and utility installation on Section 16. However, because the mitigation for impacts on Section 16 must occur on Section 17 (i.e., offsite), a mitigation ratio of 2:1 is required – requiring an additional 14.2 acres of improved habitat. The mitigation acreage described above appears adequate to compensate on Section 17 for Section 16 impacts defined in Table 5.

Table 5. Mitigation impacts and ratios for Section 16 impacts.

Section 16 Road + Utilities		**Mitigation (2:1) per WDFW Requirements**
Modeled Results	**Est. Acres**	**Acres Needed on Section 17**
High	0.1	0.2
Medium	5.5	11.0
Low	1.5	3.0
Total	**7.1**	**14.2 acres of improved habitat on Section 17**

Table 6 provides an overview of impacts and proposed mitigation opportunities, as discussed above.

Table 6. Impacts and Proposed Mitigation

Impacts		
Impact/Action	**Source or Location**	**Wildlife Impact Area**
Conversion of upland habitat	Orchard development which includes seasonal housing, new reservoir, auxiliary outbuildings, road improvement, utilities and human presence	~260 acres
Preservation of existing habitat	Long-term conservation easements	~360 acres
Offsite	Section 16 impacts from upgraded road and utility installation	~310,000 sqft (7.1 acres)
Proposed Mitigation		
Action Area	**Source or Location**	**Wildlife Impact Area**
Riparian Areas	Ns West – Restoration of flow into original, native stream channel; restoration of old pathway	~35,000 sqft restoration
	Ns West and Ns North: Erosion control and vegetation community enhancement	~15,000 sqft
	Np stream crossing and buffer road surface restoration	~87,000 sqft
	Two Ns stream / wetland road culvert crossings	~2,500 sqft/crossing.
Wetlands	Wetland restoration at B and C	~86,000 sqft
Illegal roads	Existing off road vehicle two track paths south of the County Road in Section 17 will be ripped and revegetated with native plants	~ I mile (~80,000 sqft)
Upland elk habitat	In compensation for loss of breeding/calving habitat from conversion of 260 acres to orchard and impacts from road and utility work on Section 16.	In addition to the ~7 acres of habitat restoration described above; models indicate that enhancing at least 19.9 acres (Section 17 impacts) plus 14.2 acres (Section 16 impacts) of Medium quality habitat in the Conservation Area will meet mitigation requirements – summing to 41.2 acres.

If we sum up the information outlined above, in order to meet minimum replacement ratios for impacts on both Section 16 and 17, mitigation would require at least the following:

- Restoration and enhancement of about 5-6 acres of degraded wetland and stream areas;
- Removal and restoration of surfaces directly affected by about a mile (~2 acres) of illegal roads on Section 17;
- For Section 17 impacts: Enhancement of at least 20.2 acres out of 45 acres of Medium quality habitat in the Conservation Area to create High quality habitat.
- For Section 16 impacts: Enhancement of at least 14.2 acres of Medium to Low quality habitat on Section 17 to create Medium to High quality habitat.

These acreages sum to a total of about 42 acres of habitat enhancement, as needed to meet the minimum mitigation replacement ratios.

4.10 Mitigation Proposal Goals and Performance Standards

Performance Standards are used to provide a basis for evaluating whether the project's Goals are being met. This conceptual mitigation proposal establishes the following criteria as the basis for evaluating mitigation compliance and success. Because this is a conceptual mitigation proposal, detailed site specific mitigation plans and details are not provided. Once the conceptual proposal is approved, a detailed Mitigation Plan, including details on how monitoring will be carried out in each specific mitigation area, will be prepared. The detailed Plan will provide site-specific plant species lists; habitat restoration standards, and erosion control plans.

However, general Goals and Performance standards are outlined below. These will be applied later to the detailed, final Mitigation Plans.

The primary Goal of the Mitigation Plan will be to enhance at least 42 acres of elk habitat in the Conservation Area. This will be done by ripping and replanting areas that are currently affected by illegal off-road access; by restoring severely degraded wetland areas and associated eroding stream channels; by enhancing and replanting degraded riparian buffer areas; and by thinning and replanting upland areas to increase native grassland cover adjacent to forested and shrub-dominated areas (i.e., enhancing calving habitat). A direct measure of success of elk habitat enhancement is not possible. However, the success of the proposed plant community enhancement measures will be used as a proxy to indicate success, in concert with direct elk use observation studies over the 5-year monitoring period. Certain areas will be planted in different vegetation communities, which will have site-specific plant cover and type requirements.

Performance standards will require that any replanted areas achieve 80% cover by native plant species (including all canopy layers) by the end of the 5-year monitoring period. Native plant volunteers will be acceptable in meeting this standard as long as the targeted habitat type and species diversity for that specific planting area is maintained – i.e., dense red alder volunteers will be thinned to ensure they account for less than 20% of the total canopy cover in shrub-dominated mitigation areas, but will be entirely removed from grassland areas.

In Ns stream areas where erosion control measures are applied, no more than 15% bare soil surface will be acceptable, and no gully erosion will be allowed by the end of the 5-year period. During annual site visits, any evidence of continued erosion (channels; gullies; bare sediment deposits) will be noted and new erosion control measures will be applied.

Wildlife cameras will be deployed within the Conservation Easement in strategic areas in consultation with WDFW to track wildlife, primarily elk use within enhanced habitat areas. In addition to direct

onsite summer observation studies, the number of elk using Section 17 during the summer months, as well as the duration of habitat area use will be documented in the wildlife cameras for at least 5 years after mitigation installations have been completed. An annual report will be prepared and provided to WDFW and Chelan County.

5. SUMMARY

Wheeler Ridge LLC is proposing to convert 260 acres of forest habitat within a 640-acre historical working forest to orchard development. The remaining 360 acres will be preserved in a permanent Conservation easement/ wildlife habitat corridor, and will be enhanced to improve elk habitat functions. Impacts to wildlife and their habitat cannot be entirely avoided, but will be minimized and mitigated to ensure retention of critical habitat – particularly for elk breeding and calving functions.

To mitigate for Project impacts on Sections 16 and 17, It is proposed to:

- enhance and restore existing degraded wetland and riparian buffer areas;
- implement erosion control measures in two severely degraded Ns streams;
- replace/install two culverts at existing, eroding road crossings needed to access orchard areas;
- enhance elk calving habitat in the 360-acre Conservation Area set aside, and
- remove illegal roads to control future public access to protected Conservation Area habitats.

A future detailed Mitigation Planting Plan will be developed in consultation with and approved by WDFW to ensure that the proposed elk habitat enhancement/ restoration in upland areas is effective.

In order to meet minimum replacement ratios for impacts on both Section 16 and 17, mitigation would require at least the following:

- Restoration and enhancement of about 5-6 acres of degraded wetland and stream areas;
- Removal and restoration of surfaces directly affected by about a mile (~2 acres) of illegal roads on Section 17;
- For Section 17 impacts: Enhancement of at least 20.2 acres out of 45 acres of Medium quality habitat in the Conservation Area to create High quality habitat.
- For Section 16 impacts: Enhancement of at least 14.2 acres of Medium to Low quality habitat on Section 17 to create Medium to High quality habitat.

These acreages sum to a total of about 42 acres of habitat enhancement, as needed to meet the minimum mitigation replacement ratios.

Wheeler Ridge LLC will work directly with Chelan County, WDFW and other permitting agencies to ensure wildlife and wildlife habitat enhancements proposed are designed in such a way to maximize environmental benefits.

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APPENDICES

APPENDIX I

Critical Areas Report, Wildlife Habitat Mapping & Management Plan 2018

APPENDIX II

Wetland Summary 2018-2019

APPENDIX III

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APPENDIX VI

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APPENDIX IX

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APPENDIX X

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APPENDIX XI

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